

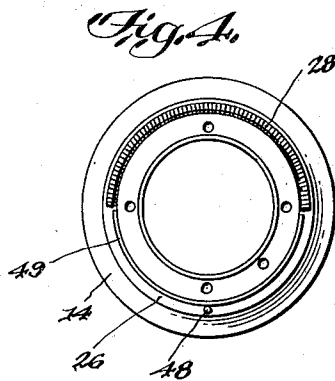
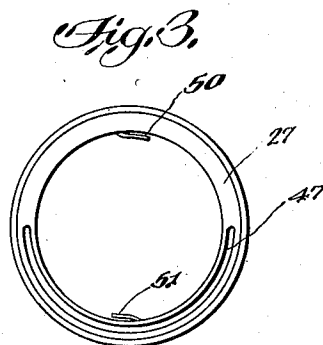
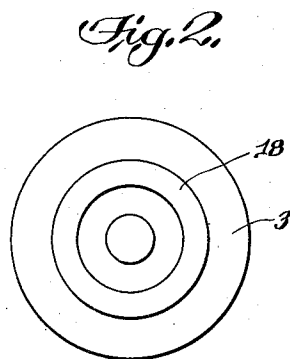
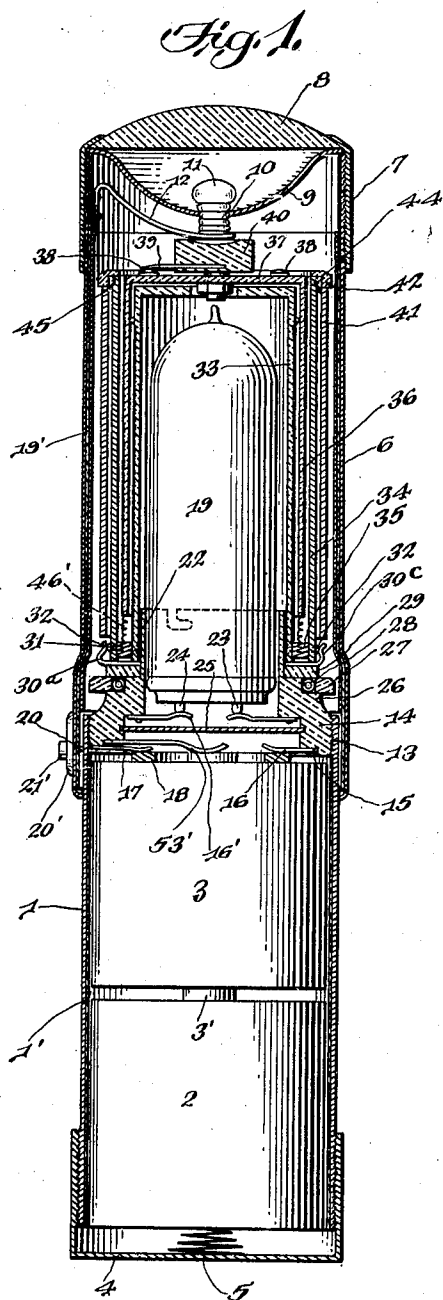
March 25, 1930.

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1,752,196

RADIO APPARATUS

Original Filed Jan. 16, 1926 3 Sheets-Sheet 1



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RADIO APPARATUS

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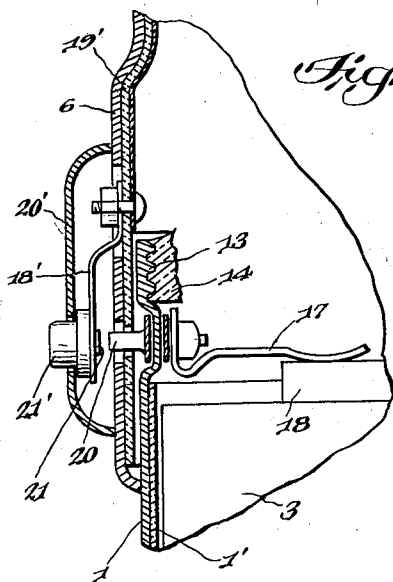


Fig. 5.

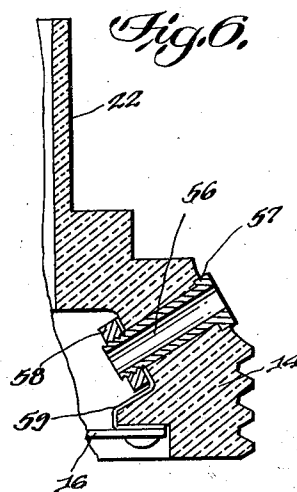


Fig. 6.

