

Radio Equipment and Supplies

**Radio Catalogue
1925**

Hub Cycle & Auto Supply Co., Inc.
19-37 Portland Street, Boston, Mass.

INTRODUCTION

To Our Friends and Customers—Everywhere:

It is, and always will be, our aim and purpose to be among the first to carry in stock as complete a line of Radio Equipment and Accessories as have been demonstrated to be both practical and desired by our trade. All effort will be made to procure any merchandise not carried in stock and new items will be added, from time to time, to take care of all requests and orders.

In compiling this catalogue we have endeavored to place before you only Radio Apparatus and Accessories of known quality made by reputable and recognized manufacturers.

We solicit your inquiries, at all times, and for those desiring information, technical or otherwise, we will maintain a SERVICE DEPARTMENT. This service is absolutely gratis.

HUB CYCLE & AUTO SUPPLY COMPANY, Inc.

INDEX OF MANUFACTURERS

We believe the manufacturers as indexed below to be leaders in their respective lines and do not hesitate to recommend their products to our customers.

HUB CYCLE & AUTO SUPPLY COMPANY, Inc.

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GENERAL INFORMATION FOR PROPER INSTALLATION OF RADIO RECEIVERS

For correct receiver installation, care should be taken that all connections are clean, bright and tight.

On all standard radio receivers binding posts will be found marked antenna, ground, A—, A+, B—, B+ detector, B+ amplifier and sometimes C— and C+. The A— and A+ are the "A" or filament heating battery terminals, to which should be connected the storage battery or dry cells (according to the type of vacuum tubes used).

The B—, B+ detector and B+ amplifier are the "B" plate battery terminals, to which should be connected the "B" battery. "B" batteries should always be connected in series. It is a good policy to connect the B— first, running up the scale on the battery, which is usually marked, to 22½ volts +, which is the average detector voltage, then up again to 45 or 90 volts +, which is the average amplifier voltage.

The C— and C+, is a grid bias battery, usually placed between the filament negative and the transformer grid return terminal, the C— connected to the transformer terminal.

As a general safeguard, when first connecting up the batteries (especially in a multi-tube set), it is advisable to connect the "A" battery across the "B" battery posts on the receiver and insert a single tube. The tube should not light. If, however, the tube lights, it proves improper wiring and set should be inspected by capable radio man. If the tube does not light, the "B" battery may be safely connected to its proper posts in accordance with the stipulated voltage and polarity.

The fact that the "B" battery voltage so exceeds that of the "A" battery filament voltage, makes it needless to explain the result if the batteries were connected up without making this test if by chance the receiver is improperly wired. This is a most necessary test for persons assembling kit-sets.

Antenna. The best antenna is conceded to be one of not over 125 feet in length from set to the end of outside wire. The higher this wire, the louder are the long distance signals.

Ground. A water-pipe makes the best ground connection. This pipe should be free from paint, rust, or dirt of any kind where contact is made. Ground wire should be of clean copper, wrapped several times around pipe very tightly or attached with a good ground-clamp. A steam or hot water radiator will be the second best choice.

Tubes. The mere fact that a tube lights is no indication that the tube is in good condition. It is well to have one or two extra tubes which you know are perfect. To test tubes, tune in music, remove tested tube, and replace tube to be tested. If tubes are perfect they will all give same amount of volume of music.

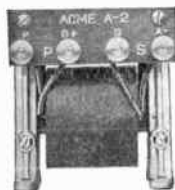
On the purchase or building of set, beware of extravagant claims, and do not expect the unusual all the time. Obtain reliable apparatus and you will have a dependable radio set.

Reception during the daylight is only one-tenth as good as night reception.

ACME APPARATUS

AUDIO FREQUENCY

ACME A-2



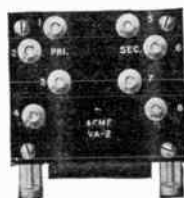
The Acme audio frequency amplifying transformer Type A-2.

Price\$5.00

The reputation of the famous Acme A-2 for volume without distortion scarcely needs comment. It was the first transformer on the market for amateur and experimental purposes, and remains today undisputed leader in the field. Ask your neighbor, he uses them.

Any Ratio You Want

ACME VA-2



The Acme variable ratio A. F. transformer.

Price\$7.00

If you believe in different ratio audio transformers, here's one which will allow you the choice of fifteen different ratios. We believe the 4.25 to 1 ratio of the A-2 is correct for all stages, but all radio engineers do not agree with us.

One for Both

ACME POT-RHEO ACME TWIN-RHEO



The Acme Pot-Rheo and Twin-Rheo. Rheos in 30 or 6 ohm sizes.

Price. each\$3.00

A combined 300 ohm potentiometer and either a 30 or a 6 ohm rheostat is the Pot-Rheo, and the Twin-Rheo is a combined 100 ohm non-inductive resistance and a 30 or a 6 ohm rheostat. Invaluable for "Reflex" sets.

RADIO FREQUENCY

ACME R-2, R-3 and R-4

In ability to secure distance with clearness the Acme Radio Frequency Transformers are acknowledged to be the best on the market. Acme Radio Transformers cover the wave length range with equal and maximum amplification.



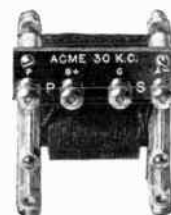
The Acme Radio frequency amplifying transformers, Type R-2, R-3, R-4.

Price each\$5.00

Long Wave R. F.

ACME 30 K. C.

Many circuits are being published calling for a long wave radio frequency transformer. As pioneer transformer and radio engineers and manufacturers, Acme has produced the Acme 30 kilocycle radio frequency amplifying transformer.



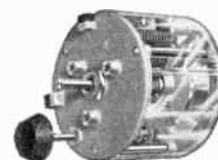
The ACME 30 K.C. transformer.

Price\$5.00

Low Losses

ACME CONDENSER

Your antenna or loop receives only a little energy—don't waste it. High loss condensers use up so much of the received energy there isn't enough left for the amplifiers.



The Acme variable air condenser with vernier control.

Price\$6.50

ACME APPARATUS

HOW TO OPERATE A "REFLEX" RECEIVER

1. After wiring up a "Reflex" receiver and putting the tubes in the sockets connect the "A" battery across the "B" battery terminals to make sure that they are not directly connected to the filaments. If they are the tubes will light, if not, it is then safe to put the "B" battery and "A" battery on.

2. Light the tubes by turning on the rheostat; gently tap each of the tubes and note if a ring is heard in the phones or loud speaker. This is by no means an indication of the sensitivity of the set, but shows whether or not the audio amplifier is working.

3. Tune in any signal or broadcasting station and adjust the crystal to a point of maximum sensitivity.

4. For tuning in stations on an antenna set the coupler to maximum coupling, turn the potentiometer arm to the positive end, rotate the secondary condenser until a station is heard and then tune the antenna circuit to maximum intensity with the antenna condenser. If no signals are heard or if louder signals are desired turn the potentiometer arm towards the negative end up to the point where the set squeals, the most sensitive operating point being slightly back towards positive from this position.

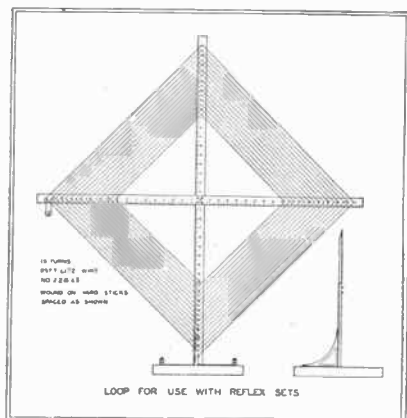
You will find that the potentiometer can be turned nearer to the negative end on the longer wave lengths.

After a few nights' operation you will know just how much you can turn the potentiometer arm for maximum sensitivity for each setting of the secondary or loop condenser.

For sharper and more exact tuning reduce the coupling until the signal is just audible, then retune both primary and secondary. A little practice will show just what coupling value is best for a given station.

For loop tuning, place one hand on the condenser and the other on the potentiometer knob. Tune the condenser until a station is heard and turn the potentiometer arm toward the negative side for louder signals or greater sensitivity. These are the only tuning adjustments necessary outside of tuning the loop.

With either the loop or antenna any given station may be tuned in at will after once being heard if a record is kept of the final adjustments.



MOST COMMON REASONS FOR FAILURE IN OPERATION OF A RADIO FREQUENCY OR "REFLEX" RECEIVER

What to Look for in an Inefficient Radio or "Reflex" Receiver

1. Short circuited lightning arrester.
2. Loose and high resistance connections in antenna, and defective insulation.
3. Low values of inductance in primary and secondary circuits of variocoupler; loose connections to rotor; short circuited turns in primary or secondary.
4. High loss, inefficient condensers.
5. Defective vacuum tube.
6. Discharged or low voltage storage battery.
7. High resistance leads from storage battery to filament connection on sockets, causing low voltage at tube.
8. Dirty tube contacts.
9. Use of corrosive soldering flux, causing leakage.
10. Incorrect connections.
11. Use of tickler coil or plate variometer in an attempt to obtain regeneration.
12. Long leads, particularly grid and plate connections.
13. Poor crystal in detector.
14. Exhausted or low voltage "B" battery.
15. Open potentiometer winding.
16. Poor ground or high resistance ground connections.
17. Incorrect transformers. For broadcast reception, these should be Acme R-2 first stage, Acme R-3 second stage, and Acme R-4 third stage.
18. Poor grade of spaghetti.
19. Jacks in the radio frequency circuits.
20. Use of too heavy a cat whisker.
21. Use of incorrect loop leads.
22. Attempt to combine R. F. transformer with regenerative set.
23. Poor soldered joints.

If, after following the above instructions, satisfactory results are not obtained, the Acme Apparatus Company will be pleased to have you communicate with their engineering department, describing the complete set and accessories with a sketch showing the location of the parts.

This service is given gladly and free of charge, for the Acme Apparatus Company does not consider a sale complete until the customer is satisfied. All Acme products are guaranteed against defects in workmanship and material, and should any such develop, will be repaired or replaced free of charge upon return to the factory with the guarantee tag attached for reference.

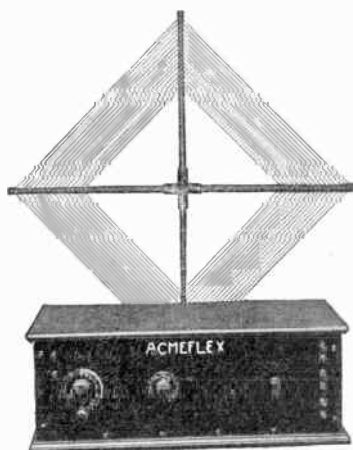
HOW TO MAKE A LOOP

The loop shown may be made with yard sticks. Drive escutcheons into yard sticks 9-16 inch on centers. This will space the wires 3-3 inch apart. Use Litz wire. To remove insulation from enameled Litz wire, unwind silk covering for one inch of length, twist the strands, heat the enameled strands exposed red hot, and quickly plunge into alcohol.

LOOP RECEPTION

With three and four tube Reflex sets in congested districts the loop receiver gives the best all the year round reception on account of interference from radiating receivers. In apartments and hotels the loop is almost imperative. With a loop and four tube Reflex set the distant stations may be heard on a loud speaker all the year round.

ACME APPARATUS



Acmeflex Kitset, Model A, Price.....\$65.00

Anyone can put an **ACMEFLEX KITSET** together

No Soldering—no technical knowledge—no workshop—only two tools and they're given you with the set—all the parts—complete instructions—everything on a loud speaker—all the year 'round radio.

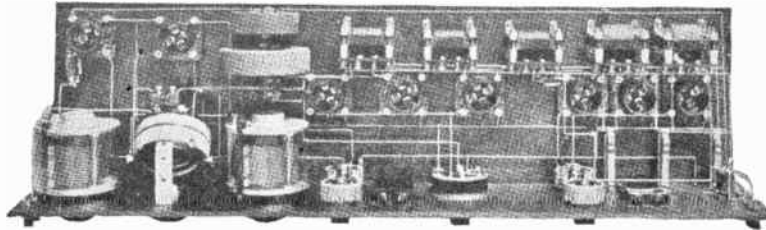
The only accessories to get are tubes, batteries, loud speaker and cabinet.

The circuit employed in the Acmeflex Kit receiver is that of the Acme "Four-tube Reflex," which is well known. The four vacuum tubes are arranged to give three stages of radio frequency amplification, for insuring sensitivity by building up the strength of the signal before applying it to the detector, and three stages of audio frequency amplification, for obtaining ample volume for the operation of a loud speaker from the signal which is passed on from the detector. A crystal detector is used, as it has

been found to give better quality of signals than a vacuum tube detector. The receiver is essentially a single-control outfit, only one knob being used in the selecting the desired programs. An auxiliary control is provided for regulating the volume of signal. Thus the receiver is not only simple to construct but is easy to operate after it has been assembled. The circuit is not new—it has been in use for several years and has given entire satisfaction. The feature which has been recently incorporated, and which makes so strong an appeal to the beginner, is the complete revision of the method of assembly. Only two tools are required to assemble the receiver, and these tools are furnished in the "Kit." The "Kit" contains all the necessary parts for the assembly of a complete receiver—every necessary nut and screw, tools, wire, parts for a loop antenna, full-size working drawings, with complete instructions, in simple language, for assembling, operating and maintaining the receiver. The batteries, tubes and loud speaker are additional.

ACME APPARATUS

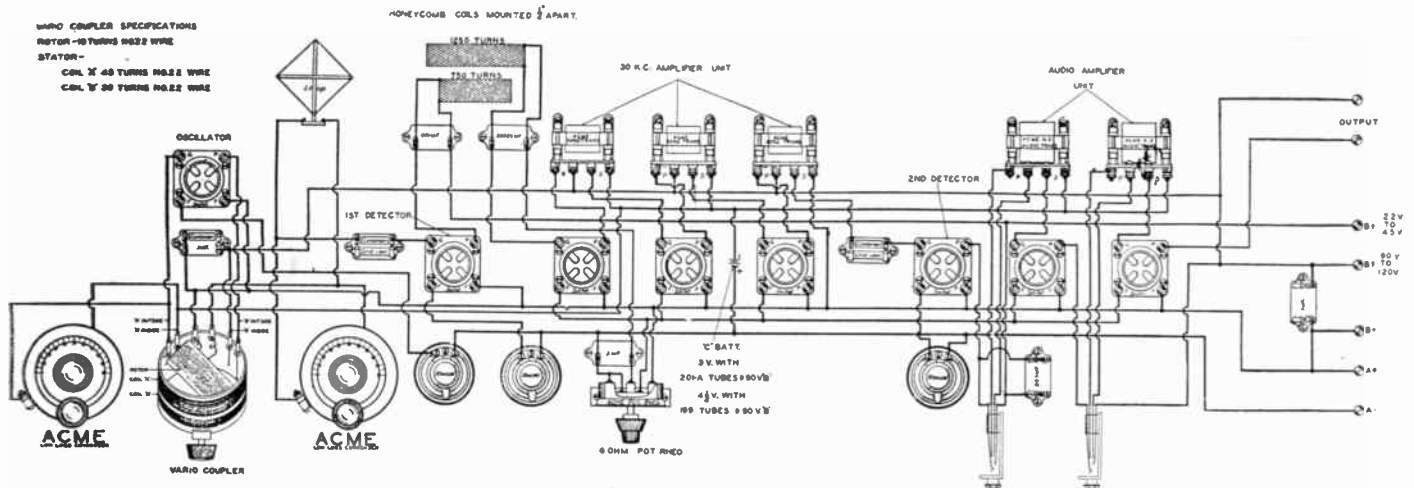
CONSTRUCTION AND OPERATION OF SUPER-HETERODYNE



The Super-Heterodyne is considered by many engineers to be the most sensitive receiving set at the present time. The principle of operation depends on the phenomenon of beats between two oscillating circuits. These beats which are at a comparatively low frequency can easily be amplified since a low frequency is more easily constructed than a high frequency amplifier. Engineers have found that the most efficient frequency is in the neighborhood of 30 K. C. Lower than that value approaches too close to audio frequency and above that value efficient amplification is difficult. In order to obtain a beat frequency of 30 K. C. an oscillation circuit is coupled to the detector tuning circuit and so adjusted that the difference in frequency between the carrier frequency and the oscillator frequency is 30 K. C. and this may be either above or below the carrier frequency. Therefore, when operating the set there will be two positions of the oscillating tuning condenser where a station may be heard. Also when working with very short wave-lengths it may be possible to use an harmonic of the oscillator, for example the oscillator may be set to receive a station at 500 meters and the detector circuit may be tuned to 250 meters, and the

250 meter station will be heard, then the detector circuit may be changed to 500 meters and a 500 meter station heard without changing the oscillator adjustment at all, but the 250 meter station will have disappeared. This is useful when very short wave-lengths are to be received, since the fundamental of the oscillator will not cover much outside of a range from 220 to 250 meters. Short wave stations may then be heard on four different oscillator adjustments.

To operate a Super-Heterodyne first set potentiometer to about half scale, then set oscillator coupler to about 25 or 30 degrees. Start with tuning dial at any position, at same time turn oscillator dial slowly back and forth. If a signal is heard tune detector dial more closely. If nothing is heard try another position of detector condenser and repeat adjustment of oscillator. To gain more sensitivity turn potentiometer toward negative end until the set oscillates, then set it back to a point just before it starts to oscillate which will be the most sensitive point and may be kept in one fixed position for all stations. When a station is found all the dials may be more carefully adjusted to give best results.



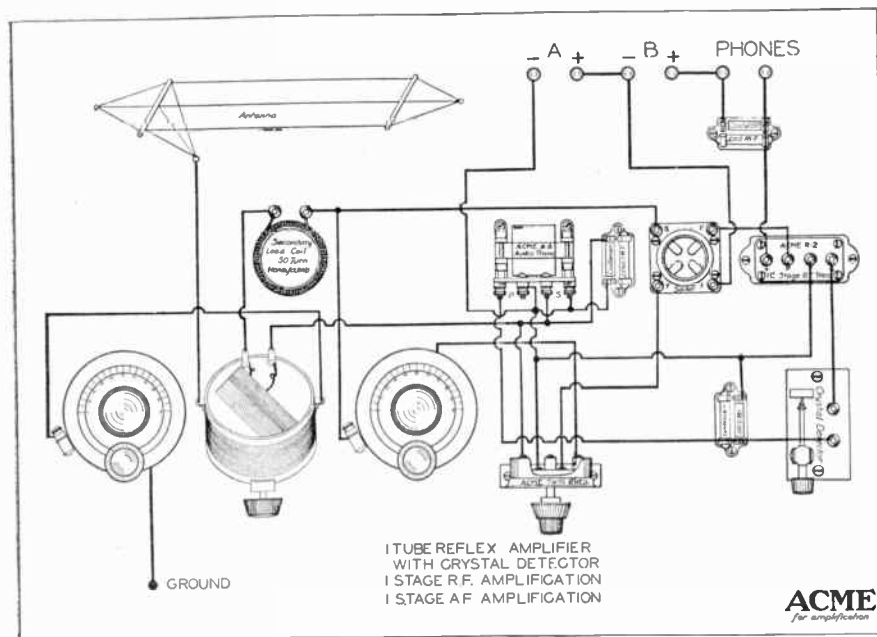
LAYOUT AND WIRING DIAGRAM FOR 8 TUBE SUPER-HETRODYNE

- | | | |
|--------------------------------------|---|---|
| 2 Acme Low Loss Condensers. | 3 Good Rheostats. | 1 5 Meg. Grid Leak (for 2nd Det. Tube). |
| 1 Variocoupler (see specifications). | 1 Acme 6-ohm Pot Rheo. | 2 .1 Mfd. Fixed Condensers. |
| 1 Loop. | 1 1,250 Turn Coil. | 1 .001 Mfd. Fixed Condenser. |
| 8 Good Sockets. | 1 750 Turn Coil. | 1 .005 Mfd. Fixed Condenser. |
| 3 Acme 30 K. C. Transformers. | 3 .00025 Fixed Condensers. | 1 1 Mfd. Fixed Condenser. |
| 2 Acme A-2 Transformers. | 1 1/2 Meg. Grid Leak (for 1st Det. Tube). | 2 Double Circuit Jacks. |

In some cases it will help to put a .001 condenser across the secondary of the first audio transformer and a .00025 condenser across the secondary of the second transformer.

ACME APPARATUS

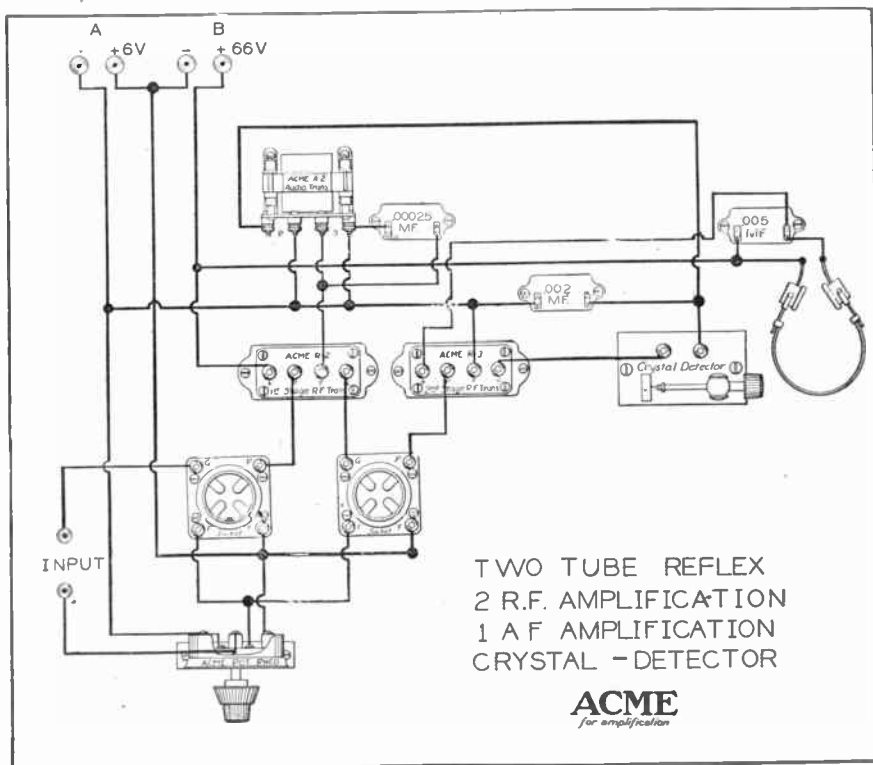
ONE TUBE REFLEX SET



- 1 Acme A. F. Transformer, Type A-2.
- 1 Acme R. F. Transformer, Type R-2.
- 1 Acme Twin Rheo.
- 1 Good Socket.
- 1 Good Crystal Detector.
- 1 .00025 m.f. Mica Condenser.
- 1 .002 m.f. Mica Condenser.
- 9 Binding Posts.
- 6 ft. No. 14 solid wire.

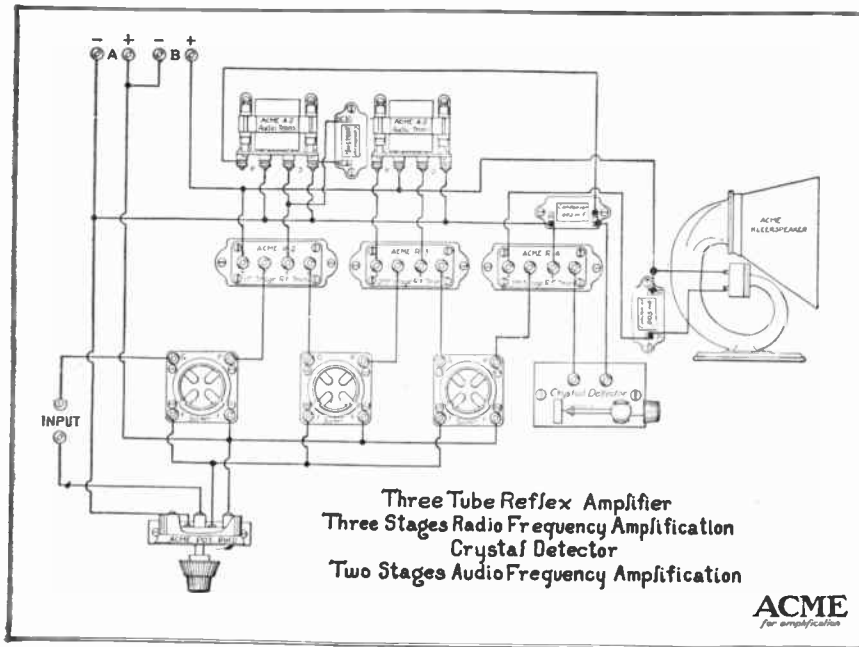
TWO TUBE REFLEX SET

- 1 Acme A. F. Transformer, Type A-2.
- 2 Acme R. F. Transformer, Type R-2, R-3.
- 1 Acme Pot Rheo.
6 ohm with .25 amp. tubes.
30 ohm with .060 amp. tubes.
- 2 Good Sockets.
- 1 Good Crystal Detector.
- 1 .00025 m.f. Mica Condenser.
- 1 .002 m.f. Mica Condenser.
- 1 .005 m.f. Mica Condenser.



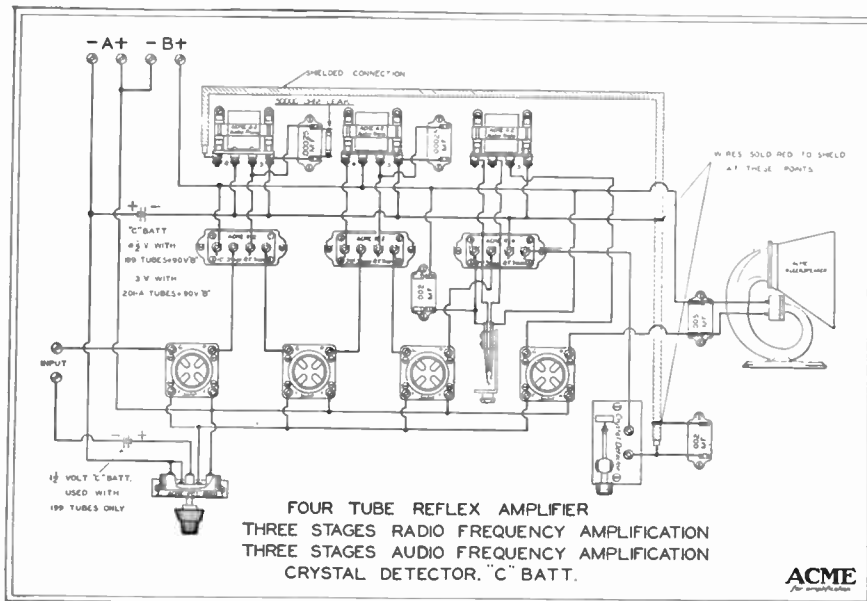
ACME APPARATUS

THREE TUBE REFLEX SET



- 2 Acme A. F. Transformers, Type A-2.
- 3 Acme R. F. Transformers, Type R-2, R-3 and R-4.
- 1 Acme Pot Rho.
6 ohm with .25 amp. tubes.
30 ohm with .060 amp. tubes.
- 1 Loud Speaker.
- 3 Good Sockets.
- 1 Good Crystal Detector.
- 1 .00025 m.f. Mica Condenser.
- 1 .002 m.f. Mica Condenser.
- 1 .005 m.f. Mica Condenser.
- 10 ft. No. 14 Solid Wire.
- 8 Binding Posts

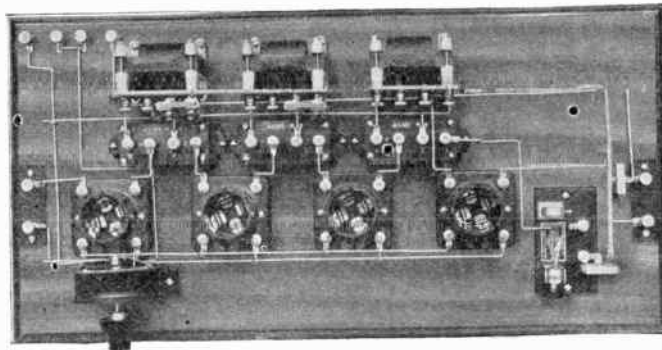
FOUR TUBE REFLEX SET WITH "C" BATTERY AND JACK



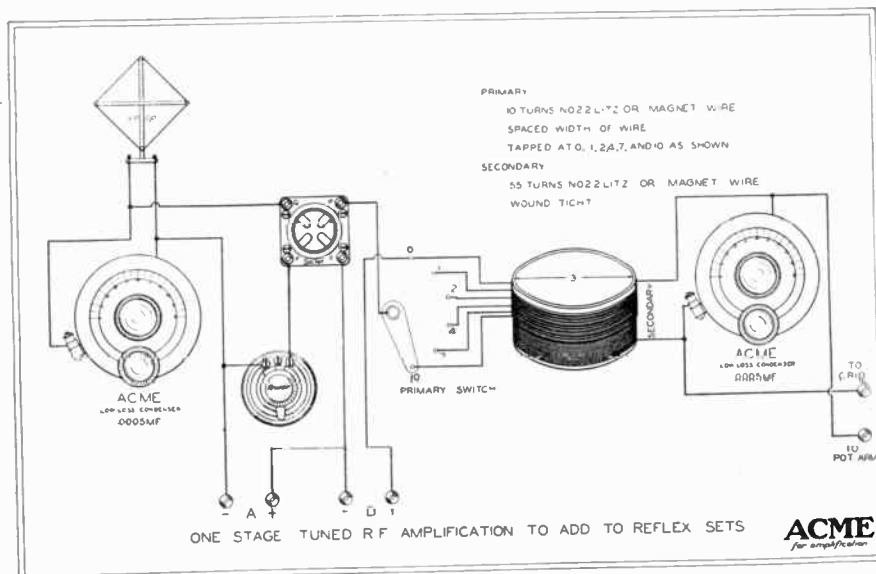
- 3 Acme A. F. Transformers, Type A-2.
- 3 Acme R. F. Transformers, Type R-2, R-3 and R-4.
- 1 Acme Pot Rho.
- 1 Acme Kleerspeaker.
- 4 Good Sockets.
- 1 Good Crystal Detector.
- 1 .001 Mica Condenser.
- 1 .002 m.f. Mica Condenser.
- 1 .00025 m.f. Mica Condenser.
- 1 .005 m.f. Mica Condenser.
- 10 ft. No. 14 Solid Wire.
- 8 Binding Posts.
- 2 ft. Spaghetti No. 9 French Scale.
- 2 ft. Belden Braid Shielding Code "Channel."

ACME APPARATUS

SHOWING LAYOUT OF FOUR TUBE REFLEX SET



TUNED RADIO FREQUENCY AMPLIFICATION



For even greater distance and selectivity the circuit shown above for one stage of tuned radio frequency is strongly recommended. This circuit acts much as a filter and will not only eliminate nearby stations but will improve the quality of any set due to cutting out interference.

A loop is shown in the diagram but the circuit may be used with an antenna as well by simply substituting the secondary circuit of the variocoupler for the loop.

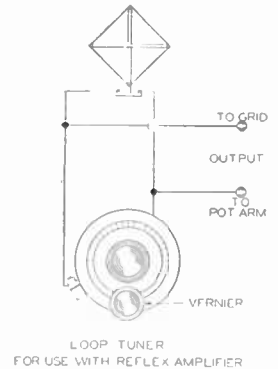
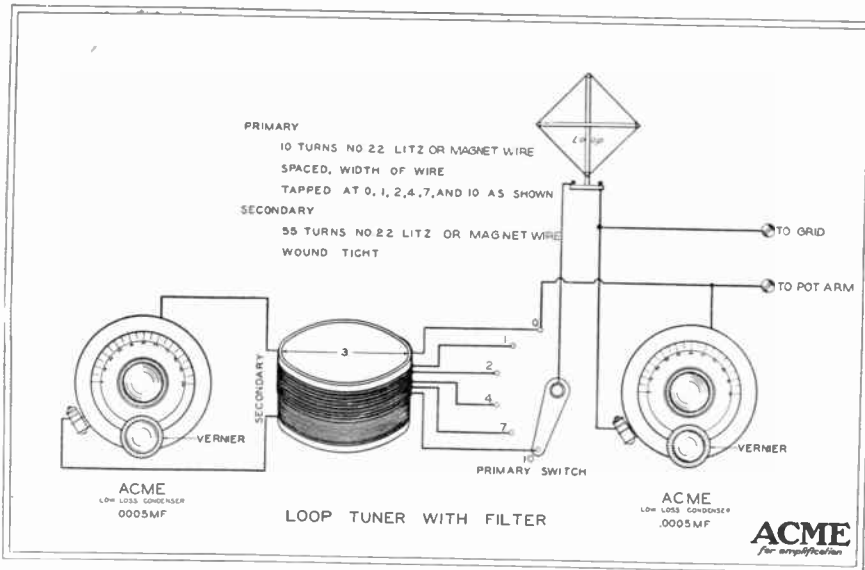
The single stage of tuned radio frequency amplification shown above is operated by tuning its coil to the same wave length as the loop circuit. The necessary

calibration may be obtained either by trial or with a wave-meter. Once each condenser setting is found it will remain the same unless the wave length of the station is changed. With the condensers properly set, the switch on the amplifier coil and the potentiometer on the reflex set should be adjusted for maximum signal strength. With a little practice the adjustment of this unit becomes very simple.

This one stage R. F. Amplifier when added to four tube set, either as an additional unit or on the same panel, gives the now popular and highly efficient five tube set.

ACME APPARATUS

LOOP TUNER WITH FILTER



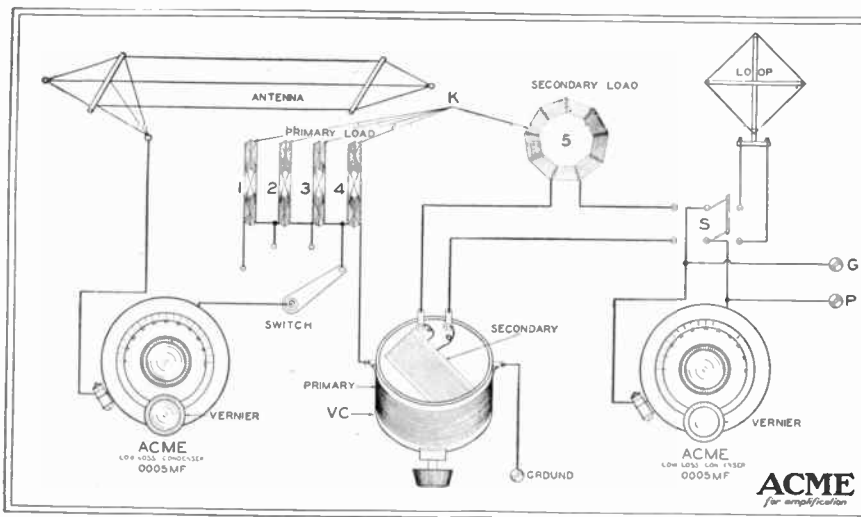
The above circuit is for use on all Loop Type Reflex Sets.

If interference is experienced when using a loop, the above circuit will be found to give an extremely efficient filter. Such interference may come from local broadcasting stations too powerful to otherwise cut out on such sensitive sets as Reflex.

The filter shown above is operated as follows:

1. With the filter coil switch at 0 tune in the undesired station to maximum intensity as usual.
2. Cut in two or more turns of the filter coil and adjust the filter condenser until the signal is absorbed in the filter circuit.
3. Proceed in the regular way to tune in other stations.

LOOP AND ANTENNA TUNING CIRCUIT WITH CHANGE-OVER SWITCH



VC—Coupler.

Stator 28 turns No. 22 Enamelled spaced 1-32 inch.

Rotor 18 turns No. 22 Enamelled spaced 1-32 inch.

S—Miniature D. P. D. T. switch to change from loop to antenna. Do not use jack.

K—Spider Web Coils or equivalent. Coils Nos. 1, 2 and 5, 50 turns each coil. No. 3, 35 turns, and coil No. 4,

25 turns. Mount primary load coil 10 inches from secondary load coils and at right angles to them.

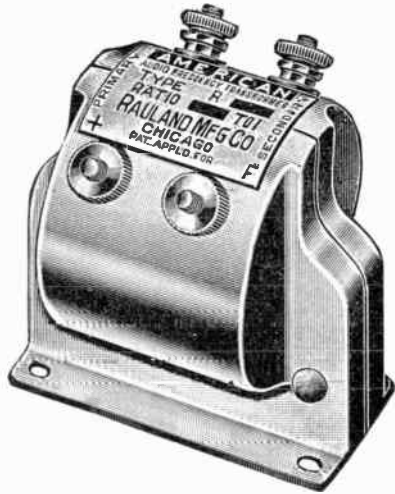
G—Connect to grid of first tube.

P—Connect to Mid-Point of Pot-Rheo.

Note—The primary coils are for use with different antennas. For one antenna use one coil as found by trial.

ALL-AMERICAN TRANSFORMERS

AUDIO FREQUENCY TRANSFORMERS



"All-American" amplifying transformers are designed to give maximum volume, with clear, pure, and distortionless tone. Being quiet in operation and free from extraneous noises, music and speech, from distant broadcasting stations, can be reproduced through good loud speakers with wonderful exactness.

Electrically correct, splendid examples of high-class workmanship, from the best materials, built by experts, rigidly inspected and given exhaustive tests before leaving our factory. Every "All-American" transformer is guaranteed to be electrically and mechanically perfect.

Type	Ratio	Prices
R-12	3 to 1	\$4.50
R-21	5 to 1	4.75
R-13	10 to 1	4.75

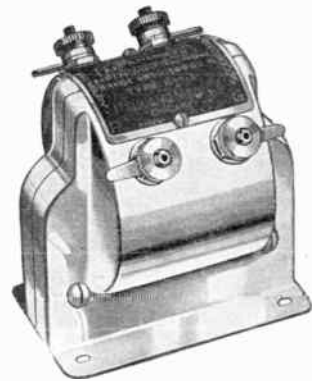
RADIO FREQUENCY TRANSFORMERS

"All American" Long Wave Radio Frequency Transformer, Type R-100, is designed as an intermediate frequency transformer to cover wave lengths between 4000 and 20,000 meters. Its amplification peak occurs at approximately 10,000 meters or 30 K. C. Enclosed in highly nickeled brass shell. Price each.....\$6.00

The "All American" Filter or Input Transformer, Type R-120, is mounted in a molded Bakelite shell designed to pass an intermediate frequency wave of 10,000 meters together with modulated side bands. Other frequencies are effectively dropped out. Price\$6.00

"All American" Oscillator Coupler, Type R-130, is used with Type R-120 Transformer and has a wavelength range of 150 to 650 meters. Price\$5.00

"All American" Short Wave Radio Frequency Transformers have an iron core and a wavelength range from 250 to 550 meters. Type R-201 A is for use with tubes bearing that number. Type R-199 is for use with low capacity tubes such as UV-199 or WD-12. Price, either type, \$5.00

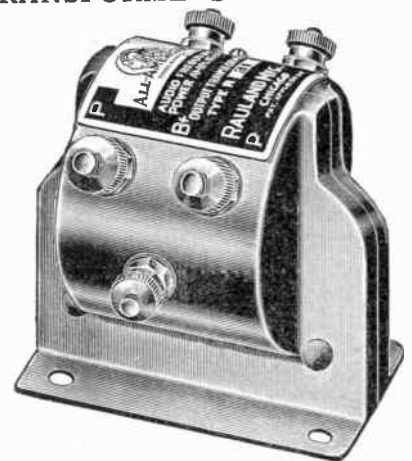


Type R-110 4000-20000 M.
Especially adapted for Super
Het. Work.
Price, each, \$6.00

AUDIO FREQUENCY POWER AMPLIFIER TRANSFORMERS

This POWER AMPLIFIER utilizes two tubes which are practically placed in parallel, because their grid terminals are connected to the opposite ends of the secondary winding of the INPUT transformer. The INPUT transformer has, of course, a primary winding. The special feature, however, is the two secondary windings, each having a common terminal which connects with the negative filament through the "C" or biasing battery. The other ends of this double secondary winding as used in the ALL-AMERICAN INPUT transformer, are the grid terminals. This secondary winding is sometimes referred to as a "split" winding; in that case the center tap is the same as the common terminal just referred to. The advantage of the double secondary winding is that the impedance of both will be exactly the same. This is important, due to the balancing action described below.

This method applies an EMF on the grids of these two tubes exactly 180° out of phase. In other words, one tube is in operation during one-half of the cycle, while the other tube functions during the other half. This action therefore "balances out" or neutralizes the distortion or harmonics usually produced when only one tube is used.



Input, Type R-30.....\$6.00
Output, Type R-31..... 6.00

ALDEN MFG. CO.

"NA-ALD" PRODUCTS



NA-ALD DIALS

No. 3044, 4x1/4 Shaft Super-DeLuxe Dial ..	\$0.75	No. 3024, 2x1/4 Shaft Rheostat Dial	\$0.35
No. 3043, 4x3/16 Shaft Super-DeLuxe Dial	.75	No. 3023, 2x3/16 Shaft Rheostat Dial ....	.35
No. 3784, 37/8x1/4 Shaft DeLuxe Dial .....	.50	No. 3154, 1/4 Knob .....	.20
No. 3783, 37/8x3/16 Shaft DeLuxe Dial ....	.50	No. 3153, 3/16 Knob .....	.20
No. 3004, 3x1/4 Shaft Dial .....	.35	Na-ald Dial Display (Actual dial cost only)	2.65
No. 3003, 3x3/16 Shaft Dial .....	.35		

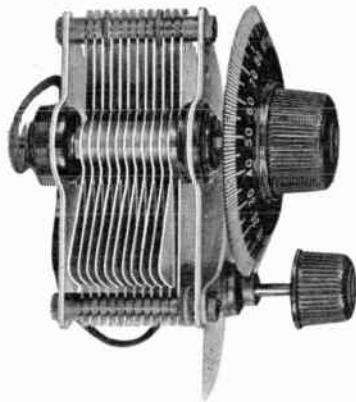


NA-ALD SOCKETS

No. 400, DeLuxe (Standard)	Each \$0.75	No. 499, 199 Socket (For all 199 Tubes) ..	\$0.50
No. 401, Small Space (Standard) .....	.35	No. 460, Panel Mount for all Na-ald Sock-	.35
No. 411, W. D. 11 (For W. D. 11 Tubes) ..	.75	ets	
No. 429, 199 Adapter (Fits all Standard		Rubber Cushions for all Na-ald Sockets ..	.15
Sockets) .....	.75	Na-ald Socket Display Board (Actual cost	
		of Sockets only)	3.10

ALDEN MFG. CO.

"NA-ALD" PRODUCTS



NA-ALD COGSWELL CONDENSER

No.	Plate			Each
113	13	Plain	.000306	\$3.50
113V	13	Vernier	.000306	4.50
123	23	Plain	.000517	3.90
123V	23	Vernier	.000517	4.90
143	43	Plain	.001	4.70
143V	43	Vernier	.001	5.70
100V	Vernier, Separate Attachment			1.00



NA-ALD PHONE CORDS

	Each
Single Phone Cord	\$.50
Double Phone Cord .....	.75
Loud Speaker Cord (15 foot extension) ...	1.50

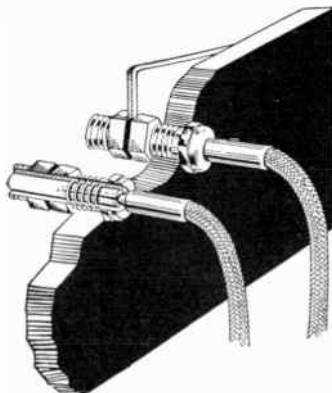
NA-ALD PHONE TIP JACKS, No. 12

Na-ald Phone Tip Jacks make a very easy and a very satisfactory means of connecting as many sets of Phones and Loud Speakers as are desired, connecting them either in series or in parallel.

To install these jacks all that is necessary is to bore 1/4" holes in the panel, clamping the bus wire under the nut and lock nut provided. Extra sets can be connected either in series or in parallel.

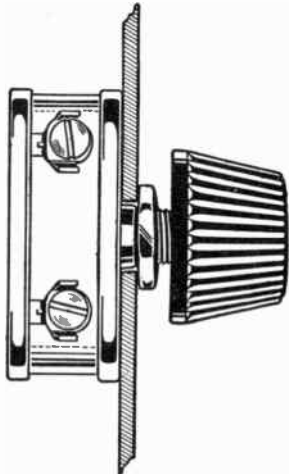
Na-ald Phone Tip Jacks are packed twenty-five pairs to a carton. With each carton goes an attractive counter display card, and a section of cord for display purposes.

Price, 25c a Pair



ALLEN-BRADLEY PRODUCTS

BRADLEYSTAT Perfect Filament Control



Bradleystat

A universal graphite disc rheostat for all tubes. Provides an unbroken, noiseless, stepless range of control for any tube without change of connections.

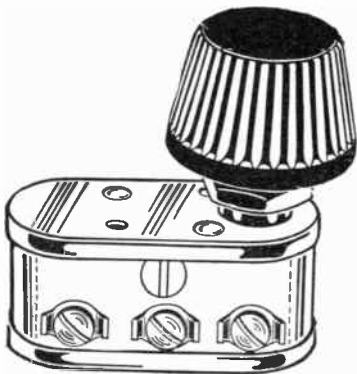
Only one hole in panel is required for mounting. Bradleystat is secured in position on panel with one locknut.

