March 4, 1930. S. WEISBERG 1,749,364

RADIO RECEIVING APPARATUS

Filed March 29, 1928

Fig. 1,

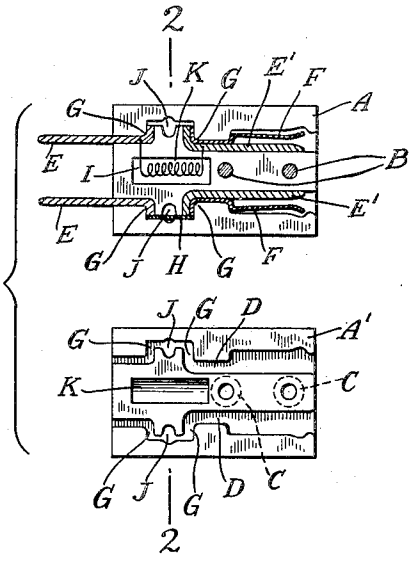
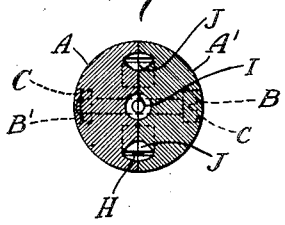


Fig. 2.



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UNITED STATES PATENT OFFICE

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RADIO RECEIVING APPARATUS

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My invention relates to radio receiving apparatus.

The principal object of my invention is to provide a device that can be readily connected in the circuit of a house current, and which embodies means for preventing the tube or tubes used in the receiving set from being injured or burned out due to a rise in voltage in the power line, or due to any cause by reason of which the voltage is raised beyond the normal.

A further object is to make the device of parts that are interchangeable as far as possible to reduce the cost of dies and the cost of assembling, the device being so constructed as to be assembled without the use of tools, and all the parts being held together by the screws or bolts which hold the casing portions together in co-operative relation.

Referring to the drawings which form a part of this specification,

Fig. 1 is a longitudinal view of the two half portions which comprise the casing, the upper view disclosing the electrical conducting elements assembled therein.

Fig. 2 is a cross sectional view of the device taken on line 2—2 of Figure 1, as it would appear when the casing portions are assembled.

The casing comprises two duplicate semi-cylindrical portions A, and A′ respectively, made of suitable insulating mouldable material, and are held together by the nut and bolt elements B, and B′ respectively, as shown in dotted lines in Figure 2, the portions each having a recess C, as illustrated in dotted lines in Figure 2, to permit the nut and head of the bolt to rest within the circle or outer circumference of the cylinder.

Two slots D—D respectively extend the entire length of the casing portions, the depth of the slots corresponding to one half the width of the conductor elements E, and F, which rest therein as shown, so that they may be clamped firmly between the casing portions by the bolts B.

The device is illustrated by full size drawings with the exception of the resistance and fuse wires, which are further described hereinafter. The elements E, are duplicates, and the elements E′ are duplicates, and the elements F, are duplicates, one pair of each being used in each device as shown. Each of said conducting elements is bent or off-set at one end to provide an anchorage at each point G, in the casing, the slots being formed to correspond to provide abutments to prevent longitudinal movement of said conductors in either direction.

A fuse wire H, rests in the slot between the adjacent ends of the conductors E and E′ in contact therewith. This fuse wire is very small in cross section and of such resistance as to melt before the resistance wire I, will burn out.

A recess J, is formed in the casing portions to receive the fused metal when the fuse melts, and is large enough to insure the complete breaking of the circuit.

A central recess K, is formed in the casing to provide a separate closed chamber to hold the resistance wire I, which is preferably formed in a helical coil, the ends of which overlie and contact with the adjacent ends of the conductors E, and E′ on the side opposite to that in which the fuse wire is located, to complete the circuit at this point.

The resistance wire is made of very fine wire, having a resistance equal to or slightly greater than that of the tubes of the set it is to be put in circuit with, or is designed to protect, and therefore the fuse wire and resistance wire are made in complimentary pairs, each pair being designed for a set of tubes having a resistance less than that of the fuse and resistance wire, as will be readily understood.

The elements E and E′ are stiff, having very little resiliency, and therefore the conductors F, are made of thin resilient sheet material. The elements E′ and F, are held firmly in contact with each other in the grooves D, and in freely separable relation when the casing is apart.

If desired, a bridge-piece of conducting material may be used in place of the fuse wire on one side of the circuit, and allow the resistance wire I, to serve as a fuse, the wire burning out when the voltage rises above the normal to the danger point.