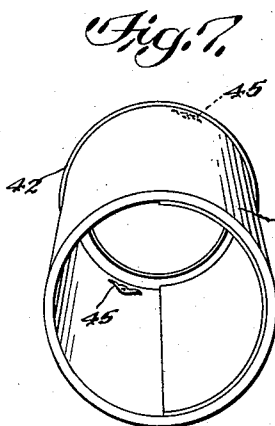


Fig. 7.

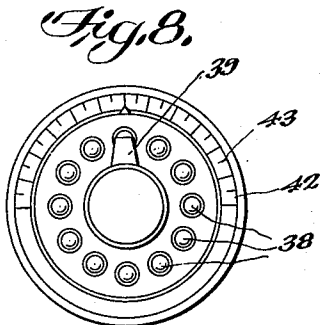


Fig. 8.

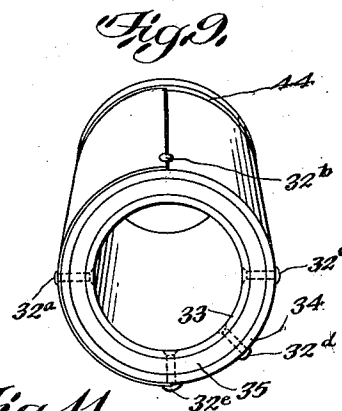


Fig. 9.

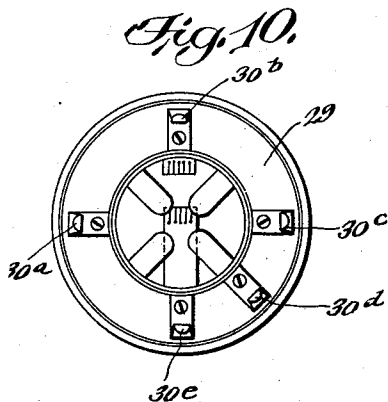


Fig. 10.

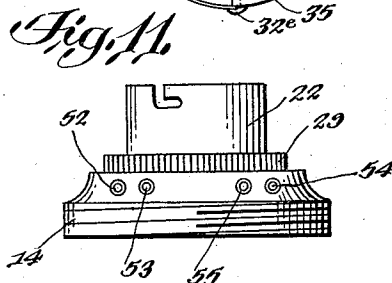


Fig. 11.

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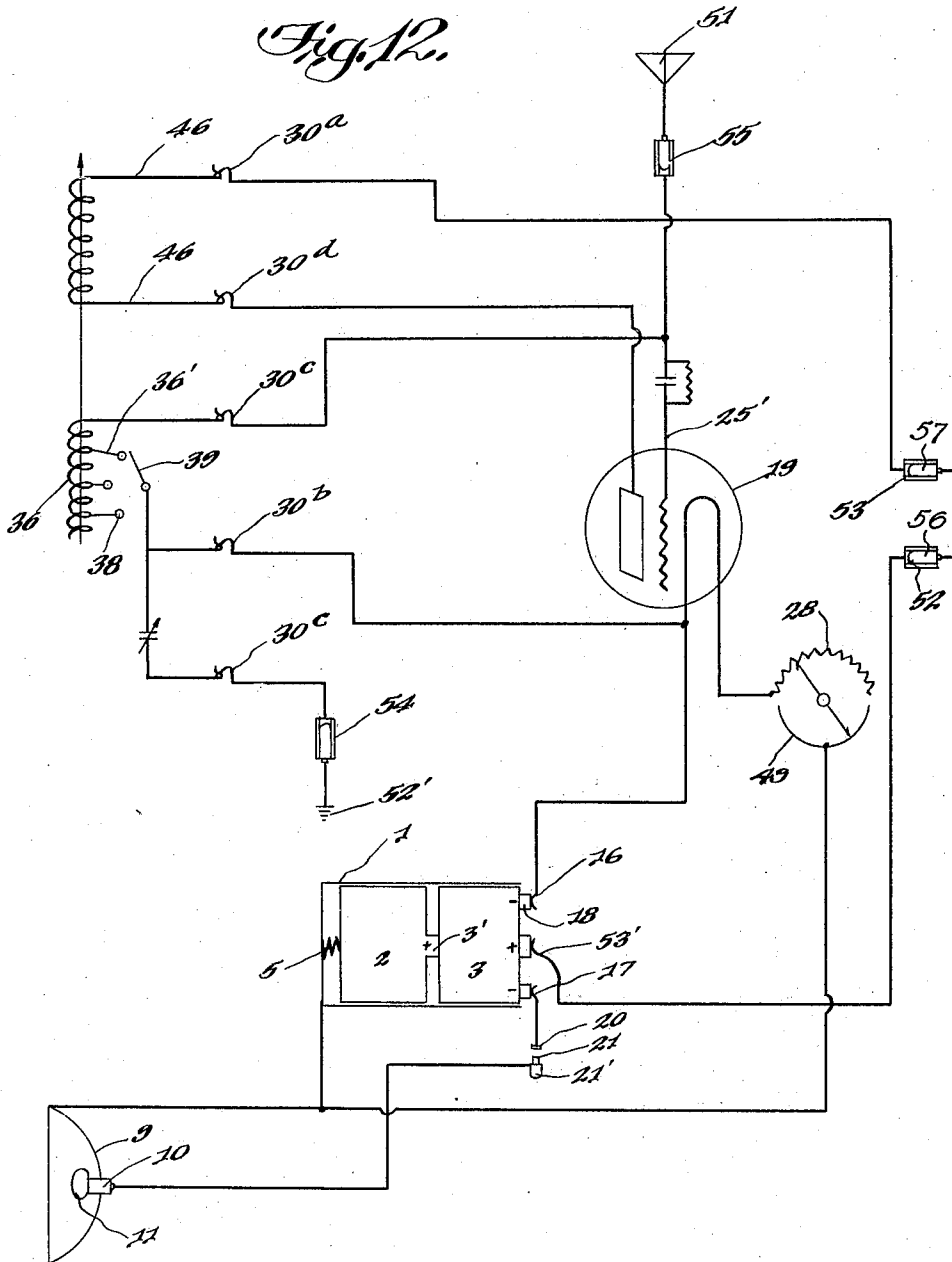
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Fig. 12.