A knurled, polished knob provides entire range of control. Enclosed switch opens battery circuit if knob is turned sufficiently to the left.

Bradleystat, when mounted, extends only 11-16 inch behind panel, and is 2 inches long and 15-16 inch wide, occupying less space than a wire rheostat. Metal parts are nickel-plated to match finest sets.

Price\$1.85

BRADLEYOMETER The Perfect Potentiometer



Bradleyometer

A graphite disc potentiometer that is a distinct improvement over wire potentiometers.

One knob provides a stepless, noiseless adjustment of potential. A 1-hole mounting is provided.

The knob is polished black, and metal parts are nicked. Extends only 7-8 inch behind panel, and is 2 inches long by 15-16 inch wide. Non-inductive in operation.

Price 200-Ohm\$2.00
400-Ohm 3.00

BRADLEYLEAK The Perfect Grid Leak



Bradleyleak

A graphite disc adjustable grid leak that provides stepless, noiseless adjustment of grid leak resistance for all tubes. Range 1/4 to 10 meg. in an unbroken range.

Entire control is centered in one knob. A 0.00025 mf. fixed condenser can be furnished to fit Bradleyleak terminals.

The Bradleyleak is endorsed by leading radio authorities, such as Cockaday, Flewelling, Crosley, and is repeatedly specified in their circuits as essential for proper operation. In circuits requiring precise grid leak adjustment, the Bradleyleak is vitally essential.

Provided with one hole mounting and extends only 11-16 inch behind panel.

Price\$1.85
Condenser (0.00025 mf.)35

BRADLEYOHM The Perfect Resistor



Bradleyohm

An adjustable graphite disc resistor to provide a wide, stepless range of non-inductive resistance for numerous radio applications.

Made in three ranges, specified below. Entire control centered in one knob.

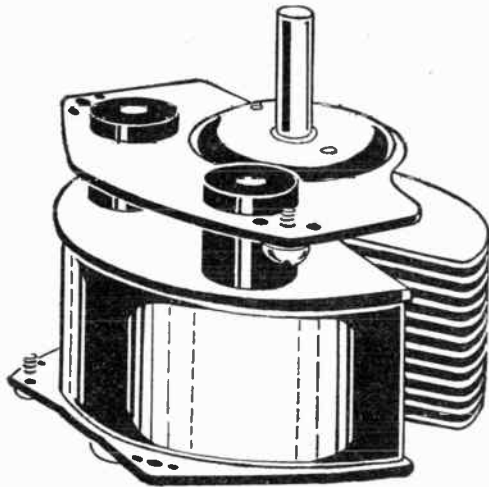
Provided with one hole mounting, and extends only 11-16 inch behind panel.

Specified by Cockaday and other radio authorities for their circuits.

Price No. 10 (10,000 to 100,000 ohms)\$2.00
No. 25 (25,000 to 250,000 ohms) 2.00
No. 50 (50,000 to 500,000 ohms) 2.00

ALLEN-BRADLEY PRODUCTS

BRADLEYDENSER Perfect Variable Condenser



Bradleydenser

The Bradleydenser marks a distinct advance in condenser construction. Every effort has been made to reduce losses and hand capacity effects.

The rotor plates are grounded to the mounting plate, and the stator plates are insulated from the balance of the condenser with a minimum of dielectric. This insures a condenser of remarkably low loss.

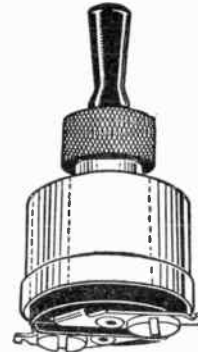
By the use of a bearing of new design, a one-bearing construction is possible which further reduces losses. The new bearing is rigid and will not wear loose.

A dust-cap shield encloses the stator plates, and may be detached without tools if desired. The condenser is mounted on the panel with two screws and no special drilling template is required.

The condenser stator and rotor plates are of brass, thoroughly soldered at all joints to insure perfect contact so essential in high-grade condensers.

Price	0.00025 mf.	.....	\$4.50
	0.0005 mf.	.....	5.00
	0.001 mf.	.....	6.00

BRADLEYSWITCH Perfect Battery Switch



Bradleyswitch

A compact, totally enclosed battery switch for "A" or "B" battery circuits. Saves tubes and batteries.

Provided with one-hole mounting. Metal parts are nicked, and push button is polished black.

Contacts are protected against injury.

A well-built, reliable switch for the finest radio set. Install in a few minutes.

Price\$.60

BRADLEYUNIT Perfect Fixed Resistor



Bradleyunit

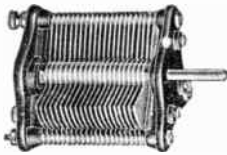
A fixed resistor, calibrated accurately to meet the needs of radio set builders, and is especially suited for resistance-coupled amplifiers and similar circuits. Provided with terminal clips that can be quickly secured to radio devices or mounted upon panel. Metal parts are silver-plated.

Price	No. 12R (12,000 ohms)	.....	\$1.25
	No. 50R (50,000 ohms)	.....	1.25
	No. 100R (100,000 ohms)	.....	1.25

AMSCO PRODUCTS

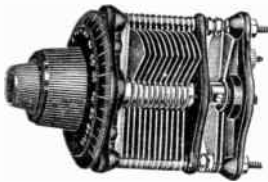
AIR CONDENSERS

These Variable and Vernier Condensers will satisfy the most exacting. Perfect spacing, permanent adjustment. End plates of genuine bakelite or Radion hard rubber. High nickel finish. High maximum to very low minimum ratio.



PLAIN

	Price
No. 503—3 plate, without dial.....	\$1.30
No. 511—11 " " " "	1.80
No. 513—13 " " " "	1.80
No. 517—17 " " " "	2.30
No. 523—23 " " " "	2.50
No. 543—43 " " " "	3.50



VERNIER

	Price
No. 811—11 plate, with 3 in. bakelite dial.....	\$4.00
No. 813—13 " " " "	4.00
No. 817—17 " " " "	4.50
No. 823—23 " " " "	4.50
No. 843—43 " " " "	5.00

RHEOSTATS

Suitable for either table or panel mounting. Condensite base, high grade resistance unit, attractive knob or dial. Adjustable shaft to any thickness of panel. All that is desirable in a Rheostat is embodied in our instrument.



	Price
No. RF 104 2 ohms, with arrow knob.....	\$1.35
No. A 101 6 " " " "	1.00
No. A 102 20 " " " "	1.25
No. A 103 30 " " " "	1.25
No. A 105 50 " " " "	1.30
No. RFD 104 2 ohms, with bakelite dial.....	1.60
No. D 101 6 " " " "	1.25
No. D 102 20 " " " "	1.50
No. D 103 30 " " " "	1.50
No. D 105 50 " " " "	1.55

VERNISTATS (Vernier Rheostats)

This Vernier Rheostat is particularly adaptable for critical circuits or when one wishes to use a soft tube for a detector. The design is unique and mechanically a masterpiece.



	Price
No. V.R. 65—6 ohms, with arrow knob.....	\$1.50
No. V.R. 66—20 ohms, with arrow knob.....	1.75

DOUBLE RHEOSTATS

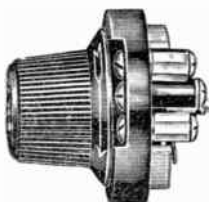
The Amsco Double Rheostat has been designed to take the place of two Rheostats: it saves space, beautifies the Panel Layout and gives more efficient control for each tube separately. The second Rheostat knob is furnished with the following character inscriptions "Detector", "2d stage R. F.", "2d stage audio."



	Price
No. D. R. 121—6 and 20 ohms, with arrow knob.....	\$1.50
No. D. R. 122—20 and 20 ohms, with arrow knob.....	1.75

POTENTIOMETERS

Compact, neat and sturdy. Suitable for either panel or table mounting. For plate voltage control on receiving tubes and for all critical control purposes. Base is moulded Bakelite. The winding is of "Nichrome" wire, securely wound; phosphor bronze highly nickel-plated finger. Adjustable shaft to any thickness of panel.



	Price
No. A 205—250 ohms, with arrow knob.....	\$1.25
No. A 204—400 ohms, with arrow knob.....	1.50
No. D 205—250 ohms, with bakelite dial.....	1.50
No. D 204—400 ohms, with bakelite dial.....	1.75

AMSCO PRODUCTS



BAKELITE DIALS

Made of genuine Bakelite. Especially accurate graduations

	Price
No. 702 —2 inches, 100 Graduations	\$.40
No. 702A—2 inches, 50 Graduations .....	.40
No. 703 —3 inches, 100 Graduations .....	.60
No. 704A—4 inches, 100 Graduations "Vernigrip".....	1.00



GRID-LEAK AND CONDENSER

Fixed condenser .00025 Mfd. capacity—grid-leak 2 megohm. Base of hard rubber. Holder, highly nickered phosphor bronze prongs.

No. 800. Price	\$1.00
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BINDING POST STRIP

Strip of Radion Hard Rubber 1¼" wide by 8" long, with 7 character engraved, non-removable head, binding posts assembled, ready for use. Provision made for separate "B" voltage for detector and amplifier tubes.

No. 900. Price	\$1.50
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CHARACTER BINDING POSTS

Non-removable, character engraved, binding posts, substantial knob of highly polished black composition, engraved A+, A-, B+, B-, ANT., GRD., and BLANK.

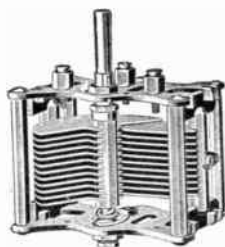
No. 600. Price	\$.15
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VERNIER ADJUSTER

Knob of highly polished black composition engraved "VERNIER." Spring adjustment. Need not be disassembled for mounting.

No. 400. Price	\$.30
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LOW LOSS CONDENSER

This Condenser has the least possible losses, practically zero.

This Condenser has a minimum at its zero setting of less than one-fiftieth of its maximum capacity.

The mechanical construction is such that the electrical efficiency of the condenser shall be everlasting.

This Condenser when suitably grounded is entirely free from "Body Capacity" effects through the whole range of 180 degrees.

This Condenser is free from electrical noises during adjustment.

Number	Capacity	No. of Plates	Price
942	.001	43	\$6.00
923	.0005	23	5.00
913	.00032	13	4.25

Howard

Storage B and C Batteries for RADIO

Individual cell used in
24 v. assembly



Dimensions of 24 v. unit
4½" x 9" x 6⅞"

Capacity 4500 MA

The *Howard* B Battery is manufactured as a compact, neat and well appearing 24 volt unit. The cells are enclosed in a wood container well finished with an acid resisting lacquer.

The elements are of the cylindrical type which affords the largest plate area in the smallest space, thus assuring a B Battery of high capacity and of convenient dimensions.

Howard B Batteries are so constructed that the 24 volt units may be built up upon one another to any desired voltage. A 72 volt battery having the same approximate dimensions as the popular size A Battery.

24 Volt Units

4½" x 9" x 6⅞"

List Price \$9.00

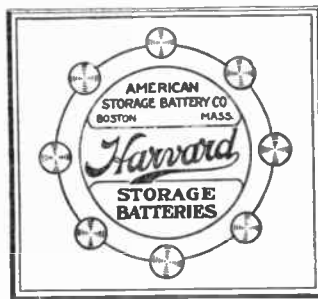
Harvard



Acid Proof Case



STORAGE BATTERIES for RADIO



Trade Mark

Harvard batteries are guaranteed for workmanship and material for a period of one year, and any defective product will be replaced if within this period.

Harvard batteries are made under rigid supervision by the American Storage Battery Co., Boston, and their New Process Improved Superior plates insure greater capacity and longer life, which means economy and satisfaction for the ultimate consumer.

No Harvard plate has ever been known to buckle!

Harvard Radio Batteries are fitted with improved extended terminals which completely eliminate disagreeable corrosion.

**Rubber Case
Acid Proof**

**Rubber Case
Acid Proof**

BAR-0,	6 Volt, 80 Amp.,	Wood	.....	\$20.00
BARC-9,	6 Volt, 80 Amp.,	Rubber	.....	23.75
BAR-11,	6 Volt, 100 Amp.,	Wood	.....	23.00
BARC-11,	6 Volt, 100 Amp.,	Rubber	.....	25.50
BAR-13,	6 Volt, 120 Amp.,	Wood	.....	28.50
BARC-13,	6 Volt, 120 Amp.,	Rubber	.....	31.00
		and		
R-S-7,	6 Volt, 60 Amp.,	Wood (Enclosed		
	Mahogany Cabinet)		.....	23.00

**PRICES BASED ON FACTORY DELIVERY AND SUBJECT TO
CHANGE WITHOUT NOTICE**

BRIGHT STAR "B" BATTERIES

These batteries are all made with large cells, giving greatest power and long service. Rigid tests under normal and adverse conditions have proven that these batteries have no superior.

MADE IN ALL POPULAR STYLES

No. 7117 "C" BATTERY



22½ VOLT REGULAR TYPES "B"



No. 7117—Utility battery, regular 4½ volt "C" battery often used as an "A" battery in portable and other sets. Price, each\$0.60

No. 1550 (Small)\$1.50
 No. 1503 (Medium) 1.90
 No. 1590 (Large) 2.00

Price, each

LONG TYPE REGULAR 45 VOLT BATTERY, No. 3090

COLUMBIA DRY CELLS



No. 3090—45 Volt Long Type "B". Price, each.....\$3.75

22½ AND 45 VOLT VERTICAL TYPES

No. 6 Ignitors, Red Top
 Each, 40c

No. 3005—45 VOLT SQUARE "B"




No. 3005—45 Volt Square "B" battery. Price, each..\$3.75

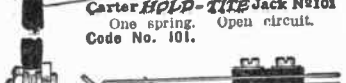
No. 1591—22½ Volt. Price, each.....\$1.75
 No. 3095—45 Volt. Price, each..... 3.75

CARTER RADIO CO. PRODUCTS


(Pat. 1-30-23)




Carter HOLD-TITE Jack No. 101 **70c Each**
One spring. Open circuit. Code No. 101.




Carter HOLD-TITE Jack No. 102 **80c Each**
Two springs; one break contact. Closed circuit. Code No. 102.




Carter HOLD-TITE Jack No. 102A. **80c Each**
Two springs; one break contact; frame insulated. Closed circuit. (Not regularly carried in stock.) Code No. 102-A.



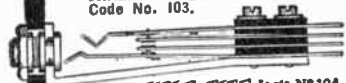
Carter HOLD-TITE Jack No. 103 **90c Each**
Three springs; one local make contact. Single filament control. Code No. 103.



Carter HOLD-TITE Jack No. 104 **\$1.00 Each**
Four springs; breaks two contacts. Double circuit. Code No. 104.



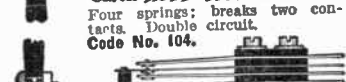
Carter HOLD-TITE Jack No. 105 **\$1.10 Each**
Five springs; opens two and closes one contact. Double filament control. Code No. 105.




Carter HOLD-TITE Jack No. 107 **\$1.30 Each**
Seven springs; opens three and closes one contact. Double circuit, double automatic filament control. (Not regularly carried in stock.) Code No. 107.

NEUTRODYNE AND SPECIAL CIRCUIT JACKS


[Pat. 1-30-23]



Carter HOLD-TITE Jack No. 103-A **90c Each**
Three springs; makes one and breaks one contact.



Carter HOLD-TITE Jack No. 104-A **\$1.00 Each**
Four springs; makes one and breaks one contact. Used in first stage audio Freed-Eisemann type of circuit.



Carter HOLD-TITE Jack No. 106 **\$1.20 Each**
Six springs; breaks three contacts. Used in Freed-Eisemann type of circuit.

Carter TU-WAY Radio Plug

Special designed terminal permits one to four sets to be connected at the same time. Positive contact made with any type of cord terminal or wire.

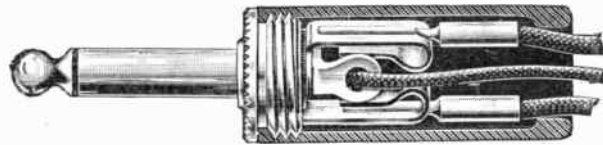


Price, \$1.00 Ea.

Black finish, non-breakable; round, no piece handle not affected by body capacity; no screws used to hold handle in place.

STANDARD PACKAGE: 24 Plugs in Dealers Display Carton

CARTER "ONE-WAY" PLUG

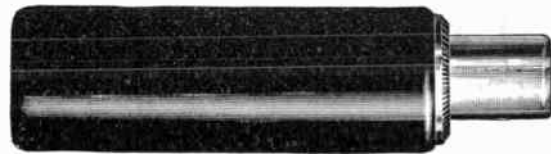


For one head set or loud speaker.

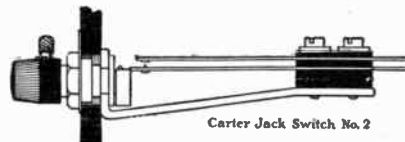
Heavy phosphor-bronze spring terminals hold cord tips tight.

Price "One-Way" Plug\$0.50

CARTER PORTABLE JACK




Price\$1.50



CARTER JACK SWITCH. For opening and closing the "A" battery circuit; mounts same as standard jack; ¼ turn of knob opens or closes the circuit; furnished with "On and Off" etched name plate. Code No. 2 Jack Switch. Price.....\$1.00 ea.

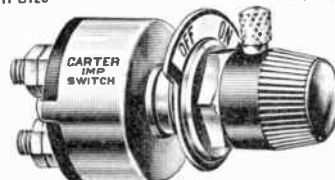
Prices on other spring combinations on application

"IMP" Cord Tip Jack
replaces binding post for phone cord; provides easy method of connecting any circuit using standard phone cord-tips or "IMP" plugs. Nickel plated. Phosphor-bronze spring. Mounts in ⅜" hole. Cut half size. Price\$0.35



CARTER "IMP" BATTERY SWITCH

Full Size Pat. 1-30-23



Quarter Turn Snap Switch makes positive contact. "On and Off" name plate and pointer indicate position of switch. Compact and quiet in operation. One hole mounting. Price, complete\$0.65

Fits All Phone Tip Jacks "IMP" Plug

Can be attached to tinsel cord or wire without soldering.



PRICE.....\$0.15 ea.

CHELSEA RADIO EQUIPMENT



No. 50 AUDIO FREQUENCY AMPLIFYING TRANSFORMER

Chelsea No. 50 transformer is already one of the most popular in the field, it gives amplification of signals not surpassed by any other. The insulation is genuine bakelite and the core of highest quality silicon steel. The coil is moisture proof and tested with 500 volts. Chelsea transformers produce no distortion, are noiseless and efficient.

Ratio $3\frac{1}{4}$ to 1, genuine bakelite insulation, moisture proof. Price.....\$4.50



CHELSEA PANEL MOUNT RHEOSTATS

Similar in construction and appearance to No. 22 rheostat except that it is built for panel mounting and is equipped with knob and dial. The base, knob and dial are of moulded bakelite.

	Price	
No. 23A 30 ohms.....		\$1.40; without dial, \$1.00
No. 25 Universal		1.40; without dial, 1.00



CHELSEA RHEOSTATS

Chelsea rheostats are equipped with a non-corrosive resistance element with proper carrying capacity and resistance to handle present-day tubes. The base and knob are of moulded bakelite. Chelsea rheostats embody proper electrical characteristics, highest quality materials and workmanship and attractive appearance. $7\frac{1}{2}$ ohms.

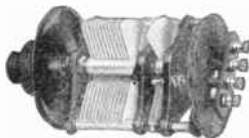
No. 22A 30 ohms. Price.....\$1.00



CHELSEA No. 95 VARIOCOUPLER

Stator and rotor wound on genuine bakelite tubing. Pigtail connections to rotor and taps on stator brought to binding posts. Will give maximum results in any circuit. Panel mounting. Wave length, 100 to 575 meters, four taps on primary, bakelite tube.

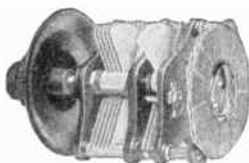
Price without dial\$3.50; with dial, \$3.95



CHELSEA No. 70 ANTENNA TUNING UNIT

Combining the correct amount of inductance and capacity for most efficient tuning of antenna circuit, inductance with four taps. Wave length, all broadcast waves, panel mounting, bakelite insulation.

No. 70, price with dial and Vernier	\$5.75
No. 71, price without Vernier and with dial.....	4.25

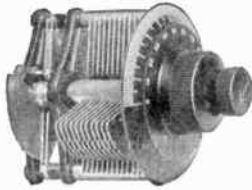


CHELSEA No. 75 RADIO FREQUENCY TUNER

The proper amount of inductance and capacity to most efficiently tune between stages of a tuned radio frequency amplifier with minimum control. Wave length—broadcast waves, panel mounting, bakelite insulation.

No. 75, price with dial and Vernier	\$5.75
No. 76, price without Vernier and with dial.....	4.25

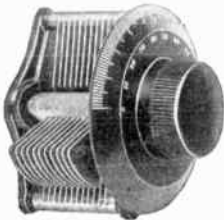
CHELSEA RADIO EQUIPMENT



CHELSEA VERNIER CONDENSERS

Has spiral connections to the rotor element, eliminating noises from friction contacts commonly used. Great care in the selection of material and in the design assure you of low energy losses and highest possible efficiency.

	Plates	Cap.	Price
No. 8 with dial	46	.001	\$5.00
No. 10 with dial	26	.0005	4.50
No. 12 with dial	14	.00025	4.25



CHELSEA PLAIN CONDENSERS

This condenser employs all of the many features incorporated in the Chelsea line of condensers and is built for panel mounting. It carries the usual Chelsea guarantee. Capacity .001 M. F.

	Plates	Cap.	Price
No. 3 with dial	43	.001	\$3.25
No. 4 with dial	23	.0005	3.00
No. 5 with dial	11	.00025	2.75
No. 6 with dial	3	Vernier	2.05



CHELSEA No. 60 BAKELITE SOCKET

The base of this socket is genuine moulded bakelite and supports four readily accessible binding posts. The tube receptacle is highly polished nickel and will take any standard make of detector or amplifier tube.

Heavy phosphor bronze contacts, genuine bakelite base. Price.....\$0.75



CHELSEA No. 61 MOULDED SOCKET

This socket is similar in design to our No. 60 and is built to take the popular No. 199 tube. It is moulded of genuine bakelite and has four easily accessible binding posts. Positive connection is assured at all times by the use of four heavy phosphor bronze contact springs.

Heavy phosphor bronze contacts, genuine bakelite body. Price.....\$0.50



CHELSEA RHEOSTAT DIALS

This dial like other Chelsea products is of moulded bakelite. It will not warp and is guaranteed to run true. Has a scale range of 0-80 and is 2 5/8 inches in diameter. Designed principally for use on panel mounting rheostats.

	Diameter	Shaft	Price
No. 43	2 5/8"	1/4"	\$0.40
No. 43A	2 5/8"	3-16"	.40



CHELSEA MOULDED DIALS

Chelsea dials are moulded of genuine bakelite, beautifully finished with deep set and sharply defined characters. Chelsea dials run true and will not warp. No. 41 is 3 1/4 inches in diameter with a scale of 0 to 100.

	Diameter	Shaft	Price
No. 41	3 1/4"	1/4"	\$0.45
No. 41A	3 1/4"	3-16"	.45
No. 44	4"	1/4"	.60
No. 44A	4"	3-16"	.60

COTO SYMPHONIC BROADCAST RECEIVER

THE SET THAT EXCELS IN SELECTIVITY—TONE QUALITY—VOLUME



Price\$125.00

**HAND POLISHED MAHOGANY CABINET
POLISHED FORMICA PANEL**

**COVER, PIANO HINGED AND FITTED WITH
STOP HINGE**

**EXTREME SELECTIVITY—SIMPLE TUNING
ALL STATIONS CAN BE LOGGED**

The new Coto Symphonic broadcast receiver represents a distinct advance in radio set designing.

The past year has been notable in multi-tube designing. Six, eight and nine tube combinations have been presented to the public with little or no mention of cost of upkeep, and with unfounded claims for additional performance that are never realized. The public is learning this lesson fast, and already popular demand has begun to force development towards the middle road of extra refinement and the economy of a moderate number of tubes.

Coto Symphonic is a four tube tuned radio frequency receiver with two outstanding features of design that make possible a high degree of selectivity and the very unusual quality of reception indicated by the name SYMPHONIC.

The first of these features called a rejector is in fact a unique and remarkably effective wave trap so designed that coupling of coils may be made "loose" or "close" at will. By a half turn of dial it is thrown entirely out of use. When closely coupled, its effect differs from the ordinary wave trap in that the desired signals rather than being diminished in volume by the rejector are frequently slightly amplified even when a local station of real power is operating nearby.

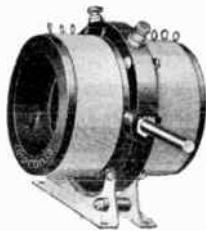
There are few radio sets that can equal the Coto Symphonic in selectivity. But for quality of reception it probably stands alone, due to a simple and remarkably efficient shielding of the audio frequency circuits from the radio frequency circuits. In ordinary assembly the audio frequency circuits are alongside the radio frequency circuits with more or less air space between, usually less than there should be. The result is a noisy set, imperfect tones, indifferent reproduction which is conveniently blamed on the weather, the broadcasting station, etc., etc.

The Coto Symphonic assembly places the radio frequency circuits and the rejector circuit on the panel. The four tubes are mounted behind the panel on a grounded metal plate which also bends over to form a shield behind which the two Coto audio frequency transformers are perfectly isolated. The resulting purity of tone secured by this and other refinements is a revelation even to widely experienced broadcast listeners.

With economy, selectivity and tone purity assured only reception for distance remains to be considered. Coto Symphonic has received KGO, Oakland, California, from Providence, Rhode Island, with WSAI of Cincinnati operating. Between WSAI and KGO there is a difference of only 3 meters in wavelength, yet they were completely separated. This is real coast to coast reception with four tubes and "A" and "B" battery expense less than half that of the multi-tube supers.

In spite of the extreme selectivity, the Coto Symphonic receiver is easy to tune. The tuning is done with two dials, the Receptor and Resonator, tuning to the same dial setting, log the stations and they always come in at the same dial setting. The Resonator Booster controls the volume of signal.

COTO-COIL CO. APPARATUS



Type 9000

Compact Variocoupler

Primary Coil has 8 taps for use with primary condenser. Range, 200 to 600 meters. In brown bakelite, highly polished. Size only 2 7/8 x 3 x 3 3/4. Mounts on base or panel.

Type 9000 Variocoupler.

List Price \$5.50



Type 3500

Compact Variable Condenser with Vernier

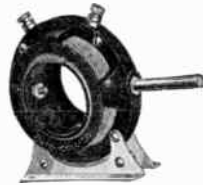
A very efficient condenser built to supply the demand for a good condenser of small dimensions. This condenser is only 2 7/8 in. square. It is constructed on a metal frame plate, both rotor and stator plates being insulated from it. Plates are of copper, soldered together and to the supports. This assures low resistance and prevents rotor plates from slipping in shaft. Dial furnished.

Type 3505 .0005 Mfd.

List Price \$5.00

Type 3510 .001 Mfd.

List Price \$6.00



Type 8000

Compact Moulded Variometer

The stator is honeycomb wound. Connections to rotor made through pig-tail, assuring positive contact. Metal parts nicked. Range 200 to 600 meters. Brackets interchangeable for table or panel mounting. Dimensions 2 7/8 x 1 3/4 x 3 3/4.

Type 8000 Variometer

List Price \$5.00



Type 7000

Cotogrip Vacuum Tube Socket

Note the unique way in which double positive contact is secured by the double bayonet joint. This is a real socket formed of sheet brass and heavily nicked. Contacts mounted to hard rubber panel, one of the best radio insulating materials.

Type 7000 Cotogrip Socket

List Price \$0.85



Type 4000

Compact Audio Transformer

Large volume with unusual clearness and tone quality have made it a favorite with professional and amateur users. Turn ratio, 5 to 1, the highest that should be used without careful and complete shielding of set. Shell type, wound with No. 40 wire, stands 2 1/2 inches high.

Type 4000 Audio Frequency Transformer.

List Price \$5.00



Type 4500

"Coto Special" Audio Frequency Transformer

All materials of the very highest grade. Formica panel, .014" Silicon steel laminations, wound with No. 40 Enamel wire. Core type, 3 to 1 turn ratio, and will give excellent volume without distortion.

Type 4500 "Coto Special" Audio Transformer.

List Price \$2.50



Honeycomb Wound Inductance Coils

Turns	List Price Unm't'd	List Price M't'd
25	\$.50	\$1.15
35	.50	1.15
50	.55	1.20
75	.60	1.25
100	.65	1.30
150	.70	1.35
200	.80	1.45
250	.85	1.50
300	.95	1.60
400	1.15	1.80
500	1.30	1.95
600	1.45	2.10
750	1.60	2.25
1000	1.90	2.60
1250	2.20	2.90
1500	2.50	3.20



Coil Mounting Brackets

Type 2900—Fixed Panel Mounting Bracket.

List Price \$1.00

Type 2901R — Trunnion Mounting Bracket (Right Hand).

List Price \$1.25

Type 2901L — Trunnion Mounting Bracket (Left Hand).

List Price \$1.25

Type 2902 — Mounting Plug.

List Price \$.60

CARTER VARIOCOUPLERS

Manufactured by The Carter Manufacturing Company, Cleveland Ohio. Designed and manufactured by an expert Radio Engineer Mr. E. C. Carter. Known to amateur operators as 8YD.

CARCO Couplers are correct in every detail having several special features not found in other makes, that promotes interest and popularity with every builder of Radio apparatus.

CARCO Couplers are small and compact, yet equal in every respect to larger and more cumbersome apparatus designed for the same purpose. Attractiveness coupled with efficiency are incorporated in every unit.

The windings are securely attached to Bake-lite tube for the primaries and the secondary windings are mounted on polished molded Bake-lite ball rotors.

The primary taps are provided for by a fibre shoe or guard which protects the main winding from the heat and acid of the soldering of inductance switch connections even when done by the most inexperienced amateur builder.

The positive rotor contacts are an exclusive feature, the rotor shaft suspended and always rotating between its electrical contacts.



CARCO COUPLER TYPE 1

Single circuit.
Outside dimensions
Depth 3 $\frac{3}{4}$ " , height 4"
Guaranteed Range 175 to
600 Meters.

Price, \$3.50

DIAGRAM OF HOOK-UP
WITH EVERY UNIT



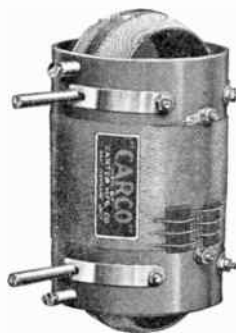
CARCO COUPLER TYPE 2

For Single or Two circuit
hook-ups.

Outside dimensions
Depth 3 $\frac{3}{4}$ " , height 4"
Guaranteed Range 150 to
600 meters.

Price, \$4.00

DIAGRAM OF HOOK-UP
WITH EVERY UNIT



CARCO COUPLER TYPE 3

Three circuit, two rotors
with inductance tapped pri-
mary equal to two variom-
eters and one coupler. More
efficient and closer tuning.

Outside dimensions
Depth 3 $\frac{3}{4}$ " , height 6"
Guaranteed Range 175 to
600 meters.

Price, \$6.75

DIAGRAM OF HOOK-UP
WITH EVERY UNIT



CARCO COUPLER TYPE 4

Single circuit style but with
2 rotors. Eliminates separate
units of coupler, variometer
and variable condensers if de-
sired. Fine sharp tuning is
secured by the operation of
the two rotors only. Used
with fixed condensers.

Outside dimensions
Depth 3 $\frac{3}{4}$ " , height 5 $\frac{3}{4}$ "
Guaranteed Range 180 to
600 meters.

Price, \$8.00

DIAGRAM OF HOOK-UP
WITH EVERY UNIT

CARCO R. F. TRANSFORMERS

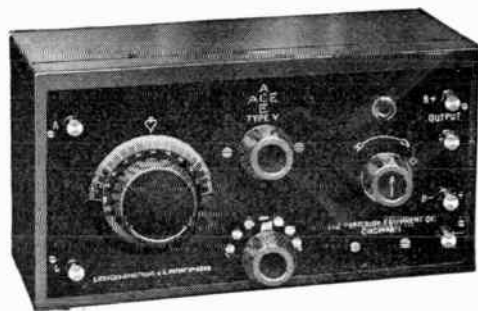


This is a set of 3 air core
Radio Frequency Transform-
ers, Ratio 4 to 1, for use in
the Neutrodyne circuits, or as
a fixed coupler—with a con-
denser connected across the
secondary winding. Brackets
are furnished for attaching
the transformer to all types
of condensers.

Price per set of three.. \$5.25

DIAGRAM OF HOOK-UP
WITH EVERY SET

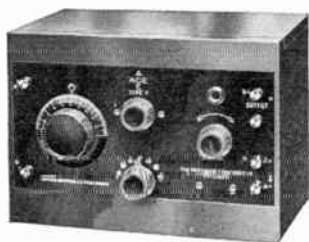
CROSLY RADIO APPARATUS



CROSLY TYPE V

When the price of the Crosley Type V, formerly called the Ace Type V, was \$20.00, the set was referred to by thousands of owners as the best one tube set on the market, and many marveled at the possibility of producing it as such a low cost. But quantity production has permitted a reduction in the price, and this "Little Wonder" now is offered to you for \$16.00. The Type V is well known as a long range Armstrong regenerative receiver. Stations from coast to coast are heard by owners of this set under ordinary conditions. Wonderful efficiency, simplicity of operation, and low cost are the chief factors in the growing success of the set. They are the features that have made it the most popular one-tube regenerative set on the market. Owners of the Type V who desire to operate a loud speaker may do so by adding a Crosley Two-Stage Audio-Frequency Amplifier to their receiving set. The amplifier matches the Type V perfectly. (Amplifier Model IV.)

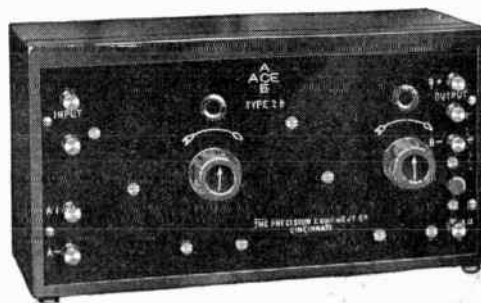
Type V Price, less accessories\$16.00



CROSLY TYPE V SPECIAL

The Crosley Type V Special is similar in every way to the Crosley Type V—with exception that it has a larger Mahogany Cabinet. This Cabinet is large enough to allow the Dry Cell for "A" Battery and two small "B" Batteries to be put in cabinet. Two-step Amplifier to match this Model is Model IV Special.

Type V Special Price, less accessories.....\$21.00



CROSLY TYPE IV AMPLIFIER

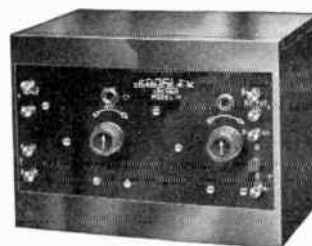
The Crosley two-stage audio frequency amplifier consists of Crosley multistats, sockets, transformers, etc., mounted on a panel of genuine formica and installed in a beautifully finished cabinet. The panel is artistically engraved and complete with binding posts which are marked.

This unit was designed to work efficiently with practically any audion detector hook-up, the phone posts on the detector being connected to the input posts on the amplifier.

Wonderful reports are being received from owners of the Crosley Two-Step Amplifier. In many instances they have been regarded as being far more efficient than those costing several times as much. Their simplicity appeals to many people, and one trial convinces the most skeptical that the units have been brought to 100 percent perfection.

This amplifier is designed to match Crosley Type V Set. Elimination of howls and other extraneous noises is a feature of the Crosley Two-Step Amplifier. In other words, it amplifies desired signals but eliminates undesirable noises. It does not produce volume, it amplifies it.

Type IV Amplifier Price, less accessories.....\$18.00



CROSLY TYPE IV SPECIAL AMPLIFIER

The Crosley Type IV Special Amplifier is identical to the Crosley Type V, with a larger Cabinet. This matches the Crosley Type V Special.

Type IV Special Price, less accessories.....\$23.00

CROSLEY RADIO APPARATUS

CROSLEY 51



The Crosley 51 needs no introduction. Within twenty-four days from the time that it was announced it became the biggest selling radio receiving set in the world, and it holds that position today. Over 20,000 were sold within two months. It uses two standard storage battery or

dry cell tubes, and is licensed under Armstrong U. S. Patent 1,113,149. This receiver will bring in local stations on the loud speaker at all times, and under average conditions will also bring in distant stations on the loud speaker. The Crosley 51 is unusually selective—it incorporates standard sockets so that all makes of tubes may be used. The various units are mounted on beautifully engraved grained panels inside of hardwood, mahogany finished cabinets, which enclose all parts and tubes.

Price, less accessories\$18.50

CROSLEY 51-A

One Stage Amplifier to Match the Crosley 51



The Crosley 51-A is a new One-Stage Audio Frequency Amplifier to match the Crosley 51 receiver. When used in connection with the Crosley 51, it gives the equivalent of a three-tube regenerative set. A Crosley multistat and standard socket permit the use of any make of amplifier tube. The cabinet of the Crosley 51-A matches the cabinet of the Crosley 51

perfectly—the combination forming a neat and attractive radio set.

Price, less accessories.....\$14.00

CROSLEY 50



The Crosley 50 is a new One-Tube Armstrong Regenerative Receiver, licensed under U. S. Patent No. 1,113,149. We believe this to be the most efficient one-tube receiver ever put on the market. Like the Model V, which it supersedes, it will bring in, under average conditions, on headphones, broadcasting stations at a distance of one thousand miles or more. It was a Crosley Model V Receiver that was used by Mr. Len Weeks at Minot, North Dakota, in establishing radio communication last December with Captain MacMillan, who was then near the North Pole. The various parts of the new Model 50 are mounted on a beautifully grained panel of highest grade insulating material, nickel-plated trimmings, mounted in mahogany finished hardwood, cabinet having hinged lid. This receiver has standard socket, and is equipped with the Crosley Multistat, which enables the use of any standard storage battery or dry cell vacuum tube.

Price, less accessories.....\$14.50

CROSLEY 50-A

Two Stage Amplifier to Match the Crosley 50

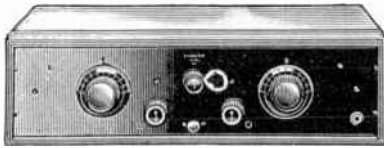


The Crosley 50-A is a new Two-Stage Audio Frequency Amplifier to match the new Model 50 receiver. This unit is equipped with a filament switch for shutting off the current from the "A" and "B" batteries. When used in connection with the Crosley 50, it gives the equivalent of a three-tube regenerative receiver.

Price, less accessories.....\$18.00

CROSLEY RADIO APPARATUS

TRIRDYN 3R3



This three-tube Trirdyn 3R3 Receiver gives the efficiency and volume of a five-tube receiver. It consists of one stage of non-reradiating, non-oscillating radio

frequency amplification. Armstrong regenerative feed-back detector, licensed under U. S. Patent 1,113,149, reflexes back on the first tube for first stage of audio frequency, and a third tube provides a second stage of audio frequency amplification. This set has only two major tuning controls. These two dials can be calibrated accurately so that stations can be logged and returned to at will. It can be used on outdoor or on short indoor antenna, and is, we believe, the most efficient and sharpest tuning receiver on the market at any price for bringing in long distance stations. It is encased in a beautifully finished, solid mahogany cabinet.

Price, less accessories\$65.00

TRIRDYN SPECIAL

The Crosley Trirdyn Special is exactly the same as the Trirdyn 3R3, except the solid mahogany cabinet is larger. There is sufficient space inside to house all the 6-inch No. 6 dry cells and the "B" batteries required when standard dry cell tubes are used. Home-furnishing experts have declared that the Trirdyn Special is the most beautiful radio receiving set ever manufactured, and radio experts have acclaimed it to be the most efficient. The Special Trirdyn and a loud speaker placed on a library table, will be a welcome addition to the home from an artistic standpoint.

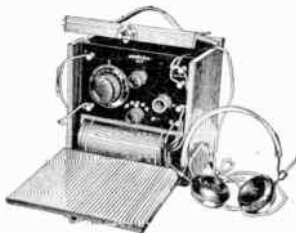


Price, less accessories\$75.00

NEW TRIRDYN NEWPORT

Price, less accessories\$100.00

CROSLEY 50-P PORTABLE

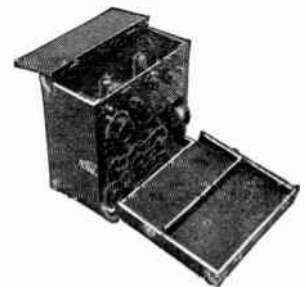


Genuine Armstrong Regenerative one-tube portable radio receiver. Primarily a home set, but it has the portable feature which permits its owner to carry it wherever he may go. Stations 1,000 miles away, and perhaps more, can be heard with headphones.

Price, less accessories.....\$18.00

CROSLEY 51-P PORTABLE

This is the Crosley 51-P, our new portable set. It is the Crosley Model 51 two-tube receiver mounted in a leatherette covered carrying case, having nickel-plated trimmings and a leather handle. It has a compartment for a pair of headphones and a compartment large enough to hold three standard dry cells and three batteries. Nothing comparable to this set has ever been put on the market at such a reasonably low price.



Price, less accessories\$25.00

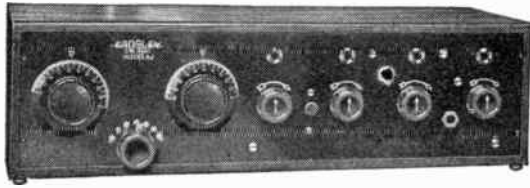
CROSLEY 52



The Crosley 52 is a new three-tube Armstrong Regenerative Receiver, licensed under U. S. Patent 1,113,149. It consists of tuner, regenerative detector, two stages of audio frequency, phone-jack to plug in on two tubes and filament switch to turn off the "A" and "B" batteries when the set is not in use. This receiver is unusually efficient, will provide loud-speaker volume on distant stations under practically all conditions, and is in every way an ideal receiver for the home. The parts are mounted on a beautifully grained panel of highest grade insulating material, and are in a hardwood, mahogany finished cabinet.

Price, less accessories\$30.00

CROSLEY RADIO APPARATUS



CROSLEY MODEL XJ

The price of the famous Crosley Model XJ has been reduced from \$65.00 to \$55.00. This is a four tube set, consisting of one stage of Crosley tuned radio frequency amplification, detector and two stages of audio frequency amplification. It is probably the biggest selling radio receiver on the market, the thousands that are in use giving exceptionally satisfactory service. Stations many hundreds of miles away are heard regularly by owners of the Model XJ, and frequently we receive reports of the set having brought in those thousands of miles away. Crosley variable book-type condensers, multistats, transformers, etc., are used in the receiver. The two stages of audio frequency amplification permit use of a loud speaker on either local or distant broadcasting stations.

Standard Model XJ Price, less accessories.....\$55.00

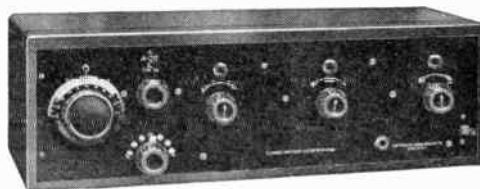


CROSLEY MODEL SUPER XJ

A Four Tube Radio Frequency Set with many new and exclusive features.

The new Crosley Super XJ is a four tube radio receiver incorporating Armstrong Regenerative and Miner features. This circuit has been pronounced by leading authorities throughout the country as the most efficient of the latest radio developments, enabling perfect regeneration, control of tuned radio frequency amplification with minimum reradiation and increased range, volume and selectivity. There are two stages of audio frequency amplification, which permit the operation of a loud speaker when receiving nearby as well as far-away broadcasting stations.

Model Super XJ Price, less accessories.....\$65.00



CROSLEY MODEL 3B

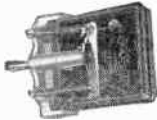
Price of the Crosley Type 3 B, formerly called the Ace 3 B, has been reduced from \$50.00 to \$42.00. This receiver consists of an Armstrong regenerative detector and two stages of audio frequency amplification, making it suitable for long distance reception on a loud speaker. Its dull black panel, engraved in white letters, highly polished black knobs and dials and nickel trimmings,

form a pleasing contrast to the beautiful piano finished, solid mahogany cabinet, making it a thing of beauty for the most magnificent home. Like all other Crosley radio receivers illustrated, the Type 3 B will operate with any type of tubes, the Crosley Multistats taking care of this feature.

Model 3 B Price, less accessories.....\$42.00

CROSLY RADIO APPARATUS

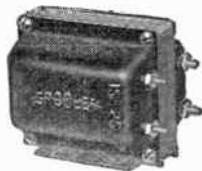
CROSLY BOOKTYPE CONDENSERS (Patent Pending)



Maximum efficiency and minimum cost make the Crosley booktype variable condensers exceptionally popular and in great demand everywhere. The sharpest and most accurate tuning are provided by this unit. Body capacity effects are reduced to such an extent that they are scarcely noticeable, and no condenser on the market does more to eliminate static interference.