In use the device is connected in the feed

line between the source of power and the set to be operated. The resistance to the current increases as the voltage increases due to the increased heating of the wire, thus keeping the flow of current thru the tubes fairly constant until the fuse wire or the resistance burns out as the voltage reaches the danger point.

The average six tube set operates under a resistance of about 7 ohms with 110 volts. In such a set if the voltage is increased to say, 130 volts, the fuse would blow before the resistance would burn out, but if a bridge piece was used on one side of the circuit instead of the fuse, the resistance wire would burn out and disrupt the circuit, thus saving the tubes of the set from damage.

It has been found that the use of this device also prevents the whistling and noisy tones usually generated when the voltages rises too high, the resistance serving to prevent the tubes from oscillating, and this feature of my invention is deemed of importance.

The device is so simple and the construction is so clearly shown in the drawings, that further description is deemed unnecessary.

Having thus described my invention I claim as new:

1. A device for protecting the tubes of a radio receiving set, comprising a casing of insulating material, electrical conductors in said casing comprising two separated sections located in alignment with each other, a wire connecting said sections having a resistance greater than that of the tubes of the set to be protected, two other sectional conductors located in alignment with each other, a fuse wire of predetermined resistance connecting said last mentioned conductors and designed to fuse prior to the fusing temperature of said first wire, said conductors being adapted for connection with standard plug terminal elements used in connecting electrical circuits.

2. A device for protecting the tubes of a radio receiving set, comprising a casing of insulating material, electrical conductors in said casing comprising two sets of sectional conductors, one set being connected by a wire resistance and the other by a fuse wire, both resistance wire and fuse wire having a greater resistance than that of the tubes of the set to be protected, said conductors being adapted for connection with standard plug terminal elements used in connecting electrical circuits of the character described.

3. A device for protecting the tubes of a radio receiving set, comprising a casing of insulating material made of two duplicate half portions with grooves formed therein, two sets of electrical conductors located in said grooves two of each of which are duplicates and are located on opposite sides of the median line of the casing, a resistance wire connecting the adjacent ends of the conductors on one side of the casing and a fuse wire of greater resistance connecting the adjacent ends of the conductors on the opposite side of the casing, each of said wires having a resistance greater than that of the tubes of the set to be protected.

4. A device for protecting the tubes of a radio receiving set, comprising a casing of insulating material made in two duplicate half portions with grooves formed therein, sectional electrical conductors in said grooves two each of which are duplicates, a resistance wire and a fuse wire connecting said conductors in freely separable relation, and means for connecting said casing portions together and clamping said conductors therein.

5. A device for protecting the tubes of a radio receiving set, comprising a casing of insulating material made in two half duplicate portions with grooves formed therein, electrical conductors in said casing located in said grooves and spaced apart longitudinally, a resistance connecting the adjacent ends of said conductors, said casing having a chamber formed therein in which said resistance rests, means for holding the two casing portions together and for clamping the conductors in the grooves.

6. A device for protecting the tubes of a radio receiving set, comprising a casing of insulating material made in two duplicate half portions with grooves formed therein, sectional conductors located in said grooves, means for preventing the conductors from moving longitudinally in said grooves, a resistance element connecting the adjacent ends of said sectional conductors located in one of said grooves, and means for holding said casing portions together the elements therein being held by one portion of the casing in freely separable relation thereto when the casing portions are separated.

7. A device for the purpose set forth comprising a casing of insulating material, sectional conductors therein spaced from each other longitudinally, a resistance wire of greater resistance than that of the tubes to be protected connecting the adjacent ends of said conductors on one side of the median line and a conductor for connecting the adjacent ends of the sectional conductors on the opposite side of the median line, two of said conductors extending beyond the end of the casing at one end thereof, and two being housed within the casing at the opposite end thereof substantially as shown.

8. A device for protecting the tubes of a radio receiving set, comprising a casing of insulating material made in two half portions which are duplicates, having grooves formed therein, sectional conductors arranged in pairs located in said grooves and freely removable therefrom when the casing portions are separated, said casing having a separate closed chamber, a resistance wire in said

chamber of greater resistance than that of the tubes to be protected, the ends of which are held in contact with two of said conductors to complete a circuit therethru, a fuse wire of greater resistance than that of said resistance wire connected in circuit therewith, and means for holding said casing portions together.

In testimony whereof I have affixed my signature.

SIDNEY WEISBERG.