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UNITED STATES PATENT OFFICE

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RADIO APPARATUS

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This invention relates to new and useful improvements in radio receivers and more particularly to a combined flashlight and a single-tube regenerative receiver. The main object of my invention is the provision of a device of the above character wherein there is combined with the ordinary construction battery flashlight a single-tube regenerative receiver.

Another object of my invention is the provision of an article of the above character adapted to be enclosed in a suitable casing whereby the same may be readily carried and occupy a minimum of space.

A further object of my invention is the provision of a combined flashlight and radio receiver which is enclosed in a casing and provided with means whereby the same may be quickly and readily placed in use and the operative parts thereof are contained within a suitable protective casing so that it may be carried about with very little danger of breakage.

With the above and other objects in view, my invention consists in the novel features of construction and the combination and arrangement of parts to be hereinafter more fully described, pointed out in the claims and shown in the accompanying drawings, in which:

Fig. 1 is a longitudinal sectional view, parts thereof being illustrated in elevation,

Fig. 2 is a plan view of one of the batteries,

Fig. 3 is a plan view of the rheostat control rim,

Fig. 4 is a plan view of the tube socket,

Fig. 5 is a detail section, illustrating the connection from the battery to the flashlight bulb,

Fig. 6 is a detail section through the tube socket,

Fig. 7 is a perspective view of the movable condenser plate,

Fig. 8 is a plan view of the movable condenser plate, illustrating the inductance switch lever and switch points which are connected to the sliding tuning coil,

Fig. 9 is a perspective view, illustrating the stationary condenser plate and the tickler coil,

Fig. 10 is a top plan view of the tube socket,

Fig. 11 is a side elevation of the tube socket, and

Fig. 12 is a diagrammatic view of the circuit.

In carrying out my invention I provide a lower casing 1 having its inner walls insulated as at 1' within which is arranged an A battery 2 and a B battery 3. The batteries are retained in position within this casing by means of a removable closure cap 4. Arranged between this closure cap and the metal bottom wall of the A battery is a coil spring 5 providing a connection between the negative side of the A battery and the walls of the casing through the cap 4.

An upper casing 6 is mounted upon the upper end of the lower casing 1 and has its outer end externally threaded to be engaged by a screw cap 7 carrying a lens 8 and a reflector 9, the reflector 9 being preferably disposed between the upper edge of the casing 6 and the edge of the lens 8 as best illustrated in Fig. 1. This reflector carries a socket 10 in which a light bulb 11 is arranged. The light bulb 11 has connection with the A battery through a spring contact 12 carried by casing 6. The circuit between the A battery and the bulb is controlled through the medium of manually operated means which will be more particularly hereinafter described.

The upper end of the casing 1 is internally threaded as at 13 to receive a socket piece 14 which is provided with a recess 15 adapted to receive the inner end of a spring contact 16. This contact 16 is provided for connection between a negative circular terminal 18 of the B battery and the negative filament of a tube 19, carried by the socket piece as best illustrated in Figs. 1 and 12.