Price.....\$2.25

CROSLY SHELTRAN TRANSFORMERS



This is the new Crosley Sheltran Transformer, incorporated in which are several features that make it even more efficient than the already popular Sheltran. Terminals are rigidly secured in a molded hard rubber terminal block, preventing any possibility of their being shorted to the metal case. It is a completely shielded transformer, with a nine to one ratio. The four binding posts have been placed at one end, making it easy to connect the wires. As the Sheltrans are heavily shielded, they may be placed close together.

Price.....\$4.00

CROSLY SOCKETS (Patent Pending)



The Crosley Vacuum Tube sockets are made in two models—one of molded insulating material and the other of porcelain. The contacts are of phosphor bronze, nickel-plated, to eliminate corrosion at the contacts. Short circuiting of high voltage "B" battery current across the filament contacts is prevented, thus eliminating the danger of burning out the filament through careless insertion of the tubes. They may be mounted on a base or panel.

Price of molded socket as illustrated 50c
Price of porcelain socket.....40c

CROSLY KNOB AND DIAL



Crosley Knobs and Dials are made of molded composition and are unquestionably the most attractive on the market. The lines and figures are molded in the dials and inlaid with white enamel. The dials are three inches in diameter. The exceptionally large dial gives practically vernier control.

Price.....60c

CROSLY MULTISTATS (Patent Pending)

The Crosley Multistat is a universal filament control rheostat for all makes of tubes. The wire is so arranged that it has a graded resistance. The low resistance portion being for operation UV 200, UV 201, C 301, WD 11 and WD 12 tubes, while the higher resistance portion is for low amperage tubes as 201-A and 199. New molded cups prevent possible loss of shape and resultant loose control. Total resistance exceeds 20 ohms.



Price85c

CROSLY VARINDS (Patent Pending)

Sufficient inductance is contained in both the primary and secondary windings of the Crosley Varind to permit its use in radio sets that receive on wave lengths ranging from 200 to 600 meters. Five taps are provided on the primary inductance for the antenna circuit. All connections are made directly to the movable coil, thus eliminating the resistance of sliding or bearing contacts. The Crosley Varind takes the place of a vario-coupler.



Price\$2.00

CROSLY FILAMENT SWITCH

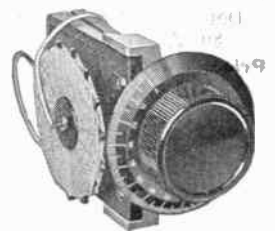
The Crosley Filament Switch is easy to install and functions perfectly. After it has been added to the set, the operator may cut off the filament current and come back to the same station without retuning. The necessity of disconnecting battery clips is eliminated.



Price35c

CROSLY RADIO FREQUENCY AMPLIFYING TUNER

The Crosley Radio Frequency Tuner consists of an inductance coil and a Crosley booktype variable condenser. It can be tuned to any wave length between 200 and 600 meters, depending for its action on the infinite impedance principle. Energy entering the R. F. A. T. at the frequency to which it is tuned is blocked and forced into the detector tube. It is recommended that the R. F. A. T. be used in non-regenerative sets, and when so used will increase the range many times.



Price\$4.25

CUNNINGHAM VACUUM TUBES

CUNNINGHAM C-11



Detector, Radio and Audio Frequency Amplifier Tube.
 Filament Terminal Voltage, 1.1 V.
 Filament Current, .25 A.
 Plate Voltage:
 Detector, 20-22½ V. Amplifier, 45-100 V.
 Price\$4.00

CUNNINGHAM C-12



Same characteristics as Type C-11, but with Standard Base.
 Price\$4.00

CUNNINGHAM C-299



Detector, Radio, and Audio Frequency Amplifier Tube.
 Filament Terminal Voltage, 3 V.
 Filament Current, .06 A.
 Plate Voltage:
 Detector, 20-30 V. Amplifier, 45-80 V.
 Price\$4.00

CUNNINGHAM C-300



Gas Content Detector Tube.
 Standard Base.
 Filament Terminal Voltage, 5 V.
 Filament Current, 1 A.
 Plate Voltage, 18 to 25 V.
 Price\$4.00

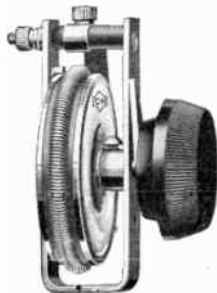
CUNNINGHAM C-301A



High Vacuum Detector, Radio and Audio Frequency Amplifier Tube.
 Standard Base.
 Filament Terminal Voltage, 5 V.
 Filament Current, .25 A.
 Plate Voltage:
 Detector, 40 V. Amplifier, 45-100 V.
 Price\$4.00

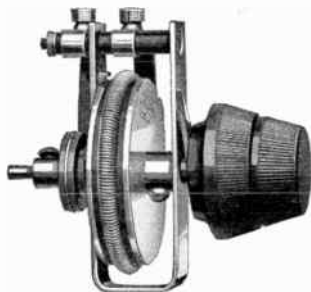
Type	Price
Cunningham C-302 5 watt power tube..	\$8.00
Cunningham C-303 50 watt power tube..	30.00
Cunningham C-304 250 watt power tube..	110.00

CUTLER-HAMMER APPARATUS



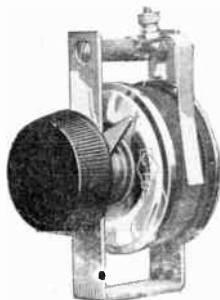
The C-H Four Ohm Rheostat
For Amplifier Tube Control

Price \$1.00 each



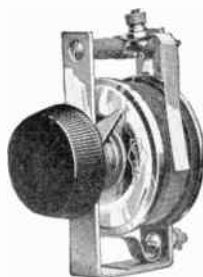
The C-H Vernier Rheostat
Perfect Detector Tube Control

Price \$1.50 each



The C-H Thirty Ohm Rheostat
For the New "A" Type Tubes

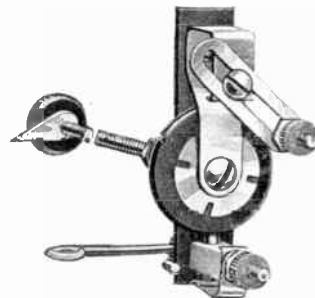
Price \$1.25 each



THE C-H RADIO POTENTIOMETER
For increased range and signal strength

Price \$1.50

C-H Variable Grid Leak



The C-H Grid Leak is worthy of the trademark it carries. It was designed by the master builders of all electrical control apparatus, and is produced with watch-like precision to give accurate control. It can be installed in a few minutes in any set. A special flexible mounting link makes it easy to attach directly to the grid terminal of the tube socket or wherever else desired. A long, fully threaded brass control rod (which can be cut to any length required) is furnished with bakelite insulating joint, Thermoplax knob and pointer for panel control. The leak is adjustable, arranged to care for any style of grid condenser.

The C-H Variable Grid Leak.....\$1.50

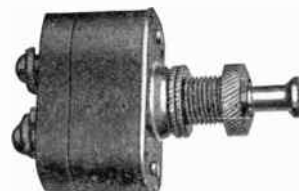
The C-H Radio Resistance Unit Use the New Tubes With Your Present Rheostats



The C-H Radio Resistance Unit adds to your present rheostats just the number of ohms required for the regulation of the new 1/4 ampere tubes. Just put the eyelet of the C-H Unit over the post of your rheostat, and attach the wire you had to remove to do so to the binding post of the unit.

Price 25c each

Cutler-Hammer Radio Pull Switch



This switch is the latest type radio pull switch. Only a single 7-16" hole is required for its installation; no screws or measurements required. It has quick-break and self-cleaning contacts in the dust proof fibre case.

Price, C. H. Pull Switch\$0.60

DAVEN RESISTORS AND PARTS



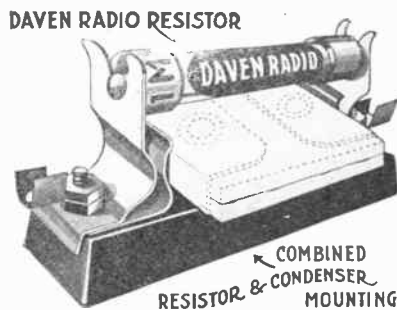
Ohms	Megohms	List Price
2,500	.0025	\$1.00
5,000	.005	.75
12,000	.012	.75
25,000	.025	.75
40,000	.04	.75
48,000	.048	.75
50,000	.05	.75
100,000	.1	.50
150,000	.15	.50
200,000	.2	.50
250,000	.25	.50
300,000	.3	.50
400,000	.4	.50
500,000	.5	.50
600,000	.6	.50
750,000	.75	.50
1,000,000	1.	.50
1,250,000	1.25	.50
1,500,000	1.5	.50
1,750,000	1.75	.50
2,000,000	2.	.50
2,500,000	2.5	.50
3,000,000	3.	.50
4,000,000	4.	.50
5,000,000	5.	.50
6,000,000	6.	.50
7,000,000	7.	.50
8,000,000	8.	.50
9,000,000	9.	.50
10,000,000	10.	.50

The above range of values provides resistances suitable for many different circuits such as—

- Resistance Coupled Amplifiers (Radio or Audio Frequency)
- Oscillators and Heterodynes
- Neutrodyne Receivers
- Superdyne Receivers
- Power Amplifiers
- Impedance Coupled Amplifiers
- Super-Heterodyne
- Super-Plidyne, etc.

CONDENSER AND RESISTOR MOUNTING

No. 51



This mounting will be appreciated by every radio engineer or enthusiast who has had occasion to remove and replace a grid condenser. The Bakelite Base has two pairs of nicked phosphor bronze spring clips for holding a Daven Resistor and a standard mica fixed condenser. The installation of this mounting will save its cost in the economy of time and trouble.

No. 51. Mounting without Resistor and Condenser
Price\$.40

DEALER'S DISPLAY BOX



This assortment contains five units each of the following values:

- 1/2, 1, 1 1/2, 3, 4, 5 and 7 Megohms and ten units of 2 Megohms, which satisfies the selection of the radio experimenter, for use with any tube or circuit.
- UV-200, C-300 1, 1 1/2 or 2 Megohms
- UV-201-A, C-301-A 3 to 7 Megohms
- UV-199, C-299 5 to 9 Megohms
- WD-11, C-11, WD-12, C-12 2 Megohms

Price\$22.50

DAVEN RESISTOR KIT



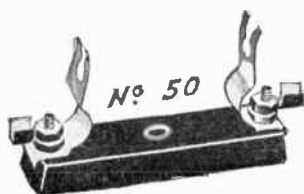
Those who are building experimental receiving apparatus, or who are desirous of selecting a grid resistance of the right value for their detector tube, will find the DAVEN RESISTOR KIT, illustrated above, of inestimable value and a saving in cost.

The Kit contains five accurately calibrated resistors, of values 1, 2, 3, 5 and 7 Megohms, among which may be found the right one for the particular tube to be employed. The entire functioning of a vacuum tube as detector is solely dependent upon the proper grid action. One never obtains the last degree of effectiveness from his tube until the proper resistance unit suited to that tube is employed. There are unanticipated results to be obtained from your receiving set if you will find the proper value. A well-designed and well-made resistor is essential. Many of the noises in the average radio receiver that are attributed to "static" can be traced to a poor and improper grid resistor.

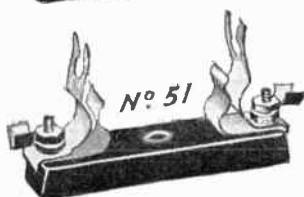
Price\$2.25

DAVEN RESISTORS AND PARTS

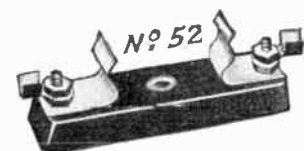
MOUNTINGS



No. 50 Mounting (with clips for holding the Resistor only).....35c



No. 51 Mounting (with clips for both Condenser and Resistor) (Pat. Applied for)40c



No. 52 Mounting (with clips for holding the Condenser only).....30c

These Mountings may be used wherever it is necessary to install a resistor, grid leak or a Mica Fixed Condenser.

Mounting No. 51 is indispensable where a resistor must be shunted across the fixed Condenser. It permits changing either resistor or condenser instantly.

Mounting No. 52 is valuable in any circuit where a Mica Fixed Condenser is required, and where it may be necessary to test for the proper value to be used. The condenser may be quickly removed and replaced without tools or soldering iron.

Bases are of Moulded Black Bakelite and clips are nickel-plated.



THE IDEAL COUPLING UNIT

For Resistance-Coupled Amplifiers
DAVEN RESISTO-COUPLER

No. 41

(Pat. Applied for.)

This unit consists of a moulded bakelite base 2 3/8" long by 1 1/2" wide with terminals marked for connections to Plate, Grid, + "B" Battery and, Filament similar to the usual terminals of transformers and for the same purpose. Clips of phosphor bronze nickel plated, are provided for holding the two Resistors and the Mica Fixed Condenser. necessary in each stage of coupling. These units may be easily removed from the clips without disturbing the coupler mounting. With these couplers, amplifiers of many stages may be assembled in small space. Packed in cardboard carton with instructions for use. Price, without resistors or condensers\$1.25 each

DAVEN TUBE BALLAST UNITS

Saves panel space and eliminates the rheostat for amplifiers. Manufactured in standard assembly, uniform with the resistor, and may be installed in No. 50 mounting, described below.

	Price
No. 70 for one 6 Volt, 1/4 Amp. Tube.....	75c
No. 71 for two 6 Volt, 1/4 Amp. Tubes.....	75c
No. 72 for three 6 Volt, 1/4 Amp. Tubes.....	75c
No. 73 for four 6 Volt, 1/4 Amp. Tubes.....	75c

COMPLETE AMPLIFIER KITS ARE AS FOLLOWS:

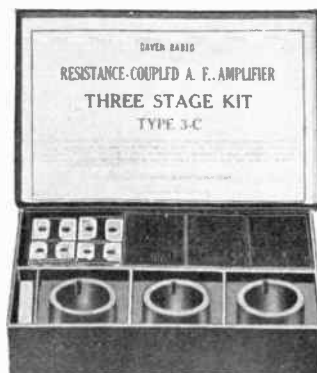
TYPE 3-C

This consists of all parts for a 3-Stage Resistance Coupled Audio Frequency Amplifier without panel or baseboard. Comprises 3 high grade Bakelite Standard Sockets, 3 Daven Resisto Couplers No. 41, and necessary Resistors and Grid Leaks, Fixed Condensers and other accessories.....\$12.50

Type 4-C (Same, 4 Stage)..... 16.00

Type 3-K; 3-Stage Amplifier Kit without sockets or fixed condensers..... 8.00

Type 4-K; 4-Stage Amplifier Kit without sockets or fixed condensers..... 10.50



AMPLIFIERS COMPLETELY ASSEMBLED ON BASE BOARD

TYPE 3-B

Contains all parts included in Type 3-C, but completely assembled and wired on hand-rubbed Walnut Base Board 7x18, ready for use, and with all necessary binding posts for Input, Output, and Batteries.....\$25.00

Type 4-B (Same, 4 Stages)..... 30.00

Type 3-A De Luxe 3-Stage Amplifier, Mahogany or Walnut Cabinet..... 45.00

Booklet: "Resistor Manual"15

ERLA APPARATUS

AUDIO TRANSFORMERS



Erla Synchronizing Audio Transformers

Ratio 3½ to 1, Price\$5.00
 Ratio 6 to 1, Price 5.00

POWER TRANSFORMERS



Erla Push Pull Transformers

Price, per pair\$10.00

SELECTOFORMER



Erla Selectoformer

To be used in place of antenna coupling devices. Used in combination with .0005 condenser makes ideal wave-trap. Price\$5.00

REFLEX TRANSFORMERS



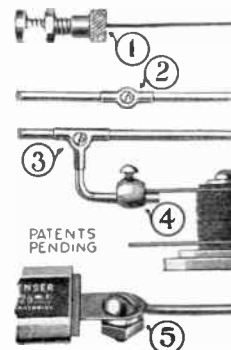
Erla Reflex Transformer

Nos. 1, 2, 3, Price\$5.00 each
 Erla Reflex Transformer, Red Label, No. 1\$5.00
 (1 to 5-tube antenna circuits), No. 2 5.00
 Erla Reflex Transformer, Green Label, No. A-1.
 (4 and 5-tube loop), No. A-2.
 (201-tube circuits), No. A-3.
\$5.00 each, \$15.00 per set

Erla Reflex Transformer, Yellow Label, No. 0-1.
 (5-tube loop, 199-tube circuit), No. 0-2.
 No. 0-3.
\$5.00 each, \$15.00 per set

Erla Collapsible Reactance Loop, Standard\$7.00
 De Luxe10.00
 Erla Tube Porthole, Black, for 199 Tubes25
 Erla Tube Saver 1.00
 Erla Precision Rheostat, 6-Ohm 1.10
 25-Ohm 1.10
 40-Ohm 1.10
 Erla Precision Potentiometer, 200-Ohm 1.25
 400-Ohm 1.40
 Erla Automatic Grip Phone Plug75
 Erla Anti-Capacity Dial, 4" Silver Gold
 3"75 \$1.00
 2"50 .75
 Erla Microdial, 4" 2.00 2.25

ERLA SOLDERLESS CONNECTORS



Connector No. 1, Coupler\$.05
 Connector No. 2, Bus Bar04
 Connector No. 3, Bus Bar04
 Connector No. 4, Jack04
 Connector No. 5, Condenser03

ERLA APPARATUS

Erla Telescoping Bezels

Erla bezels add 100% to the appearance of any receiving set, neatly screening the unsightly openings required for tube ventilation, yet enabling complete view of the tube filaments.



Attractively finished in bright nickel or dull black enamel, they match perfectly the finest cabinet materials.

The rim of Erla bezels is patented, being of special telescoping type that fits any 1/8" to 1/4" panel.

Made in 1" and 1 1/2" diameter. No set should be without them.

Bezels, Black or Nickel, all sizes.....20c each
 Bezels, Gold30c each

Erla Two-Way Phone Plug

Advanced design and exquisite workmanship distinguish the Erla phone plug, rated one of the finest examples of the precision instrument maker's art.



List Price—75c

Two sets of phones are connected simultaneously through this plug, without cutting or changing the phone tips in any way.

To connect or disconnect the plug is the work of but a moment. No harm can result either to the phone tips or the plug, no matter how often the operation is repeated.

Throughout, the plug is made with a jeweler's accuracy, from materials that are the very best.

All metal parts are heavily nicked, while the shell is of hard black fibre.

Erla Tested Capacity Condensers



	30c	35c	40c	65c	75c
	.0001	.0008	.0025	.005	.006
	.00015	.001			
	.00025	.0015			
	.00035	.002			
	.0005				

Erla fixed condensers are individually tested to the exact capacity for which they are marked, a unique and exclusive feature. Their absolute accuracy makes them indispensable in meeting the exacting requirements of reflex work, for which they were especially designed. Also, they are absolutely noiseless, due to the positively uniform over-all pressure maintained between plates through the original shell design and the exclusive precision methods under which they are built and assembled. Made in eleven sizes, each an unduplicated, outstanding value.

Erla Fixed and Semi-Fixed Crystal Rectifier

Unequaled, efficiency, together with absolute stability in reflex work, is assured through the Erla fixed or semi-fixed crystal rectifier, antiquating costly vacuum tubes for detector purposes.



Maximum volume and purity of tone are achieved with complete absence of distortion and parasitic noises.



The solid gold, non-oxidizing contact point maintains indefinitely original qualities of reception. Once installed, no further attention is required.

Price, each.....\$1.00

Erla Vacuum Tube Sockets

The exquisite beauty and surpassing strength of Erla sockets enhance materially the value of finest receiving sets. All metal parts are triple-nickled, on a polished Radion base. Liability of breakage is reduced to a minimum. Broad, diagonal contact springs insure uniform, positive connection. Special binding posts facilitate wiring and unwiring. Throughout, quality of materials and workmanship are unexcelled.



Standard Socket \$.75
 Type 19965

Erla Variable Grid Leak

The Erla grid leak is of the well known pencil-mark type that has proved itself ideal for stabilizing vacuum tubes, being easy to adjust and highly efficient.



List Price—20c

The base is hard fibre, with a cap of heavy brass, finished in gun metal. Terminals are heavily nicked and spaced to fit the Erla grid condenser.

Erla Grid Condenser

These grid condensers are of standard type, with a record of uniformly satisfactory service in the hands of thousands of users.



List Price—10c

The holes of the condenser are spaced conveniently to fit the Erla grid leak. The condenser illustrated is Type 3, .00025 mfd. capacity.

ERLA APPARATUS

ERLA ONE, TWO AND THREE TUBE DIAGRAM

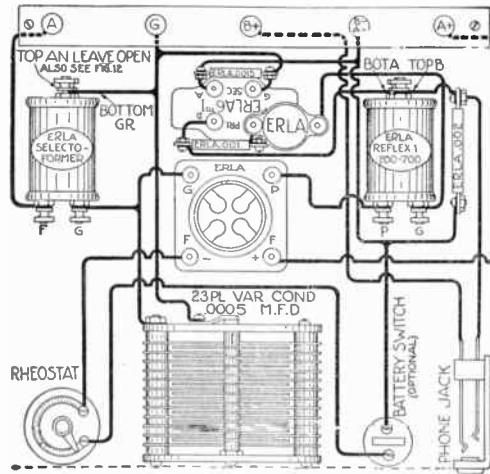


Diagram Erla One Tube Reflex Receiver Showing Layout and Hookup

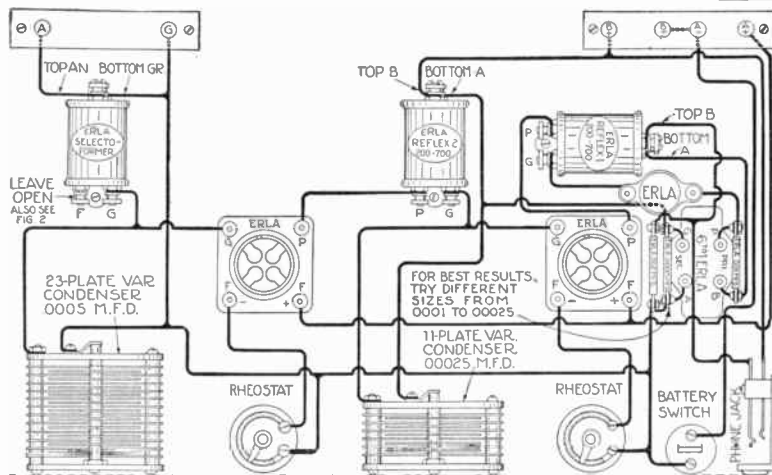


Diagram Erla Two Tube Reflex Receiver Showing Layout and Hookup

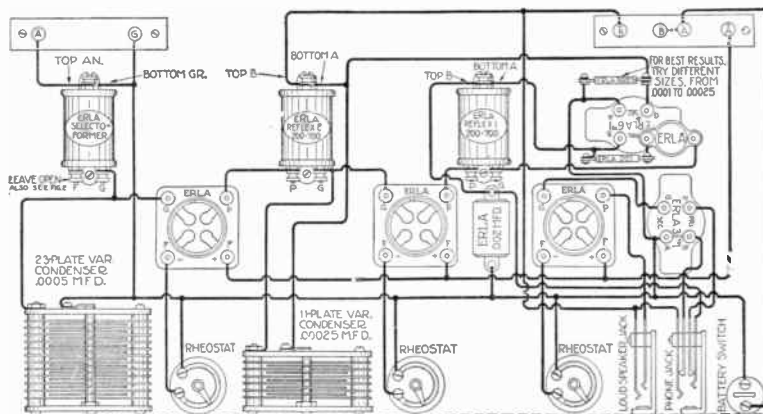


Diagram Erla Three Tube Reflex Receiver Showing Layout and Hookup

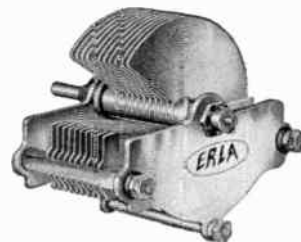
ERLA APPARATUS

ERLA DUO OR SUPER KNOCKDOWN OR ASSEMBLED REFLEX RECEIVERS



Erla Duo-Reflex K-D Receiver, antenna 1-tube	\$27.35
Factory built 1-tube demonstrating Receiver without Cabinet	31.85
In Mahogany finished Cabinet	36.35
Erla Duo-Reflex K-D Receiver, antenna 2-tube	39.95
Factory built 2-tube demonstrating Receiver without Cabinet	47.95
In Mahogany finished Cabinet	54.45
Erla Duo-Reflex K-D Receiver, antenna 3-tube	49.35
Factory built 3-tube demonstrating Receiver without Cabinet	61.35
In Mahogany finished Cabinet	68.35
Erla Super-Reflex K-D Receiver, antenna 4-tube	56.40
Factory built 4-tube demonstrating Receiver without Cabinet	72.43
In Mahogany finished Cabinet	79.43
Erla Super-Reflex K-D Receiver, antenna 5-tube	62.50
Factory built 5-tube demonstrating Receiver without Cabinet	82.53
In Mahogany finished Cabinet	89.53
Erla Super-Reflex K-D Receiver, loop 4-tube	54.15
Factory built 4-tube demonstrating Receiver without Cabinet	70.15
In Mahogany finished Cabinet	77.15

Erla Super-Reflex K-D Receiver, loop 5-tube	60.40
Factory built 5-tube demonstrating Receiver without Cabinet	80.40
In Mahogany finished Cabinet	87.40
Erla Super-Reflex K-D Receiver, loop 5-tube (Type 199)	52.90
Factory built 5-tube (Type 199), demonstrating Receiver without Cabinet	72.90
In Mahogany finished Cabinet	79.90



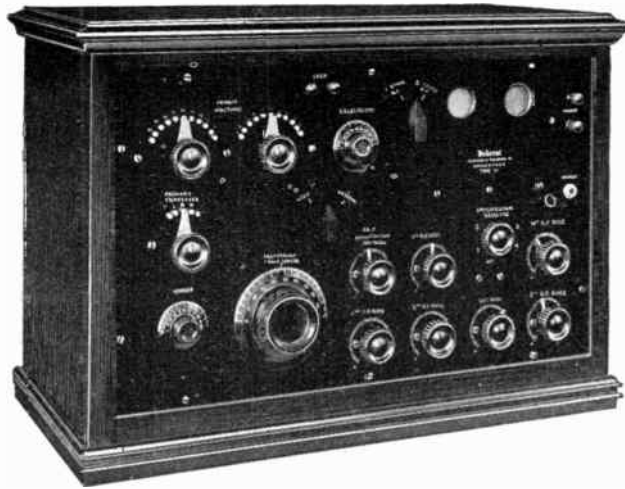
ERLA VARIABLE CONDENSERS

Erla Miniloss Variable Condensers:	
.00015, 5-Plate	\$3.50
.00025, 11-Plate	3.75
.00035, 15-Plate	4.25
.0005, 21-Plate	4.50
.001, 41-Plate	5.50
Erla Micropacity Variable Condenser:	
.0005	2.25

ERLA BLUE PRINTS

Blueprint, Duo-Reflex Receiver, Antenna:	
1-Tube	\$.25
2-Tube .....	.35
3-Tube .....	.50
Blueprint, Super-Reflex Receiver, Antenna:	
4-Tube .....	.50
5-Tube .....	.50
Loop:	
4-Tube .....	.50
5-Tube .....	.50
Loop, 199:	
5-Tube .....	.50

FEDERAL TYPE 61 RECEIVER



Price, \$223.00

The **FEDERAL** Type 61 has a greater breadth of usefulness than any other of **FEDERAL'S** receivers. It may be used with equal effectiveness with a small or large loop antenna, a small indoor wire, or the more common large outdoor antenna systems and when used with any of these types of signal pickup systems, will give a range of reception of such magnitude as to make available almost all American broadcasting. It secures its great range and flexibility through the use of its three stages of radio frequency amplification in combination with two stages of audio frequency amplification and through a unique switching system, which gives an exceptionally great variation of the degree of amplification, it has an extremely wide range.

It is so constructed that when used with an antenna it is, in effect, a very selective and extremely sensitive two tuned circuit receiver, while when used with a loop it becomes a single tuned circuit receiver. The change from one type of receiver to the other is accomplished through the simple turning of a single switch.

Practically every position of the circuit is provided with separate controls, thus making it possible to operate all parts of the device at the utmost in efficiency.

By careful choice of the controlling mechanism and the arrangement of parts, the operation of the controls is made quite independent so that the manipulation of any control may be accomplished without any reaction on the remaining controls. This makes possible the operation of the receiver at a high degree of effectiveness without any previous familiarity with the device and makes the manipulation of the controls to bring about maximum effectiveness possible after only an extremely limited experience with the device.

The face of the receiver is a highly polished black bakelite panel upon which all control knobs are of a similar material, while all exposed metal parts are of

highly polished nickel. The mahogany cabinet which houses the receiver is finished in a luxurious dark brown mahogany with a delightful satin surface. It will retain its beautiful finish indefinitely and requires only the most infrequent dusting or polishing.

The terminals for the connection of all auxiliaries such as antenna, ground, batteries, etc., are mounted inside the cabinet so that all connecting wires are concealed from view.

SPECIFICATIONS

ANTENNA

The receiver will operate on all types of antennas ranging from the indoor loop or open wire antenna to the large, high outdoor antenna system. The adjustment of the receiver to suit any particular antenna is accomplished through the use of two simple switches.

TUBES

Any of the commonly available vacuum tubes may be used with the receiver. This is made possible through both the circuit design and through the use of the No. 27 rheostat, which provides control for any tube filament current between the limits of the very small current required by the UV-199 tube to the much higher current required by the UV-200 vacuum tube.

BATTERIES

Any type of dry or storage battery may be used with the receiver, since the No. 27 rheostats with which it is provided allow the control of any battery voltage between two and six volts.

Individual control of the filament current of each vacuum tube is provided through the use of a No. 27 filament rheostat for each of the six tubes.

TELEPHONES OR LOUD SPEAKER

The telephone binding posts and telephone jack provide for the connection of any type of head set or loud

speaker, the connecting cords of which are equipped with either plug or plain terminals. A special pair of terminals are also provided inside the set for the connection of the loud speaker.

TUNING SYSTEM

The tuning system consists of two variable inductively coupled tuned circuits. The antenna circuit is tuned by means of two inductance switches, whereby the inductance may be slowly varied, a turn at a time. The secondary circuit is tuned by means of a **FEDERAL** No. 45 Variable Air Condenser and an auxiliary **FEDERAL** No. 48 Vernier Condenser. The coupling between the two circuits is made variable in exceptionally minute steps so that a very close control of the selectivity of the receiver is easily possible. Through the turning of a switch the receiver is changed to a single tuned circuit device which employs a loop antenna.

RADIO FREQUENCY AMPLIFIER

The R. F. Amplifier consists essentially of three **FEDERAL** R. F. Transformers and will perform very effectively with any of the many vacuum tubes over the entire band of broadcast wave lengths,—225 to 550 meters. It is provided with an R. F. Amplification Control whereby the degree of amplification is made variable between wide limits.

AUDIO FREQUENCY AMPLIFIER

The A. F. Amplifier consists essentially of **FEDERAL** amplifying transformers and will operate with any of the available vacuum tubes to give an extraordinarily high degree of amplification combined with a pureness and faithfulness of reproduction unrivaled

by any other type of amplifier. It is provided with an A. F. amplification control, whereby the degree of amplification may be varied between wide limits.

TUBE MOUNTING

The six vacuum tube sockets are securely mounted on a suspension of elastic material, making the whole receiver proof against shock and eliminating the tube noises inherent in any other type of mounting.

PANEL

The panel is of the highest grade of phenol condensation material with the controls arranged in such symmetry as to give a well balanced and beautiful assembly.

CABINET

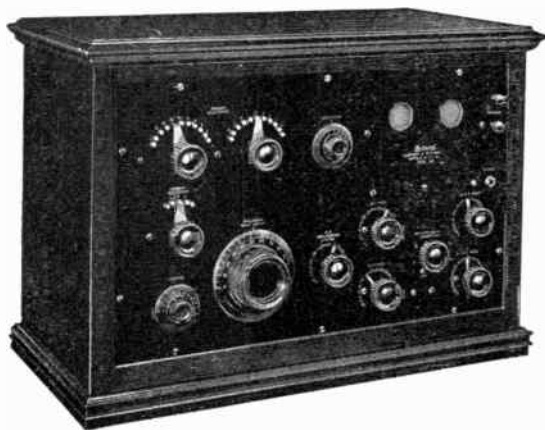
The cabinet, which is of mahogany, finished in a very dark brown, is beautiful, both in its proportions and its finish and its color is such that it blends most harmoniously with either a setting of mahogany or walnut furniture. The cover of the cabinet opens conveniently upward exposing the internal mechanism of the receiver and makes the connection of all auxiliaries and the insertion or removal of vacuum tubes most conveniently and easily accomplished.

DIMENSIONS

Cabinet .	Panel
Height, 16¾ Inches.	Height, 12½ Inches.
Width, 24¼ Inches.	Width, 21 Inches.
Depth, 12¾ Inches.	Depth, 35 Inches.

Type 61 Receiver (with head set) each, \$223.00

FEDERAL TYPE 59 RECEIVER



Price, \$177.00

The **FEDERAL** Type 59 Receiver has a greater range of reception and a more beautiful reproduction of music than any of the **FEDERAL** receivers which have been produced in the past for use primarily with antennas. Through its use practically all the broadcasting on the American continent is made available under good conditions and the entertainment which may be secured through its remarkable faithfulness of tone reproduction makes it a device of infinite utility. In addition to its tremendous receiving range, it makes possible, through its exceptionally precise tuning qualities, almost a complete elimination of all but the broadcasting of the desired station and it does this with the simplest kind of manipulation and adjustment.

It gains its tremendous range of reception through the use of painstaking circuit design and the choice of the finest kinds of materials, fabricated, with the most careful workmanship.

It is essentially, a two-circuit receiver with variable inductive coupling between the circuits in connection with a combination radio and audio frequency amplifier, consisting of one stage of **FEDERAL** Radio Frequency amplification and two stages of **FEDERAL** Audio Frequency amplification. It combines in itself a rare degree of ease and simplicity of operation with a degree of effectiveness unique to itself. Sufficient controls are provided so that the utmost in receiving range may be secured under very careful manipulation, while the choice and arrangement of parts and the lack of interdependence of controls is such that a more casual manipulation of the receiver will still give a greater range of reception than has been heretofore available by apparatus more complicated than the **Federal** Type 59.

The entire receiver is mounted on a polished bakelite panel with all exposed metal finished in highly polished nickel, and the entire unit is mounted in a beautifully

polished dark mahogany cabinet. Provision is made for the connection of batteries, antenna and ground by a special set of terminals mounted inside the cabinet, making it possible for the connection of all auxiliaries with the connecting wires wholly concealed.

The highly polished black of the panel, as contrasted with the rich satin finished mahogany cabinet makes the receiver a device of unquestioned beauty and one which will always constitute a suitable addition to any type of home furnishings.

Below are given brief descriptions of the various parts of the device:

ANTENNA

The receiver will operate on any type of antenna, from the indoor wire to the large, high outdoor antenna system, the adjustment of the receiver to suit any particular antenna being provided through the use of the Primary Condenser switch.

TUBES

Any of the commonly available vacuum tubes may be used with the receiver. This is made possible through both the circuit design and through the use of the No. 27 rheostat, which provides control for any tube filament current between the limits of the very small current required by the UV-199 tube to the much higher current required by the UV-200 vacuum tube.

BATTERIES

Any type of dry or storage battery may be used with the receiver, since the No. 27 Rheostats with which it

is provided allows the control of any battery voltage between two and six volts.

Individual control of the filament current of each vacuum tube is provided through the use of a No. 27 filament rheostat for each of the four tubes.

TELEPHONES OR LOUD SPEAKER

The telephone binding posts and telephone jack provide for the connection of any type of head set or loud speaker, the connecting cords of which are equipped with either plug or plain terminals. A special pair of terminals are provided inside the set for the connection of the loud speaker.

TUNING SYSTEM

The tuning system consists of two variable inductively coupled tuned circuits. The antenna circuit is tuned by means of two inductance switches, whereby the inductance may be very slowly varied, a turn at a time. The secondary circuit is tuned by means of a FEDERAL No. 45 Variable Air Condenser and an auxiliary FEDERAL No. 48 Vernier Condenser. The coupling between the two circuits is made variable in exceptionally minute steps so that a very close control of the selectivity of the receiver is easily possible.

RADIO FREQUENCY AMPLIFIER

The R. F. Amplifier consists essentially of the No. 35 FEDERAL R. F. Transformer and will perform very effectively with any of the many vacuum tubes over the entire band of broadcast wave lengths,—225 to 550 meters. It is provided with an R. F. Amplification Control whereby the degree of amplification is made variable between wide limits.

AUDIO FREQUENCY AMPLIFIER

The A. F. Amplifier consists essentially of FEDERAL amplifying transformers and will operate with

any of the available vacuum tubes to give an extraordinarily high degree of amplification combined with a pureness and faithfulness of reproduction unrivaled by any other type of amplifier. It is provided with an A. F. amplification control, whereby the degree of amplification may be varied between wide limits.

TUBE MOUNTING

The four vacuum tube sockets are securely mounted on a suspension of elastic material, making the whole receiver proof against shock and eliminating the tube noises inherent in any other type of mounting.

PANEL

The panel is of the highest grade of phenol condensation material with the controls arranged in such symmetry as to give a well balanced and beautiful assembly.

CABINET

The cabinet, which is of mahogany, finished in a very dark brown, is beautiful, both in its proportions and its finish and its color is such that it blends most harmoniously with either a setting of mahogany or walnut furniture. The cover of the cabinet opens conveniently upward exposing the internal mechanism of the receiver and makes the connection of all auxiliaries and the insertion or removal of vacuum tubes most conveniently and easily accomplished

DIMENSIONS

Cabinet	Panel
Height, 15¾ Inches.	Height, 11½ Inches.
Width, 22¾ Inches.	Width, 19½ Inches.
Depth, 11¼ Inches.	
Weight, 29 lbs.	

Type 59 Receiver (with head set)each, \$177.00

FEDERAL TYPE 102 PORTABLE



Price, \$140.00

The Type 102 Special Receiver is the latest Federal development in receiving equipment. This four tube radio frequency type of broadcast receiver has been designed especially for operation with dry cell vacuum tubes but, because of the universality of its design, it may also be used, without alterations, with any available storage battery tubes.

It is extremely compact and may be easily transported. All necessary dry cells for "A" and "B" battery may be enclosed in the cabinet and, when completely equipped with tubes, head set and batteries, for transportation, it weighs only thirty-five pounds. A head set and plug are carried on the back of a removable cover which protects the instrument panel when the set is not in use.

The cabinet is beautifully finished in mahogany and presents a most pleasing appearance. With the front cover and the sturdy leather carrying handle removed it is as much a suitable part of the music room as of the hunting lodge; it is as suited to the city home as to the summer cottage at the seashore or in the country.

The usefulness of the Type 102 is not confined to conditions in which portability is a necessity. It is equally useful as a general utility receiver. No degree of volume or quality of tone reproduction has been sacrificed for portability.

Painstaking development has made possible the incorporation of standard Federal units into an extremely small space, making possible the minimum length of leads with the resultant high efficiency. A special radio frequency amplifying stage has been developed for this receiver and with the standard Federal high quality amplifying

equipment which is a part of the device gives an exceptional degree of sensitivity and beautiful tone quality.

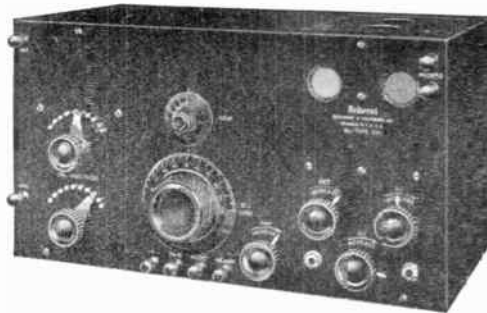
Although designed for the use of UV-199, C-299, and DV-3, economical, low-consumption, dry battery tubes, the sockets and other equipment are so designed that the standard storage battery tubes may be used without the least alteration. Special openings are provided in the back of the cabinet for connection of the storage battery external to the receiver.

Because of the sensitivity of this receiver, the ease of erection of the antenna and ground is of especial value for temporary installation. Almost any kind of antenna may be used for satisfactory reception. Attic antennas, electric light socket attachment devices, wire suspended from poles, trees or buildings and other quickly installed antennas will function perfectly well.

The Type 102 is very simple to operate. There are but four controls, only two of which require frequent manipulation. Stations may be tuned in quickly and precisely by means of a single wave length dial. A radio frequency amplification control limits the amplification or the loudness of the received signals to any desired value. The tubes are shock proofed in a very effective manner thereby eliminating vibration noises. All parts of the receiver are accessibly mounted on one panel and may be removed from the cabinet by the simple disconnection of the batteries and the removal of a few screws.

The Type 102 Special Receiver including Type 53-W (2200 ohm) head set with plug and adapters for UV-199 vacuum tubes but less tubes and batteries..... Each \$140.00

FEDERAL D. X. TYPE 58 RECEIVER



Price \$123.00

The FEDERAL D. X. receiver is especially suited for use by the Radio Amateur who desires a receiver that is more selective than is the single tuned circuit receiver, Federal No. 57. The greater selectivity of the Federal D. X. receiver is secured through the use of two tuned circuits, provided with controls which make it possible by a series of simple adjustments to secure a degree of selectivity quite exceptional for a receiver as simple in operation as the Federal D. X.

The Receiver is exceedingly sensitive and makes reception possible over ranges greater than can be accomplished with the more ordinary means of amplification.

It can be used with a wide variety of antennas and it may be used for the reception of broadcast radio telephone signals with almost any type of antenna. It serves admirably for the reception of amateur telegraph or telephone signals on the shorter wave length, and through the use of the Federal Radio Frequency Amplifying Transformers gives exceptionally high sensitiveness with high selectivity.

The tuning circuit consists of an antenna tuning inductance, a secondary circuit inductance, with variable induction coupling between the two inductance, and a secondary circuit tuning condenser. The antenna circuit inductance is equipped with an inductance switch which allows a very exact tuning of the antenna circuit while the secondary circuit condenser allows of precise tuning of that circuit.

The coupling between the circuits is variable between very wide limits and makes possible adjustment of the receiver to almost any degree of selectivity.

The amplifying system consists of one stage of radio frequency amplification, a detector tube and two stages of Audio Frequency Amplification.

The R. F. Amplification of which this receiver is capable is exceptionally high and results from the use of the Federal No. 29 or No. 30 Radio frequency amplifying transformer, both of which are supplied with the receiver, in conjunction with a U. V. 201 vacuum tube or its equivalent. The two stages of audio frequency amplification, which so greatly augments the amplification made available through the R. F. amplifying transformers, is accomplished through the use of the Federal 226-W audio frequency amplifying transformers in conjunction with U. V. 201 vacuum tubes or their equivalents. Provision is made for the use of a sensitive detector tube such as the U. V. 200 vacuum tube.

Through the use of either No. 29 or No. 30 R. F. Transformers wave length ranges from 200 to 500 meters may be obtained.

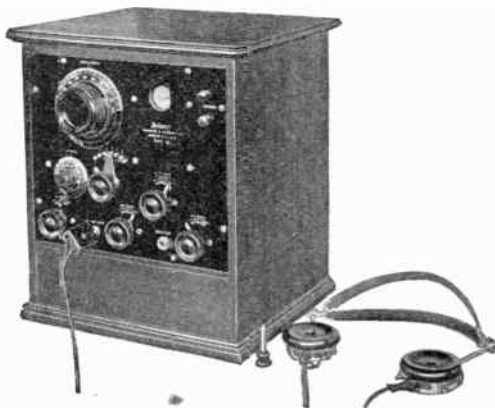
Control knobs are supplied for the adjustments of the primary antenna circuit inductance, primary-secondary coupling, and secondary condenser. An amplification control knob allows the variation of the amplification between wide limits and separate filament control rheostats, allow of the careful adjustment of the filament currents of individual vacuum tubes.

Such parts as tube sockets, filament rheostats, filament control jacks, etc., are standard high quality product and each contributes its share to making a device unrivaled in quality of material and workmanship.

The entire unit is mounted on a polished panel which is assembled in a metal case, finished in dull black enamel. The receiver as a whole is a device of remarkable beauty of line and finish as well as one of unrivaled effectiveness. Overall dimensions $17\frac{1}{2}$ " x $9\frac{1}{4}$ " x $8\frac{1}{4}$ ".

D. X. Type No. 58 Receiver
(with Headset) each.....\$123.00

FEDERAL TYPE 110 RECEIVER



Price, \$105.00

The **FEDERAL** Type 110 Receiver combines with a remarkable simplicity of operation a compactness of parts, a range of reception and beauty of music reproduction heretofore impossible of attainment in so small and modest a radio receiver. When used with almost any type of antenna it requires frequent manipulation of only one or, at most, two controls for its operation at maximum effectiveness and when used with reasonable care in its manipulation will bring in signals over startling great ranges with a beauty of tone quality that is indeed surprising to the user. It is especially suited for use with dry battery tubes and provision is made so that it constitutes a portable but still long range receiver.

