June 21, 1932. H. L. BRADLEY 1,864,336

RESISTOR UNIT

Filed June 8, 1927

Fig. 1.

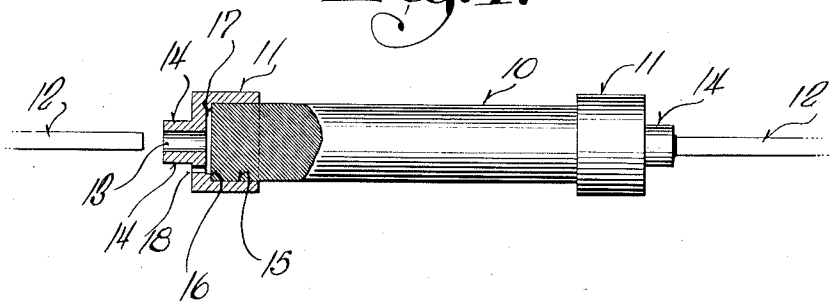


Fig. 3.

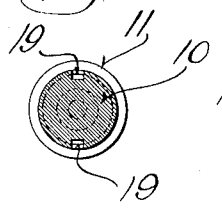


Fig. 2.

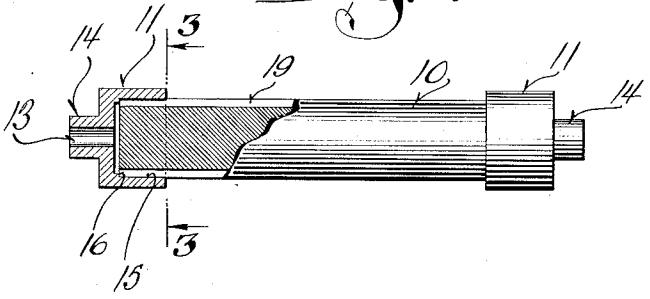


Fig. 4.

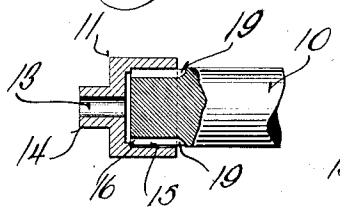


Fig. 5.

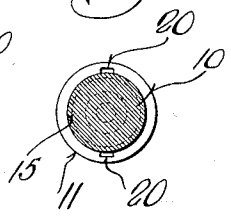


Fig. 6.

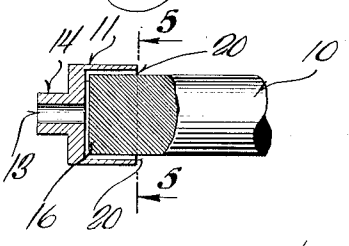
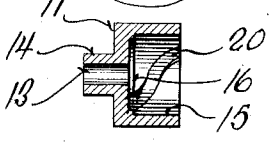


Fig. 7.



Inventor

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UNITED STATES PATENT OFFICE

HARRY L. BRADLEY, OF MILWAUKEE, WISCONSIN, ASSIGNOR, BY MESNE ASSIGNMENTS, TO ALLEN-BRADLEY COMPANY, OF MILWAUKEE, WISCONSIN, A CORPORATION OF WISCONSIN

RESISTOR UNIT

Application filed June 8, 1927. Serial No. 197,398.

This invention relates to certain new and useful improvements in resistor units of the type having a body of material of the desired conductivity and provided with end caps or terminal members adapted to be connected within a circuit by being detachably secured between a pair of spring clips or other mounting or by having the conductor ends directly connected therewith by soldering.

In the application of Lynde Bradley, Serial No. 53,570, is illustrated one form of resistor unit which, while very satisfactory when mounted between spring clips, is open to the objection that when an attempt is made to directly solder the leads in the sockets or openings provided, the air trapped within the opening expands upon the application of heat, blowing the solder out and further the expansion of any air that may be trapped between the ends of the resistor body proper and the end caps or terminals either loosens the caps or blows them off.

Therefore, this invention has as a primary object the provision of means whereby the difficulties heretofore encountered in connection with the soldering of the leads directly to the end caps or terminals are overcome.

Another object of this invention resides in the provision of an improved resistor unit having an end terminal or cap provided with means for venting air trapped either between the resistor cap or the body proper or within the sockets in which the leads are adapted to be soldered.

A more specific object of this invention resides in the provision of an improved resistor unit of the character described which in no wise impairs its efficiency and is capable of production in quantities at a low cost.

With the above and other objects in view which will appear as the description proceeds, my invention resides in the novel construction, combination and arrangement of parts substantially as hereinafter described and more particularly defined by the appended claims, it being understood that such changes in the precise embodiment of the herein disclosed invention may be made as come within the scope of the claims.

