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RADIO CLUB OF AMERICA.

By

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--- HUDSON FILAMENT. --

One of the most objectionable features of the ordinary Audion is its short life, due to the burning out of the filament. The blue glow phenomenon accompanying the electron emmission causes a very rapid disintegration of the hot electrode. Due to the presence of minute traces of gas, positive ions may be formed which bombard the cathode (filament) with high velocity, causing a chipping off of atoms of the metal.

When any one spot in the filament grows slightly narrower than the rest of the filament, this spot offers more resistance, and gets much hotter than the rest. One part of the filament becomes very much overheated, and finally breaks.

I could see no reason why an audion of proper construction could not have the same life as an ordinary incadescent lamp. It occurred to me that if it were possible to coat the filament with some electron emmitting material and use a filament of long life (say tungsten) ,disintegration of the filament would not be so rapid.

Coats of various salts were tried , using tungsten as a filament, but the results obtained were unsatisfactory. After numerous experiments the best results were obtained by wrapping a small piece of tantalum (in wire form) around the filament. Tests proved that it was not necessary to have the whole surface of the filament so wound. The life of the lamp was wonderfully increased, the first original lamp is still in use.

The audions having this filament were found to be a trifle more sensitive than the ordinary audion. A new filament sometimes gives a slight hissing sound, due to the wire being loose on the filament. This disappears after short uses.

MICROPHONE AMPLIFIER

This instrument is simple in construction and very satisfying in resuts. It can also be made very cheaply.

It consists merely of: An ordinary wireless receiver, a Bell Telephone Type transmitter, some batteries, a low resistance telephone receiver (75 ohms) and a low resistance telephone induction coil.

The cap and diaphram of the receiver should be removed, exposing the ends of the magnets. The transmitter should be of the ordinary button type, containing the carbon granules and disks all in the compact form of a button. Remove the diaphram of the transmitter. a small circular disk of soft iron should be screwed on to the screw which ordinarily holds the diaphram to the button. This disk should be three quarters of an inch in diameter and extremly light and thin. The receiver and transmitter should be mounted on a suitable base in such a way that the receiver will be held rigidly. The transm mitter disk should have its surface parallel to the edge (ends) of the magnets, and should almost touch the same.

Arrangement should be made so as to regulate the distance between the magnets and the disk, with a slow motion screw.

The receiver should be connected as ordinarily in the wireless circuit. The transmitter should be in series with the primary of the low resistance inductin
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coil (20) ohms, and a battery of low internal resistance (preferably a storage battery of 4-6 volts). The secondary terminals should be connected to the terminals of the 75 ohm receiver.

When properly adjusted, signals can be heard all over the room with ease. By attaching a small horn to the receiver the loudness can be increased. The horn should be in resonance with the pitch of the incoming signal. To do this fairly well a half spunge sphere may be used. This should be hung over the mouth of the horn, and so arranged as to partially close it.

By varying the opening resonance can be roughly obtained, giving very loud signals as a result.