The quality of the units entering into its construc-

tion is identical to that in our higher priced receivers. The workmanship and finish throughout is in no way inferior to the high standards of our types 59 and 61. Every effort has been made to make this model the most popular radio receiver ever offered the public. The same skilled workmen and inspectors employed in the production of our more elaborate receivers will assure the same unsurpassed mechanical and electrical qualities that have given so much prestige to **FEDERAL** radio products.

The extreme sensitivity of this device has been made possible by painstaking development covering a period of many months. Every unit entering into its construction is produced in our own factory where direct engineering supervision during the production of each component part is assured.

SPECIFICATIONS

ANTENNA

The receiver will operate on any type of outdoor antenna, the adjustment of the receiver to suit any particular antenna being provided through the use of the selectivity switch.

TUBES

Any of the commonly available vacuum tubes may be used with the receiver. This is made possible through both the circuit design and through the use of the No. 27 rheostat which provides control for any tube filament current between the limits of the very small current required by the UV-199 tube to the much higher current required by the UV-200 vacuum tube.

BATTERIES

Any type of dry storage battery may be used with the receiver, since the No. 27 Rheostats with which it is provided allows the control of any battery voltage between two and six volts. Individual control of the filament current of each vacuum tube is provided through the use of a **FEDERAL** No. 27 rheostat for each of the three tubes.

TELEPHONES OR LOUD SPEAKER

The telephone binding posts and telephone jack provide for the connection of any type of head set or loud speaker, the connecting cords of which are equipped with either plug or plain terminals.

TUNING SYSTEM

The tuning system is especially devised for ease of operation. It has the simplicity of the ordinary single circuit tuner and combines in addition, a degree of selectivity not found in the usual single circuit receiver. This control in connection with the FEDERAL Vane Vernier gives an exceedingly gradual change of wavelength. The five selectivity taps provide five different values of selectivity, giving a flexibility which makes it possible to operate the receiver with a low or high degree of selectivity at any wavelength.

RADIO FREQUENCY AMPLIFIER

The R. F. Amplifier consists essentially of the No. 35 FEDERAL R. F. Transformer and will perform very effectively with any of the many vacuum tubes over the entire band of broadcast wavelengths,—225 to 550 meters. It is provided with an R. F. Amplification Control whereby the degree of amplification is made variable between wide limits.

AUDIO FREQUENCY AMPLIFIER

The A. F. Amplifier consists essentially of a FEDERAL No. 65 Amplifying transformer and will op-

erate with any of the available vacuum tubes to give an extraordinary high degree of amplification combined with a pureness and faithfulness of reproduction unrivaled by any other type of amplifier.

TUBE MOUNTING

The three vacuum tube sockets are securely mounted on a suspension of elastic material, making the whole receiver proof against shock and eliminating the tube noises inherent in any other type of mounting.

PANEL

The panel is of the highest grade of phenol condensation material with the controls arranged in such symmetry as to give a well balanced and beautiful assembly.

CABINET

The receiver is mounted in a wooden cabinet of excellent design, finished in a dark brown mahogany which blends perfectly with either the mahogany or walnut. The cabinet is of such dimensions that it will accommodate four dry cell "A" Batteries and three small sized "B" Batteries.

DIMENSIONS

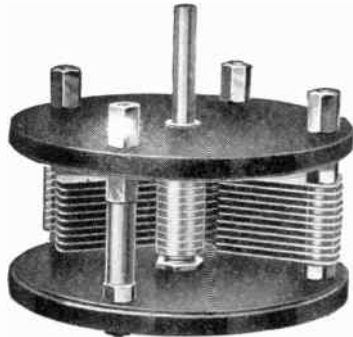
Cabinet	Panel
Height, 14½ Inches.	Height, 9½ Inches
Width, 13¾ Inches.	Width, 11 Inches.
Depth, 11¼ Inches.	

Weight, 17 lbs.

Type 110 Receiver (with head set)each, \$105.00

FEDERAL PARTS

FEDERAL CONDENSERS



- No. 44—7 Plate cap. approx. 190 MMF (.00019 M.F.)\$3.30 each
- No. 45—11 Plate cap. approx. 275 MMF (.00027 M.F.) 3.40 each
- No. 46—21 Plate cap. approx. 530 MMF (.00055 M.F.) 3.85 each
- No. 47—43 Plate cap. approx. 1100 MMF (.00110 M.F.) 5.15 each
- No. 48—3 Plate Vernier 1.90 each

FEDERAL ENCLOSED TYPE VARIABLE CONDENSER

To the experimenter who desires a Variable Condenser which may be quickly and easily moved from one circuit to another, we recommend the Federal Enclosed Type.



- No. 81—7 Plate\$6.40 each
- No. 82—11 Plate 6.55 each
- No. 83—21 Plate 7.10 each
- No. 85—43 Plate 8.65 each

FEDERAL RADIO FREQUENCY BY-PASS CONDENSERS

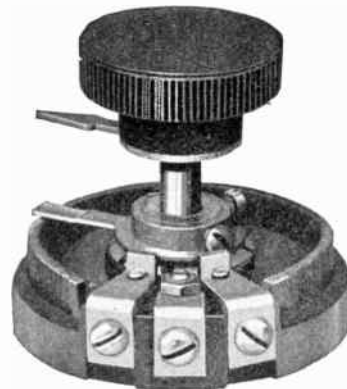
- No. 130—.1 mf.\$.50
- No. 131—.05 mf.50
- No. 132—.5 mf.75
- No. 133—1. mf. 1.00
- No. 134—1.5 mf. 1.25

FEDERAL FILAMENT RHEOSTATS



Type	Resistance	Current Capacity	Each
No. 18	5.5 Ohms	1. Ampere	\$1.10
No. 19	1.5 Ohms	2. Ampere	1.10
No. 22	25. Ohms	.75 Ampere	1.50
No. 23	16. Ohms	Universal	1.70
No. 26	60. Ohms	.45 Ampere	1.60
No. 27	60. Ohms	Universal	1.90

FEDERAL POTENTIOMETERS



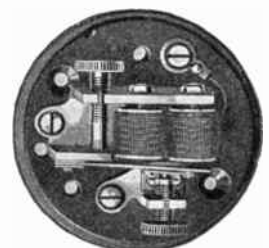
- No. 24 200 Ohms.....\$1.50 each
- No. 25 1850 Ohms..... 2.20 each

FEDERAL HIGH FREQUENCY BUZZERS (Century)

An exceptionally well designed high frequency buzzer for wave meter, test set or laboratory use where a constant smooth tone is desired through all ranges of audio frequency.

Contact points are of pure platinum. Adjustment is obtained by means of two screws. Superior workmanship and best material obtainable make this buzzer supreme.

- No. 168 Buzzer\$2.50 each
- Armature only 1.00 each



FEDERAL PARTS

FEDERAL RADIO FREQUENCY TRANSFORMER



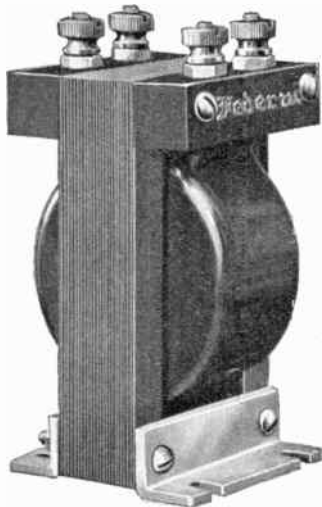
MOUNTING



TRANSFORMER

No.		Each
29	(175- 300 meters)	\$6.60
30	(275- 600 meters)	6.60
31	(500-1000 meters)	6.85
32	(1000-3000 meters)	7.10
40	(Mounting only) .....	.95

FEDERAL TRANSFORMERS



No. 65 A. F. Transformer, Illustrated\$7.00
 No. 226W Audio Frequency Transformer.. 5.50

The FEDERAL Auto Frequency Transformer consists essentially of a core of especially chosen Silicon steel sheet, with a carefully built winding assembled integrally with the core and supplied with conveniently located terminal screws.

FEDERAL HEAD TELEPHONES



The sensitiveness and durable efficiency of the FEDERAL Head Telephone is peculiar to the FEDERAL Head Telephone alone. Twelve years of manufacturing Head Telephones, together with constant experimenting in order that they might attain a still higher degree of efficiency, enables us to offer the FEDERAL Head Telephones which stands so high in the favor of all Radio enthusiasts.

No. 53. 2200 Ohms \$7.00

FEDERAL BATTERY CABINET

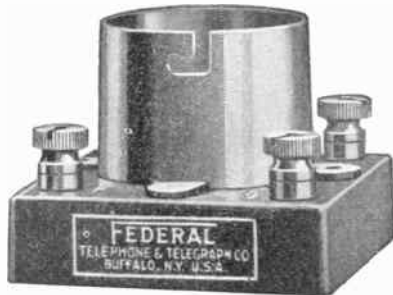


Sufficient space is provided inside of cabinet for housing any type of filament and plate supply batteries. If these batteries are properly arranged a battery charging device may be housed in the cabinet with the batteries, thus making the battery cabinet a complete power supply system in itself.

No. 175 Battery Cabinet, Each.....\$51.00

FEDERAL PARTS

FEDERAL VACUUM TUBE SOCKETS

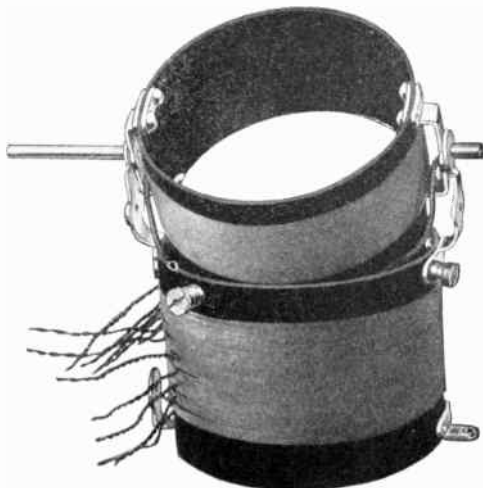


The Federal Vacuum Tube Sockets designed for use with receiving or transmitting tubes, are remarkably rugged and sturdily built.

The base being of bakelite, the barrel nicked and highly finished, the binding posts conveniently and carefully designated, make a unit of pleasing construction and individuality.

- No. 16 V. T. Socket\$1.00 each
- No. 14 V. T. Socket, Type 199 1.00 each
- No. 21 Standard Panel Mount 1.20 each

FEDERAL No. 95 VARIOCOUPLER



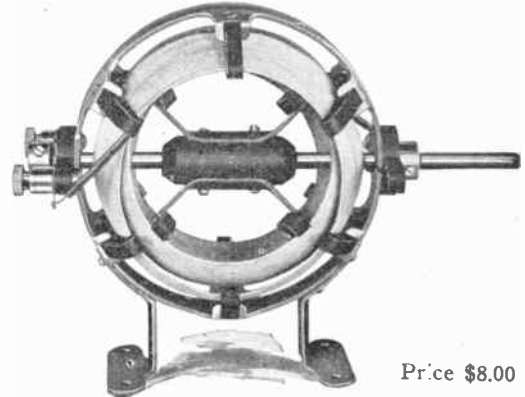
Price, \$7.00

The Federal No. 95 Variocoupler embodies the essential elements of a two circuit tuning system. It comprises a primary winding and a secondary winding, the secondary being placed in such a position with respect to the primary winding that its coupling with the latter is variable through a wide range. This relation makes for extreme fineness of tuning.

The primary winding of the No. 95 Variocoupler is adjusted to such a value that it is receptive for signals through a wavelength band from 200 to 600 meters when used with an average receiving antenna. Taps are provided in such a manner that adjustment may be made to a single turn of winding throughout the range. The secondary is a winding fixed at such a value that when used with a variable condenser having a maximum capacity of 250 micro-microfarads (a No. 45 Federal) wavelength settings from 200 to 600 meters are available.

Booklet "Federal Radio Work Bench" Price..... \$0.25

THE FEDERAL NO. 90 VARIOMETER

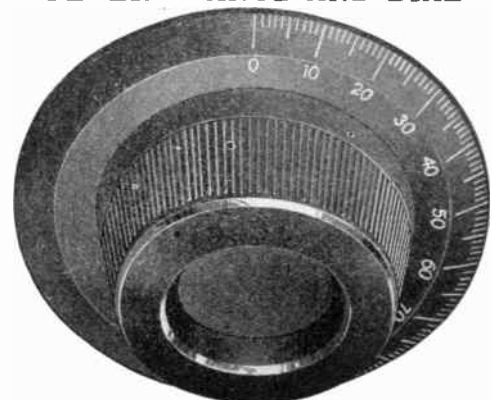


Price \$8.00

The H. F. Type No. 90 Variometer is a variable inductance unit which should find extensive use in vacuum tube receiving circuits. It comprises two spherical shaped inter-connected windings, the inner winding variable with respect to the outer winding. The coils are so connected that a wide range of inductance is obtained as the movable element is changed through its positions.

The windings are supported at as few points as possible thus reducing to a large extent the electrical losses due to insulating material in proximity to the coils. Connections are direct and positive. The instrument may be changed for panel or table mounting.

FEDERAL KNOB AND DIAL



- Each
- No. 7 (4 inch) Knob and Dial.....\$1.50
- No. 3 (3 inch) Knob and Dial65
- No. 12 (2 inch) Knob and Dial..... .40

FEDERAL

ANTI-CAPACITY SWITCHES

The original Anti-Capacity Switch which has supplanted the old flat spring type with its high capacity which is detrimental in radio circuits. These switches may be used to quickly change from one stage to another; to switch from a long wave set to a short wave set and numerous other uses which the ingenious experimenter may devise.

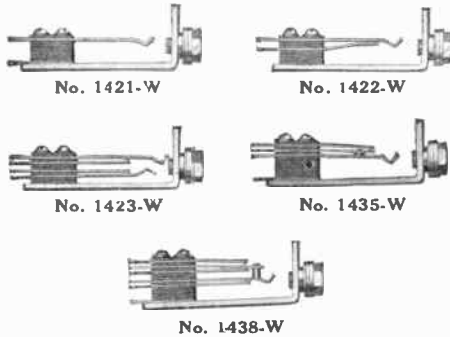


No. 1425-W

- Each
- No. 1424-W 4 P.D.T. 12 sprg \$3.35
- No. 1425-W D.P.D.T. 6 sprg 3.30
- No. 1426-W D.P.S.T. 4 sprg 3.05
- No. 1427-W D.P.S.T. 4 sprg 3.20

FEDERAL PARTS

FEDERAL RADIO JACKS



The frame is of nickered brass, one-half inch wide, three-fourths of an inch high; overall length three and one-half inches.

The springs are made of highly tempered nickel silver. Pure silver contact points are used, thereby assuring the best possible electrical contact. The insulation is of phenol plate, known under such trade names as Formica, Bakelite or Redmanol.

Each Jack is supplied with three washers which allows of its being used with panels of different thickness, viz: One-eighth inch; three-sixteenths of an inch, and one-fourth inch.

All Federal Radio Jacks are designed for use with Nos. 15 and 1428-W Plugs.

- No. 1421-W—Open Circuit\$.60 each
- No. 1422-W—Closed Circuit70 each
- No. 1423-W—Double Circuit..... .80 each
- No. 1435-W—Filament Control .85 each
- No. 1438-W—Filament Control 1.00 each



FEDERAL PLUG No. 15

Unlike others of similar design, spade terminals, pin connections, stranded or solid wire may be used without soldering.

Consists of only five simple parts — two highly finished Bakelite moulded pieces, the plug with its connecting screws and a brass screw and collar for holding the two together. The connecting screw does not come in contact with electrical circuit in any way.

Price 80c each

FEDERAL GRID LEAK

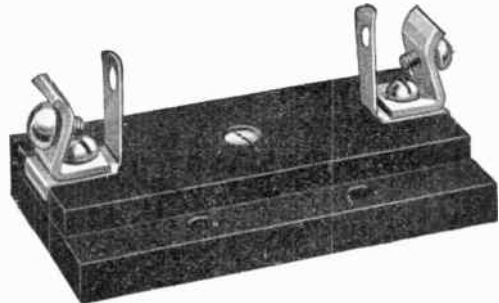


The FEDERAL Grid Leak is made in nine standard resistances, and is so designed as to be adjustable between wide limits.

The resistance unit is carried inside a shell of insulating material between two metal terminal members, so proportioned as to fit our No. 120 Grid Condenser and Mounting. The highest grade of insulating material is used and the terminal ends are of brass with highly polished nickel finish.

	each		each
No. 121— 1/2 meg	\$.75	No. 126—3 meg	\$.75
No. 122—1 meg .....	.75	No. 127—3 1/2 meg .....	.75
No. 123—1 1/2 meg .....	.75	No. 128—4 meg .....	.75
No. 124—2 meg .....	.75	No. 129—5 meg .....	.75
No. 125—2 1/2 meg .....	.75		

THE FEDERAL NO. 120 Grid Condenser and Mounting

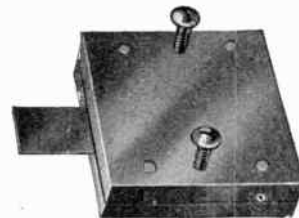


The Condenser is composed of copper plates, using mica as the dielectric. The whole unit is securely clamped between hard rubber plates to insure permanency of capacity.

The top clamping plate carries receptacles which are suited to all standard types of grid leaks, but were especially designed to accommodate the FEDERAL Grid Leak cartridge. The hard rubber parts are highly polished and all metal parts are brightly nickered.

- No. 119—Mounting, only50c each
- No. 120—With Condenser in base 75c each

FEDERAL MICA TYPE CONDENSERS



No. 242 .000125 mf	\$1.00 each
No. 243 .000250 mf	1.00 each
No. 244 .0010 mf	1.10 each
No. 247 .0020 mf	1.20 each
No. 245 .005 mf	1.30 each

FRESHMAN APPARATUS



FRESHMAN MASTERPIECE

5 Tube Tuned Radio Frequency Receiver, Price\$60.00



VARIABLE GRID LEAK

With .00025 Freshman Condenser..\$1.00
 With .0005 Freshman Condenser.. 1.00
 Without Condenser75



"FRESHMAN FIX-O"

Fixed Grid Leak Combination

FRESHMAN Condenser, .00025 } Price
 LEAK MOUNTING } Comp
 FRESHMAN Grid Leak } 65
 SAFE-T HANDLE } Cents
 Furnished in any value of Resistance
 from 1/2 to 10 Meg.
 Separate Condenser and Leak Mount-
 ing\$.40
 Separate Leaks with Safe-T Handle,
 \$.30

Freshman Vernier Dial

A Bakelite dial with Vernier Adjustment. A small rubber tired wheel through the slot in the dial permits you to set the dial to the exact point and obtain the same dial setting every time. Just the thing for Neutrodyne, Polydyne and Super Heterodyne.

Price, 3 in. \$1.00
 Price, 4 in. \$1.50



**NOISELESS
 Tested Mica Condensers**

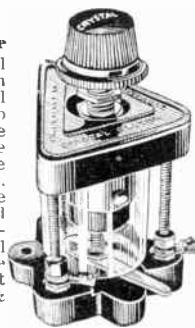
Capacity	Each	Capacity	Each
.00005	.....\$ .35	.0025	.....\$ .50
.0001	..... .35	.003	..... .60
.00015	..... .35	.0035	..... .70
.0002	..... .35	.004	..... .75
.00025	..... .35	.005	..... .75
.0003	..... .35	.006	..... .75
.00035	..... .35	.0075	..... 1.00
.0005	..... .35	.008	..... 1.00
.0006	..... .40	.009	..... 1.00
.0008	..... .40	.01	..... 1.00
.001	..... .40	.015	..... 1.50
.0015	..... .40	.025	..... 2.50
.002	..... .40		

"SUPER CRYSTAL"

Double Adjustable for base or panel mounting. When mounted on panel only the knob shows on the front. No more searching for the sensitive spot. Merely turn the knob as you would a dial thus adjusting the crystal instead of the cats-whisker. Best for both Reflex & Crystal sets.

Price\$1.50

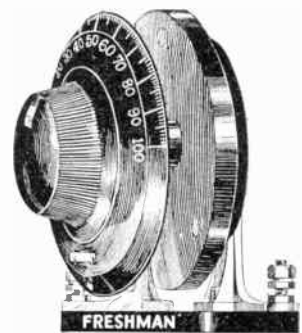
Mounted Crystals in Non-Metallic
 Freshman Housings\$.50



**ANTENELLA
 No Outside Wires Needed**

Antenella attached to any lighting socket, eliminates the inconveniences in radio such as unsightly outdoor aerials, insulators, lightning arresters, lead-ins, etc. Antenella is not only a real distance getter, but also overcomes static annoyances, making it a most complete and efficient aerial.

Price\$1.25



**FRESHMAN .SELECTIVE
 VARIABLE CONDENSER**

Will withstand 8,000 volts without leakage or danger of short circuit. Can be used for transmission or reception.

Complete with 3" Vernier Dial
 .0003 M. F. .0005 M. F. .001 M. F.
 Price\$5.00
 With a 4" Vernier Dial 50c Extra

GLOBE RADIO PRODUCTS



GLOBE HEADSET

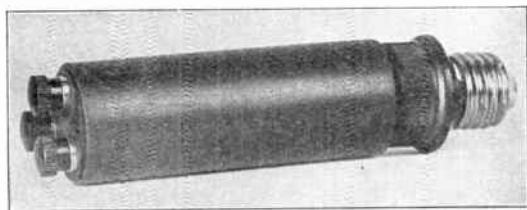
No. 500, Globe, 2200 ohms

Price \$5.00

Supersensitive balanced receivers, brass cases with high polish nickel finish; magnets tungsten steel, rust proof; large moulded ear caps, 5 ft. cord, concealed terminals and equipped with a special broad adjustable headband, russet leather covered, so designed as to hold in perfect and comfortable adjustment.

The Globe headset, though sensitive and loud, is very clear and natural in tone, faithfully reproducing musical tones and the spoken word.

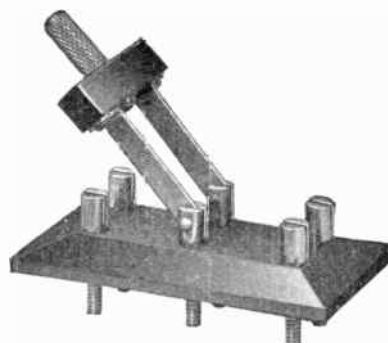
All Globe headsets are tested by a visual reading device. No guess work—Result: Both receivers are perfect tone mates.



GLOBE ANTENNA ATTACHMENT PLUG

No. 20, List Price \$2.00

The most dependable on the market. Can be connected with any electric light socket, doing away with outside antenna, and is the only plug made which is equipped with a safety fuse for the protection of your receiving set. Is guaranteed to have greater capacity for distance than any plug on the market.



GLOBE RADIO SWITCH

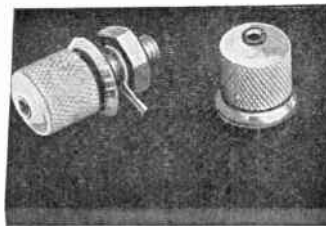
Size 1 1/4" x 2 1/4"

No. 40, Double Pole, Double Throw 80c

No. 41, Single Pole, Double Throw 80c
(Two gang type)

The Globe Radio Switches are made in two styles, double pole double throw and single pole double throw, two gang type (this latter is really two switches on the same base). Globe switches are mounted on a bakelite base with bevel edges and are designed for mounting on the panel of your set. A drilling template is furnished with each switch. All metal parts are polished nickel.

Though small in size they are strongly made and have a carrying capacity of from 5 to 7 amperes.



No. 25, GLOBE JACK BINDING POST

List price 2 for 25c

Overcomes the objections of the old style posts. Will take all regular sizes of phone cord tips and 10 to 14 wire, also spade tip terminals. Connections are made by plugging in, similar to a telephone jack, and are made permanent by a slight twist of the knurled cap. All connections are parallel, making shorts impossible.

JEWELL INSTRUMENTS



"B" Battery Voltmeter

JEWELL "B" BATTERY TESTER

No. 84

Many troubles with receiving sets may be traced to low "B" batteries, and an inexpensive voltmeter, such as our Pattern No. 84, is a necessity for checking them. The full scale value of 50 volts will allow the checking of 45 volt "B" batteries, which should be discarded when they indicate only 35 volts. 22.5 volt "B" batteries should be replaced when they read 17 volts.

Price.....\$2.75



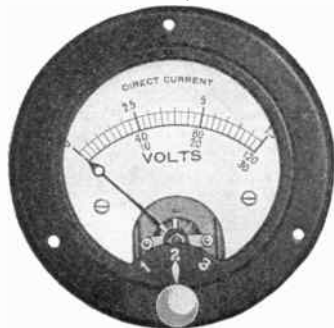
"A" Battery Tester

JEWELL DRY CELL TESTER

No. 85

The customary method of testing single dry cells is by taking a short circuit current reading. The Pattern No. 85 ammeter is equipped with a pair of studs to fit the terminals of a dry cell, and with its scale of 40 amperes will take care of a No. 6 dry cell which, when new, will show 35 amperes on short circuit. Such a dry cell should be considered as exhausted when the short circuit shows only about 10 amperes.

Price.....\$2.00



Combination Panel Voltmeters

JEWELL TRIPLEX INSTRUMENTS

No. 55

The addition of a switch on the lower portion of the instrument described above gives a combination of wide utility and is known as Pattern No. 55. Single reading voltmeters and ammeters are used in connection with multiple tube receiving sets. The three reading voltmeters are used to read the voltage of the "A" and "B" batteries. Turning the knurled knob at the lower portion of the flange switches the instrument into the various circuits.

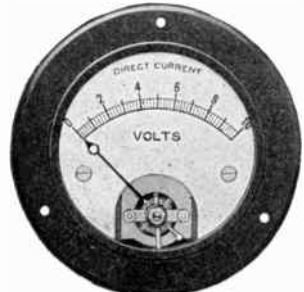
Prices—0-10, 0-8, 0-4, or 0-2 Volts\$10.00
 0-7.5-30-60 Volts, three reading 12.50
 0-7.5-30-120 Volts, three reading 12.50
 0-8-80-160 Volts, three reading 12.50

JEWELL DIRECT CURRENT INSTRUMENTS

No. 53

Particularly adapted for receiving sets is the small size instrument illustrated at the left, which may be had in a variety of ranges. The case diameter is 2½ inches and the flange diameter is 3¼ inches. The movement is of the very highest grade, using the moving coil principle.

Prices—5, 8, 10, 15, 25, 50 or 80 Volts.....\$7.50
 5, 1.0, 1.5, 2, 3, 5, 8, 10 or 15 Amperes..... 7.50

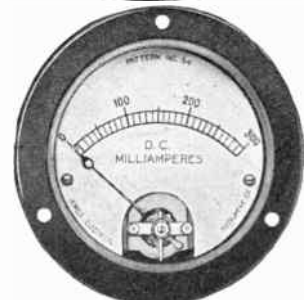


JEWELL DIRECT CURRENT INSTRUMENTS

No. 54

These direct current instruments are used in many places for battery work, in transmitting sets and other miscellaneous work. Furnished in the 3-inch case entirely similar to the No. 74 and No. 64.

Prices—3, 7.5, 10, 15, 30, 50, 75 Volts.....\$7.50
 1.5, 3, 5, 10, 20, 30 or 40 Amperes..... 7.50
 3, 5, 10, 15, 20, 25, 30, 50, 75, 100, 150, 200, 250, 300, 500, 800 or 1000 Milliamperes 7.50

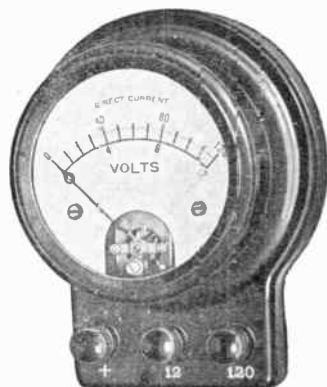


Voltmeters for values above 75 are supplied with external resistors; prices on request.

Send for Jewell Catalogue No. 15-A, giving complete prices.

JEWELL INSTRUMENTS

JEWELL "A" AND "B" BATTERY VOLTMETER No. 57



Many troubles with receiving sets may be traced to low batteries, and the Jewell Pattern No. 57 instrument with its double range covers all voltage requirements in a receiving set. The low range takes care of the "A" battery and the higher range the "B" battery, combining these two functions in one instrument. The proper range should be selected to take care of the maximum "B" battery voltage used.

Price, 0-10-50, 0-10-100 or 0-12-120 volts\$10.00
This instrument is also supplied as a voltmeter to take short circuit tests on dry cells, as explained under the Pattern No. 85, as well as "B" battery voltage readings. **Price,** 0-40 amperes and 0-80 volts\$12.50

CURRENT SQUARED GALVANOMETERS No. 67

Radio frequency current squared galvanometer is very satisfactory for wave-meter work and in connection with No. 90 wave-meter, will show great sensitivity when making wave length or decrement measurements. **Price, each**\$16.50

JEWELL RADIO FREQUENCY AMMETERS THERMO COUPLE TYPE

No. 64

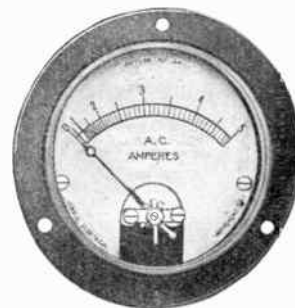
For the measurement of high frequency current, as in the antenna or transmitting sets, the thermo couple type of instrument is the standard. The Jewell No. 64 radio frequency ammeter with its 3-inch case and 3/4-inch flange is the most popular antenna ammeter in the country.

Price, full scale value of .5, .8, 1, 1.5, 2, 2.5, 3, 5, 8, 10 or 15 amperes.....\$12.00

JEWELL ALTERNATING CURRENT INSTRUMENTS No. 74

For commercial frequency alternating current, the Jewell Pattern No. 74 instrument will be found to be reliable and accurate. This instrument can be furnished as an ammeter or voltmeter for practically any range, although the ranges listed are most popular. The movement is of the iron vane repulsion type and will stand a relatively heavy overload. This instrument is most commonly used for the control of vacuum power tube filaments excited from alternating current.

Price, 0-10 V. or 0-3 A. for 5-watt transmitting tubes.....\$7.50
0-15 V. or 0-8 A. for 50-watt transmitting tubes..... 7.50
0-15 V. or 0-15 A. for 250-watt transmitting tubes..... 7.50



JEWELL RADIO TEST SET No. 95

A complete test instrument for making all the tests necessary in connection with a radio receiving set. Particularly adapted for the taking of characteristic curves on vacuum tubes, the only extra equipment being the necessary batteries. The several instruments, any of which may be used independently, include a 0-1.2 filament ammeter a 0-6 filament voltmeter, a 0-120 Plate voltmeter, a 0-10 plate milliammeter and a 10-0-10 grid voltmeter.

Price, complete with instructions\$75.00

JEWELL WAVEMETER No. 90

When tuning up a radio transmitter, it is quite necessary to have a wavemeter available to make certain that the wave length is within the allotted range. The Jewell No. 90 with its standard range of 150-625 meters covers the broadcasting wave lengths of today. The amateur type with its range of 140-230 meters just covers the amateur band and has one meter divisions.

Prices, standard range, 150-625 meters\$20.00
Special amateur range, 140-230 meters..... 25.00
No. 91 Receiving Set, Type 200-625 meters..... 30.00

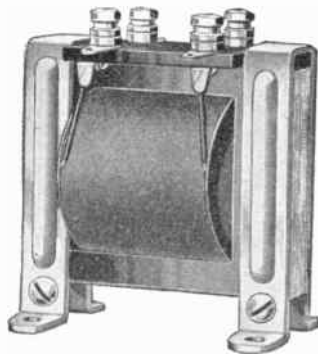


JEWELL LIGHTNING ARRESTER

When using radio set, it should be properly protected by means of an approved lightning arrester. Such arresters are required by many insurance companies and are a real necessity. The Jewell lightning arrester shown at the left is encased in brown glazed porcelain. It has been approved by the National Board of Underwriters.

Price\$1.10

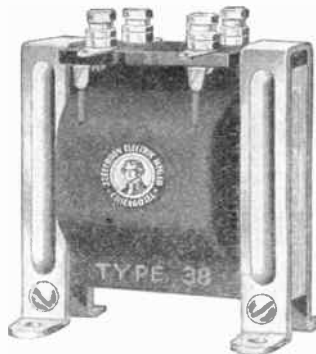
JEFFERSON TRANSFORMERS



No. 37—Ratio 3.75 to 1

Designed primarily for operation with WD-11, WD-12, UV-199 and C-299 tubes

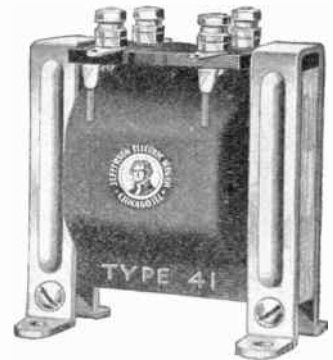
No. 37 A. F.\$5.50



No. 38—Ratio 6 to 1

Designed for operation with all standard tubes

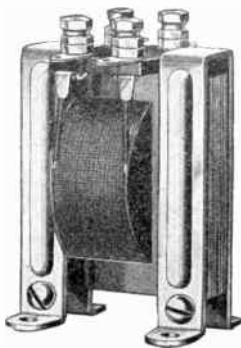
No. 38 A. F.\$5.50



No. 41—Ratio 3.75 to 1

Designed for operation with all standard tubes

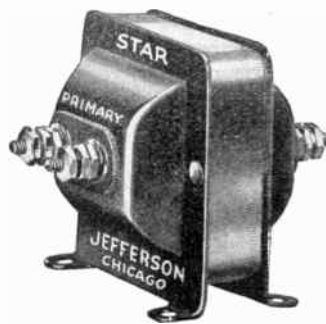
No. 41 A. F.\$4.25



No. 45—Ratio 3.1 to 1

Designed for operation with all standard tubes

No. 45 A. F.\$7.00



Star—Ratio 3 to 1 or 6 to 1

Designed for operation with all standard tubes

Star A. F. (Ratio 3 to 1).....\$3.25

Star A. F. (Ratio 6 to 1)..... 3.75



No. 80 R. F., 1st Stage.....\$2.50

No. 82 R. F., Tuned 1st Stage.. 2.50

No. 85 R. F., 2nd Stage..... 2.50

JEFFERSON LONG WAVE TRANSFORMERS

(Intermediate Frequency)

No. 150 L. W.



The successful operation of the Heterodyne or Super Heterodyne circuits depends entirely upon the characteristics of the intermediate transformers used.

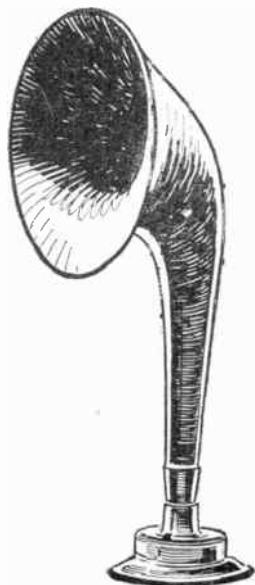
These transformers must be absolutely uniform in operation as it is found that variations of only a few per cent, which has been permissible in other fairly sensitive circuits, will prove ruinous in the Super Heterodyne Set.

The JEFFERSON engineers as a result have placed much greater emphasis on the testing of these transformers than on any others. These transformers are built with laminated Silicon steel core and peak at about 6600 meters operating at full efficiency from 3,000 to 10,000 meters. Being assembled in a sealed metal case sensitivity is maintained in all seasons and climates. The coils and cores are thoroughly impregnated in a compound of high dielectric strength with a small coefficient of expansion. Having found this out the engineers of the JEFFERSON Elec. Mfg. Co. placed greater emphasis, if possible, on the testing of these transformers than on any others of their manufacture.

This shielding also makes for quietness of operation. It eliminates the back coupling which in the super heterodyne circuit is a factor that would otherwise cause a great deal of trouble and dissatisfaction. Price.....\$5.00

MANHATTAN APPARATUS

Manhattan Junior Loud Speaker, Price \$10.00



The Manhattan Junior is the outgrowth of a popular demand for a real loud speaker at an inexpensive price. It represents the greatest value for the money of any loud speaker on the market, for this is the first time that a loud speaker with a "Concert Modulator" has ever been sold for ten dollars.

The attractive finish and pleasing design of the Manhattan Junior will harmonize with the furnishings of any home. The finish of the entire instrument is of sparkling crystalline varnish of a rich, black color. It stands twenty-two inches high and the horn is ten inches in diameter at the bell. Once you have seen the Manhattan Junior you will realize that it is a quality instrument throughout. Its graceful design stands out in regal contrast to the many grotesque absurdities that are sold as loud speakers today. The base is weighted. It is not top-heavy and stands rigidly on its base.

A twist of the "Concert Modulator" and the Manhattan Junior floods the room with beautiful music. It has been designed to give satisfactory volume under all operating conditions. The horn is of fibre, of a size and shape to produce the most satisfactory results. The base is protected by rubber so that it cannot scratch or mar the table upon which it stands.

MANHATTAN JUNIOR LOUD SPEAKER WITH CONCERT MODULATOR

Price\$10.00

MANHATTAN RED SEAL PHONOGRAPH ATTACHMENT

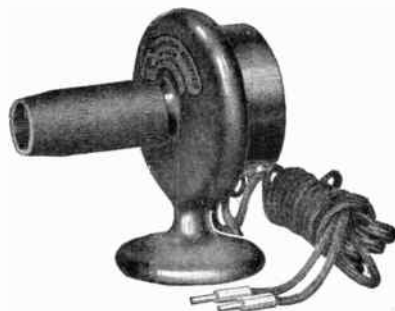
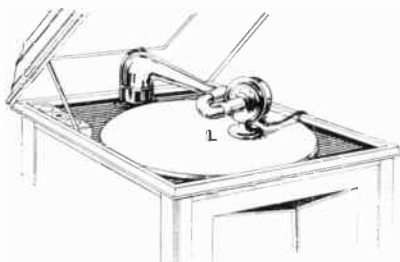
Price\$5.00



MANHATTAN LOUD SPEAKER

The Manhattan Loud Speaker has long been recognized for the musical qualities of its reproduction. It has received high praise from many of America's leading artists.

Price\$25.00



MUSIC MASTER APPARATUS



14-inch
\$30
21-inch
\$35

MUSIC MASTER — the Instrument of Radio Realism

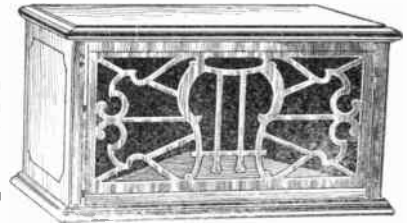
THE horn of the MUSIC MASTER RADIO AMPLIFIER is wood, for the same reason that a violin is wood. MUSIC MASTER gives more than a reproduction; more than a recreation. It IS the artist himself, in the pure, mellow-sweet tones of ACTUALITY!

Not a mechanical device, but a musical INSTRUMENT. No rasp or blast. No crackling or frying noises. In describing the MUSIC MASTER, one is tempted to shout its praises from the housetops. For it is perfectly marvelous, and sales show that people KNOW that it is.

Complete, ready to attach in place of headphones, no extras to buy—\$30 for the 14-inch home model; \$35 for the 21-inch model for concerts and dancing. Come in and hear the MUSIC MASTER! Come in and HEAR it!

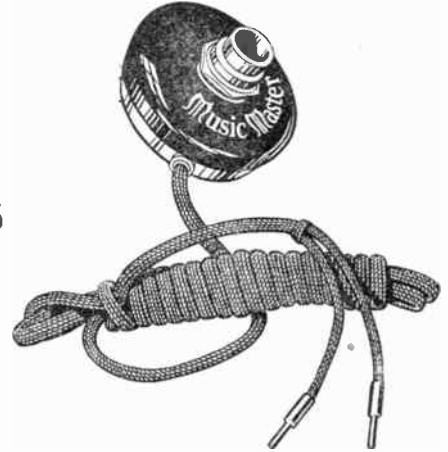
MUSIC MASTER CABINET SPEAKERS

Model VIII, Price\$35.00
Model V, Price 18.00
Regular 14" \$30.00 Music Master with Chinese lacquer finish overall, an exceptionally beautiful piece of work.
Price\$50.00



MUSIC MASTER PHONOGRAPH ATTACHMENT

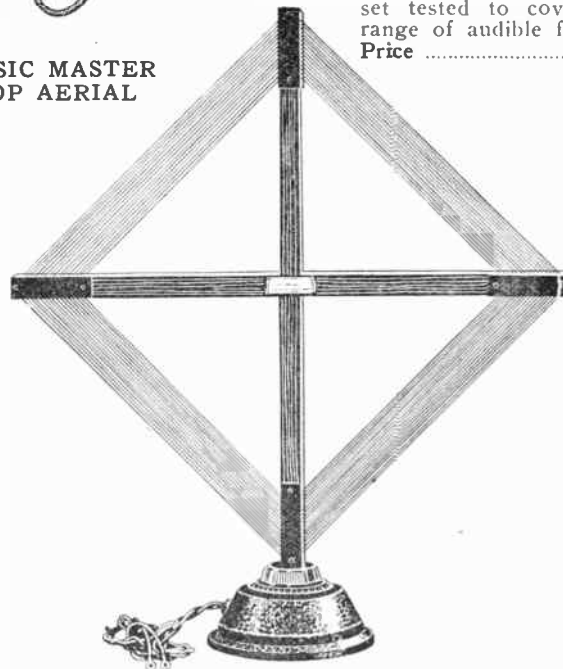
Fits the tone arm of your talking machine, converting it into a loud speaker. This attachment is used as a matter of convenience and found superior to many loud speakers.
Price\$10.00



MUSIC MASTER SUPER-SENSITIVE HEADSET

The finest headset made—for local and distant reception. Large caps to fit the ears comfortably. Headband finished with genuine leather. Every set tested to cover the entire range of audible frequency.
Price\$12.00

MUSIC MASTER LOOP AERIAL



Loop aerial has perfect "aim" and extraordinary "reach." It is equipped with calibrated dial and covers the entire band of broadcasting wave lengths. Frame, antique mahogany, art metal stand and leads.
Price\$10.00



MUTER RADIO PRODUCTS



Fixed Condensers



Muter Condensers are constructed of carefully selected uniform Mica and brass electrodes, which are retained under even pressure with Condensite Celeron plates by a special process. They are accurately calibrated and individually tested, insuring noiseless operation with maximum results.

Stock No.	Capacity	List
600.....	.00015	.....30c
605.....	.00025	.....30c
606.....	.00025 with mtg.	.....35c
608.....	.00035	.....35c
610.....	.0005	.....35c
620.....	.001	.....40c
625.....	.002	.....40c
630.....	.0025	.....40c
631.....	.003	.....45c
633.....	.004	.....50c
635.....	.005	.....50c
640.....	.006	.....60c
645.....	.0075	.....75c
650.....	.01	.....85c

Packed ten to the carton except Nos. 606-640-645 and 650 which contain five.

Special Sizes on Request

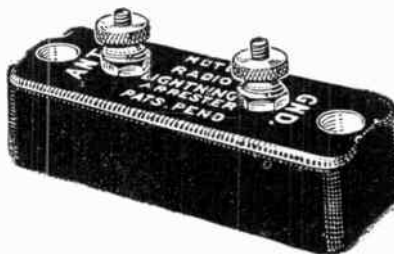
Adjustable Resistance Unit



Muter 25 Ohm Adjustable Resistance Unit makes a 30 ohm with a standard rheostat enabling the use of the new type 1/4 ampere tubes without changing the old rheostat. It is easily adjusted to meet all conditions of tubes and when connected permits sensitive adjustments with the standard rheostat. Packed in individual boxes on which full instructions are printed.

Stock No. 400.....Each 20c

Lightning Arrester



APPROVED BY UNDERWRITERS

Muter Porcelain Lightning Arrester is fully approved by the Underwriters' Laboratories under Electrical Report No. 5474 for indoor or outdoor use. It is of the air gap type which is positive in action, eliminating any chance of failure through loss of vacuum or any other cause which would endanger home or radio equipment. Packed in individual boxes on which full instructions for installation are printed.

Stock No. 200.....Each 50c

Fixed Grid Leaks



Patented May 1, 1923

Muter Fixed Grid Leaks are constructed of a permanent resistance element, which is hermetically sealed in a substantial glass tubing insuring constant capacity. They are individually calibrated and guaranteed to be accurate.

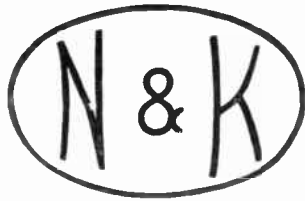
Stock No.	Capacity	List
700.....	1/2 megohm	.....30c
710.....	1 megohm	.....30c
715.....	1 1/2 megohms	.....30c
720.....	2 megohms	.....30c
730.....	3 megohms	.....30c
740.....	4 megohms	.....30c
750.....	5 megohms	.....30c
760.....	6 megohms	.....30c
770.....	7 megohms	.....30c
780.....	10 megohms	.....30c

Packed ten to the carton. Above illustration shows Fixed Grid Leak mounted on Condenser No. 606, listing complete at 65c.