In the accompanying drawing, I have illustrated several complete examples of the physical embodiment of my invention constructed according to the best modes I have so far devised for the practical application of the principles thereof, and in which:

Figure 1 is a side view, partly in section and partly in elevation, illustrating an improved resistor embodying my invention;

Figure 2 is a view similar to Figure 1 of a slightly modified form of my invention;

Figure 3 is a view, taken transversely through Figure 2 on the plane of the line 3—3;

Figure 4 is a view, partly in section and partly in elevation, of one end of a resistor unit embodying another modification of my invention;

Figure 5 is a transverse sectional view taken through Figure 6 on the plane of the line 5—5;

Figure 6 is a view similar to Figure 4 of still another modified form of my invention, and

Figure 7 is a view taken transversely through the end terminal or cap member providing a further modification of my invention.

Referring now more particularly to the accompanying drawing, 10 designates a body of material having the desired resistance and preferably formed in accordance with the method illustrated and described in the copending application of Laurence E. Power, Serial No. 197,882, and 11 designates end caps or terminal members pressed or otherwise secured on the ends of the body to facilitate mounting of the unit between spring contact clips, not shown, or between the ends of bus lines or leads 12 soldered or otherwise secured within the bores 13 of the socket members 14 formed on the caps or terminals.

In soldering the leads within the sockets 14, the application of heat has heretofore resulted in the blowing off or loosening of the caps or terminals due to their expansion or the expansion of the air trapped therein. Further, any air trapped in the bore 13 tends to blow the solder outwardly making it extremely difficult to secure the leads in the caps. This difficulty is eliminated in the

structures illustrated in the drawing and each terminal member or cap has its bore 15 slightly reduced at its inner end to form a shoulder 16 against which the inner end of the resistance body 10 strikes to form an air space 17 between the inner end of the body 10 and the closed end of the cap, and a bleed or vent opening 18, see Figure 1, connects space 17 with the outside air. It will thus be seen that heating of the terminal member in the soldering of a lead in the socket 14 will not cause the blowing off of the cap by reason of the fact that the expanding air readily escapes through the vent.

The bore 13 of the socket preferably extends into the space 17, when soldering of the lead therein any air trapped therein is readily vented through space 17 and bleed 18.

In Figure 2, the terminal member structure is identical with that illustrated in Figure 1 with the exception that the bleed or vent 18 is eliminated and the air vented from the space 17 through grooves or channels 19 formed in the body 10, the grooves 19 preferably extending throughout the length of the units 10. In the structure illustrated in Figure 4, the grooves 19 are formed in only the end portions of the body 10.

In Figures 5 and 6 the space 17 is vented through grooves or channels 20 broached or otherwise formed in the walls of the terminal members and the groove 20 of the embodiment illustrated in Figure 7 is of spiral form.

From the foregoing description taken in connection with the accompanying drawing, it will be readily apparent to those skilled in the art to which an invention of the character described appertains that I provide novel and improved means for preventing blowing off of the terminal caps when heat is applied thereto and which will prevent blowing out of the solder from the sockets due to the expansion of air trapped therein.

What I claim as my invention is:

1. A terminal member adapted to be secured over the end of a molded electrical resistor unit, comprising means whereby a bus line may be soldered to the terminal member, and means for venting the interior of the terminal member to prevent its detachment from the unit by the expansion of air trapped between the terminal member and the end of the unit upon application of heat to the terminal member to connect the bus line therewith.

2. A terminal member adapted to be secured over the end of a substantially solid electrical resistor unit and comprising a cap portion having a bore for receiving the end of the unit, a socket on the terminal member and into which the end of a bus line is adapted to be soldered, and means for venting the interior space between the terminal member and the resistor.

3. A terminal member adapted to be secured over the end of a substantially solid electrical resistor unit and comprising a cap portion having a bore for receiving the end of the unit, a socket formed on the terminal member and into which the end of a bus line is adapted to be soldered, means for venting the space between the interior of the terminal member and the resistor unit to permit the escape of air trapped therein and expanded by the application of heat to the terminal member, and means whereby said last mentioned means also vents the socket to prevent blowing of the solder therefrom during the soldering of a bus line therein.

4. A terminal member adapted to be secured over the solid end of a molded electrical resistor unit and comprising a bored cap portion into which one end of the unit is secured, and means for venting the bore of said bored cap to prevent the dislodgment of the terminal member by the expansion of air trapped between it and the end of the unit when the terminal member is heated.

In testimony whereof, I hereunto affix my signature.

HARRY L. BRADLEY.