A contact finger 17 is also carried by the socket piece 14 and has connection to a contact pin 20 adapted to be engaged by a depressible contact button 21 having an end portion 21' extending through an enclosure 20' carried by the casing 6. This contact pin 21 is carried by a strip 18' of conductive material carried by and insulated from casing 6 by an insulating sleeve 19'. This strip 18' carries the spring contact 12 completing the

circuit between the positive side of the A battery and light bulb 11 which positive side of the A battery is in circuit with the negative side of the B battery through the medium of the circular terminal 18 and metal casing of the B battery which rests upon and is in contact with the positive terminal 3' of the A battery as best illustrated in Fig. 1, the negative side of the A battery being connected in circuit with the light bulb through the spring 5, cap 4, metal walls of the casings 1 and 6, and reflector 9.

The socket piece 14 has extending upwardly therefrom a sleeve 22 in which the tube 19 is fitted, the lower end of this tube being provided with a negative contact pin 23 in contact with the contact finger 16 and a positive contact pin 24 engaged by a contact finger 16', as best illustrated in Fig. 1.

This socket piece 14 further carries a grid condenser 25 which has one side connected to the grid side 25' of the tube and which is further provided with an external shoulder 26 which supports a rheostat control ring 27. The interior of this control ring engages a rheostat resistance coil 28. Arranged above the shoulder 26 and supported upon the top portion of the socket piece 14 is a collar 29 and attached to this collar are circumferentially arranged contact heads 30^a to 30^e inclusive, the upwardly projecting and inwardly curved ends 31 of which are adapted to engage contact pins 32^a to 32^e inclusive. These contact pins are connected to various elements of the device as will be best understood by reference to the wiring diagram illustrated in Fig. 12.

Supported upon the collar 29 is a stationary tickler coil 33 which encloses the tube 19. One end of this coil is connected to one of the phone tip sockets, hereinafter described through the medium of the contact head 30^a and contact pin 32^a, the other end of this coil being connected to the plate side of the tube through the medium of the contact head 30^d and contact pin 32^d.

Arranged in spaced relation with the tickler coil is the stationary condenser plate 34 which is cylindrical in form and coated half way around its outer surface with tin-foil or copperfoil. It will be noted from the construction illustrated in Fig. 1 that the lower ends of the tickler coil and the stationary condenser plate are maintained in spaced relation by means of a ring 35 retained in position by means of the pins 32.

Surrounding the tickler coil 33 is a sliding tuning coil 36 having its outer end closed as at 37 and provided with a plurality of contact points 38 which are adapted to be engaged by the inductance switch lever 39 carried by a knob 40 which is rotatably mounted upon the closed end 37. This inductance switch lever 39 is connected in circuit with the minus filament of the tube through the medium of the

contact head 30^b and contact pin 32^b. This inductance lever is also connected in circuit with the stationary condenser plate as best illustrated in Fig. 12.

Rotatably mounted upon the stationary condenser plate is a movable condenser plate 41 connected in circuit with a suitable ground through the medium of the contact head 30^c and contact pin 32^c. Attached to the outer end of the movable condenser plate is an annular rim 42 having graduations 43 formed thereon with the inner edge of the rim 42 engaging over the outer edge of the stationary condenser plate as best illustrated in Fig. 1.

The stationary condenser plate 34 (Figs. 7 and 9) is provided at its outer end with an annular groove 44 which extends annularly of the condenser 34 and which engages tension springs 45 carried by the movable condenser plate retaining this condenser plate in alignment with the stationary condenser plate so that the movable condenser plate will rotate in a horizontal plane.

Referring again to the sliding tuning coil 36 it will be noted that there is provided a plurality of tap wires 36' each of which are individually connected to the contact points 38. One end of this coil is connected in circuit with the aerial circuit through the medium of the contact head 30^c and contact pin 32^c through the medium of a flexible lead 46, this lead being of a length to permit proper sliding movement of the coil. The connection between the inductance switch 39 and the contact head 30^b and the stationary condenser plate is likewise through the medium of a flexible lead 46' similar to the lead 46.

The rheostat control rim 27 is provided with an arcuate slot 47 in which a guide pin 48 moves. This guide pin is carried by the shoulder 26 of the socket piece 14 serving to limit rotary movement of the control rim 27.

It will be noted in Fig. 4 that the rheostat resistance coil 28 extends half way around the socket piece 14 and opposite this coil is arranged a copper strip 49 connected to the positive filament side of the tube through the contact finger 16'. It is apparent from this construction that when one of the spring contacts 50 or 51, carried by the control rim 27, is in engagement with the resistance coil, the other will be in engagement with the copper strip 49 thus completing a connection between the rheostat resistance coil and the copper strip.