Low Resistances and Special Sizes on Request

Muter Radio Products are scientifically made of best materials, carefully tested, and guaranteed to give complete satisfaction.

N. & K. THE SYMBOL OF CLEARNESS AND RICH TONE



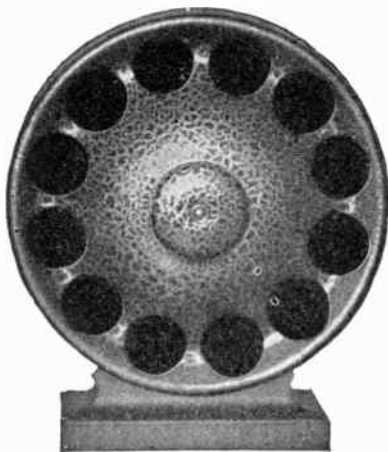
N. & K. offers a complete line—head set, loudspeaker, and phonograph unit—that enthralls the most particular radio fan. Each of these products embodies important exclusive features, all of which work to one end, namely, **clearer, more natural reproduction.**

Designed by Europe's foremost makers of telephone and allied scientific devices, the N. & K. products contain many basic improvements in magnets, diaphragms, proportioning of sound chamber, etc. And all of them are distinguished by extremely skilled workmanship and finish.



N. & K. IMPORTED PHONO-UNIT

Radio fans have declared this the most successful phonograph unit yet devised. Like N. & K. Phones and the N. & K. Loudspeaker it gives a tone of extreme clearness and richness. Attaches instantly to Victrola or other standard make phonographs without need of screws or special attachments. Made of rigid brass heavily nicked, complete with six-foot cord. Packed in cartons of twelve. Retail list, per unit \$7.50.



N. & K. IMPORTED LOUDSPEAKER

An original departure from speaker types heretofore on the market. Designed primarily to insure better distribution of sound, its circular shape has proven highly artistic and harmonizes far better than most loudspeakers with the furnishing of the average home. Made of a new lightweight material, **burtex**, which eliminates counter vibrations and the twanging, rattling, rasping sounds which result from counter vibration. The special N. & K. unit embodied gives a clear, rich, mellow, natural tone. Comes in a series of handsome finishes. The wooden base is faced with felt to prevent marring polished surfaces. Height 14 inches, depth 6½ inches. Packed in cartons of three, each speaker in individual display carton. Retail list \$27.50 each.



N. & K. IMPORTED PHONES

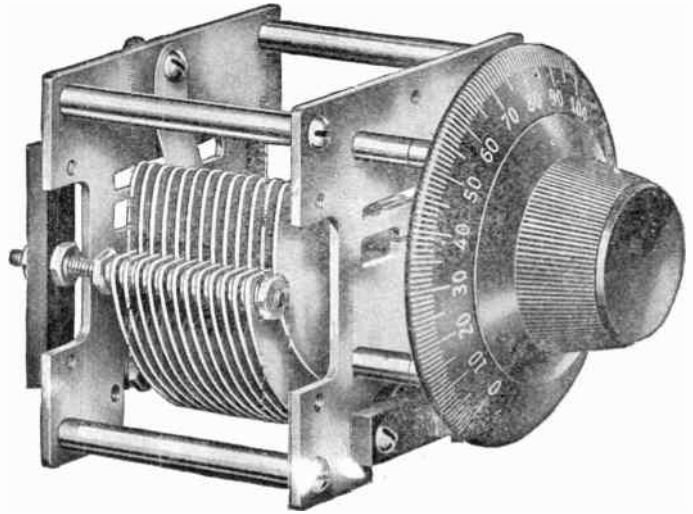
The diaphragms in these phones are larger than in ordinary phones and more sensitive. The magnets are of specially selected metal, treated to insure long life, and wound by an entirely new method. Microscopically accurate spacing between magnet poles and diaphragm—important to true reproduction—is maintained by the use of a thin calibrated metal washer. The ohmage is 4000, most satisfactory capacity for general broadcasting reception. The slightly larger ear caps cover the ear perfectly, insuring comfort and the exclusion of outside noises. The head bands covered with genuine leather, handsome in appearance and easy to keep clean. Packed in attractive display cartons of ten phones. Retail list \$8.50 per set.

NATIONAL CONDENSERS AND DIALS

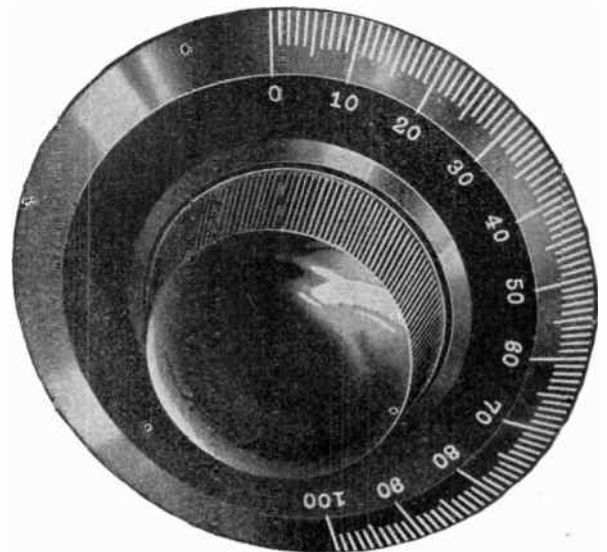
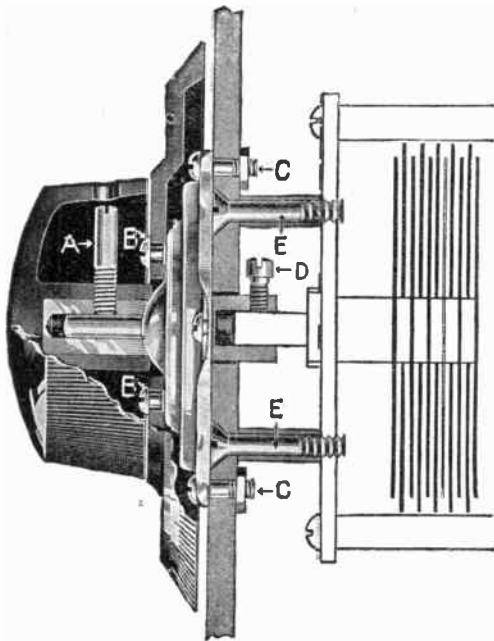
NATIONAL CONDENSERS

Capacity	Price
.00025	\$5.50
.00035	5.75
.0005	6.00
.00055	6.00
.001	7.00

These condensers complete with National 3-inch vernier dial. If 4 inch desired add 50c extra to list.



NATIONAL VELVET VERNIER DIALS



3-inch dial only, Price\$2.00
 4-inch dial only, Price 2.50

RADIODYNE

TRADE MARK REG.

The Voice of the Nation



Type WC-12 Consolette
SPECIFICATIONS

This Radiodyne is known as *WC-12 Consolette*.
Specify type carefully when ordering.

Wavelength—200 to 600 meters (1500 to 500 Kilocycles).

Dimensions—30" Long x 37" high x 19" deep.

Antenna—inside—outside, lamp socket.

Finish—Rubbed—Two tone—dark mahogany.

Amperes—Filament—with UV-199 or C-299 tubes, approximately one third ampere.

Selectivity—Extreme.

Plate Current—7 to 12 milli-amperes.

Range—Signal to stray ratio only limiting factor.

Non-radiating.

Tubes—Six, two radio, detector, three audio.

Weight—Approximately 48 pounds.

Price—With loud speaker (but less tubes, etc.) \$250.

Manufactured by **Western Coil & Electrical Co.**

Type WC-12 Consolette

THE WC-12 Consolette has been especially designed to fill the demand for a non-radiating, high powered, long range dry cell tube receiver of extreme selectivity for use near and about radiocast centers where interference is troublesome.

Six tubes are used—two radio, detector and three audio. All three controls are finders and the positions or combinations for several dozen of the leading radiocasting stations are determined at the factory and recorded on a register card which comes with each WC-12 Consolette model. Type or length of antenna makes little or no difference. Operates with inside, outside, or lamp socket antenna. Very selective.

THE CABINET

The cabinet is so designed as to satisfy the most discriminating buyer. Its design is the reflection of good taste. As the finish is of *two tone* dark "walnut" mahogany, this consolette will harmonize with the exquisite furnishings of the modern home.

Ample room is supplied within to harbor the special wooden tone chamber (especially designed to bring out the low tones as well as the regular high ones) and all batteries. Back of cabinet and entire top open to permit free access to interior.



Consolette Open with WC-12 Set

Plant No. 2 Main Office and Plant
Plymouth, Wis. Racine, Wis., U. S. A.

Radiodyne

TRADE MARK REG.

The Voice of the Nation

*A
Real
Pleasure
to
Operate*



*A
Real
Pleasure
to
Charge
Battery*

WC-11 Consolette—Open View

Type WC-11 Consolette

In this instrument are incorporated the very latest features for wet or storage battery tube receivers. In order to obviate the usual troublesome experiences when putting a Radio storage battery on charge, a special switch is provided to the right of instrument panel. When switch lever is up all connections are properly made for reception of radio-casting. When switch is at middle position entire equipment is "dead." If switch lever is down battery is disconnected *entirely* from set, lighting current is connected to charger, charger is connected and battery automatically charges. No trouble—no fussing—just luxury. All batteries, charger, loud speaker, etc. are housed within the cabinet.

There are three controls of which the third is logged or registered at factory for many leading radiocasters. Instrument has beautiful tone qualities and good selectivity coupled with great range. May be used with inside, outside or lamp socket antenna.

The WC-11 Consolette will amaze the most ardent Radio fan as well as the music critic.

CABINET

The Cabinet of WC-11 Consolette is the same beautiful piece of furniture used in connection with WC-12 Consolette (previously described) with the exception of the automatic charging switch, which the WC-12 Consolette would naturally not need.

For good selectivity, maximum range or sensitiveness, beautiful tone qualities and volume plus ease of control with large or storage battery tubes, it is recommended that the WC-11 Consolette be used.

SPECIFICATIONS

This Radiodyne is known as *WC-11 Consolette*.

Specify type carefully when ordering.

Wavelength—200 to 600 meters (1500 to 500 Kilocycles).

Amperes—Filament with UV-201A or C-301A tubes—one and one third.

Plate Current—(at 66 volts) 9 to 12 milliamperes.

Antenna—inside, outside or lamp socket.

Selectivity—Very Good.

Range—Signal to stray ratio only limiting factor.

Weight—50 pounds.

Tubes—Six—three radio—detector—two audio.

Dimensions—30" long x 37" high x 19" deep.

Finish—Rubbed two tone dark mahogany, veined.

Price—With loud speaker, (but less tubes, etc.)

\$250.00.

Radiodynes are built to last for years.



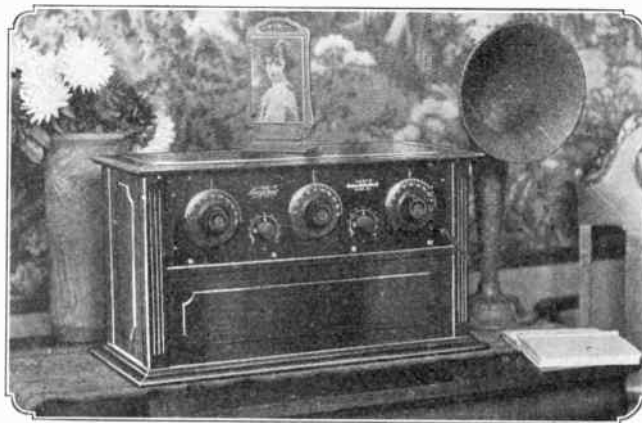
RADIODYNE

TRADE MARK REG.

The Voice of the Nation

WC-12 B

The WC-12B is suggested for those who have a satisfactory radio table and loudspeaker and who wish to limit their investments. As previously described, this set is extremely selective and at the same time uses only dry cell tubes. It is therefore, ideal for country or farm use. Its volume will amaze anyone, while its range is limited *only* by the amount of noise or so called strays present. All three dials are wavelength or finder controls and are all recorded at the factory for many of the leading radiocast stations. You will hear many reports of foreign reception on this receiver.



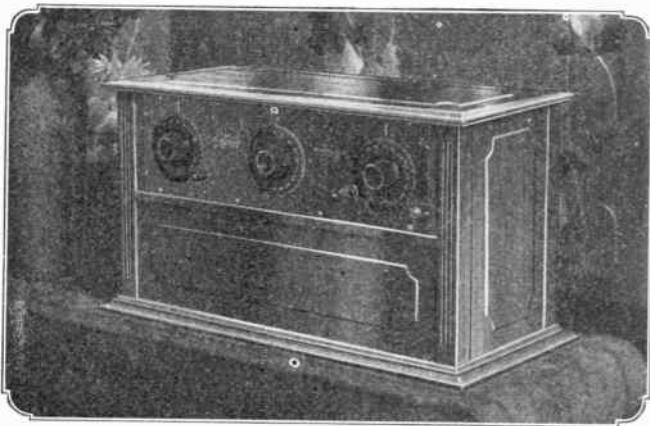
CABINET

The WC-12B cabinet is so constructed that *all* batteries may be stored within the lower compartment. This compartment is accessible through a hinged door in the back of cabinet. Lid or cover is hinged to permit of tube inspection, etc. Cabinet is of beautiful two-toned dull mahogany.

SPECIFICATIONS—Radiodyne Type WC-12B—Specify type carefully when ordering.

Wavelength—200 to 600 meters (1500 to 500 Kilocycles).
Amperes—Filament (with UV-199 or C-299 tubes)
approximately one third ampere.
Plate Current—7 to 12 milliamperes.
Antenna—Inside, outside, or lamp socket type.
Selectivity—Extreme.

Tubes—Six, two Radio—detector—three audio.
Range—Signal to stray ratio only limiting factor.
Dimensions—24 $\frac{3}{8}$ " x 15 $\frac{1}{8}$ " x 11 $\frac{1}{4}$ ".
Finish—Rubbed dark mahogany.
Weight—27 pounds. Non-radiating.
Price—(Less tubes, accessories, etc.) \$150.00.



Type WC-11B

The WC-11 B is the six tube Radiodyne unit WC-11 encased in a smaller cabinet similar to the WC-12B. Thus it is possible to have this same high class powerful receiver employing large tubes, in a smaller case. This receiver has its third control logged or registered at the plant for many of the leading radiocasters.

CABINET

The WC-11B cabinet is similar to the WC-12B in that all B batteries may be kept in the lower compartment. Holes drilled through from the inside of case permit the connecting wires from "B" batteries

to be hidden. The compactness of this arrangement makes the model very popular and a great seller. Cabinet is of beautiful two toned dull mahogany.

SPECIFICATIONS. This Type Radiodyne is known as WC-11B. Specify type carefully when ordering.

Wavelength—200 to 600 meters (1500 to 500 Kilocycles).
Amperes—Filament with UV-201A or C-301A tubes, one and one third amperes.
Plate Current at 66 volts—9 to 12 milliamperes.
Antenna—inside, outside or lamp socket.
Selectivity—Very good.
Range—Signal to stray ratio only limiting factor.

Tubes—Six—three radio—detector—two audio.
Dimensions—24 $\frac{3}{8}$ " x 15 $\frac{1}{8}$ " x 11 $\frac{1}{4}$ ". Weight—27 pounds.
Finish—Rubbed dark mahogany.
Weight—Approximately 27 pounds.
Price—(Less tubes, accessories, etc.) \$150.00

Radiodynes are built to last for years.

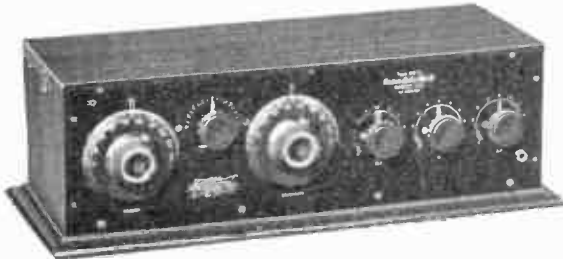


RADIODYNE

TRADE MARK REG.

The Voice of the Nation

Type WC-10



THE type WC-10 Radiodyne has proved to be one of the most popular types of Radio receivers in existence. Its outstanding feature is its ease of control, as only one wavelength dial or control is provided. The second or right hand dial is solely for controlling the volume and distance of reception. We recommend, especially for elderly people, the WC-10 Radiodyne as it is often possible to hear many different stations by turning only the first dial. This instrument has recorded signals from Honolulu, as well as from England.

CASE. This receiver is encased in a very small and compact solid mahogany case with split lid and long buffed piano hinge. All connections are brought out in the rear on a neatly polished formica back panel.

SPECIFICATIONS—This Type Radiodyne is known as WC-10. Specify type carefully when ordering.

Wavelength—200 to 600 meters (1500 to 500 Kilocycles).

Amperes—Filament with UV-201A or C-301A tubes, one and one third.

Plate Current—(at 66 volts) 9 to 12 milliamperes.

Antenna—inside, outside, or lamp socket.

Selectivity—Ordinary.

Tubes—Six—three radio—detector—two audio.

Range—Very great.

Dimensions—22" x 7" x 8½"

Finish—Rubbed mahogany. Weight—14 pounds.

Price—(less tubes) \$150.00.

WC-5B

The Radiodyne WC-5B is our latest contribution in four tube sets to the Radio field. It is low priced yet great in quality. Economy of operation, selectivity and ease of control are among its features. A careful system of marking controls makes its tuning a pleasure.

Though only four tubes are employed, loud speaker reception is secured from many hundreds of miles. The upkeep of this receiver is extremely low, while its original cost complete with all accessories is well under one hundred fifty dollars. Furthermore, the instrument is so sensitive that it will operate very well on an inexpensive single wire antenna. The WC-5B is encased in the same mahogany cabinet used on the WC-10 which has all binding posts brought out in the rear on a polished formica panel.

This receiver is without question the greatest value in the Radio field today.

SPECIFICATIONS—This Radiodyne is known as WC-5-B. Specify type carefully when ordering.

Wavelength—200 to 600 meters (1500 to 500 Kilocycles).

Amperes—Filament UV-201A or C-301A tubes, one ampere.

Plate Current—(at 90 volts) 9 milliamperes.

Antenna—Outside single wire.

Selectivity—Very good.

Tubes—four—one radio—detector—two audio.

Range—Excellent.

Dimensions—22" x 7" x 8½"

Finish—Rubbed dark mahogany. (Same as WC-10)

Weight—12 pounds.

Price—(less tubes etc.) \$80.00.

RADIODYNES ARE BUILT TO LAST FOR YEARS

Manufactured by

Plant No. 2
Plymouth, Wis. **WESTERN COIL & ELECTRICAL CO.** Main Office and Plant No. 1
Racine, Wis. - U. S. A.



STERLING RADIO METERS



R322
FILAMENT AMMETER
0-3 A.
Price, \$4.00



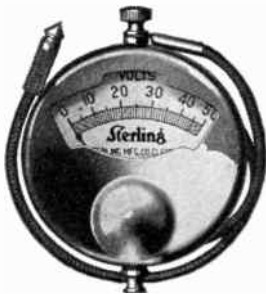
R341
FILAMENT VOLTMETER
0-8 V.
Price, \$4.00



R325
D. C. MILLIAMMETER
0-250 M. A.
Price, \$4.00

The line of meters here listed was designed especially for use on radio receiving sets. They are unusually accurate and thoroughly reliable. The movement is of a magnetic type which has been developed through years of meter experience. They are of the flush mounted

type and require a hole in the panel only 2 inches in diameter, the overall diameter of the flange being only 2 5/8 inches. This small size, together with the black satin finished flange and white dial makes a very attractive addition to any radio panel.



Sterling Voltmeter

For Testing "B" Batteries

Type No.	Reading	List Price
34B	0-30 volts (1 volt divisions)	\$2.25
34C	0-50 volts (1 volt divisions)	2.75



Sterling Ammeter

Type No.	Reading	List Price
24	0-35 amp., 1 amp. div.	\$1.00
25	0-60 amp., 2 amp. div.	2.25



Sterling Voltammeters

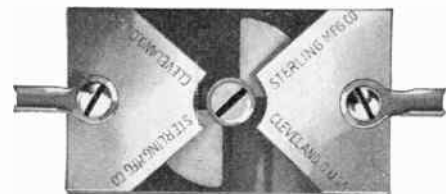
Type No.	Reading	List Price
44	0-35 amp., 0-10 v. (1 amp. and 1-5 volt. div.)	\$1.50
44A	0-35 amp., 0-16 v. (1 amp. and 1/2 volt div.)	2.00
45	0-35 amp., 0-50 v. (1 amp. and 1 volt div.)	4.00



STERLING No. 900 PORTABLE RECTIFIER

This device is for charging "A" storage batteries from a 110-volt lamp socket. It can be supplied for 25, 50 or 60 cycle alternating current circuits. It is an improved full wave vibrating reed type with single screw adjustment and special wear resisting carbons of large cross section area, which reduce sparking and wearing to a minimum, also eliminating fusing and "freezing."

Determination of polarity is not necessary. It is so designed that either clip on the charging leads may be attached to either battery terminal without regard to which is positive or negative. No possibility of injuring battery or wrong connecting of rectifier to battery. Furnishes tapering charge which decreases as the battery becomes charged, thus making overcharging impossible.
Price—50 or 60 Cycle\$16.00



STERLING

R 311 MICROCONDENSER

ESPECIALLY DESIGNED

For EQUALIZING RADIO FREQUENCY CIRCUITS

SPECIAL FEATURES

Unusually Wide Range of Capacity—Perfect Equalization where Others Fail—Cures Many Hopeless Sets, Reflex and Others.

Convenience and Simplicity of Installation.

Extraordinary Ease of Adjustment—A Turn Sets It and It Stays Put.

A Turn of the Screw Slot in the Visible Plate Sets It in the Equalized Position.

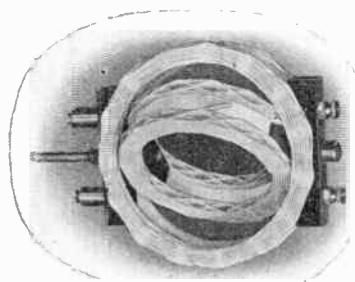
The Equalized Position Then Remains Fixed Without Any Further Manipulation.

The Use of a Long, Dry Stick, Sharpened at the End, Makes Perfect Equalization Possible Without Any Error Due to Hand or Other Capacity.

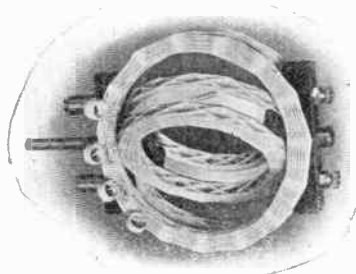
Price, including connecting lugs and screws.....\$1.00

SICKLES COILS

VARIOMETER



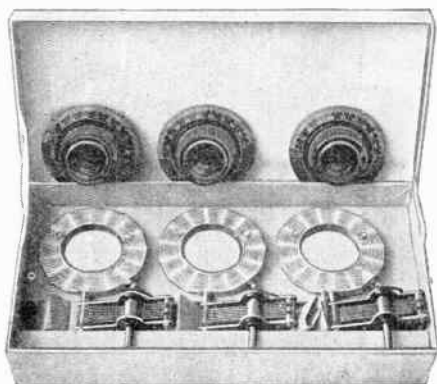
VARIOCOUPLER



The SICKLES Diamond-Weave Variocoupler and Variometer.

Price\$4.50 Each

TUNED TRANSFORMER KIT



Price\$19.50

DIAMOND WEAVE INDUCTANCES



COILS

- No. 1A Style Rienartz, 450 meters.....\$2.00
- No. 1B Style Rienartz, 600 meters..... 2.50
- No. 2 Style BC 1.50
For use with our RMC Style A Radio Frequency Transformer. Wave length 200-650 m.
- No. 3 Style DX75
For use with RMC Style DX Radio Frequency Transformer. Wave length 150-350 m.
- No. 4 Style F 1.00
For use with Flivver Circuit
- No. 5 Style G 1.50
For use with Green Circuit, 5 taps
- No. 8 1 Set Radio Broadcast Knockout Reflex Coils, T1 and T2 List..... 4.00
- No. 13 American Super Coils, per set of 2.. 4.00
- No. 14 Tuned Transformer Coils, each..... 2.00
6½ turns primary, 55 turns secondary. Wave length 200 to 570 meters when shunted by .0003 M. E. variable condenser.
- No. 15 American Superflex Coils, per set of 2 4.00

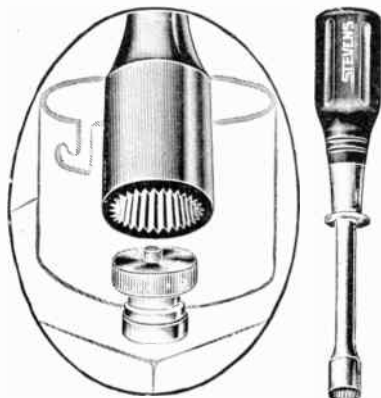
RADIO BROADCAST KNOCKOUT KIT



Price \$13.00

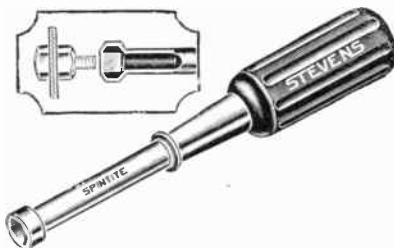
STEVENS SPINTITE WRENCHES

For ROUND Nuts



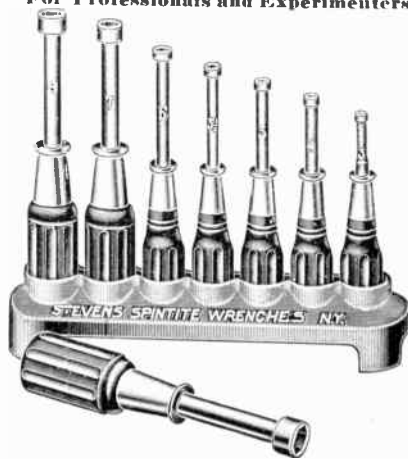
T-825—Set of ROUND Spintites, 3 sizes, 5-16", 3-8", 7-16", tapered so as to fit ALL Round Radio nuts.
Price\$1.00

All Sizes for Hex Nuts



Made in All Sizes
 (Numbers indicate 16ths of an inch.)
 No. 3—(Switch points)35c
 No. 4—(Switch points)35c
 No. 5—(Popular size)35c
 No. 5½—(Standard 8-32 nut).....35c
 No. 6—(Standard 10-32 nut).....35c
 The following have large shank and handle:
 No. 7—(Phone Jack)65c
 No. 8—(Phone Jack)65c
 No. 965c

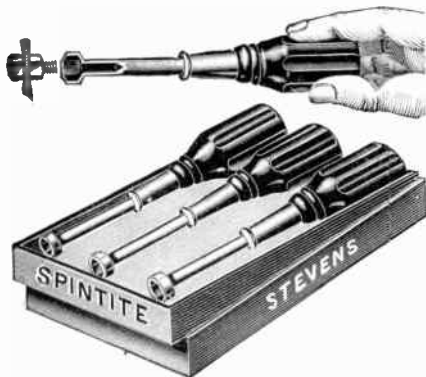
Hex Spintite Set T-73
 For Professionals and Experimenters



This set has a wide range of sizes which fit every hex nut used in radio. It is the ideal set for the radio enthusiast. Consists of 7 sizes, Nos. 3, 4, 5, 5½, 6, 7, 8 (these numbers indicate 16ths of an inch across flats), mounted in neatly finished metal base.

Spintite Hex Set T-73. Price, \$3.50.

Hex Spintite Set T-71



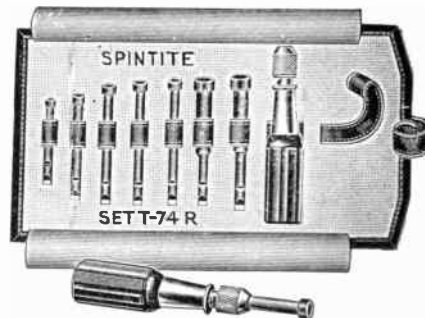
It contains the three most popular sizes of Hex Spintites, No. 4, ¼"; No. 5, 5-16", and No. 6, ⅜".
Price\$1.00

Hex Spintite Set T-74-B



Many radio fans prefer the Hex Spintites in separate shanks with a universal handle. Set T-74-B has same socket sizes as Set T-73, namely, Nos. 3, 4, 5, 5½, 6, 7, and 8. The universal handle has a positive catch which keeps the bits from slipping. Mounted in mahogany finished hardwood block.
Hex Spintite Set T-74-B. Price, \$3.25

Hex Spintite Set T-74-R



Same as T-74-B, except that bits and handle are put up in a neat, flexible roll, handy for pocket or tool kit.

Price\$3.50

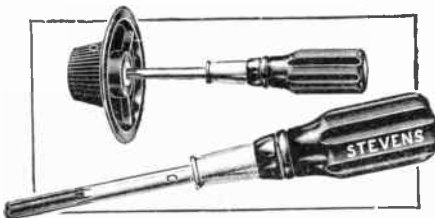
T-Handle Hex Spintite



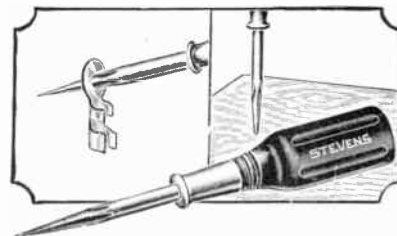
This style of the Hex Spintites makes it easy to get at the hex nuts on panel-mounted parts. It reaches down through a maze of buss bar and wires and gives you sure grip and leverage no matter how cramped the place. Made in four sizes, Nos. 4, 5, 5½ and 6.

Price, 35c Each
Set T-820, 4 sizes, \$1.25

"Oversize" Radio Reamers



Stevens Oversize Reamers are of just the correct size to clean out holes in dials, rheostats, etc., to make a smooth, sliding fit on the shaft—and also to ream jacks that are too tight for phone plugs.
 No. T-555—3-16" Size. Price, 75c
 No. T-550—¼" Size. Price, 75c



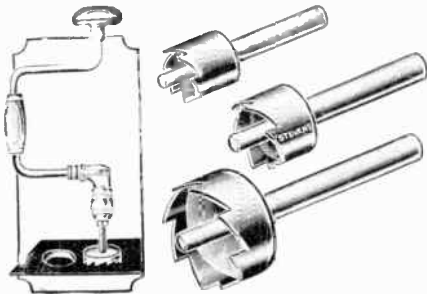
Here's a tool so simple you will be surprised how many uses it serves—reaming small holes, starting screws in hard wood, laying out panels, etc. Tool steel bit, tempered and hardened just right—convenient screw driver handle.

T-557—Price, 35c.

STEVENS SPEED-UP TOOLS

Panel Cutters

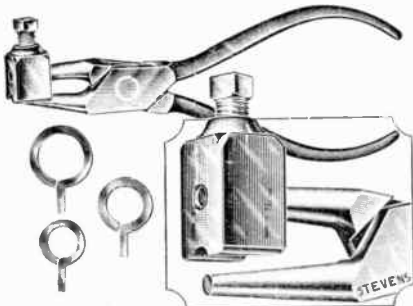
Three Sizes, 3/4", 1" and 1 1/2"



Clean, true holes can now be cut through rubber or bakelite panels with Stevens Panel Cutters.
 No. T-563—Set of 3. Price \$2.50.
 No. T-560—3/4" Size. Price 75c.
 No. T-561—1" Size. Price 85c.
 No. T-562—1 1/2" Size. Price \$1.00.

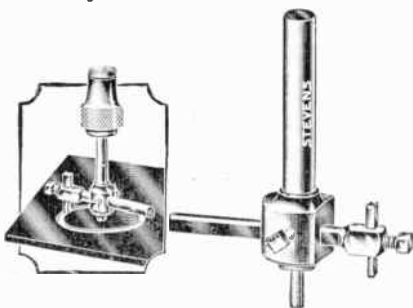
Speed-a-Loop Pliers

Attachment With or Without Pliers



This clever attachment, for round nose pliers, bends perfect, uniform loop terminals of any needed size in round or square buss wire, with amazing rapidity. It also bends special forms in wire, as illustrated, without taking the work away from the set.
 No. T-570—Attachment with Pliers. Price, \$1.50
 No. T-571—Attachment only, which fits most round nose pliers. Price, 50c

Adjustable Panel Cutters



A well-made, substantial tool for cutting large holes in panels. Quickly adjusted from 1 1/2 to 6 in. Shank is 7-16" diameter for convenient use in carpenter's brace or machine. Double end high-speed cutter may also be used for beading.
 T-564—Complete with Cutter, Price, \$1.75

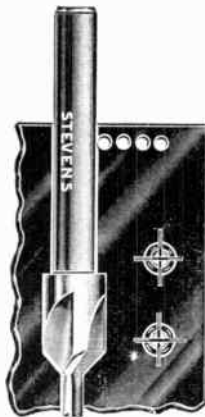
Bezel Beading Tool

Two Sizes, 3/4" and 1"



Bezel Beader enables the amateur mechanic to get a full, true bead in peek holes, so that the set will have the same dignified, high-grade appearance found in the expensive, manufactured sets.
 T-552—Size 3/4" hole. Price \$1.75.
 T-553—Size 1" hole. Price \$2.00.
 Extra Cutters, per set, 50c.

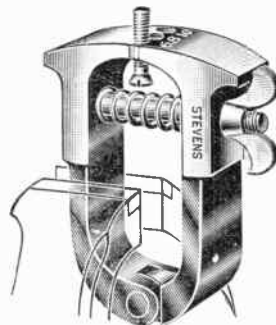
Radio Drill and Countersink Combined



Drills holes through hard rubber or bakelite panels and also countersinks the holes at one operation. The combination is both convenient and accurate. The 5-32" drill point takes No. 6 and No. 8 screws. The 1/4" shank fits every standard hand drill.

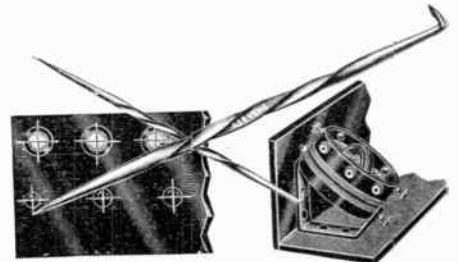
T-565
 Price, 35c.

Radio Screw Clamp



This Clamp holds screws for filing down to the many odd lengths required in radio. The jaws have three threaded depressions for holding Nos. 6, 8, 10 screws, 32 thread. The tool is made from forged steel; the hardened jaws may be used as rethreading dies.
 No. T-551—Price, \$1.50

Radio Scribes



Every radio builder has experienced the need for a keen, sharp scribe for clearly laying out panels and accurately positioning condensers, couplers, sockets or other radio parts. Stevens Scriber is made of one-piece of high quality steel with fine, sensitive points. Length 7 3/4 in.
 No. T-550—Retail Price, 45c.

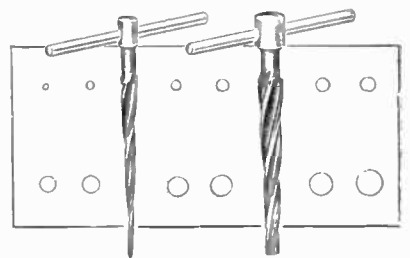
Radio Pliers



Both of these pliers are especially designed for use in making adjustments and connections in radio work. The jaws are long and slender, to reach into tight places, secure a firm grip, and make delicate adjustments.

No. T-77—With straight jaws. Price, \$1.25
 No. T-88—With curved jaws. Price, \$1.25

Utility Taper Reamers



These Reamers have an improved spiral cutting edge which produces a true, round hole in any material—metal, bakelite, hard rubber, wood, etc.—without digging in or chattering. With these two reamers you can enlarge a 1/8" hole to 3/4".
 T-580—Size 1/8" to 1/2". Price \$1.50
 T-581—Size 3/8" to 3/4". Price \$2.00

THOROPHONE

LOUD SPEAKER
Perfect Tone With Great Volume



Model S-5

A battery actuated instrument designed for unlimited volume, using the same storage battery required for the set.

The Thorophone will positively give greater volume, per given impulse, than any other loud speaker manufactured today. Its tone is full and deep—life-like and natural, exactly as broadcasted.

The electrical element of the Thorophone consists of three powerful coils operating a lever attached to a mica diaphragm. The power delivered at the peak is in excess of fifty pounds.

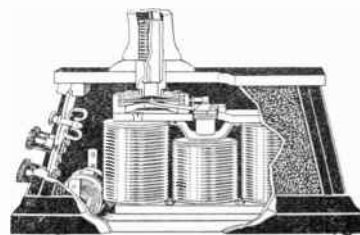
This mechanical method of amplification prevents distortion and all possibility of blasting or rattling. This construction gives expression to all ranges of music.

All radio receivers can be made from 25 to 30 per cent more efficient by the use of a Thorophone. It would be rather false economy then, to pay more for a receiving set and economize on the loud speaker, especially when it is to be remembered that no radio set can be better than the loud speaker used with it.

THOROPHONE—Model S5, Black.....	\$45.00
THOROPHONE—Model S5, Gold.....	50.00
THOROPHONE—Model S6, Phonograph Attachment	35.00

SPECIFICATIONS

- Unit—Electro-Dynamic with 50 lb. pull.
- Diaphragm—Red India mica under complete control.
- Tone—Full, deep and life-like. No blasting.
- Height—25". Weight packed for shipment 35 lbs.
- Cabinet—Wood, finished in ebony and black, Florentine.
- Horn—Made of Thorite—Revolving 14" bell.
- Connections—Four binding posts in rear plainly marked.
- Current Consumption—One ampere from same Storage Battery used for tubes.



Showing Power Unit in
Thorophone Base

THOROLA

THE LOUD SPEAKER WITH THE PERMANENT ADJUSTMENT
A New Principle and a New Contribution to the Radio Art
NO EXTERNAL BATTERY REQUIRED

A Product of the Thorophone Factory



THOROLA

4

\$25.00

14½-Inch Bell Thorite Horn, Beautiful Black Florentine Finish Complete with Cord and Plug.

Art Base Mounted on Felt.

Height, 23 Inches.



THOROLA

3

\$20.00

12-Inch Bell Thorite Horn, Beautiful Black Florentine Finish.

Art Base Mounted on Rubber Feet.

Height, 21 Inches.

The following is prepared to help you gain a fair understanding of the operation of the Thorola. If this information is carefully studied you will be rewarded in a better understanding of Thorola operation and this understanding will help you, at times, to more quickly locate trouble on your receiving set.

With the development of the dry cell tubes, there arose a large demand for an instrument with Thorophone S-5 reproduction that did not need external field excitation.

In response to this demand, the Reichmann Company has developed the Thorola, a radio loud speaker of the permanent magnet type with a graceful Thorite horn in black Florentine finish.

In performance, this instrument is distinctly superior in tone and volume to any loud speaker yet produced, with the exception of the Thorophone.

To connect the Thorola to your receiving set, proceed as follows:

1. If your receiving set is equipped with a jack, insert the Thorola plug into this jack. If your receiving set is equipped only with binding posts, connect the Thorola cord to these binding posts. This connection is made exactly as if the Thorola was a head receiver.

2. Turn adjusting knob to the point where the Thorola delivers maximum volume.

Both the Thorola Three and Four are equipped with a five foot tinsel cord. The Thorola Four is also equipped with a standard plug. The Thorola Three is not equipped with a plug.

The adjustment on the Thorola is one of the principal means by which the great amplification of the Thorola is

obtained. This is simply a final adjustment made by the user to adjust the Thorola's characteristics to the user's own receiving set. This is an exclusive Reichmann Company principle and represents a new contribution to the art of loud speaking telephony and to the radio art.

This Thorola adjustment must not be confused with the adjustment required on many other makes of loud speakers. The adjustment made on other makes of loud speakers is a diaphragm adjustment and must be changed to obtain efficiency when varying from weak to strong signal reception. Quite contrary to this, the adjustment on the Thorola is a permanent adjustment and not a diaphragm adjustment. Once the Thorola is adjusted to the ordinary tube output of your receiving set you will receive the maximum efficiency on either weak or strong signals without changing this adjustment.

By means of this adjustment knob the armature of the Thorola is placed in a neutral, balanced position with reference to the magnetic field. If you turn knob too far in either direction you will hear a click and the Thorola will be substantially silent. The most efficient adjustment of the Thorola is when knob is turned to a position half way between these clicks.

When adjusting the Thorola to your receiving set, it is well to try reversing the cord terminals in your plug, to see if this improves the volume.

When once this adjustment is made for your receiving set it ordinarily need not be touched again. The only things that would necessitate readjustment of knob on the Thorola are substantially varying the rheostat adjustment on your last amplifier tube or reversing the polarity of your loud speaker cord terminals.

FASTEST SELLING HEADSET IN THE WORLD



Every set made of the finest quality material, with all the best features of headsets selling at much higher prices.

Powerful magnets, genuine tinsel cords, aluminum cases, longer cord (full 5 feet), easy fitting headband, 20,000 turns, equivalent to 3,000 ohms.

Net weight 8 ounces.

Our written money-back guarantee protects the buyer. Every set tested and approved by licensed radio operators. Production for 1924 will exceed the million mark.

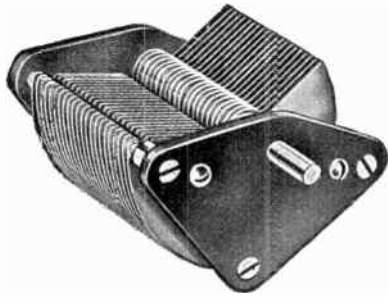
“WORLD’S GREATEST HEADSET VALUE”

REPAIR PARTS

Cord	50c each
Head Band	50c each
Rubber Caps	25c each
Coils	25c each
Diaphragms	10c each

U. S. TOOL CONDENSERS

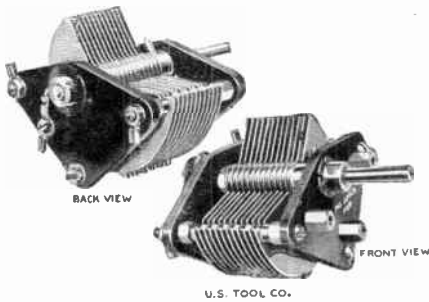
C. S. PLAIN TYPE



With stops, nickel-plated, turns easily and smoothly. No counterweight. Mounting screws permit use of panel of varying thickness.

Stock No.	App. Capacity M. F. D.		List Price	Plates
	Max.	Min.		
CS111	.00025	.000008	\$2.20	11
CS116	.0003	.000008	2.30	15
CS112	.00035	.000008	2.40	17
CS114	.0005	.00001	2.70	23
CS115	.001	.00002	3.10	43

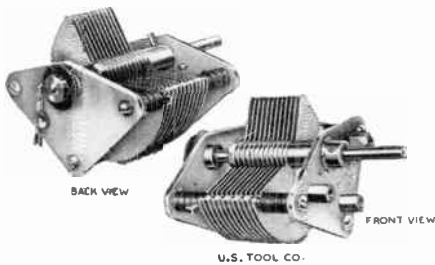
TYPE No. 3 PLAIN



With Stops, Nickel Plated, Turns Smoothly, No Counterweight. 3 Mounting Lugs and Screws.

Stock No.	Capacity		List Price	Plates
3-13	.00025	.000008	\$3.10	13
3-15	.0003	.000008	3.25	15
3-18	.00035	.000008	3.40	18
3-25	.0005	.00001	3.75	25
3-49	.001	.000017	4.75	49

TYPE No. 5 PLAIN

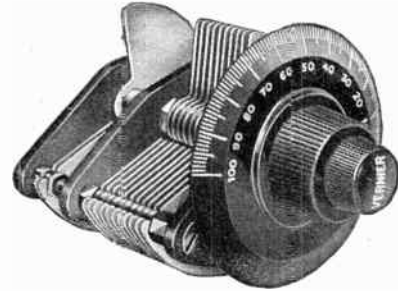


"Pat. App'd For"

Brass End Plates, Brass One Piece Stator, Brass Rotor, Celoron Spacers, Stops, No Counterweight, No Adjustments, 3 Mounting Lugs, 3 Screws.

Stock No.	Capacity		List Price	Plates
5-13	.00025	.000011	\$3.85	13
5-15	.0003	.000012	4.00	15
5-18	.00035	.000012	4.15	18
5-25	.0005	.0000135	4.50	25
5-49	.001	.000019	5.50	49

C. V. VERNIER TYPE



Single blade vernier with stops. Nickel-plated. Condensite 3 inch dial and vernier knob. App. Capacity M. F. D.

Stock No.	Max. Min.		List Price	Plates
CV121	.0003	.00001	\$4.50	14
CV122	.00035	.00001	4.60	18
CV123	.00055	.000015	4.75	24
CV124	.00105	.00002	5.50	46

TYPE No. 4 ALL-VERNIER

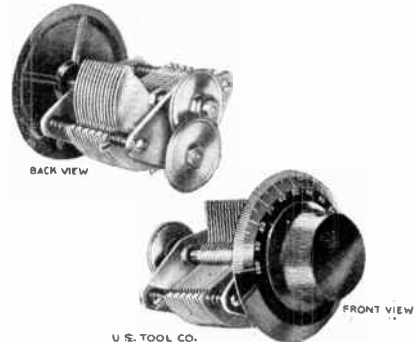


"Pat. App'd For"

FRICITION MECHANISM (Pat. app'd for), picks up at any point—No Gears, No Lost Motion, Ratio 9-1. 3 3/4" K-K Dial, 2 1/4" K-K Knob, Stops, 3 Mounting Lugs and Screws.

Stock No.	Capacity		List Price	Plates
4-13	.00025	.000008	\$5.55	13
4-15	.0003	.000008	5.70	15
4-18	.00035	.000008	5.85	18
4-25	.0005	.00001	6.20	25
4-49	.001	.000017	7.20	49

TYPE No. 6 ALL-VERNIER



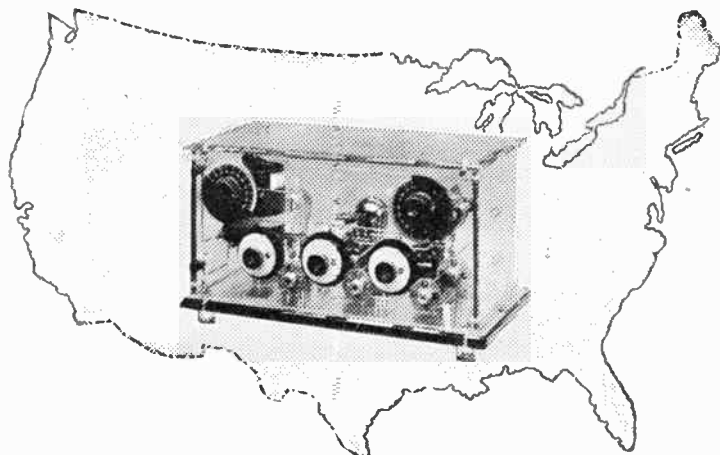
"Pat. App'd For"

FRICITION MECHANISM (Pat. app'd for), picks up at any point—No Gears, No Lost Motion, Ratio 9-1. 3 3/4" K-K Dial, 2 1/4" Knob, Stops, 3 Mounting Lugs and Screws.

Stock No.	Capacity		List Price	Plates
6-13	.00025	.000011	\$6.35	13
6-15	.0003	.000012	6.50	15
6-18	.00035	.000012	6.65	18
6-25	.0005	.0000135	7.00	25
6-49	.001	.000019	8.00	49

UNCLE SAM COIL

COAST TO COAST



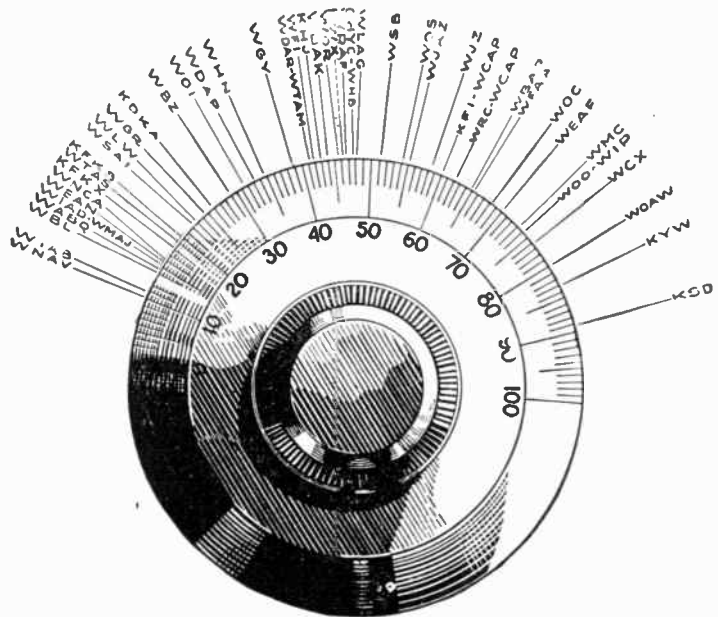
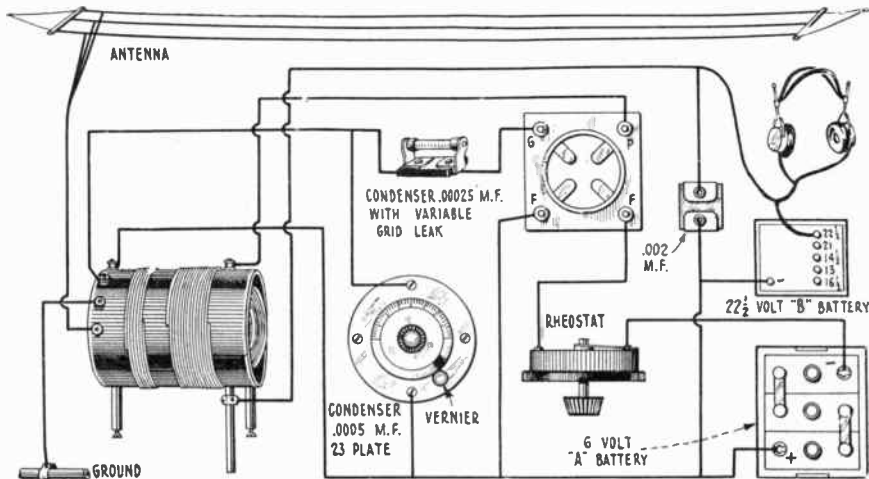
A Prize Glass Set

WITH AN
UNCLE SAM
TUNING
COIL

The Red, White and Blue Litz
Wound Tuner.

SIMPLICITY

The hook-up shown illustrates a standard set using our tuning Coil in place of their tuning unit as published in many of the leading newspapers. The simplicity of this layout can be easily seen and as a Fan said "Such wonderful results and yet so simple that even a baby could operate it." The old style three circuit used two variometers and one variocoupler yet this tuner gives a three circuit with less controls and increased efficiency. This hook-up has few controls and is efficient, but may be used only by lawfully licensed manufacturers of sets embodying the regenerative circuit.



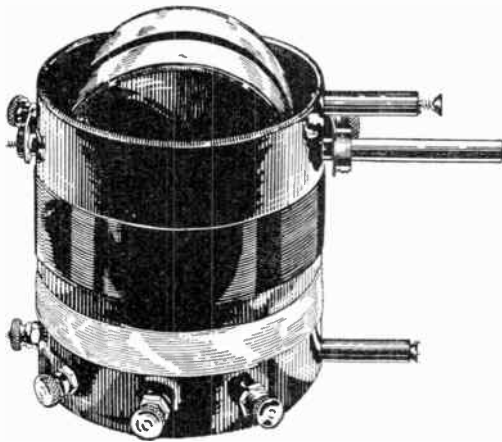
CALIBRATION

This Condenser dial shows the stations (from Cuba to Los Angeles) a committee in Philadelphia heard in 8½ hours using only two tubes. The same station will be heard at the same point on your dial night after night. Your set with this Coil is not just a receiving set, it is a wavemeter.

Uncle Sam Coil, Price, each . . . \$5.50

UNCLE SAM COIL

THE COIL THAT MAKES THE PERFECT SET



The Standard Armstrong feed back circuit with the Uncle Sam Tuning coil, which has shown such remarkable results, is described in this article. Mr. Gordon O. Wilkinson, the inventor of the Master Tuning Coil, during a few months tuned in 172 different stations in 32 states and had stations in Los Angeles on many occasions. His best record for a single night is 35 stations on a detector tube alone and Los Angeles on detector tube and one step of audio frequency amplification.

The beauty of this hook-up lies in its extreme simplicity and remarkable sharp tuning. At a public demonstration in Philadelphia, the results of which can be verified, a receiving set with the Uncle Sam Tuning Coil was located within 150 feet of Station WOO at the Wanamaker store which was transmitting the evening concert. WOO is a class "B" station of high power. In spite of this fact Mr. Wilkinson, who conducted the tests, was able by a very slight adjustment of the single tuning knob to eliminate the local station entirely and pick up in turn Station WGY

at Schenectady, N. Y., and KDKA at East Pittsburgh, Pennsylvania.

The Uncle Sam Tuning Coil is the neatest and most compact article of its kind on the market. The Coil eliminates all taps; contacts are made through phosphor bronze springs, which does away with pigtails and their many disadvantages, and has a fixed coupling between the primary and secondary. Regeneration is controlled by one dial attached to the rotor of the coil and the wave length is controlled by a twenty-three plate condenser, a full .0005 capacity. This really means a one control set.

All the Uncle Sam Tuning Coils are wound with special Litzendracht wire produced to our own specifications. One of these wires is a distinctive red and the other a distinctive blue. These are firmly held in place on the black vulcanized fibre tubing by a special compound of non-distributive capacity. Litzendracht wires are soldered, after each strand is sand-papereol, by using a non-corrosive flux and the complete unit is the smallest and most selective on the market.

Every metal part of the Coil is nicked with the exception of the phosphor bronze spring contacts and these springs are not nicked because a better contact is made between two unlike metals. The coil is the result of tests upon 483 different coils and every attention possible has been given to details.

Our engineers are now working on this circuit in conjunction with re-radiation and our tests so far have shown that this Coil will not re-radiate appreciably. We have taken two sets, one on the third and one on the first floor of a house and used two aerials paralleling each other 30 feet apart and 100 feet long. We were unable to make either set re-radiate in this instance.

SENSITIVITY

The ability of a set to pick up feeble distant stations is the measure of its sensitivity and although many fans throughout the country claim they have heard England there are very few who have actual verifications of such reception. An editor of one of the New York papers stated that thousands of amateurs had told him they had received London, yet only one had shown him a verification.

Uncle Sam Coil, Price, each \$5.50

AN
UNCLE
SAM
COIL
WITH

TWO
TUBES
BRINGS
IN
2 LO

The British Broadcasting Company
Limited

2, Savoy Hill
London W.C.2

1934 (1934) 1000

Paul E. Hurm, Esq.,
6200 Franklin Avenue,
Philadelphia,
U.S.A.

Dear Sir:

I'm in for your letter of the 24th ult.

The London Station (2LO) of this Company broadcast on the day as at the time as notified a Charge Certificate from St. Botolph-within-Aldgate. This is a perfectly legal procedure.

Allow me to thank you for this receipt.

Yours faithfully,
The British Broadcasting Company Ltd.

[Signature]

Director, BROADCASTING

WESTERN ELECTRIC APPARATUS

Western Electric 10-D Loud Speaking Telephone Outfit



Western Electric 10-D Loud Speaker

This outfit consists of No. 518-W receiver with the addition of No. 112-A transformer mounted in the base. It is approximately 2½ feet h.g.h and the mouth of the fibre horn is 14 inches in diameter.

10-D Outfit\$55.00

2-A Current Supply Set

This outfit is for use in place of the present "A" and "B" batteries for supplying both filament and plate current only to the No. 10-A loud speaking telephone equipment where there is an alternating current lighting circuit available, whose voltage is not less than 100 or more than 120, and the frequency not less than 50 or more than 70 cycles. It cannot be used on a direct current lighting circuit.



W. E. 2-A Current Supply Set

The set, which with the exception of the tubes, is enclosed within a cast-iron case, weighs approximately 19 pounds. It consists of the necessary transformers to supply proper voltage, together with two 217-A rectifier tubes which rectify the alternating current to direct current for the plate circuit. Two cords, one equipped with an attachment plug for connecting to the lighting circuit and the other for attaching to the No. 10-A loud speaking telephone outfit, complete the equipment.

2-A Set\$71.00

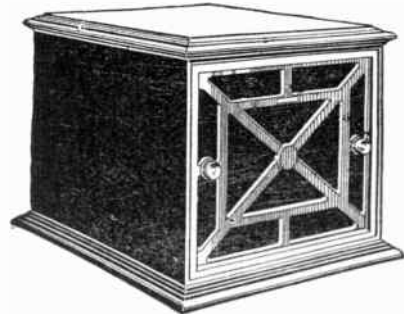
No. 1002-C Head Set



Price\$12.00

Western Electric No. 14-A Loud Speaking Telephone Outfit

The No. 14-A Loud Speaking Telephone Outfit makes use of the latest developments in the electrical communication art. It is mounted in an attractive cabinet and is a combined audio-frequency amplifier and loud speaking telephone.



W. E. No. 14-A Loud Speaker

The operation of the No. 14-A is a simple matter. Two controls operated from the front of the cabinet control the filaments of the three 216-A tubes and regulate the loudness of sound.

W. E. 14-A Loud Speaker with tubes, less batteries \$140.00

No. 521-W Receiver



W. E. 521-W Loud Speaker

The No. 521-W Loud Speaking Telephone Receiver is placed inside of a weighted base with a horn for directing the sound. This horn is 18½ inches high with an opening 10 inches in diameter at the large end.

521-W Receiver\$21.00

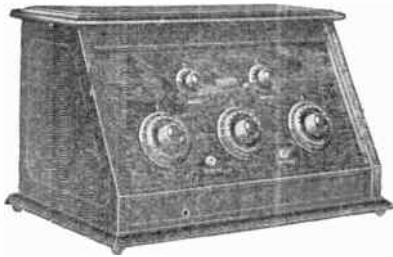
No. 522-W Loud Speaking Victrola Adapter



Price\$9.50

WORKRITE SUPER NEUTRODYNE RECEIVERS

Many years of experience have proven that a thoroughly satisfactory radio receiver can only be produced by the utmost care in the selection of high grade materials, by careful workmanship and by scientific knowledge in applying these factors. WorkRite receivers are manufactured under the famous Hazeltine Neutrodyne license, employing two radio frequency, one detector and two audio amplifier tubes. They are made of the finest materials obtainable by workmen highly skilled in radio craftsmanship.



WORKRITE AIR-MASTER

This set is encased in a genuine brown mahogany cabinet. Either phones or loud speaker can be plugged in jack on panel or attached to binding posts in the rear of the set. Furnished with special eight-foot cable carrying all battery wires. Thus batteries can be kept in basement or closet and all connections made or cut off instantly by attaching plug to back of set. The graceful sloping panel is set at just the right angle to make tuning easy. Size of cabinet, 21 inches long, 14 inches wide, 14 inches high.

Price, without accessories\$160.00



WORKRITE RADIO-KING

This model will appeal to those who love artistic musical instruments. They will appreciate the elimination of the unsightly loudspeaker which, in this set, is built into the cabinet behind a handsome mahogany grille. A great deal of time was spent in developing a special horn which would reproduce music or voice with a deep, rich, full tone without the slightest distortion. Compare the WorkRite loudspeaker with others and you will realize the difference.

The WorkRite Radio-King is also equipped with the special cable and plug as described above. Plugging phones in the jack on panel cuts out the loudspeaker, which is connected inside the cabinet.

To appreciate the quality of this cabinet you should examine it closely. You will find workmanship such as is found only in the very finest furniture and cabinet-work. Built of rich brown mahogany. Size, 22 inches long, 14 inches wide and 20 inches high.

Price, with built-in loudspeaker, but without other accessories\$220.00

WORKRITE ARISTOCRAT

A most beautiful mahogany console, designed by one of the foremost furniture designers of the country. This model will harmonize with the finest of home interiors. The front drops, forming an arm rest for tuning or writing. A drawer beneath this drop is provided for log sheets, extra parts, writing material, etc. The loud speaker, with special composition horn and reproducing unit, is placed on one side and on the other side is a compartment, finished with acid-resisting paint, for both "A" and "B" batteries. All compartments



are easily accessible, and all connections made inside with cable and plug.

The WorkRite Aristocrat is the last word in radio and will be for a long time to come. Both in performance and in beauty of housing, it is unsurpassed. You will be proud to show it to your friends. Maximum entertainment is assured with this high-grade receiver. Size, 46 inches long, 22 inches wide, 41 inches high.

Price, with built-in loud speaker, but without other accessories..\$350.00

WORKRITE NEUTRODYNE OUTFITS



Contain These WorkRite Parts

- | | |
|------------------------------------|--------------------------------|
| 2 WorkRite Neutrodons | 1 Base Board |
| 2 WorkRite Rheostats | 1—.25 mfd. Condenser |
| 1 Brass Panel Shield | 1—.001 mfd. Condenser |
| 1 Double Circuit Jack | 1—.00025 mfd. Condenser |
| 1 Closed Circuit Jack | 3 WorkRite 1/4" E-Z Tune Dials |
| 2 A. F. Transformers | Screws, solder lugs, etc. |
| 25 Foot Buss Wire | |
| 3 WorkRite Neutroformers | |
| 5 WorkRite Non-Microphonic Sockets | |
| 1 Grid Leak | |
| 9 WorkRite Marked Binding Posts | |
| 1 Panel 24x7x3/16" (drilled) | |

This outfit contains the special parts from the DeLuxe Kit and is just what your customers want. No shopping around for the right parts. No doubt about the parts to get. No delay. No mistakes in assembling. In addition to the parts listed above the Outfit contains a mounting angle and complete instructions. The WorkRite Neutrodyne Outfit is packed in an attractive box that will come in handy as a radio tool box.

No. 101, List Price\$70.00

No. 102 (Parts packed in Mahogany cabinet), List Price 80.00



WORKRITE NEUTRODYNE KIT

De Luxe Model

To meet the demand of WorkRite Fans who want the best possible in neutrodyne parts we have developed this extra fine Neutrodyne Kit. The parts in this Kit are not sold separately. They are made for this Kit alone. They are the last word in quality of material and efficiency. The following parts are contained in this De Luxe Kit:

- 3 WorkRite Neutroformers (Special Design)
 - 3 WorkRite E-Z Tune Dials
 - 2 WorkRite Neutrodons (New Style)
 - Panel Chart, Mounting Angle and Complete Instructions
- The Kit is packed in a very neat box

No. 103, List Price.....\$25.00



WORKRITE NEUTRODYNE KIT

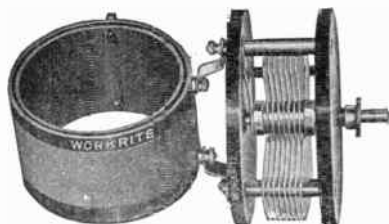
Model "A"

This Model "A" Neutrodyne Kit is made up of standard WorkRite parts. It is not of as high quality as the De Luxe Model, but will give very excellent results. Consists of three WorkRite Air Core Transformers, mounted on suitable Variable Condensers, two Vernier WorkRite Neutrodons, Panel Chart, Mounting Angle and complete instruction book. This is a good seller due to its moderate price.

No. 104, List Price\$17.50

WORKRITE APPARATUS

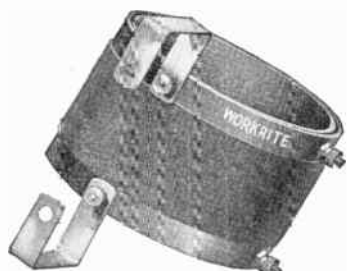
WORKRITE NEUTROFORMER



This instrument is made up of one WorkRite Variable Condenser and one WorkRite Neutrodyne Transformer mounted together ready for use in a Neutrodyne Receiving Set. The two parts work together with excellent results.

Price, each \$5.50

WORKRITE NEUTRODYNE TRANSFORMER



An aircore transformer with tubes of moulded Bakelite wound with green silk wire. Proper spacing of tubes and winding of wire make this transformer extremely effective.

Price, each \$2.00
Set of three 6.00

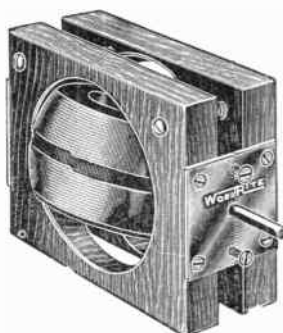


WORKRITE HYDROMETERS

Every Radio Fan needs one for his storage battery. Full instructions for use and care of battery packed with each instrument. Graduations on float guaranteed accurate.

A Battery Type \$.75
B Battery Type75

WORKRITE SUPER VARIOMETER



This instrument is made from the finest mahogany, highly polished. The rotor is wound with green silk wire. All metal parts made from brass and nicked. Both connections are made with double springs. Shaft 3-16".

Price \$3.50

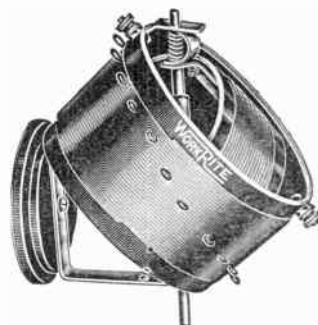
WORKRITE NONMICROPHONIC SOCKET



It has a sponge rubber base moulded in one piece which eliminates ringing in these tubes from jarring the set. A very efficient and attractive Socket.

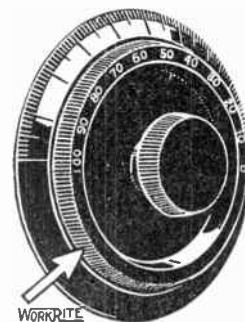
Standard Socket \$.90
Type 19975

WORKRITE 180 DEGREE SUPER VARICOUPLER



Made from moulded Bakelite. Cannot shrink. It is wound with green silk and has 12 taps. Tunes twice as sharply as ordinary 90° coupler. Range 150 to 705 meters. Double spring contacts eliminate harsh noises. All metal parts made from brass and nicked. Shaft 3-16".

Price \$3.50



WORKRITE E-Z TUNE DIAL

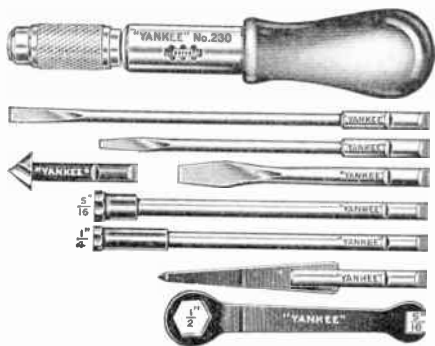
When you want to get a very fine adjustment on your variometers, varicouplers, condensers, etc., you always grasp your dial on the outer edge for more leverage. Right there is where you will find a knurled flange that just fits your grasp on the E-Z Tune Dial. You can easily make a turn of a hair's breadth.

Made of the finest material, highly polished. Easily the "snappiest" dial on the market; 3 1/2-inch diameter. Specify whether 3/16 or 1/4-inch shaft.

No. 201—3/16; No. 202—1/4".
Price \$.75

"YANKEE" RADIO TOOLS

TOOL SET No. 105



This is the handiest set of tools ever made for Radio work. It appeals at once to all Radio enthusiasts as well as manufacturers, and no expense has been spared in design, workmanship, materials or finish to make it equal to all other "YANKEE" tools, conceded to be the finest in the world.

Set Contains

No. 230 Ratchet Screw Driver (6¼" over all) holds all attachments.

Blades—5½"x3/16", for long reach into box, between wires, etc.

3½"x1/8", for small screws on dials.

2½"x1/4", for heavy screws—putting up aerials, etc.

Countersink—for countersinking, for heads of screws.

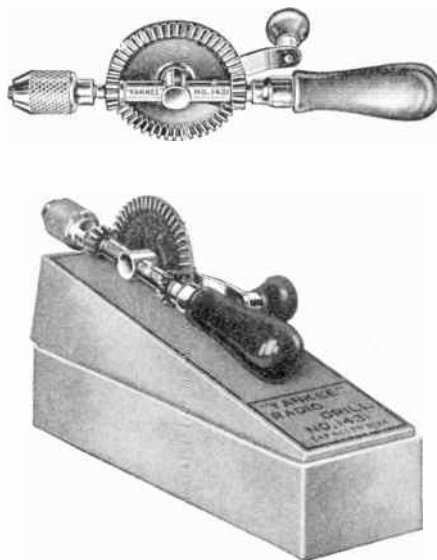
Sockets—(two) ¼" and 5/16" hex, with 4" shanks. Cover all small nuts.

Reamer—for enlarging holes in panel from 1/8" to 1/2".

Wrench—one end, 5/16", square or hex. Other, 1/2" hex for jacks.

Price\$3.60

RADIO DRILL No. 1431



Specially designed for Radio work. A beautifully balanced, small, powerful drill, with 4 to 1 ratio of gears for speed. Special Radio chuck, 9/32" capacity to take largest drill furnished with Radio drill sets. Length over all 9½".

Price\$3.40

YANKEE COMBINATION WITH WORK STAND



Price\$7.00

ANTENNA EQUIPMENT, WIRE, ETC.

MAGNET WIRE

Size B. & S. Gauge	¼-lb. Spools			
	Single Cotton	Double Cotton	Single Silk	Double Silk
\$0.18	\$0.22	\$0.24	\$0.38	\$0.46
.22	.26	.30	.44	.58
.20	.24	.26	.42	.54
.24	.28	.34	.48	.68
.26	.32	.40	.60	.86
.28	.38	.48	.70	1.10
.30	.44	.60	.90	1.40

Size B. & S. Gauge	½-lb. Spools			
	Single Cotton	Double Cotton	Single Silk	Double Silk
\$0.18	\$0.36	\$0.40	\$0.60	\$0.84
.20	.40	.44	.74	.96
.22	.44	.50	.80	1.06
.24	.48	.60	.90	1.36
.26	.58	.70	1.10	1.66
.28	.64	.94	1.40	2.16
.30	.80	1.10	1.80	2.70

BELDEN BRAIDED COPPER WIRE

Such as used on Acme Sets, etc.

Price, per foot \$0.15

LITZ WIRE

For loop construction, etc. Equal to No. 22 solid wire double silk.

Price, per foot \$0.05

CEL-AT-SITE WIRE

Combining tinned copper wire with flexible varnished spaghetti made especially for wiring radio sets.

No. 14 B. & S. gauge, made in the following colors—

Brown, Green, Yellow, Red, and Black

Price, per foot (30' lengths) \$0.08

BUS WIRE

Square Tinned, per length \$0.03
 No. 16, Round Tinned, per 100 feet90

SPAGHETTI

Grade A, per length \$0.15
 Grade B, per length10
 Grade C, per length05

ANNUNCIATOR WIRE

½-lb. Coil \$0.40
 1-lb. Coil80

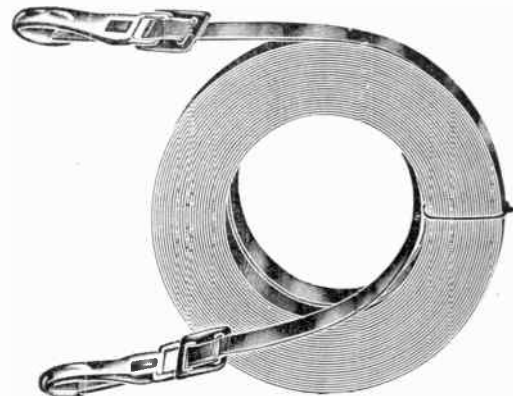
ANTENNA WIRE

Per 100 Feet

No. 14 Solid Copper, Plain \$0.80
 No. 14 7-22 Stranded Copper, Plain \$0.90
 No. 14 7-22 Stranded Copper, Tinned \$1.00
 No. 16 Solid Copper, Tinned (Round Bus Wire) \$0.90

GROUND WIRE

No. 14 S. B. R. C. Solid, per foot \$0.03
 No. 14 S. B. R. C. Solid, per 500 feet \$7.50



RIBBON ANTENNA

50-foot Coil \$1.00
 75-foot Coil 1.50
 100-foot Coil 2.00



THE KEY TO THE AIR CAGE ANTENNA

A double helix cage designed to give highly directional effect and selectivity with maximum collecting area. With hundreds of high powered stations on the air a long outdoor antenna is no longer practical. The indoor Cage gives volume with selectivity, cuts out static, reduces code interference, and gives many times the volume of the loop. It shows marked superiority on DX work, bringing them in with a clearer and FULLER TONE.

More volume than a loop. More satisfaction than outside antenna. Portable, easily installed, and pleasing in appearance. Full directions packed with each Cage.

Price complete \$2.00

SPRING ANTENNA

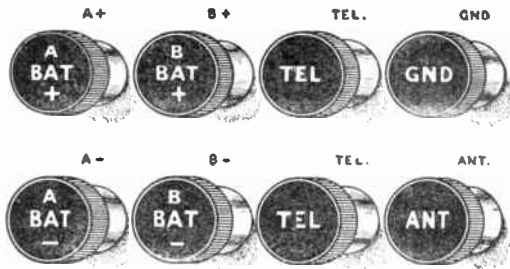
Heavy Brass Type. Excellent for indoor reception. May be used anywhere. Contains 100 feet wire.

Price, each \$1.00

BINDING POSTS, ETC.

MARKED BINDING POSTS WITH REMOVABLE KNOBS

Insulated Knobs and Nickeled Bodies



Price per card of 8 knobs\$.50

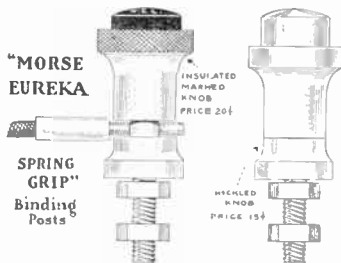
NON-REMOVABLE KNOB BINDING POSTS

Made plain or with ten different markings
Insulated Knobs and Bodies



Price, each\$.15

SPRING GRIP BINDING POSTS



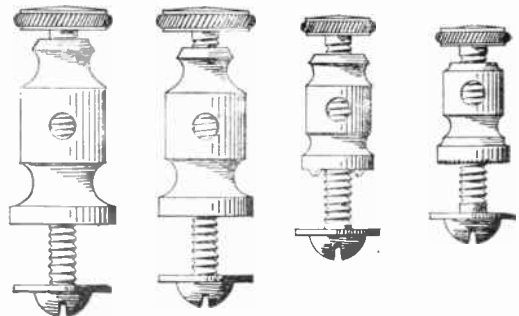
Hold button with thumb resistance, draw brass body out with two fingers, then insert cord tip and release fingers when tip or cord is gripped tight.

Marked knobs always in line. These posts have no threaded knobs or thumbscrew to screw up and unscrew, therefore connections can be made more quicker and more positive than by any other make of post.

Price, Insulated Marked Knob, each.....20c.

Price, Nickeled Knob, each.....15c.

POLISHED BRASS, NICKELED AND INSULATED BINDING POSTS



Style J, 15c Style K, 12c Style D, 6c Style G, 5c



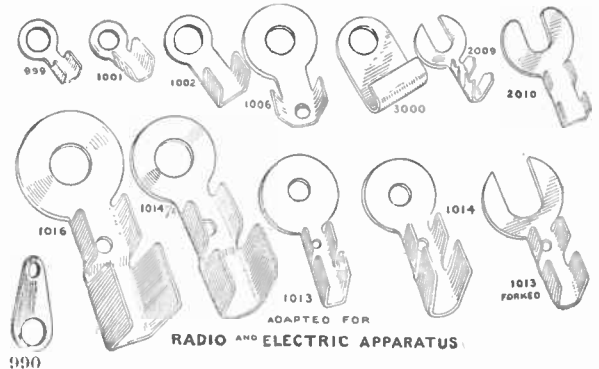
Style R 8c

Style E 8c

Style I, 12c

SMALL COPPER TERMINALS

SMALL WIRE TERMINALS



COPPER TERMINALS

Price Per 100

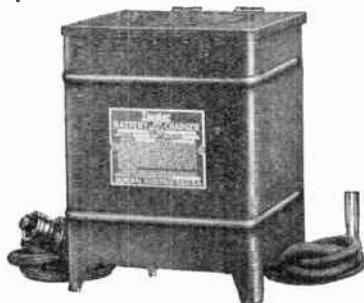
Style 999.....	\$0.20	Style 1013F.....	\$1.00
Style 1001.....	.20	Style 1014.....	1.25
Style 1002.....	.50	Style 1016.....	2.00
Style 1006.....	.50	Style 3000.....	.70
Style 1012.....	.65	Style 2009.....	.40
Style 1013.....	.80	Style 2010.....	.60
Style 990.....	.20		

BATTERY CHARGERS



HOMCHARGER'S TEN POINTS OF SUPERIORITY

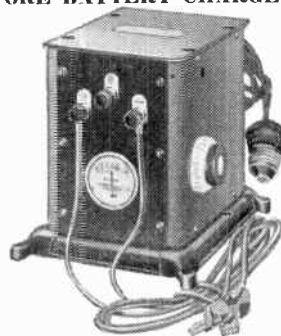
1. **Simple**—Only one moving and wearing part, replaceable after thousands of hours' use for \$1.00. Will last a lifetime.
2. **Efficient**—Uses less than one-half the current of any bulb or liquid type rectifier. Will charge any radio or automobile battery for a nickel.
3. **Quick**—Its high charging rate of 7 amperes eliminates long waiting for battery to become charged. Will charge any "A" or "B" battery over night, or three times as fast as most other chargers.
4. **Clean**—No expensive bulbs to break or acids to spill or replace. No acid fumes. Charges without muss, fuss or bother.
5. **Dependable**—Tungsten contacts insure continuous operation—prevent sticking and stopping.
6. **Fool-proof**—Can be operated by anyone. Attach to lamp socket and connect battery either way, it will always charge. High-grade ammeter eliminates guess work.
7. **Safe**—No danger of shock or fire. Tested and approved by Fire Insurance Underwriters everywhere. Gives tapering charge—will not overheat or injure battery.
8. **Beautiful**—Mahogany and Gold Finish.
9. **Unqualifiedly Guaranteed.**
10. **Popularly Priced**—Retail at \$18.50 complete.



TUNGAR BATTERY CHARGERS

- | | | |
|---|-------------------------------|---------|
| 2 | Ampere Type, Price, each | \$18.00 |
| 2 | Ampere Type, Price, each | 28.00 |
| 2 | Ampere Bulb only, Price, each | 4.00 |
| 2 | Ampere Bulb only, Price, each | 8.00 |

FORE BATTERY CHARGER



(Alternating Current)

"Master Fore"

(Charges all wet storage batteries)

The development of the Radio Industry has compelled the designing of a battery charger that is appropriate for home use. The use of many storage "B" batteries has furthermore created a demand for an instrument that will charge both "A" and "B" wet storage batteries. "MASTER FORE" is the latest product of FORE'S engineering department to cover this rapidly growing demand. Appearance combined with utility makes possible its use amongst the most elaborate surroundings.

Similar to all other types of "FORE" Battery Chargers this model charges at a six ampere rate and tapers down to the minimum rate as the battery becomes charged.

Among the many advantages of the "MASTER FORE" is the fact that it remains cool during its entire performance which is a special feature not to be found in competitive devices. This again adds to the desirability of the "MASTER FORE" for home use.

Approved by the National Board of Underwriters. Simplicity of operation is a particular feature. When service is desired it is only necessary to attach plug to electric light socket and connect battery wires as directed. Inasmuch as the battery is automatically charged no further attention is required until full charge has been completed.

Due to special alloy metal of which the vibrator points are composed there is freedom from excessive arcing at the points. This prevents the possibility of points sticking.

FORE Battery Chargers are of the permanent magnet type. Although the battery may be completely discharged the "FORE" will begin charging as intended immediately upon being connected. This cannot be accomplished with a battery charger that is not of the permanent magnet type. As soon as the power current is shut off the automatic magnet keeper engages keeping the magnet fully magnetized. When the charger is in service the magnet keeper is automatically disconnected, temporarily.

FORE Battery Chargers may be left in operation over night with the positive assurance that they will perform their duty as intended. No harm can result from accidentally failing to shut off charger when the battery is charged as low ampere rate charging is beneficial if not continued too long.

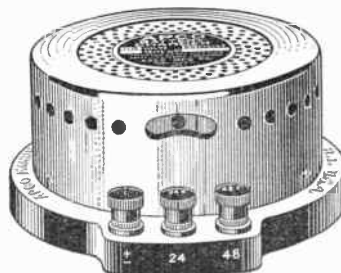
All binding posts are clearly marked for guidance in making connections.

"MASTER FORE" Battery Charger, complete with rubber covered battery leads\$18.50

APCO "A" AND "B" BATTERY CHARGERS

"A" Battery

"B" Battery



Price, each\$18.50

Price, each\$10.00

CELORON STANDARD RADIO PANELS AND TUBES

CELORON "BAKELITE" RADIO INSULATION

Celoron, a "Bakelite" product, is particularly adapted for use in Radio Apparatus because (1) of its high surface and volume resistivity; (2) its high dielectric strength; (3) its low dielectric losses. It is a laminated phenol material, bonded with Condensite and is used by many of the leading manufacturers of radio equipment, the U. S. Signal Corps and Navy Department Bureau of Engineering.

Unlike rubber and similar compositions, it is unaffected by atmospheric conditions, and will not warp. It is impervious to oil, water or heat and resists the accumulation of dampness on its surface. It machines and drills easily, and cuts clean without blistering and feathering.

CELORON "BAKELITE" PANELS

Black or Mahogany polished finish



Panel No.	Size	Price each
2	7x10x1/8"	\$1.09
3	7x12x1/8"	1.31
4	7x14x3/16"	2.30
5	7x18x3/16"	2.95
6	7x21x3/16"	3.45
7	7x24x3/16"	3.94
8	7x26x3/16"	4.25
9	7x30x3/16"	4.75
10	8x40x3/16"	7.35

Special sizes used locally will be also carried in stock.
Full sheets, approx. 35x45"\$2.00 lb.

1/8" sheets weigh approx. 8½ lbs.
3/16" sheets weigh approx. 14 lbs.
1/4" sheets weigh approx. 18 lbs.

Special cut to size panels with smooth edges figure as follows:

1/8" thick\$.01½ sq. inch
3/16" thick02½ sq. inch
1/4" thick03 sq. inch

When panel figures less than 100 sq. in. add \$.01 per sq. in. to above prices.

CELORON "BAKELITE" TUBES



CELORON TUBING

May be furnished in either Black or Natural Brown color. Black color is used most extensively and stocked in the following sizes, 1/16" wall.

Outside Diameter	Length					
	2"	3"	4"	5"	6"	7"
2 "	\$.26	\$.38	\$.48	\$.58	\$.70	\$.82
2½"	.30	.46	.60	.70	.88	1.04
2¾"	.34	.48	.62	.74	.92	1.08
3 "	.35	.50	.64	.82	.96	1.12
3¼"	.36	.51	.68	.84	1.02	1.16
3½"	.38	.56	.72	.88	1.06	1.24
3¾"	.40	.58	.74	.90	1.10	1.28
4 "	.42	.62	.78	.94	1.16	1.32
4½"	.44	.68	.84	.98	1.22	1.40

Tubes may be cut to any special length, and prices may be had on application. Special sizes other than above require considerable time to obtain from mill.

VULCAWOOD RADIO CABINETS

Vulcawood Radio Cabinets were developed to meet the growing demand for a really high grade radio cabinet. The material used is Vulcawood, 3/16" thick, a patented combination of vulcanized fibre and celoron (bakelite).



STYLE B VULCAWOOD CABINET

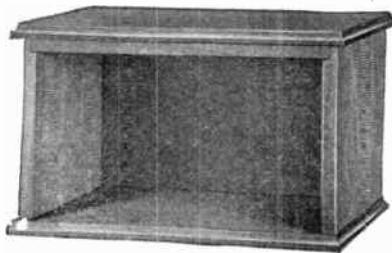
Cabinets are manufactured in the following standard sizes only.

Height	Length	Depth Inside	Without Panels		With Panels
			Each	Each	
7	x 10	x 7"	\$8.00		
7	x 12	x 7"	8.50		\$10.40
7	x 14	x 7"	9.00		12.40
7	x 18	x 7"	9.50		14.10
7	x 21	x 7"	10.50		15.60
7	x 24	x 7"	11.00		17.10
7	x 26	x 7"	12.00		18.45
7	x 30	x 7"	16.00		

When ordering cabinets please specify the following:

1. Size, height, length, depth.
2. With or without panels.
3. Finish desired—Mahogany and Oak.
4. Panel finish desired—Black or Mahogany.

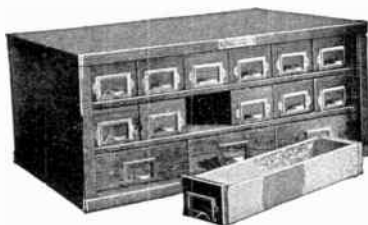
PANELS AND CABINETS



KNOCK DOWN CABINETS

7 x 9	\$1.35	7 x 21.....	\$2.55
7 x 10.....	1.45	7 x 24.....	2.85
7 x 12.....	1.55	7 x 26.....	3.10
7 x 14.....	1.75	7 x 28.....	3.30
7 x 15.....	2.10	7 x 30.....	3.65
7 x 18.....	2.30	8 x 12.....	1.75

STEVENS RADIO WORK CHESTS



Model 3009 Radio Work Chest

It has 9 drawers 6x2x12 inches. The overall size of cabinet is 19½x8½x12¾ inches.

Solid oak exposure; steel back; drawer bodies formed from one piece of galvanized sheet-steel. Each drawer has combination card frame and pull.

Price, each\$9.50

Model 3010 Radio Work Chest

It contains 6 drawers 3x2x12 inches, 3 drawers 6x2x12 inches, 1 drawer 17¼x2x12 inches. The overall size of cabinet is 19½x8½x12¾ inches.

Solid oak exposure; steel back; drawer bodies formed from one piece of galvanized sheet-steel. Each drawer has combination card frame and pull.

Price, each\$10.00

Model 3015 Radio Work Chest

It contains 12 drawers 3x2x12 inches, and 3 drawers 6x2x12 inches. The overall size of the cabinet is 19½x8½x12¾ inches.

Solid oak exposure; steel back; drawer bodies formed from one piece of galvanized sheet-steel. Each drawer has combination card frame and pull.

Price, each\$11.00

Model 3018 Radio Work Chest

It contains 18 drawers 3x2x12 inches. The overall size of cabinet is 19½x8½x12¾ inches.

Solid oak exposure; steel back; drawer bodies formed from one piece of galvanized sheet-steel. Each drawer has combination card frame and pull.

Price, each\$12.50



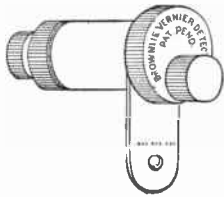
CELESTO HARD RUBBER RADIO PANELS

Size	3/16" Thickness	Black	Mahogany
6 x 7		\$.63	\$.7350
6 x 9 .....		.81	.9450
6 x 10 .....		.90	1.05
6 x 12		1.08	1.26
6 x 14		1.26	1.47
6 x 18		1.62	1.89
6 x 21		1.89	2.2050
6 x 24		2.16	2.52
6 x 26		2.34	2.73
6 x 28		2.52	2.94
6 x 30		2.70	3.15
6 x 40		3.60	4.20
6 x 48		4.32	5.04
7 x 9 .....		.9450	1.1025
7 x 10		1.05	1.2250
7 x 12		1.26	1.47
7 x 14		1.47	1.7150
7 x 18		1.89	2.2050
7 x 21		2.2050	2.5725
7 x 24		2.52	2.94
7 x 26		2.73	3.1850
7 x 28		2.94	3.43
7 x 30		3.15	3.6750
7 x 40		4.20	4.90
7 x 48		5.04	5.88
8 x 12		1.44	1.68
8 x 21		2.52	2.94
8 x 24		2.88	3.36
8 x 26		3.12	3.64
8 x 40		4.80	5.60
8 x 48		5.76	6.72
9 x 14		1.89	2.2050
9 x 28		3.78	4.41
10½x36		5.67	6.6150

	¼" Thickness	
7 x 40	6.30	7.00
8 x 40	7.20	8.00
10½x36	8.5050	9.45

CRYSTALS, CRYSTAL DETECTORS

BROWNLIE VERNIER DETECTOR



Adjustable with Automatic "Spot Finder" and Vernier Contact Regulator.

Brownlie Vernier Detector gives the final adjustment necessary for perfect Reflex or Crystal reception. It is stable against mechanical and electrical disturbances and stays in adjustment indefinitely. The contact does not scrape or scratch the sensitive crystal element; allows exacting pressure requirements and gives maximum rectification.

Price, complete\$2.00

RENEWAL CUP FOR BROWNLIE VERNIER DETECTOR



Guaranteed

Price\$.75

BROWNLIE CRYSTAL



"Reflex Special" Quick Contact Rectifier Guaranteed
The Acme Apparatus Co. says: "Prevent distortion and howling by using a BROWNLIE CRYSTAL in REFLEX SETS."

Price\$1.00

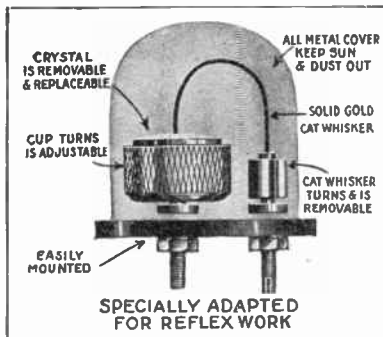


Genuine
Miller-B-Metal

CRYSTALS

Price, each\$.50

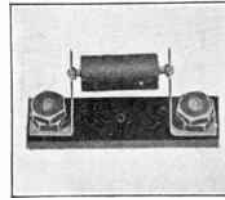
"LINCOLN" DETECTOR



"Kills Reflex Troubles"

Price, each\$1.50

THE KEY TO THE AIR PERMANENT CARTRIDGE DETECTOR



A Super-Sensitive Detector of entirely new design requiring absolutely no adjustments. Always sensitive, no rolling, no changing, no slipping, jar in no way affects it. Take out your catwhiskers and crystals and put this cartridge in their place. Then tune in. Satisfactory results are guaranteed you. Guaranteed to be the best rectifying agent you can buy. Superior in tone to a vacuum tube detector. More volume and better, louder signals than is possible with an open crystal detector. Dust-proof, moisture-proof, jar-proof, the first ones made (two years ago) are still giving good service. Full directions and 15 diagrams of circuits packed with each detector.