The socket piece 14 is provided with a plurality of cord tip sockets for connecting the device with the head phones, aerial 51', and ground 52'. The cord tip socket indicated at 52 connects one of the phone tips, indicated by 56 to the positive side of the B battery through the medium of a spring contact 53'; the cord tip socket 53 connects the other phone tip 57 to the tickler coil 33 through the medium of the contact head 30^a and con-

tact pin 32^a; the cord tip jack indicated at 54 connects the ground 52' to the movable condenser plate; the cord tip jack 55 connects the aerial 51' to the grid condenser 25 and to the tuning coil 36.

The circuit arrangement will be best understood by reference to Fig. 12 of the drawings taken in connection with the description herein.

In Figure 6, I have illustrated the manner of mounting the jack sockets in the socket piece 14, the jack sockets including a sleeve 56 having a retaining rim 57 upon their inner ends with a nut 58 upon the outer ends to retain the connection 59 thereon.

From the foregoing it will be apparent that I have provided a simple inexpensive device of the character set forth wherein a combination radio receiving set and flashlight is combined in a single casing for convenience in carrying the same about upon the person and wherein it is always ready for use.

While I have shown and described the preferred form of my invention, it will be obvious that various changes in the details of construction and in the proportions may be resorted to for successfully carrying my invention into practice without sacrificing any of the novel features or departing from the scope of the appended claims.

Having thus described my invention, what I claim is:

1. A device of the class described including a body casing, a socket piece threaded in one end thereof, a vacuum tube carried by the socket piece, batteries within the casing, means forming connection between the batteries and tube, a rheostat control carried by the socket and a collar carried by the socket and arranged above the rheostat control rim.

2. A radio receiving apparatus including an audion tube, a casing disposed around said tube, a socket for said tube secured to said casing defining a tube receiving compartment and a battery receiving compartment therein, a variable condenser, a tuning coil, and a tickler coil disposed around said tube in nesting arrangement in said tube receiving compartment, and batteries in said battery receiving compartment operatively connected to said nested parts.

3. A radio receiving apparatus including an audion tube, a casing disposed around said tube, a socket for said tube secured to said casing defining a tube receiving compartment and a battery receiving compartment therein, a variable condenser, a tuning coil, and a tickler coil disposed around said tube in nesting arrangement in said tube receiving compartment, batteries in said battery receiving compartment operatively connected to said nested parts, a rheostat mounted on said socket for controlling the filament heat of said tube, and a fixed condenser carried by said socket.

4. A device of the class described including a substantially cylindrical casing, an audion tube mounted in said casing at one end thereof, a variable condenser in said casing disposed around said tube, a tickler coil mounted in said casing interposed between said tube and said condenser, a tuning coil in said casing interposed between said tickler coil and said condenser, a socket for supporting said tube mounted in said casing defining compartments therein, and batteries in one of said compartments adapted to be operatively connected to said parts.

5. In a device of the class described, an audion tube, a socket for said tube, a substantially cylindrical casing, said socket being mounted in said casing so as to divide said casing into compartments, said tube being mounted in one of said compartments, a variable condenser rotor mounted in said tube compartment and disposed around said tube, a variable condenser stator juxtaposed said rotor and disposed between said rotor and said tube, a tuning coil adapted to be disposed between said stator and said tube, a tickler coil disposed between said tuning coil and said tube, A batteries in another compartment in said casing, B batteries in said compartment, a rheostat carried by said socket, a fixed condenser carried by said socket, said parts being operatively interconnected, and removable closure caps for the end of said casing.

6. In a device of the class described, an audion tube, a socket for said tube, a substantially cylindrical casing, said socket being mounted in said casing so as to divide said casing into compartments, said tube being mounted in one of said compartments, a variable condenser rotor mounted in said tube compartment and disposed around said tube, a variable condenser stator juxtaposed said rotor and disposed between said rotor and said tube, a tuning coil adapted to be disposed between said stator and said tube, a tickler coil disposed between said tuning coil and said tube, A batteries in another compartment in said casing, B batteries in said compartment, a rheostat carried by said socket, a fixed condenser carried by said socket, said parts being operatively interconnected, and removable closure caps for the end of said casing, one of said closure caps retaining a lens and a reflector, a lamp carried by said reflector, said lamp being operatively connected to said A batteries, and a switch carried by said casing for controlling said lamp.

In testimony whereof I affix my signature.

RONALD E. PATRIE.