Price, complete with holder\$1.00

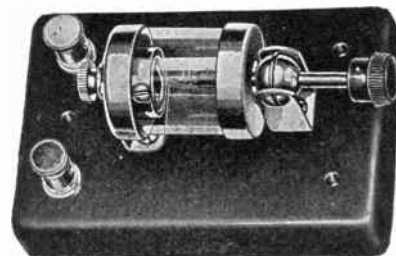
FRESHMAN DOUBLE ADJUSTABLE CRYSTAL DETECTOR



For Base or Panel Mount.

Price, each\$1.50

AEROVOX DETECTOR



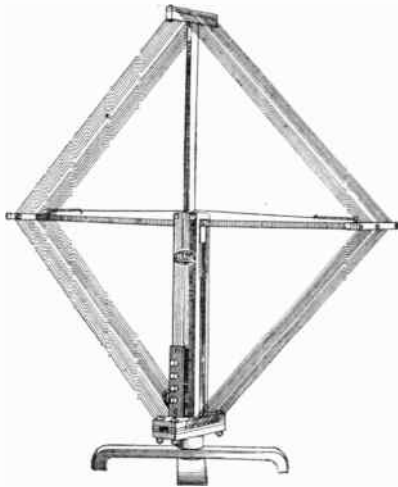
Price, each\$1.50

CRYSTALS



Selected Tested\$.15

LOOP ANTENNA

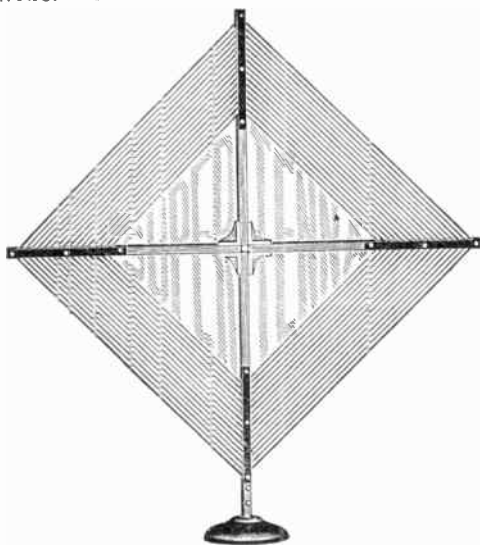


THE NIFTY LOOP

The Nifty Loop is constructed for use where first quality appearance and efficiency is required. To obtain this the Nifty Loop must be made of the highest grade of material and workmanship possible and all of this can be found in the Nifty Loop.

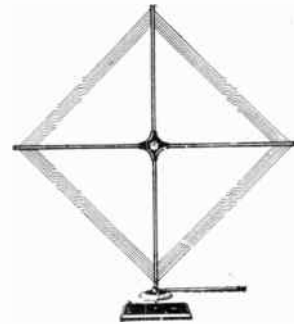
The collapsible feature of the Nifty Loop is different than that of other loops and because of it not having pivots to wear out it is sure to last longer.

The frame and base of the Nifty Loop is made of solid mahogany beautifully finished. The wire is silk covered Litz, made up of 60 strands of enameled copper wire. Two taps are provided, one 85 ft. and the other 113 ft. The frame pivots on the base and the loop stands 33" high and 31" wide. Price \$18.00



SUPER-TENNA COLLAPSIBLE LOOP

Of high grade material and construction all through. Readily portable (Litz wire).
Price, each \$5.00



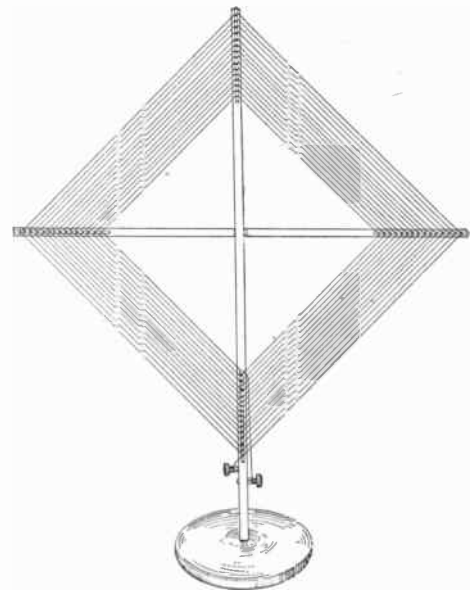
DUO-SPIRAL LOOP

The Loop Aerial has come into general use because it provides super-selectivity, freedom from static and makes any outfit readily portable.

Duo-Spiral construction, as its name implies, consists of a continuous inductance on both sides of the frame. Although only 24 inches square, it contains 90 feet of green silk covered wire. Two arms of the loop are forced outward by springs, thus causing the winding to remain taut and trim.

An extension handle fastened to an indicating dial provides convenient and precise adjustment. A swivel connection allows the loop to be lifted instantly from the base without removal of connecting wires.

Duo-Spiral Loop, 24" \$8.50



LOOP ANTENNA

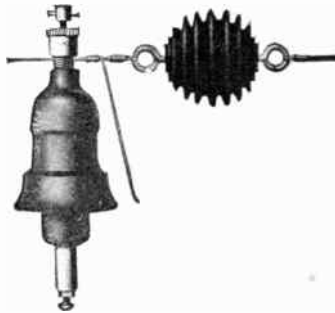
Comes knocked down unwired. May be wired with any type wire. Satisfactory for experimental purposes.

Price, each \$3.00

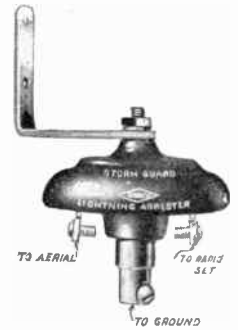
LIGHTNING ARRESTERS, SWITCHES, INSULATORS, LEAD-INS



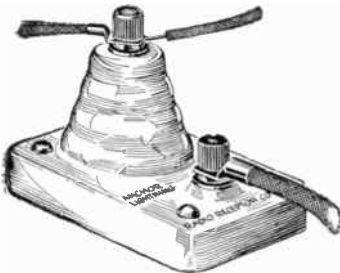
BRACH STORM KING
Price\$1.00



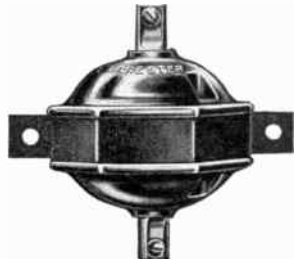
BRACH OUTDOOR Suspended Model
Price\$2.50



BRACH STORM GUARD
Price\$1.50



ANCHOR ARRESTER
Each\$1.50



KEYSTONE ARRESTER
Each\$1.50



RADIO LIGHTNING SWITCH
Price, each\$2.80

Single Pole, Double Throw, Porcelain Base Set Switch
Price\$.50

INSULATORS

ELECTROSE COMPOSITION STRAINS

	Price
No. 4500—Ball Type	\$.30
No. 4501—Short Barrel .....	.15
No. 4502—4 in. Barrel Type .....	.45



No. 4500

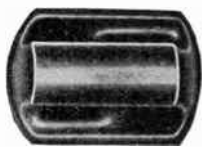


No. 4501



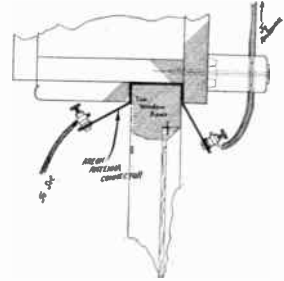
No. 4502

PORCELAIN STRAIN



Price, each	\$.08
Nail it Knobs Porcelain Insulators	\$.05
3 inch Porcelain Tube Insulators .....	.05
6 inch Porcelain Tube Insulators .....	.10
12 inch Porcelain Tube Insulators .....	.20
Screw Eye Porcelain Insulators .....	.05

AREON ANTENNA CONNECTOR



BORE NO HOLES

They fit over, under or between sashes for Antenna, and back of doors for Ground Wires. Windows and doors can be opened and closed at will, without injury to paint work or connectors.

Antennas can be shifted from one window to another without need of boring holes.

Areon Connectors are thoroughly insulated, are impervious to moisture, and prevent losses of signal strength during wet seasons.

Price\$.25 each

THE NIFTY LEAD-IN



The Nifty Lead-In was designed especially to be pliable, weatherproof and thin enough to go into a narrow space. No drilling necessary, and if placed onto the upper window pane it is practically out of sight.
Price\$.30

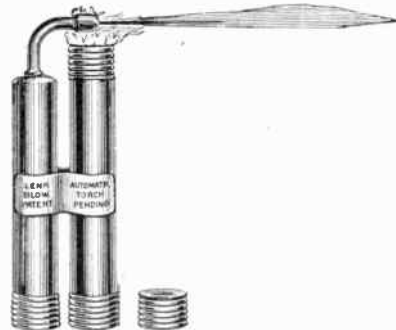
SOLDER, SOLDERING IRONS, ETC.

THE SPARTAN TORCH



A full sized alcohol blow torch complete with ebony-finished mouthpiece and rubber tube.
 The mechanic's choice.
 Uses denatured alcohol.
 Produces 1200° needle-point flame.
 For long, continued service.
 Price, each\$2.00

LENK AUTOMATIC BLOW TORCH



No pumping, no priming, blows itself. Flame heat 1400°. A practical torch for electricians, mechanics, motorists. Made of brass, heavily nicked and polished. Non-leakable.
 Uses denatured alcohol.
 Size 5½ x 2 x ⅞ inches.
 Price, each\$1.50

KESTER ROSIN CORE SOLDER



Kester Rosin Core Solder, 5 lb. box.....\$5.00
 Kester Rosin Core Solder, 1 lb. box..... 1.00
 Kester Rosin Core Solder, per 18 inch stick..... .05



Kester Rosin Core Solder, 1 lb. spool..... 1.00

KESTER RADIO SOLDER

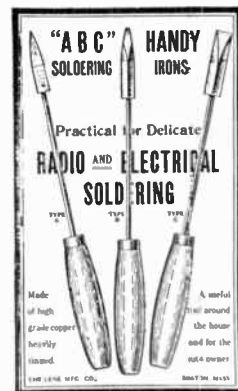


Price, per can\$.25

ELECTRIC RADIO SOLDERING IRONS



White Beauty, each\$2.00
 Electrahot Regular, each 2.50
 Electrahot ⅜" Tip, each 3.00



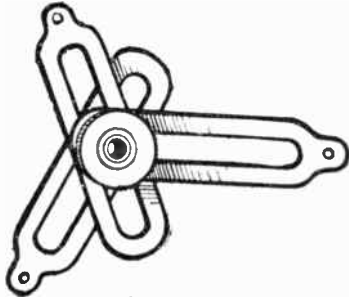
Price, each\$.25



A pure metal solder in paste form complete. Ready for instant use. No flux required.
 Price, each\$.25

MISCELLANEOUS

UNIVERSAL TEMPLATE



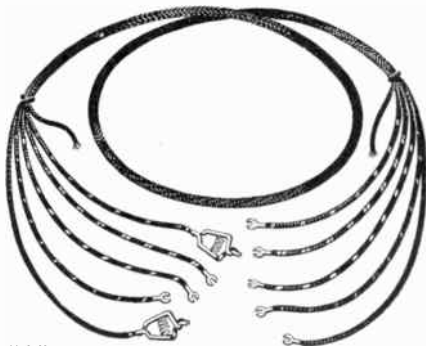
This tool is a precision instrument, designed especially as a layout tool for the purpose of determining the exact position of the center of holes that are to be duplicated in panels, baseboards, etc.

The hardened steel points are placed into the drill holes of the object you wish to mount and are then transferred to the panel or base board, by light taps of a hammer

For locating the exact position of the drill holes on condensers, rheostats, etc., in relation to their shafts, slip the Universal Template over the shaft into the drill holes and fasten the center screw. Transfer the center holes to the panel, accurately and easily after the shaft hole is drilled, by slipping the shaft through the hole and the universal template over the shaft.

Holes for switch taps, binding posts, transformers, sockets, etc., for either baseboard or panel are located accurately and easily with the Universal Template. The set builder quickly becomes accustomed to the many uses and saves hours in needless measurements, fuss and worry.

Price, each.....\$1.00



5 Wire "A" and "B" Battery Cable assembled with Universal Battery Clips

Price, each\$1.50

SOLDERLESS GROUND CLAMPS



Price, each\$.15

LENZ GROUND HOG



RAJAH SOLDERLESS SNAP TERMINALS

For Aerial, Ground and Battery Connections



Instantaneous in Operation— Positive Contact



Solderless Attachment to Wire

Just push removable part, attached to wire, on the base stud and it snaps into place making a positive electrical connection.

To remove, just pull it off; no screws to bother with; no springs to bruise the fingers.

A positive electrical connection in ten seconds, without solder or tools, that cannot pull out or shake loose and is as easy to remove as it is to assemble to the cable.

Base studs secured by No. 8-32 screws and will fit all "B" batteries with screw posts.

Rajah Snap Terminals allow instantaneous change in place voltage with a secure connection, better than any switch.

No owner of a radio set who has seen or used a Rajah Snap Terminal will ever use any other style of binding post.

Complete	\$.20
Snap only .....	.15
Stud only .....	.06

FRICITION TAPE

Black Friction Tape, 1 oz. rolls, each.....	\$.05
Black Friction Tape, 2 oz. rolls, each.....	.10
Black Friction Tape, 4 oz. rolls, each.....	.20
Black Friction Tape, 8 oz. rolls, each.....	.40

MISCELLANEOUS

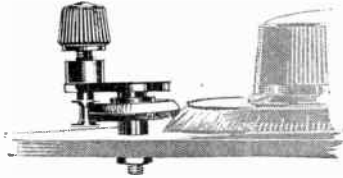
THE POLYPLUG



Satisfies the growing demand for a phone plug that will eliminate the countless inconveniences attached to the operation of the screw type now on the market. Just push phone tips into openings of plug criss-crossing through tension slot.

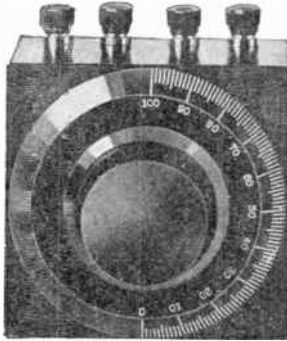
Price\$.75

TINY TURN VERNIER ADJUSTER



Price, each\$.75

COSMOPOLITAN PHUSIFORMER



RADIO FREQUENCY UNIT

As a Wave Trap the Cosmopolitan Phusiformer is superior to any now in use when used with any Reliable Low Loss condenser.

Price\$9.50

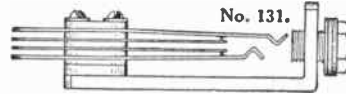
THE UNIVERNIER



The UNIVERNIER provides ultra fine vernier adjustment for ordinary variable condensers, variometers, variocouplers, potentiometers, and rheostats. It is substituted on the shafts of these instruments for the usual knob or dial and may be applied in a few minutes without disturbing the set.

Black Univernier with Silver Plated Dial. Price each\$1.25
 Mahogany Univernier with Gold Plated Dial. Price each\$1.50

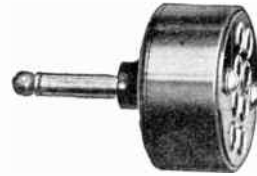
SPECIAL JACK



Jack body hard brass, all edges ground smooth, contact leaves German silver, contact points silver, insulation Bakelite.

Single Circuit, price\$.50
 Double Circuit, price70

MURDOCK MULTIPLE PHONE PLUG AND JACK



"Murdock Radio" product, made to attach as many as four pairs of phones to one unit. This arrangement eliminates the expense of buying additional plugs and jacks or other accessories now in use. The jack is arranged to allow either series or multiple series connections of head phones and loudspeaker.

Price, each\$1.00

SINGLE PHON-O-DAPTER



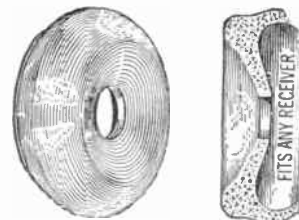
Price\$.50

DOUBLE PHON-O-DAPTER



Price\$.75

PHONE CUSHIONS

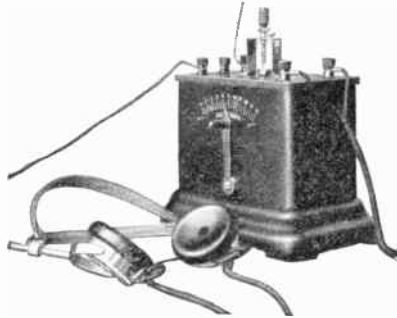


Sponge Rubber

Price, per pair\$.50

MISCELLANEOUS

FEDERAL JR. CRYSTAL BROADCAST RECEIVING SET



The **FEDERAL JR.** is, in itself, a complete receiving set requiring nothing more than the aerial wires for its operation. It is most ruggedly constructed, beautiful in appearance, simple in its operation and absolutely reliable. No batteries are required for its operation, nor are replacements of any kind ever required.

The Receiver when used with the proper antenna, is capable of receiving signals from radio telephone broadcasting and amateur stations within a range of 15 to 30 miles and of receiving ship and shore radio stations within a range of 100 to 500 miles, depending upon the height of the antenna and the power of the transmitting station.

Federal Jr. Set, Price (set only)\$10.00
 Federal Jr. Set, Price with Pair Tower Phones..... 12.95

CITIZENS CALL BOOK

CITIZENS RADIO CALL BOOK

A Complete
 Radio Cyclopaedia

This
 Issue Contains

Up-to-Date List of All Broadcasting Stations showing Schedules, New Wave Length and Kilocycles, 4 Large Radio Maps, Distance Chart, Log Sheets, "Hook up" Station with Construction and Operating Data on Neutrodane Four Circuit Tuner, Reflexes and others. Articles by Paul

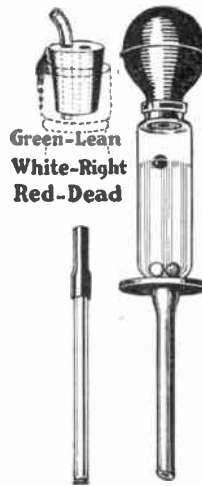
Godlev, I. M. Cuckaday and Others, American Radio Relay League Station, American, Canadian, English, French and Australian Amateur Transmitting Stations, Complete List of All Government Radio Stations, Kilocycle Meter Table accompanied by Explanatory Article & X

50 Cents in U. S. A.

FOR FOREIGN 65 CENTS

COMPILED FROM OFFICIAL SOURCES

CITIZENS RADIO SERVICE BUREAU, INCORPORATED
 308 SOUTH LORETTA STREET
 CHICAGO, ILLINOIS
 U. S. A.



THE CHASLYN BALL BATTERY TESTER

The Balls tell the story of your battery.
 Float all three charged fully.
 Sinks the White charge still right.
 Sinks the Green charge is lean.
 Sinks the Red charge is dead.

Price, \$1.00

HYDROMETERS

	Price each
Breaknot	\$1.00
Perfection	1.00
WorkRite .....	.75
WorkRite "B" Battery Hydrometer .....	.75

VOLT X VARIABLE GRID LEAK



Price, each\$1.00

STRAND LEAK

STRAND SUPERIOR

UNIVERSAL

VARIABLE GRID LEAK

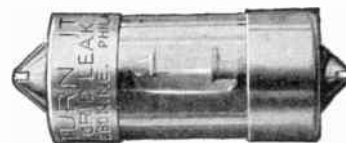
FOR PANEL

WITH CONDENSER

\$1.25

OR TABLE

TURN-IT ADJUSTABLE GRID LEAK



Price\$1.00

RUBBER BATTERY MATS

Price, each\$1.00

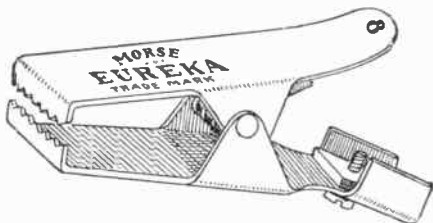
MISCELLANEOUS



No. 4 Spring Terminal, each \$.10
STORAGE BATTERY TERMINALS
 Nos. 5 and 8 Lead Galvanized



Note the wire connections—nut cannot work loose.
 No. 5, opens 1 inch\$.20



No. 8, opens 1 1/4 inch\$.25
 Easily attached to any wire from No. 10 to No. 22
 and holds same as well as if soldered.

CONTACT POINTS WITH NUTS



Contact Points, per 100\$1.50
 Switch Stops, per 100 1.50

SWITCH ARMS



With small or large knob\$.25

DETECTOR



Carter Name Plates
 Fit under jack lock
 nut; marked
 "Detector,"
 "Telephone,"
 "1 Stage,"
 "2 Stage,"
 "3 Stage,"
 "4 Stage"
 Price..... 5c ea.
 Standard Package: 50

Seven styles—"Detector," "1st stage," "2nd stage,"
 "3rd stage," "Telephone," "Loudspeaker," "Radio."
 Price, each\$.05

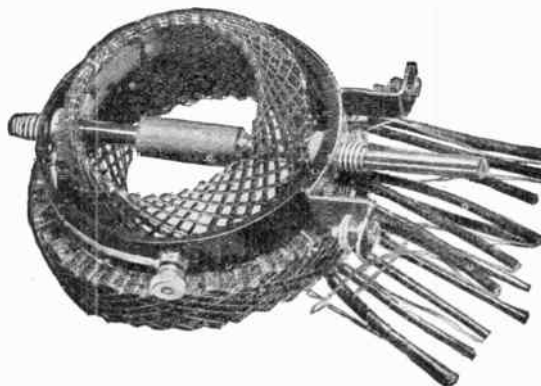
BRISTOL POWER AMPLIFIER



This One Stage Power Amplifier provides a convenient unit which gives the necessary additional electrical energy required for satisfactory operation of a Loudspeaker.

Price\$25.00

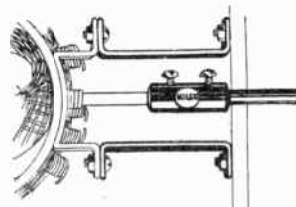
HILCO VARIOCOUPLER



The HILCO Type E Variocoupler contains a primary and secondary winding of the HILCO Lattice Banked Type and is ideal for use in single, two or three circuit tuning systems. The primary winding is so tapped as to give very close adjustments to wavelengths of 150 to 600 meters. The position of the secondary winding makes this instrument very selective, sharp tuning and its coupling is variable through a wide range.

Price\$7.00

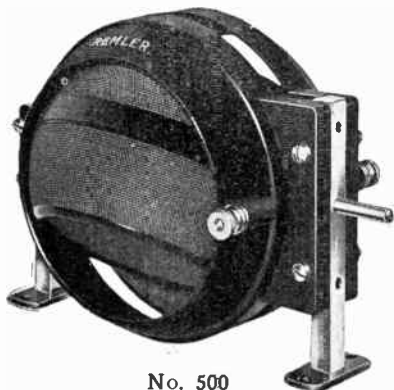
HILCO PANEL EXTENSIONS



Eliminates Possible Body Capacity

Price, each\$.75

MISCELLANEOUS

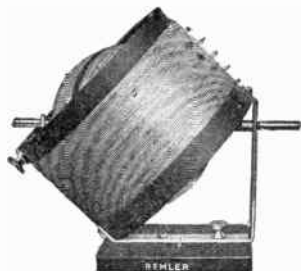


No. 500

REMLER MOLDED BAKELITE VARIOMETER Type 500

Even without the reputation of Remler behind them, Remler Molded Bakelite Variometers would instantly appeal to the buyer of wireless equipment as they are strictly commercial grade apparatus. In electrical and mechanical design—in accurate construction—and in uniform appearance, they are without equal. The inductance range is 50 to 1160 micro henries. When used with Remler Variocoupler the wave length range is approximately 175 to 700 meters.

Remler Molded Bakelite Variometer—Type 500 \$7.50



No. 503

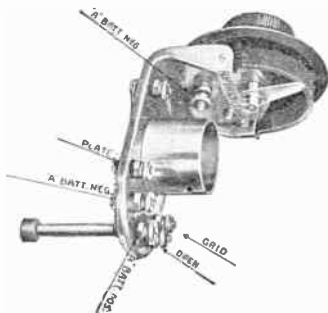
REMLER 180 DEGREE VARIOCOUPLER Types 503 and 504

The Remler Variocoupler has two original features. First—The mounting of the rotor allows 180 degrees instead of 90 degrees rotation between minimum and maximum coupling. This feature is indispensable for best results in c. w. reception and in eliminating spark interference when receiving telephone broadcast signals. Second—The coupler is mounted on its base in such a manner that there will be practically no inductive coupling between the primary and the windings of a Remler Variometer used in the same set. This feature makes possible the compact mounting of parts without sacrifice of tuning efficiency.

Remler 180° Variocoupler, Type 503 \$4.50

SUPERADIO UNITS

	Price each
Audio Frequency Unit	\$7.00
Radio Frequency Unit	6.50
Detector Unit	2.50



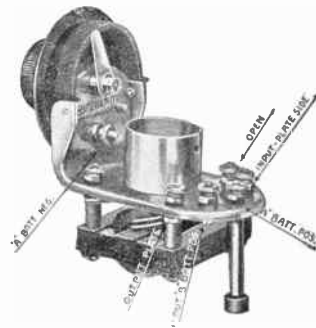
Easy to wire, only five connections.
Very compact, takes less room than the usual combination.

Grounded metal frame of brass, heavily nicked and polished.

Contact members of phosphor bronze.

Insulation is of highest-grade hard rubber.

Rheostat winding aged to prevent change in resistance.



Shell type transformer, ratio 4 to 1.
Specially built moisture-proof coil, no broken windings or leads.

Support leg tipped with hard rubber makes a very rigid assembly.

This construction permits of extremely short leads,

the grid lead is less than an inch long. The plate lead has been eliminated.

The appearance of this unit is unsurpassed, a set built of these units cannot be duplicated in appearance.

The same unit less the transformer is used as a detector unit.

BATTERY METERS

	Price each
No. 101—Ammeter, 0-35 Amperes	\$.75
No. 206—Voltmeter, 0-50 Volts	1.00
No. 103—Volt-Ammeter, 0-10 Volts, 0-35 Amp.	1.00
No. 209—Volt-Ammeter, 0-50 Volts, 0-50 Amp.	1.50



List of Radio Stations of United States, Canada, Cuba, France and Great Britain

- KDKA, E. Pittsburgh, Pa. Westinghouse E. & Mfg. Co.
 KDPM, Cleveland, O., Westinghouse Elec. & Mfg. Co.
 KDPT, San Diego, Calif. Southern Elec. Co.
 KDYL, Salt Lake City, Utah. Newhouse Hotel.
 KDYM, San Diego, Calif. Savoy Theatre.
 KDYQ, Portland, Ore. Oregon Inst. of Technology.
 KDYW, Phoenix, Ariz. Smith, Hughes & Co.
 KDYX, Honolulu, Hawaii. Star Bulletin.
 KDZB, Bakersfield, Calif. Frank E. Siefert.
 KDZE, Seattle, Wash. Rhodes Co.
 KDZF, Los Angeles, Calif. Auto. Club of So. Calif.
 KDZI, Wenatchee, Wash. Electric Supply Co.
 KDZQ, Denver, Colo. Nichols Academy of Dancing.
 KDZR, Bellingham, Wash. Bellingham Pub. Co.
 KFAD, Phoenix, Ariz. McArthur Bros. Mercantile Co.
 KFAE, Pullman, Wash. State College of Wash.
 KFAF, Denver, Colo. Western Radio Corp.
 KFAJ, Boulder, Colo. Univ. of Colo.
 KFAN, Moscow, Idaho. The Elec. Shop.
 KFAR, Hollywood, Calif. Studio Lighting Service Co.
 KFAU, Boise, Idaho. Boise High School.
 KFAW, Santa Ana, Calif. Radio Den.
 KFAV, Medford, Ore. Virgin's Radio Service.
 KFBB, Havre, Mont. F. A. Buttrey & Co.
 KFBC, San Diego, Calif. W. K. Azbill.
 KFBE, San Luis Obispo, Calif. R. H. Horn.
 KFBG, Tacoma, Wash. First Presbyterian Church.
 KFBK, Sacramento, Calif. Kimball-Upson Co.
 KFBM, Everett, Wash. Leese Bros.
 KFBP, Trinidad, Colo. Trin. G. & E. Sup. & Ch. News.
 KFBV, Laramie, Wyo. The Cathedral.
 KFCA, Phoenix, Ariz. Nielsen Radio Supply Co.
 KFCF, Walla Walla, Wash. Frank A. Moore.
 KFCH, Billings, Mont. Elec. Service Station, Inc.
 KFCL, Los Angeles, Calif. Leslie E. Rice.
 KFDM, Richmond, Calif. Richmond Radio Shop.
 KFDP, Ogden, Utah. Ralph W. Flygare.
 KFDR, Houston, Texas. Fred Mahaffey, Jr.
 KFDS, Le Mars, Iowa. Western Union College.
 KFCE, Omaha, Neb. Omaha Central High School.
 KFDD, Baker, Ore. Adler's Music Store.
 KFDE, Boise, Idaho. St. Michael's Cathedral.
 KFDF, Tucson, Ariz. University of Arizona.
 KFDE, Corvallis, Ore. Oregon Agricultural College.
 KFDE, Denver, Colo. Knight-Campbell Music Co.
 KFDE, Bozeman, Mont. H. Everett Cutting.
 KFDR, York, Nebr. Bullock's Hardware & Sport. Gds.
 KFDV, Fayetteville, Ark. Gilbrech & Stinson.
 KFDX, Shreveport, La. First Baptist Church.
 KFDY, Brookings, S. D. State College.
 KFDZ, Minneapolis, Minn. Harry Q. Iverson.
 KFEC, Portland, Ore. Meier & Frank Company.
 KFEJ, Tacoma, Wash. Guy Greason.
 KFEL, Denver, Colo. Winner Radio Corp.
 KFEQ, Oak, Neb. J. L. Scroggin.
 KFER, Fort Dodge, Ia. Auto Electric Service Co.
 KFEV, Casper, Wyo. F. Thompson Radio Shop.
 KFEX, Minneapolis, Minn. Augsburg Seminary.
 KFEY, Kellogg, Idaho. Bunker Hill & Sul. M. & C. Co.
 KFEZ, St. Louis, Mo. Asso. Eng. Societies of St. Louis.
 KFFB, Boise, Idaho. Jenkins Furniture Co.
 KFFE, Pendleton, Ore. Eastern Oregon Radio Co.
 KFFO, Hillsboro, Ore. E. H. Smith.
 KFFP, Moberly, Mo. First Baptist Church.
 KFFQ, Colorado Springs, Colo. Marksheffel Motor Co.
 KFFR, Sparks, Nev. Nevada State Journal.
 KFFV, Lamon, Iowa. Graceland College.
 KFFX, Omaha, Neb. McGraw Company.
 KFFY, Alexandria, La. Pincus & Murphey.
 KFFZ, Dallas, Texas. Al. G. Barnes Amusement Co.
 KFGC, Baton Rouge, La. Louisiana State University.
 KFGD, Chickasha, Okla. Chickasha Radio & Elec. Co.
 KFGH, Stanford Univ., Calif. Leland Stanford Univ.
 KFGJ, St. Louis, Mo. Missouri Nat. Guard, 138th Inf.
 KFGM, Arlington, Ore. Snell & Irby.
 KFGN, Boone, Iowa. Crary Hardware Company.
 KFGV, Utica, Neb. Heidebreder Radio Supply Co.
 KFGX, Orange, Tex. First Presbyterian Church.
 KFGZ, Berrien Springs, Mich. Emmanuel Mis. Col.
 KFHA, Gunnison, Colo. Western State College.
 KFHB, Hood River, Ore. Rialto Theatre.
 KFHD, St. Joseph, Mo. Utz Radio & Elec. Co.
 KFHE, Shreveport, La. Central Christian Church.
 KFHH, Neah Bay, Wash. Ambrose A. McCue.
 KFHH, Santa Barbara, Calif. Fallon & Co.
 KFHR, Seattle, Wash. Star Elec. & Radio Co.
 KFHS, Lihue, Hawaii. Clifford J. Dow.
 KFHX, Hutchinson, Kan. Robert W. Nelson.
 KFI, Los Angeles, Calif. Earle C. Anthony, Inc.
 KFID, Iola, Kan. Ross Arbuckle's Garage.
 KFIF, Portland, Ore. Benson Polytechnic Institute.
 KFIL, Louisburg, Kan. Windisch Elec. Farm Eq. Co.
 KFIO, Spokane, Wash. North Central High School.
 KFIQ, Yakima, Wash. First Methodist Church.
 KFIU, Juneau, Alaska. Alaska El. Light & Pow. Co.
 KFIV, Independence, Mo. R. Church of L. Day S.
 KFIZ, Fond du Lac, Wis. Dly. Com. & O. A. Heulsman.
 KFJB, Marshalltown, Iowa. Marshall Electrical Co.
 KFJC, Seattle, Wash. Seattle Post Intelligencer.
 KFJF, Okla. City, Okla. National Radio Mfg. Co.
 KFJI, Astoria, Ore. Liberty Theatre.
 KFJK, Bristow, Okla. Delano Radio and Electric Co.
 KFJL, Ottumwa, Iowa. Hardsag Manufacturing Co.
 KFJM, Grand Forks, N. Dak. University of N. Dakota.
 KFJN, Grand Forks, N. Dak. Electric Construction Co.
 KFJR, Stevensville, Mont. Ashley C. Dixon & Son.
 KFJV, Dexter, Iowa. Thomas H. Warren.
 KFJW, Towanda, Kan. Le Grand Radio Co.
 KFJX, Cedar Falls, Iowa. Iowa State Teachers' Col.
 KFJY, Fort Dodge, Iowa. Tunwall Radio Co.
 KFJZ, Fort Worth, Tex. Tex. Nat. Guard, 112th Cav.
 KFKA, Greeley, Colo. Colo. State Teachers' College.
 KFKB, Milford, Kan. Brinkley-Jones Hospital Asso.
 KFKA, Conway, Ark. Conway Radio Laboratories.
 KFKA, Butte, Mont. F. F. Gray.
 KFKA, Hastings, Neb. Westinghouse El. & Mfg. Co.
 KFKA, Colo. Springs, Colo. Nassour Bros. Radio Co.
 KFKA, Butte, Mont. Abner R. Willson.
 KFKA, Menominee, Mich. Signal Electric Mfg. Co.
 KFKA, Franklinton, La. Paul E. Greenlaw.
 KFKA, Denver, Colo. National Educational Service.
 KFKA, Salt Lake City, Utah. Erickson Radio Co.
 KFKA, Cedar Rapids, Iowa. Everette M. Foster.
 KFKA, Little Rock, Ark. Bizzell Radio Shop.
 KFKA, Albuquerque, N. M. Univ. of New Mexico.
 KFKA, San Benito, Tex. Rio Grande Radio Sup. House.
 KFKA, Rockford, Ill. A. T. Frykman.
 KFKA, Missoula, Mont. Missoula Electric Supply Co.
 KFKA, Galveston, Tex. George R. Clough.
 KFKA, Fargo, N. Dak. Fargo Radio Supply Co.
 KFKA, Atlantic, Iowa. Atlantic Automobile Co.
 KFKA, Little Rock, Ark. Christ. churches of Little Rock.
 KFKA, Fayetteville, Ark. University of Arkansas.
 KFKA, Sioux City, Iowa. Morningside College.
 KFKA, Duluth, Minn. Treimuth Department Store.
 KFKA, Minneapolis, Minn. George W. Young.

- KFMU, San Marcos, Tex. Stevens Bros.
 KFMW, Houghton, Mich. M. G. Sateren.
 KFMX, Northfield, Minn. Carleton College.
 KFMY, Long Beach, Calif. Boy Scouts of America.
 KFMZ, Roswell, N. M. Roswell Broadcasting Club.
 KFNC, Corsicana, Tex. Alonzon Monk, Jr.
 KFNF, Shenandoah, Iowa. Henry Field Seed Co.
 KFNG, Coldwater, Miss. Wooten's Radio Shop.
 KFNH, Springfield, Mo. State Teachers' College.
 KFNL, Warrensburg, Mo. Warrensburg Electric Shop.
 KFNL, Paso Robles, Calif. Radio Broadcast Association.
 KFNV, Santa Rosa, Calif. L. A. Drake.
 KFNX, Peabody, Kan. Peabody Radio Service.
 KFNY, Helena, Mont. Montana Phonograph Co.
 KFNZ, Burlingame, Calif. Royal Radio Co.
 KFOA, Seattle, Wash. Rhodes Company.
 KFOB, Minneapolis, Minn. Glenwood Technical Assoc.
 KFOC, Whittier, Calif. First Christian Church.
 KFOD, Wallace, Idaho. The Radio Shop.
 KFOF, Marshfield, Ore. Rohrer Electric Co.
 KFOH, Portland, Ore. Radio Bungalow.
 KFOJ, Moberly, Mo. Moberly High School Radio Club.
 KFOL, Marengo, Iowa. Leslie M. Schafbuch.
 KFON, Long Beach, Calif. Echophone Radio Shop.
 KFOO, Salt Lake City. Latter Day Saints University.
 KFOP, Dallas, Texas. Willson Construction Co.
 KFOQ, Galveston, Tex. Ora W. Chancellor.
 KFOR, David City, Neb. David City Tire & Electric Co.
 KFOT, Wichita, Kan. College Hill Radio Club.
 KFOU, Richmond, Calif. Hommel Manufacturing Co.
 KFOV, Sioux City, Iowa. Davis Electrical Corp.
 KFOX, Omaha, Neb. Technical High School.
 KFOY, St. Paul, Minn. Beacon Radio Service.
 KFOZ, Fort Smith, Ark. Leon Hudson Real Estate Co.
 KFPB, Seattle, Wash. Edwin J. Brown.
 KFPG, Los Angeles, Calif. Garretson & Dennis.
 KFPH, Salt Lake City, Utah. Howard C. Mailander.
 KFPL, Dublin, Tex. C. C. Baxter.
 KFPN, Greenville, Tex. New Furniture Co.
 KFPN, Jefferson City, Mo. Missouri Nat. Guard Hdq. Company, 70th Infantry Brigade.
 KFPO, Den., Colo. Colo. Nat. Guard, 45th Div. Tank Co.
 KFPP, Olympia, Wash. G. G. Radio & Elec. Shop.
 KFPQ, Denison, Tex. Clifford M. Esler.
 KFPR, Los Angeles, Calif. Los Angeles For. Dept.
 KFPs, Casper, Wyo. Carter A. Ross Motor Serv. Co.
 KFPV, San Francisco, Calif. Heintz & Kohimoos.
 KFPW, Carterville, Mo. St. Johns Church.
 KFPX, Pine Bluff, Ark. First Presbyterian Church.
 KFPY, Spokane, Wash. Symons Investment Co.
 KFQA, St. Louis, Mo. The Principia.
 KFQB, Fort Worth, Texas. Searchlight Publishing Co.
 KFQC, Taft, Calif. Kidd Brothers Radio Shop.
 KFQD, Anchorage, Alaska. Chovin Supply Co.
 KFQE, Colo. Sprgs., Colo. Dickenson-Henry Rad. Lab.
 KFQF, Minneapolis, Minn. Donald A. Boulton.
 KFQG, Los Angeles, Calif. Southern Calif. Radio Asso.
 KFQH, Hillsborough, Calif. Albert Sherman.
 KFQI, Culver City, Calif. Thomas H. Ince Corp.
 KFQJ, Oklahoma, Okla. Harbour-Longmire Co.
 KFQL, Fayette, Mo. Democrat Leader.
 KFQL, Muskogee, Okla. Okla. Free State Fair Asso.
 KFQM, Austin, Tex. Texas Highway Bulletin.
 KFQN, Portland, Ore. Third Baptist Church.
 KFQO, Russell, Kans. Meier Radio Shop.
 KFQP, Iowa City, Iowa. George S. Carson, Jr.
 KFQR, Oklahoma, Okla. Walter L. Ellis.
 KFQS, Manitou, Colo. Dickenson-Henry Radio Lab.
 KFQT, Denison, Tex. Tex. Nat. Guard, 36th Signal Co.
 KFQU, Holy City, Calif. W. Riker.
 KFQV, Omaha, Neb. Omaha Grain Exchange.
 KFQW, North Bend, Wash. C. F. Knierim Photo R. & E. Shop.
 KFQX, Seattle, Wash. Alfred M. Hubbard.
 KFSG, Los Angeles, Calif. Echo Park Evangelistic As.
- KGB, Tacoma, Wash. Tacoma Daily Ledger.
 KGG, Portland, Ore. Hallock & Watson Radio Ser.
 KGN, Portland, Ore. Northwestern Radio Mfg. Co.
 KGO, Oakland, Calif. General Electric Co.
 KGU, Honolulu, Hawaii. Marion A. Mulrony.
 KGW, Portland, Ore. Portland Morning Oregonian.
 KGY, Lacey, Wash. St. Martin's College.
 KHJ, Los Angeles, Calif. Times Mirror Co.
 KHQ, Seattle, Wash. Louis Wasmer.
 KJQ, Stockton, Calif. C. O. Gould.
 KJR, Seattle, Wash. Northwest Radio Service.
 KJS, Los Angeles, Calif. Bible Inst. of Los Angeles.
 KLS, Oakland, Calif. Warner Bros.
 KLX, Oakland, Calif. Tribune Pub. Co.
 KLZ, Denver, Colo. Reynolds Radio Co.
 KMJ, Fresno, Calif. San Joaquin Lt. & Pr. Corp.
 KMO, Tacoma, Wash. Love Elec. Co.
 KNT, Kukak Bay, Alaska. Walter Hemrich.
 KNV, Los Angeles, Calif. Radio Supply Co.
 KNX, Los Angeles, Calif. Elec. Lighting Supply Co.
 KOB, State Col., N. M. N. M. Col. Ag. & Mech. Arts.
 KOP, Detroit, Mich. Detroit Police Dept.
 KPO, San Francisco, Calif. Hale Bros.
 KQP, Hood River, Ore. Apple City Radio Club.
 KQV, Pittsburgh, Pa. Doubleday-Hill Elec. Co.
 KQW, San Jose, Calif. Chas. D. Herrold.
 KRE, Berkeley, Calif. Berkeley Daily Gazette.
 KSD, St. Louis, Mo. St. Louis Post-Dispatch.
 KSS, Long Beach, Calif. P. & D. Radio & Research Soc.
 KTW, Seattle, Wash. First Presbyterian Church.
 KUO, San Francisco, Calif. Examiner Ptg. Co.
 KUS, Los Angeles, Calif. City Dye Wks. & Laundry Co.
 KUY, El Monte, Calif. Coast Radio Co.
 KWG, Stockton, Calif. Portable Wireless Tel. Co.
 KWH, Los Angeles, Calif. Los Angeles Examiner.
 KXD, Modesto, Calif. Modesto Herald Pub. Co.
 KYQ, Honolulu, Hawaii. Electric Shop.
 KYW, Chicago, Ill. Westinghouse Elec. & Mfg. Co.
 KZM, Oakland, Calif. Preston D. Allen.
 KZN, Salt Lake City, Utah. Cape & Johnson.
 KZV, Wenatchee, Wash. Wenatchee Bat. & Motor Co.
- WAAB, New Orleans, La. Valdemar Jensen.
 WAAC, New Orleans, La. Tulane Univ.
 WAAD, Cincinnati, O. Ohio Mechanics Inst.
 WAAF, Chicago, Ill. Chicago Daily Drivers Journal.
 WAAM, Newark, N. J. I. R. Nelson Co.
 WAAN, Columbia, Mo. Univ. of Missouri.
 WAAW, Omaha, Neb. Omaha Grain Exchange.
 WABA, Lake Forest, Ill. Lake Forest College.
 WABB, Harrisburg, Pa. Harrisburg Sporting Gds. Co.
 WABD, Dayton, Ohio. Parker High School.
 WABE, Washington, D. C. Young Men's Chris. Asso.
 WABG, Jacksonville, Fla. Arnold Edwards Piano Co.
 WABH, Sandusky, Ohio. Lake Shore Tire Co.
 WABI, Bangor, Me. Bangor Railway & Electric Co.
 WABK, Worcester, Mass. First Baptist Church.
 WABL, Storrs, Conn. Connecticut Agricultural Col.
 WABM, Saginaw, Mich. F. E. Doherty A. & R. Eq. Co.
 WABN, La Crosse, Wis. Ott Radio, Inc.
 WABO, Rochester, N. Y. Lake Ave. Baptist Church.
 WABP, Dover, Ohio. Robert F. Weinig.
 WABQ, Haverford, Pa. Haverford Col. Radio Club.
 WABR, Toledo, Ohio. Scott High School.
 WABS, Newark, N. J. Essex Manufacturing Co.
 WABT, Washington, Pa. Holiday-Hall.
 WABU, Camden, N. J. Victor Talking Machine Co.
 WABV, Nashville, Tenn. John H. DeWitt.
 WABW, Wooster, Ohio. College of Wooster.
 WABX, Mt. Clemens, Mich. (near). Henry B. Joy.
 WABY, Philadelphia, Pa. John Magaldi, Jr.
 WABZ, New Orleans, La. Coliseum Place Bap. Church.
 WBAA, West Lafayette, Ind. Purdue University.
 WBAD, Minneapolis, Minn. Sterling Electric Co.
 WBAH, Minneapolis, Minn. The Dayton Co.

- WBAN**, Paterson, N. J. Wireless Phone Corp.
WBAO, Decatur, Ill. James Milliken University.
WBAP, Fort Worth, Tex. Wortham-Carter Pub. Co.
WBAV, Columbus, Ohio. Erner & Hopkins Co.
WBAX, Wilkes-Barre, Pa. John H. Stenger, Jr.
WBAY, New York, N. Y. Western Electric Co.
WBBA, Newark, Ohio. Newark Radio Laboratories.
WBBD, Reading Pa. Barbey Battery Service.
WBBE, Syracuse, N. Y. Alfred R. Marcy.
WBBF, Atlanta, Ga. Georgia School of Technology.
WBBG, Mattapoisett, Mass. Irving Vermilya.
WBBH, Port Huron, Mich. J. Irving Bell.
WBBI, Indianapolis, Ind. Indianapolis Radio Club.
WBBJ, West Palm Beach, Fla. Neel Electric Co.
WBBK, Pittsburgh, Pa. Kaufmann & Baer Co.
WBBL, Richmond, Va. Grace Covenant Church.
WBBM, Lincoln, Ill. Frank Atlans Produce Co.
WBBN, Wilmington, N. C. A. B. Blake.
WBBO, Rogers, Mich. Mich. Limestone & Chem. Co.
WBBP, Petoskey, Mich. Petoskey High School.
WBBQ, Pawtucket, R. I. Frank Crook.
WBBR, Rossville, N. Y. Peoples Pulpit Association.
WBBS, New Orleans, La. First Baptist Church.
WBBT, Philadelphia, Pa. Lloyd Brothers.
WBBU, Monmouth, Ill. Jenks Motor Sales Co.
WBBV, Johnstown, Pa. Johnstown Radio Co.
WBBW, Norfolk, Va. Ruffner Junior High School.
WBBY, Charleston, S. C. Washington Light Infantry.
WBBZ, Indianapolis, Ind. Noble B. Watson.
WBL, Anthony, Kan. T. & H. Radio Co.
WBS, Newark, N. J. D. W. May, Inc.
WBT, Charlotte, N. C. Southern Radio Corp.
WBZ, Springfield, Mass. Westinghouse El. & Mfg. Co.
WCAD, Canton, N. Y. St. Lawrence University.
WCAE, Pittsburgh, Pa. Kaufmann & Baer Co.
WCAG, New Orleans, La. Clyde R. Randall.
WCAH, Columbus, Ohio. Entekin Electric Co.
WCAJ, University Place, Neb. Neb. Wesleyan Univ.
WCAK, Houston, Tex. Alfred P. Daniel.
WCAL, Northfield, Minn. St. Olaf College.
WCAM, Villanova, Pa. Villanova College.
WCAO, Baltimore, Md. Sanders & Stayman Co.
WCAP, Wash., D. C. Chesapeake & Potomac Tel. Co.
WCAR, San Antonio, Tex. Southern Radio Corp. of Tex.
WCAS, Minneapolis, Minn. Wm. H. Dunwoody Ind. In.
WCAT, Rapid City, S. D. S. D. State School of Mines.
WCAU, Philadelphia, Pa. Durham & Co.
WCAV, Little Rock, Ark. J. C. Dice Electric Co.
WCAX, Burlington, Vt. University of Vermont.
WCAY, Milwaukee, Wis. Milwaukee Civic Broad. Sta.
WCAZ, Carthage, Ill. Carthage College.
WCBA, Allentown, Pa. Charles W. Heimbach.
WCBC, Ann Arbor, Mich. University of Michigan.
WCBD, Zion, Ill. Wilbur G. Voliva.
WCBE, New Orleans, La. Uhalt Radio Co.
WCBF, Pittsburgh, Pa. Paul J. Miller.
WCBG, Pascagoula, Miss. Howard S. Williams.
WCBH, Oxford, Miss. (near). University of Mississippi.
WCBJ, Bemis, Tenn. Nicoll, Duncan & Rush.
WCBK, Jennings, La. J. C. Mans.
WCBL, St. Petersburg, Fla. E. Richard Hall.
WCBM, Houlton, Me. Northern Radio Manuf. Co.
WCBN, Baltimore, Md. Charles Schwarz.
WCBO, Fort Benjamin Harrison, Ind. James P. Boland, lieutenant, U. S. A., 3d F. A.
WCBO, Memphis, Tenn. Radio Shop (Inc.)
WCBQ, Nashville, Tenn. First Baptist Church.
WCBR, Providence, R. I. Charles H. Messter.
WCBT, Worcester, Mass. Clark University.
WCBU, Arnold, Pa. Arnold Wireless Supply Co.
WCBV, Tullahoma, Tenn. Tullahoma Radio Club.
WCBW, Macon, Ga. G. P. Rankin, Jr., and M. Solomon.
WCBY, Buck Hill Falls, Pa. Forks Electrical Shop.
WCBZ, Chicago Hts., Ill. Coppotelli Bros. Music House.
WCK, St. Louis, Mo. Stix, Baer & Fuller Dry Gds. Co.
WCM, Austin, Texas. University of Texas.
WCX, Detroit, Mich. Detroit Free Press.
WDAE, Tampa, Fla. Tampa Daily Times.
WDAF, Kansas City, Mo. Kansas City Star.
WDAG, Amarillo, Tex. J. Laurance Martin.
WDAH, El Paso, Tex. Trinity Methodist Church (So.).
WDAK, Hartford, Conn. The Courant.
WDAO, Dallas, Tex. Automotive Electric Co.
WDAR, Philadelphia, Pa. Lit Brothers.
WDAS, Worcester, Mass. Samuel A. Waite.
WDAU, New Bedford, Mass. Slocum & Kilburn.
WDAY, Fargo, N. Dak. Radio Equipment Corp.
WDBA, Columbus, Ga. Fred Ray.
WDBB, Taunton, Mass. A. H. Waite & Co.
WDBC, Lancaster, Pa. Kirk, Johnson & Co.
WDBD, Martinsburg, W. Va. Herman E. Burns.
WDBE, Atlanta, Ga. Gillam-Schoen Electric Co.
WDBF, Youngstown, Ohio. Robert G. Phillips.
WDBH, Worcester, Mass. C. T. Sherer Co.
WDBI, St. Petersburg, Fla. Radio Specialty Co.
WDBJ, Roanoke, Va. Richardson-Wayland Elec. Corp.
WDBK, Cleve., O. M. F. Bros. Furn. Hdw. & Rad. Co.
WDBN, Bangor, Me. Maine Elec. Light & Power Co.
WDBO, Winter Park, Fla. Rollins College.
WDBP, Superior, Wis. Superior State Normal School.
WDBQ, Salem, N. J. Morton Radio Supply Co.
WDBR, Boston, Mass. Tremont Temple Bap. Church.
WDBS, Dayton, Ohio. S. M. K. Radio Corp.
WDBT, Hattiesburg, Miss. Taylor's Book Store.
WDBU, Skowhegan, Me. Somerset Radio Co.
WDBV, Fort Wayne, Ind. Strand Theatre.
WDBW, Columbia, Tenn. The Radio Den.
WDBX, New York, N. Y. Otto Baur.
WDBY, Chicago, Ill. North Shore Cong. Church.
WDBZ, Kingston, N. Y. Boy Scouts of Am., Ulster C. C.
WDM, Washington, D. C. Church of the Covenant.
WDZ, Tuscola, Ill. James L. Bush.
WEAA, Flint, Mich. Frank D. Fallain.
WEAF, New York, N. Y. American Tel. & Tel. Co.
WEAH, Wichita, Kan. Wichita Board of Trade.
WEAI, Ithaca, N. Y. Cornell University.
WEAJ, Vermilion, S. Dak. University of S. Dakota.
WEAM, N. Plainfield, N. J. Borough of N. Plainfield.
WEAN, Providence, R. I. Shepard Co.
WEAO, Columbus, Ohio. Ohio State University.
WEAP, Mobile, Ala. Mobile Radio Co.
WEAR, Baltimore, Md. Evening News Pub. Co.
WEAS, Washington, D. C. Hecht Co.
WEAU, Sioux City, Iowa. Davidson Bros. Co.
WEAY, Houston, Texas. Iris Theatre.
WEB, St. Louis, Mo. Benwood Co.
WEBA, Highland Park, N. J. The Electric Shop.
WEBC, Superior, Wis. Walter C. Bridges.
WEBD, Anderson, Ind. Elec. Equip. & Service Co.
WEBE, Cambridge, Ohio. Roy W. Waller.
WEBH, Chicago, Ill. Edgewater Beach Hotel Co.
WEBI, Salisbury, Md. Walter Gibbons.
WEBJ, New York, N. Y. Third Avenue Ry. Co.
WEBP, New Orleans, La. E. Budd Peddicord.
WEV, Houston, Tex. Hurlburt-Still Elec. Co.
WEW, St. Louis, Mo. St. Louis University.
WFAA, Dallas, Tex. Dallas News & Dallas Journal.
WFAB, Syracuse, N. Y. Carl F. Woese.
WFAF, Poughkeepsie, N. Y. H. C. Spratley Radio Co.
WFAH, Port Arthur, Tex. Electric Supply Co.
WFAJ, Asheville, N. C. Hi-Grade Wireless Inst. Co.
WFAM, St. Cloud, Minn. Times Publishing Co.
WFAN, Hutchinson, Minn. Hutchinson Elec. Ser. Co.
WFAQ, Cameron, Mo. Missouri Wesleyan College.
WFAT, Sioux Falls, S. Dak. New Columbus College.
WFAV, Lincoln, Neb. Univ. of Neb., Dept. of El. Eng.
WFBB, Eureka, Ill. Eureka College.
WFBG, Altoona, Pa. William F. Gable Co.
WFBH, New York, N. Y. Concourse Radio Corp.
WFBW, Cincinnati, Ohio. Ainsworth-Gates Radio Co.

- WFI, Philadelphia, Pa. Strawbridge & Clothier.
 WGAL, Lancaster, Pa. Lancaster Elec. Sup. & Con. Co.
 WGAN, Pensacola, Fla. Cecil E. Lloyd.
 WGAQ, Shreveport, La. Youree Hotel.
 WGAW, Altoona, Pa. Ernest C. Albright.
 WGAZ, South Bend, Ind. South Bend Tribune.
 WGI, Medford Hillside, Mass. Am. Rad. & Resrh. Corp.
 WGL, Philadelphia, Pa. Thos. F. J. Howlett.
 WGN, Chicago, Ill. Drake Hotel.
 WGR, Buffalo, N. Y. Federal Tel. & Tel. Co.
 WGV, New Orleans, La. Interstate Electric Co.
 WGY, Schenectady, N. Y. General Electric Co.
 WHA, Madison, Wis. University of Wisconsin.
 WHAA, Iowa City, Iowa. State University of Iowa.
 WHAB, Galveston, Texas. Clark W. Thompson.
 WHAD, Milwaukee, Wis. Marquette University.
 WHAG, Cincinnati, Ohio. University of Cincinnati.
 WHAH, Joplin, Mo. Hafer Supply Co.
 WHAK, Clarksburg, W. Va. Roberts Hardware Co.
 WHAM, Rochester, N. Y. University of Rochester.
 WHAP, Decatur, Ill. Otta & Kuhns.
 WHAR, Atlantic City, N. J. Seaside House.
 WHAS, Louisville, Ky. Courier-Journal & Louis. Times.
 WHAV, Wilmington, Del. Wilmington El. Spec. Co.
 WHAZ, Troy, N. Y. Rensselaer Polytechnic Institute.
 WHB, Kansas City, Mo. Sweeney School Co.
 WHK, Cleveland, Ohio. Radiovox Co.
 WHN, New York, N. Y. George Schubel.
 WHO, Des Moines, Iowa. Bankers Life Co.
 WIAB, Rockford, Ill. Art A. Johnson.
 WIAC, Galveston, Texas. Galveston Tribune.
 WIAD, Philadelphia, Pa. Howard R. Miller.
 WIAF, New Orleans, La. Gustav A. DeCortin.
 WIAI, Springfield, Mo. Heer Stores Co.
 WIAJ, Neenah, Wis. Fox River Valley Rad. Sup. Co.
 WIAK, Omaha, Neb. Journal-Stockman Co.
 WIAQ, Marion, Ind. Chronicle Publishing Co.
 WIAR, Paducah, Ky. Paducah Evening Sun.
 WIAS, Burlington, Iowa. Home Electric Co.
 WIAU, Le Mars, Iowa. American Trust & Svgs. Bank.
 WIAY, Washington, D. C. Woodward & Lothrop.
 WIK, McKeesport, Pa. K. & L. Electric Co.
 WIL, Washington, D. C. Continental Elec. Supply Co.
 WIP, Philadelphia, Pa. Gimbel Brothers.
 WJAB, Lincoln, Neb. American Elec. Co.
 WJAD, Waco, Texas. Jackson's Rad. Eng. Laboratories.
 WJAF, Muncie, Ind. Muncie Press & Smith Elec. Co.
 WJAG, Norfolk, Neb. Norfolk Daily News.
 WJAK, Greentown, Ind. Clifford L. White.
 WJAM, Cedar Rapids, Ia. D. M. Perham.
 WJAN, Peoria, Ill. Peoria Star.
 WJAQ, Topeka, Kan. Capper Publications.
 WJAR, Providence, R. I. The Outlet Company.
 WJAS, Pittsburgh, Pa. Pittsburgh Radio Sup. House.
 WJAT, Marshall, Mo. Kelly-Vawter Jewelry Co.
 WJAX, Cleveland, Ohio. Union Trust Company.
 WJAZ, Chicago, Ill. Chicago Radio Laboratory.
 WJD, Granville, Ohio. Denison University.
 WJH, Washington, D. C. William P. Boyer Co.
 WJX, New York, N. Y. Deforest Radio Tel. & Tel. Co.
 WJY, New York, N. Y. R. C. A.
 WJZ, New York, N. Y. R. C. A.
 WKAA, Cedar Rapids, Iowa. H. F. Paar.
 WKAD, East Providence, R. I. Charles Looff.
 WKAF, Wichita Falls, Tex. W. S. Rad. Sup. Co.
 WKAN, Montgomery, Ala. United Battery Service Co.
 WKAQ, San Juan, P. R. Radio Corp. of Porto Rico.
 WKAR, East Lansing, Mich. Michigan Agri. Col.
 WKAV, Laconia, N. H. Laconia Radio Club.
 WKAY, Gainesville, Ga. Brenau College.
 WKBF, Cranston, R. I. Dutee W. Flint.
 WKY, Oklahoma, Okla. WKY Radio Shop.
 WLAG, Minn., Minn. Cutting & Wash. Rad. Corp.
 WLAH, Syracuse, N. Y. Samuel Woodworth.
 WLAJ, Waco, Texas. Waco Electrical Supply Co.
 WLAK, Bellows Falls, Vt. Vermont Farm Mach. Corp.
 WLAL, Tulsa, Okla. Naylor Electrical Co.
 WLAP, Louisville, Ky. W. V. Jordon.
 WLAQ, Kalamazoo, Mich. Arthur E. Schilling.
 WLAV, Pensacola, Fla. Electric Shop.
 WLAW, New York, N. Y. Police Dept. City of N. Y.
 WLAX, Greencastle, Ind. Putnam Electric Company.
 WLB, Minneapolis, Minn. University of Minnesota.
 WLBL, Stevens Point, Wis. Wis. Dept. of Markets.
 WLS, Chicago, Ill. Sears, Roebuck & Co.
 WLW, Cincinnati, Ohio. Crosley Radio Corp.
 WMAB, Oklahoma, Okla. Radio Supply Company.
 WMAC, Cazenovia, N. Y. Clive B. Meredith.
 WMAF, Dartmouth, Mass. Round Hills Radio Corp.
 WMAH, Lincoln, Neb. General Supply Co.
 WMAJ, Kansas City, Mo. Drivers Telegram Co.
 WMAK, Lockport, N. Y. Norton Laboratories.
 WMAL, Trenton, N. J. Trenton Hardware Co.
 WMAN, Columbus, Ohio. First Baptist Church.
 WMAP, Easton, Pa. Utility Battery Service.
 WHAQ, Chicago, Ill. Chicago Daily News.
 WMAV, Auburn, Ala. Alabama Polytechnic Institute.
 WMAW, Wahpeton, N. Dak. Wahpeton Electric Co.
 WMAZ, St. Louis, Mo. Kingshighway Presb. Church.
 WMAZ, Macon, Ga. Mercer University.
 WMC, Memphis, Tenn. "Commercial Appeal."
 WMU, Washington, D. C. Doubleday-Hill Elec. Co.
 WNAC, Boston, Mass. Shepard Stores.
 WNAD, Norman, Okla. University of Oklahoma.
 WNAL, Omaha, Neb. Omaha Central High School.
 WNAN, Syracuse, N. Y. Syracuse Radio Telephone Co.
 WNAP, Springfield, Ohio. Wittenberg College.
 WNAQ, Charleston, S. C. Charleston Radio Elec. Co.
 WNAR, Butler, Mo. First Christian Church.
 WNAS, Austin, Texas. Tex. Rad. Corp. & A. Statesman.
 WNAT, Philadelphia, Pa. Lennig Brothers Co.
 KNAV, Knoxville, Tenn. Peoples Tel. & Tel. Co.
 WNAW, Fort Monroe, Va. Henry Kunzman.
 WNAX, Yankton, S. Dak. Dakota Radio Apparatus Co.
 WNJ, Albany, N. Y. Shotton Radio Mfg. Co.
 WNYC, New York, N. Y. City of New York.
 WOAC, Lima, Ohio. Page Organ Co.
 WOAD, Sigourney, Iowa. Friday Bat. & Elec. Corp.
 WOAE, Fremont, Neb. Midland College.
 WOAF, Tyler, Texas. Tyler Commercial College.
 WOAG, Belvidere, Ill. Apollo Theatre.
 WOAH, Charleston, S. C. Palmetto Radio Corp.
 WOAI, San Antonio, Tex. Southern Equipment Co.
 WOAL, Webster Groves, Mo. William E. Woods.
 WOAN, Lawrenceburg, Tenn. James D. Vaughn.
 WOAO, Mishawaka, Ind. Lyradion Mfg. Co.
 WOAP, Kalamazoo, Mich. Kalamazoo College.
 WOAR, Kenosha, Wis. Henry P. Lundskow.
 WOAT, Wilmington, Del. Boyd M. Hamp.
 WOAV, Erie, Pa. Penn. Nat. Guard, 2d Bat., 112th Inf.
 WOAW, Omaha, Neb. Woodmen of the World.
 WOAX, Trenton, N. J. Franklyn J. Wolff.
 WOC, Davenport, Iowa. Palmer School of Chrprtc.
 WOI, Ames, Iowa. Iowa State College.
 WOK, Pine Bluff, Ark. Pine Bluff Co.
 WOO, Philadelphia, Pa. John Wanamaker.
 WOQ, Kansas City, Mo. Western Radio Co.
 WOR, Newark, N. J. L. Bamberger & Co.
 WOS, Jefferson City, Mo. Mo. State Marketing Bureau.
 WPAB, State College, Pa. Penn State College.
 WPAC, Okmulgee, Okla. Donaldson Radio Co.
 WPAH, Waupaca, Wis. Wis. Dept. of Markets.
 WPAJ, New Haven, Conn. Doolittle Radio Corp.
 WPAK, Agri. College, N. D. N. D. Agri. Col.
 WPAL, Columbus, Ohio. Avery & Loeb Elec. Co.
 WPAM, Topeka, Kan. Auerbach & Guettel.
 WPAP, Winchester, Ky. Theodore D. Phillips.
 WPAQ, Frostburg, Md. Gen. Sales & Eng. Co.
 WPAR, Beloit, Kan. Ward Battery & Radio Co.
 WPAT, El Paso, Tex. St. Patricks Cathedral.

WPAU, Moorhead, Minn. Concordia College.
 WPAZ, Charleston, W. Va. John R. Koch.
 WPG, New Lebanon, Ohio. Nushawg Poultry Farm.
 WQAA, Parkersburg, Pa. Horace A. Beale, Jr.
 WQAC, Amarillo, Tex. E. B. Gish.
 WQAD, Waterbury, Conn. Whitall Electric Co.
 WQAE, Springfield, Vt. Moore Radio News Station.
 WQAF, Sandusky, Ohio. Sandusky Register.
 WQAH, Lexington, Ky. Brock-Anderson E. Eng. Co.
 WQAL, Mattoon, Ill. Coles County Tel. & Tel. Co.
 WQAM, Miami, Fla. Electrical Equipment Co.
 WQAN, Scranton, Pa. Scranton Times.
 WQAO, New York, N. Y. Calvary Baptist Church.
 WQAQ, Abilene, Tex. Abilene Daily Reporter.
 WQAS, Lowell, Mass. Prince-Walter Co.
 WQAV, Greenville, S. C. Huntington & Guerry, Inc.
 WQAW, Washington, D. C. Catholic University.
 WQAX, Peoria, Ill. Radio Equipment Co.
 WQJ, Chicago, Ill. Calumet Baking Powder Co.
 WRAA, Houston, Tex. Rice Institute.
 WRAD, Marion, Kan. Taylor Radio Shop.
 WRAF, Laporte, Ind. The Radio Club.
 WRAH, Providence, R. I. Stanley N. Read.
 WRAL, St. Croix Falls, Wis. Northern States Pow. Co.
 WRAM, Galesburg, Ill. Lombard College.
 WRAN, Waterloo, Iowa. Black Hawk Electrical Co.
 WRAO, St. Louis, Mo. Radio Service Co.
 WRAV, Yellow Springs, Ohio. Antioch College.
 WRAW, Reading, Pa. Avenue Radio Shop.
 WRAX, Gloucester City, N. J. Flaxon's Garage.
 WRAY, Scranton, Pa. Radio Sales Corp.
 WRAZ, Newark, N. J. Radio Shop of Newark.
 WRBC, Valparaiso, Ind. Immanuel Lutheran Church.
 WRC, Washington, D. C. Radio Corporation of Am.
 WRK, Hamilton, Ohio. Doron Bros. Electrical Co.
 WRL, Schenectady, N. Y. Union College.
 WRM, Urbana, Ill. University of Illinois.
 WRR, Dallas, Texas. City of Dallas.
 WRW, Tarrytown, N. Y. Tarrytown Radio Resrch. Lab.
 WSAB, Cape Girardeau, Mo. S'east Mo. St. Tch's. Col.
 WSAC, Clemson College, S. C. Clemson Agri. Col.
 WSAD, Providence, R. I. J. A. Foster Company.
 WSAG, St. Petersburg, Fla. L. V. Davis.
 WSAH, Chicago, Ill. A. J. Leonard, Jr.
 WSAI, Cincinnati, Ohio. U. S. Playing Card Co.
 WSAJ, Grove City, Pa. Grove City College.
 WSAL, Brookville, Ind. Franklin Electric Co.
 WSAN, Allentown, Pa. Allentown Radio Club.
 WSAP, New York, N. Y. Seventh Day Adventist Ch.
 WSAR, Fall River, Mass. Doughty & Welch Elec. Co.
 WSAT, Plainview, Tex. Donohoo-Ware Hardware Co.
 WSAU, Chesham, N. H. Camp Marienfeld.
 WSAV, Houston, Texas. Clifford W. Vick Rad. Const. Co.
 WSAW, Canandaigua, N. Y. John J. Long, Jr.
 WSAY, Port Chester, N. Y. Chamber of Commerce.
 WSAZ, Pomeroy, Ohio. Chase Electric Shop.
 WSB, Atlanta, Ga. Atlanta Journal.
 WSL, Utica, N. Y. J. & M. Electric Co.
 WSOE, Milwaukee, Wis. School of Eng. of Milwaukee.
 WSY, Birmingham, Ala. Alabama Power Co.
 WTAB, Fall River, Mass. Fall River Dly. Hrd. Pub. Co.
 WTAC, Johnstown, Pa. Penn. Traffic Co.
 WTAF, New Orleans, La. Louis J. Gallo.
 WTAG, Providence, R. I. Kern Music Co.
 WTAH, Belvidere, Ill. Carmen Ferro.
 WTAJ, Portland, Me. The Radio Shop.
 WTAL, Toledo, Ohio. Toledo Radio & Electric Shop.
 WTAM, Cleveland, Ohio. Willard Storage Battery Co.
 WTAN, Mattoon, Ill. Orndorff Radio Shop.
 WTAP, Cambridge, Ill. Cambridge Radio & Elec. Co.
 WTAQ, Osseo, Wis. S. H. Van Gorden & Son.
 WTAR, Norfolk, Va. Reliance Electric Co.
 WTAS, Elgin, Ill. (near). Charles E. Erbstein.
 WTAT, Boston, Mass. Edison Elec. Illuminating Co.
 WTAU, Tecumseh, Neb. Ruegg Battery & Elec. Co.

WTAW, College Sta., Tex. Agri. & Mech. Col. of Tex.
 WTAX, Streator, Ill. Williams Hardware Co.
 WTAY, Oak Park, Ill. Oak Leaves Broadcasting Sta.
 WTAZ, Lambertville N. J. Thomas J. McGuire.
 WTG, Manhattan, Kan. Kan. State Agricultural Col.
 WTL, Chicago, Ill. H. G. Saal Co.
 WWAB, Trenton, N. J. Hoenig, Swern & Co.
 WWAC, Waco, Tex. Sanger Bros.
 WWAD, Philadelphia, Pa. Wright & Wright, Inc.
 WWAE, Joliet, Ill. Lawrence J. Crowley.
 WWAFF, Camden, N. J. Galvin Radio Supply Co.
 WWAQ, Houghton, Mich. Michigan College of Mines.
 WWI, Dearborn, Mich. Ford Motor Co.
 WWJ, Detroit, Mich. Detroit News.
 WWL, New Orleans, La. Loyola University.

GOVERNMENT DAILY MARKET REPORTS

NAA, Arlington, Va. U. S. Navy.

CANADA

CFAC, Calgary, Alberta, Can. Calgary Herald.
 CFCA, Toronto, Ont., Can. Toronto Star.
 CFCH, Montreal, P. Q., Can. Marconi Co.
 CFCH, Iroquois Falls, Ont., Can. A. P. & P. Co., Ltd.
 CFCJ, Quebec, Que. La Cie de L'Evenement.
 CFCK, Edmonton, Alberta. Radio Supply Co.
 CFCL, Victoria, British Col. Centennial Meth. Church.
 CFCL, Calgary, Alberta, Can. W. W. Grant Rad., Ltd.
 CFCO, Bellevue, Que. Semmelhaack-Dickson (Ltd.).
 CFCQ, Vancouver, British Col. Rad. Specialties (Ltd.).
 CFCR, Sudbury, Ont. Laurentide Air Service.
 CFCW, London, Ont. The Radio Shop.
 CFDC, Nanaimo, British Col. Sparks Co.
 CFQC, Saskatoon, Saskatch. The Elec. Shop (Ltd.).
 CFRC, Kingston, Ont. Queens University.
 CFUC, Montreal, Que. University of Montreal.
 CFXC, New Westminster, Brit. Col. West. Trust Co.
 CHAC, Halifax, Nova Scotia. Radio Engineers.
 CHBC, Calgary, Alberta, Can. Albertan Pub. Co.
 CHCB, Toronto, Can. Marconi Co.
 CHCD, Quebec, Que. Canadian Wireless and Elec. Co.
 CHCE, Victoria, Brit. Col. West. Can. Rad. Sup. (Ltd.).
 CHCL, Vancouver, Brit. Col. Vancouver Merchants Ex.
 CHCM, Calgary, Alberta. Riley & McCormack (Ltd.).
 CHCS, Hamilton, Ont. The Hamilton Spectator.
 CHYC, Montreal, Que., Can. Northern Electric Co.
 CJCA, Edmonton, Alberta. Edmonton Journal, Ltd.
 CJCD, Toronto, Canada. T. Eaton Co.
 CJCE, Vancouver, British Col. Sprott-Shaw Radio Co.
 CJCI, St. John, New Brunswick. Maritime Radio Corp.
 CJCM, Monti Joli, Que. J. L. Phillippe Landry.
 CJCN, Toronto, Can. Simons, Agnew & Co.
 CJCX, Olds, Alberta. Percival Wesley Shackleton.
 CJSC, London, Ont., Can. London Free Press.
 CJSC, Toronto, Ont., Can. Evening Telegram.
 CKAC, Montreal, Can. La Presse.
 CKCD, Vancouver, B. C. Vancouver Daily Province.
 CKCE, Toronto, Ont. Can. Independent Tel. Co., Ltd.
 CKCH, Ottawa, Ont. Can. Nat. Rys.
 CKCK, Regina, Saskatchewan. Leader Pub. Co., Ltd.
 CKCO, Ottawa, Ont. Dr. G. M. Geldert.
 CKCX, Calgary, Alberta. P. Burns & Co. (Ltd.).
 CKOC, Hamilton, Ont., Can. Wentworth Rad. Sup. Co.
 CKY, Winnipeg, Man. Manitoba Telephone System.

CUBA

PWX, Havana. Cuban Telephone Co.

2DW, Havana. Pedro Zayas.

2AB, Havana. Alberto S. de Bustamante.

2OK, Havana. Mario Garcia Velez.

2BY, Havana. Frederick W. Borton.

2CX, Havana. Frederick W. Borton.

2EV, Havana. Westinghouse Electric Co.
 2TW, Havana. Roberto E. Ramirez.
 2HC, Havana. Heraldo de Cuba.
 2LC, Havana. Luis Casas.
 2KD, Havana. E. Sanchez de Fuentes.
 2MN, Havana. Fausto Simon.
 2MG, Havana. Manuel G. Salas.
 2JQ, Havana. Raul Perez Falcon.
 2KP, Havana. Alvaro Daza.
 2HS, Havana. Julio Power.
 2OL, Havana. Oscar Collado.
 2WW, Havana. Amadeo Saenz.

5EV, Colon. Leopoldo V. Figueroa.

6KW, Tuinucu. Frank H. Jones.
 6KJ, Tuinucu. Frank H. Jones.
 6CX, Cienfuegos. Antonio T. Figueroa.
 6DW, Cienfuegos. Eduardo Terry.
 6BY, Cienfuegos. Jose Ganduxe.
 6AZ, Cienfuegos. Valentin Ullivarri.
 6EV, Caibarien. Josefa Alvarez.

7AZ, Camaguey. Pedro Noguera.
 7BY, Camaguey. Salvador Rionda.

8AZ, Santiago de Cuba. Alfredo Broocks.
 8BY, Santiago de Cuba. Alberto Ravelo.
 8FU, Santiago de Cuba. Andres Vinnet.
 8DW, Santiago de Cuba. Pedro C. Anduz.
 8EV, Santiago de Cuba. Eduardo Mateos.
 8GT, Santiago de Cuba. Juan F. Chibas.

FRANCE

YN, Lyon.
 FL, Paris (Eiffel Tower).
 8AJ, Paris.
 ESP, Paris.

GREAT BRITAIN

2LO, London.
 5IT, Birmingham.
 5WA, Cardiff.
 6BM, Bournemouth.
 2ZY, Manchester.
 5NO, Newcastle.
 5SC, Glasgow.
 2BD, Aberdeen.
 6SL, Sheffield (relay station).

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	Less than 3	30%
	3 or more	35%

Pages 14, 15		
ALDEN "NA-ALD" PRODUCTS		
	Less than 3	30%
	3 or more	35%

Pages 16, 17		
ALLEN BRADLEY CO.		
Page 16	Any quantity	30%
Page 17	Any quantity	35%

Pages 18, 19		
AMSCO PRODUCTS		
	Less than 3	30%
	3 or more	35%

Pages 20, 21		
HARVARD BATTERIES		
	Harvard Technicell 2 Volt Unit, Price each, list.....	\$.75
	Less than 12 .....	.50
	12 or more .....	.45

(Note—These cells may be connected in series, giving any voltage value for "A," "B," or "C" battery work.)

HARVARD TECHNICELL "B" BATTERY		
	Price per 24 Volt Unit, List.....	\$9.00
	Less than 4	5.85
	4 or more	5.40

HARVARD STORAGE "A" BATTERIES		
	Any quantity	40%

(Note—Where these batteries are shipped, add \$1.00 to list and discount in usual manner.)

Page 22
BRIGHT STAR BATTERIES, COLUMBIA DRY CELLS

Nos.	List Price	Quantity		CASE LOTS		FOB
		Less than 3	3 or More	Quantity	FOB Boston	Brooklyn
7117	\$.60	\$.31	\$.31	.25	\$.30	\$.30
1550	1.50	.87½	.87½	.25	.85	.85
1591	1.75	1.10	1.10	.25	1.10	1.10
1593	1.90	1.12½	1.10	.50	1.10	1.10
1590	2.00	1.30	1.30	.50	1.25	1.20
3091	3.00	2.10	2.10	.25	2.00	1.95
3005	3.75	2.44	2.40	.25	2.35	2.30
3090	3.75	2.44	2.40	.25	2.35	2.30
3095	3.75	2.44	2.40	.25	2.35	2.30

Page 22	Discount
COLUMBIA DRY CELLS	
1 to 49, each	\$.34
Case of 50 Cells.....	15.11
 Page 23	
CARTER RADIO CO.	
Less than 3	30%
3 or more	35%
 Pages 24, 25	
CHELSEA RADIO EQUIPMENT	
Less than 3	30%
3 or more	35%
 Pages 26, 27	
COTO COIL CO.	
Less than 3	30%
3 or more	35%
 Page 28	
CARTER VARIOCOUPERS	
Less than 3	30%
3 or more	35%
 Pages 29 to 33, inclusive	
CROSLEY RADIO CORP.	
Pages 29, 30, any quantity	33 $\frac{1}{8}$ %
Page 31	
Trirdyn 3R3, any quantity	35%
Trirdyn Special, any quantity	35%
New Trirdyn Newport, any quantity	40%
Balance of page, any quantity	33 $\frac{1}{8}$ %
Page 32, any quantity	35%
Page 33, less than 3	30%
3 or more	35%
 Page 34	
CUNNINGHAM VACUUM TUBES	
Any quantity	25%
 Page 35	
CUTLER-HAMMER APPARATUS	
Less than 3	30%
3 or more	35%
 Pages 36, 37	
DAVEN RESISTORS	
Dealer's Display Box, any quantity	40%
Resistor Kits, any quantity	35%
Amplifier Kits, any quantity	35%
Assembled Amplifiers, any quantity	35%
Grid Leak and Resistor Mountings	35%
Grid Leaks, Resistors and Tube Ballast Units,	
Less than 5	30%
5 or more	35%
 Pages 38 to 41, inclusive	
ERLA APPARATUS	
Less than 3	30%
3 or more	35%
 Pages 42 to 53, inclusive	
FEDERAL APPARATUS	
Less than 3	30%
3 or more	35%
 Page 54	
FRESHMAN APPARATUS	
Less than 3	30%
3 or more	35%

Page 55

Discount

GLOBE APPARATUS

Less than 3	30%
3 or more	35%

Pages 56, 57

JEWELL INSTRUMENTS

Nos. 84, 85 and Lightning Arrester	
Less than 3	30%
3 or more	35%
Balance of pages, any quantity	25%

Page 58

JEFFERSON TRANSFORMERS

Less than 3	30%
3 or more	35%

Page 59

MANHATTAN APPARATUS

Less than 3	30%
3 or more	35%

Page 60

MUSIC MASTER APPARATUS

Less than 3	30%
3 or more	35%

Page 61

MUTER RADIO PRODUCTS

Less than 12	35%
12 or more	40%

Page 62

N. & K. APPARATUS

Less than 3	30%
3 or more	35%

Page 63

NATIONAL APPARATUS

Less than 3	30%
3 or more	35%

Pages 64 to 67, inclusive

RADIODYNE RECEIVERS

Less than 3	30%
3 or more	35%

Page 68

STERLING PRODUCTS

Meters Nos. R322, R341, R325	
Less than 3	30%
3 or more	35%

Meters No.	Each Net
34-B, any quantity	\$1.50
34-C, any quantity	1.85
24, any quantity .....	.65
25, any quantity	1.50
44, any quantity .....	.90
44-A, any quantity	1.25
45, any quantity	2.50
Sterling Rectifier	11.50
Sterling No. R-311 Microdenser .....	.65

Page 69

SICKLES COILS

Less than 3	30%
3 or more	35%

STEVENS RADIO TOOLS

No.		List	Net
T-825	Spintite for Round Nuts, set of 3.....	\$1.00	\$.66
T-70	Hex Spintite		
	Sizes 3" to 6" .....	.35	.22
	Sizes 6½" to 10" .....	.65	.40
T-71	Set of 3	1.00	.66
T-73	Professional set in metal base (7 sizes)....	3.50	2.50
T-74B	Universal handle, with 7 sockets in wood base	3.25	2.25
T-74A	Universal handle, with 7 sockets in roll....	3.50	2.50
	T Handle Hex Spintite .....	.35	.22
T-820	Set of four sizes	1.25	.85
T-555	3-16" O. S. Reamer .....	.75	.50
T-556	¼" O. S. Reamer .....	.75	.50
T-560	¾" Panel Cutter .....	.75	.50
T-561	1" Panel Cutter .....	.85	.60
T-562	1½" Panel Cutter	1.00	.65
T-563	Set of three sizes	2.50	1.60
T-552	¾" Beading Tools	1.75	1.15
T-553	1" Beading Tool	2.00	1.35
	Extra Cutters, per set .....	.50	.35
T-564	Adjustable Panel Cutter	1.75	1.15
T-565	Combined Countersink and Drill .....	.35	.25
T-570	Speed-a-loop Pliers, with attachment	1.50	1.10
T-571	Attachment only .....	.50	.32
T-550	Radio Scribes .....	.45	.30
T-77	Straight Nose Pliers	1.25	.90
T-88	Curved Nose Pliers	1.25	.90
T-557	Reamawl .....	.35	.25
T-573	Double Cut Coil File .....	.15	.08
T-580	Utility Taper Reamer ⅛" to ½"	1.50	1.00
T-581	Utility Taper Reamer ⅜" to ¾"	2.00	1.30
T-551	Radio Screw Clamp	1.50	1.10

THOROPHONE, THOROLA

	Discount
Less than 3	30%
3 or more	35%

TOWERS PHONE

Less than 12	\$2.10
12 or more	1.95
Repair Parts, any quantity	35%

U. S. TOOL CONDENSERS

Less than 3	30%
3 or more	35%

UNCLE SAM COILS

Less than 3	30%
3 or more	35%

WESTERN ELECTRIC APPARATUS

Less than 3	33⅓%
3 or more	35%

WORKRITE APPARATUS

Page 79	Less than 3	35%
	3 or more	40%
Pages 80, 81	Less than 3	30%
	3 or more	35%

YANKEE RADIO TOOLS

Less than 3	30%
3 or more	35%

ANTENNA EQUIPMENT, WIRE, ETC.

Magnet Wire, less than 12 spools	30%
12 to 99 spools	35%
100 or more spools	40%
Belden Braid, any quantity, per foot	\$.05
Litz Wire, per foot .....	.03
Litz Wire, per 100 feet	1.50
Celatsite Wire, any quantity	35%

Bus Wire

Square Tinned, per length	\$.02
Square Tinned, per 100 lengths	1.50
Round Tinned, per 100 feet45

Spring Antenna

Less than 3	30%
3 or more	35%

Spaghetti

Any quantity	33 1/3%
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Annunciator Wire

Less than 3 coils	30%
3 or more	35%

Antenna Wire

Less than 1000 feet	40%
1000 feet or more	50%

Ground Wire

Less than 500 feet, per foot	\$.02
500 foot coils	5.00

Ribbon Antenna

Less than 3	30%
3 or more	35%

Key to the Air Cage Antenna

Less than 3	30%
3 or more	35%

BINDING POSTS, ETC.

Initialed Posts with Removable Knobs

Less than 6 cards	35%
6 or more cards	40%

Posts with Non-Removable Knobs—Initialed or Plain

Less than 100	30%
100 or more	35%

Spring Grip Posts—Initialed or Plain

Less than 100	30%
100 or more	35%

Posts—Styles D, E, G, I, J, K, R.

Any quantity	35%
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COPPER TERMINALS

Sold only in packages of 100.....	35%
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BATTERY CHARGERS

Homcharger		Less than 3	33 1/3 %
		3 or more	35 %
Fore Battery Charger		Less than 3	33 1/3 %
		3 or more	35 %
Tungar Chargers, Rectifier Bulbs		Any quantity	25 %
Apco Chargers		"A" Battery Type, each	\$12.50
		"B" Battery Type, each	6.75

PANELS, TUBING AND CABINETS

Any quantity	33 1/3 %
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CELESTO PANELS

Any quantity	35 %
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STEVENS' CABINETS

3009 Radio Work Chest, each	\$7.15
3010 Radio Work Chest, each	7.50
3015 Radio Work Chest, each	8.25
3018 Radio Work Chest, each	9.25

CRYSTALS, ETC.

Brownlie Detector and Renewal Cap		Less than 3	30 %
		3 or more	35 %
Brownlie Crystals		Less than 12	30 %
		12 or more	35 %
B Metal Crystals		Less than 12	35 %
		12 or more	40 %
Lincoln		Any quantity	33 1/3 %
Key to Air		Any quantity	35 %
Freshman		Any quantity	35 %
Aerovox		Less than 3	35 %
		3 or more	40 %
Selected Tested Galena Crystals		Less than 100, each	\$.07 1/2
		100 or more, each05

LOOP ANTENNA

Any quantity	35 %
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LIGHTNING ARRESTERS, ETC.

All Lightning Arresters

Less than 3	30 %
3 or more	35 %

INSULATORS

No.	Less than 100	100 or more
4500	\$.20 each	\$.18 each
4501 .....	.08 each	.06 each
4502 .....	.27 each	.25 each

INSULATORS

All other Insulators

Less than 100	30%
100 or more	35%

Antenna Connectors or Lead-ins

Any quantity	35%
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SWITCHES

Lightning Switch

Any quantity	35%
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S. P. D. T. Switch

Any quantity	40%
--------------------	-----

TORCHES

Any quantity	33 $\frac{1}{8}$ %
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SOLDER

Radio Solder, per can, any quantity	33 $\frac{1}{8}$ %
5 lb. Box	\$3.05
1 lb. Box64
1 lb. Spool64
1 Stick .....	.05

SOLDERING IRONS

Less than 3	30%
3 or more	35%

SOLDERALL

Any quantity	35%
--------------------	-----

UNIVERSAL TEMPLATE

Less than 3	30%
3 or more	35%

BATTERY CABLES

Less than 3	40%
3 or more	50%

GROUND CLAMPS

Less than 100, each	\$.09
100 or more, each .....	.07 $\frac{1}{2}$

GROUND HOGS

Less than 3	30%
3 or more	35%

RAJAH TERMINALS

Less than 12	30%
12 or more	35%

TAPE

Less than 10 lbs. (may be assorted)	35%
10 lbs. or more (may be assorted)	40%

POLYPLUG

Less than 3	30%
3 or more	35%

TINY TURN

Less than 3	30%
3 or more	35%

PHUSIFORMERS

Less than 3	30%
3 or more	35%

UNIVERNIER

Any quantity	30%
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JACKS

Single Circuit, any quantity, each	\$.25
Double Circuit, any quantity, each28

MURDOCK PLUG

Any quantity	33 $\frac{1}{8}$ %
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PHON-A-DAPTERS, PHONE CUSHIONS

Any quantity	35%
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FEDERAL CRYSTAL SETS WITHOUT PHONES		
	Any quantity, each	\$5.00
FEDERAL CRYSTAL SETS WITH PHONES		
	Any quantity, each	\$6.95
RADIO CALL BOOK		
	Any quantity	35%
HYDROMETERS		
	Any quantity	35%
VOLT X LEAKS		
	Less than 3	30%
	3 or more	35%
STRAND LEAKS		
	Less than 3	30%
	3 or more	35%
TURNIT LEAK		
	Less than 3	30%
	3 or more	35%
BATTERY MATS		
	Any quantity	35%

BATTERY CLIPS		
No. 4	Less than 100, each.....	\$.05
	100 or more, each.....	.04
No. 5	Any quantity, each .....	.10
No. 8	Less than 100, each .....	.18
	100 or more, each .....	.16
CONTACT POINTS AND STOPS (Assembled)		
	Less than 100, each	\$.01
	Less than 1000, per 100 .....	.80
	1000 or more, per 1000	6.00
SWITCH ARMS		
	Less than 12, each	\$.15
	12 or more, each .....	.12
NAME PLATES		
	Any quantity	35%
BRISTOL POWER AMPLIFIERS		
	Less than 3	30%
	3 or more	35%
HILCO COUPLERS		
	Less than 3	30%
	3 or more	35%
HILCO EXTENSIONS		
	Any quantity	35%

REMLER APPARATUS		
	Less than 3	30%
	3 or more	35%
SUPERADIO UNITS		
	Less than 3	30%
	3 or more	35%
METERS		
	Less than 12	33 1/3 %
	12 or more	35%

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