Sept. 18, 1934. H. HUBBELL, JR 1,974,049

GROUNDED SOCKET CASING

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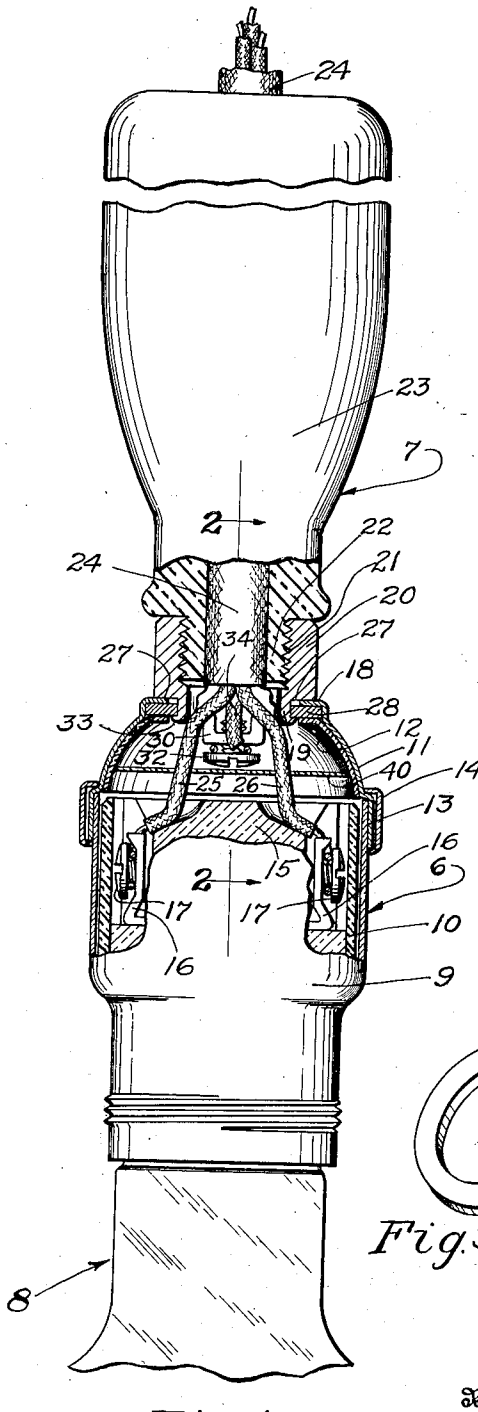


Fig. 1

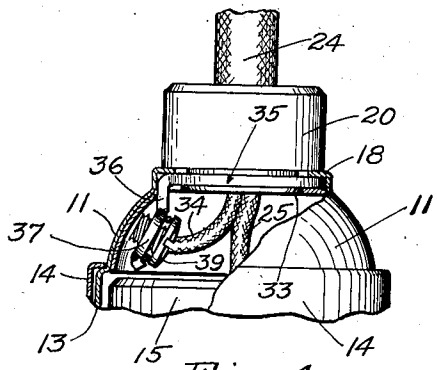


Fig. 4

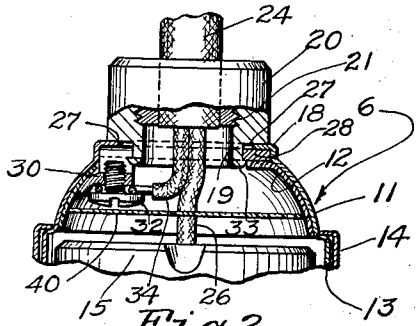


Fig. 2

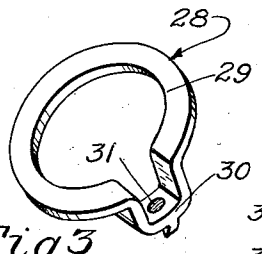


Fig. 3

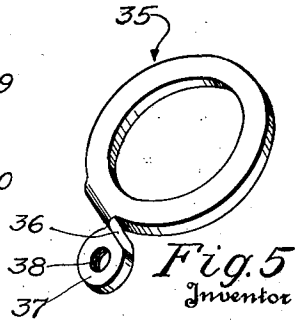


Fig. 5

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GROUNDED SOCKET CASING

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7 Claims. (Cl. 173—358)

This invention relates to new and useful improvements in sockets for electric bulbs and has particular relation to a grounded socket casing for use in a portable lamp structure such as the "trouble lights" used in garages, factories and the like.

An object of the invention is to provide a lamp socket, particularly for use in portable lamp structures and including means whereby the metal casing or cap of the socket is grounded by a conductor preferably leading from the interior of the socket and also preferably included in the usual rubber covered cable containing the two power leads or conductors.

Satisfactory embodiments of the invention are shown in the accompanying drawing and described in detail in the following specification. However, it is to be understood that the drawing and description are for the purpose of disclosure and that the invention is not confined to the details shown but includes all such variations and modifications as fall within the spirit of the invention and the scope of the appended claims.

In the drawing:

Fig. 1 is a side elevational view of a portable or trouble light in accordance with the invention, parts of the grounded socket casing being broken away;

Fig. 2 is a detail view showing the upper portion of the casing, the view being taken at right angles to Fig. 1 and parts of the upper portion of the casing being broken away;

Fig. 3 is a perspective view of a metal washer employed in the socket of Figs. 1 and 2;

Fig. 4 is a view somewhat similar to Fig. 2 but showing the device equipped with a modified form or structure of washer; and

Fig. 5 is a perspective view of the washer used in Fig. 4.

Referring in detail to the drawing and at first particularly to Figs. 1, 2 and 3, the improved socket generally designated 6 is shown as applied to a portable or trouble light including a handle 7 and a lamp or bulb 8 threaded into the socket 6 in the usual manner. The socket 6 comprises a metal casing including a metal shell 9 lined with paper or other insulating material 10 and a cap 11 also of metal and provided with a paper or other insulating lining 12. The cap 11 as here shown includes a flange or skirt portion 13 surrounding the upper end portion of the metal shell and a ring 14 serves to connect the cap and shell.

Within the casing is any or the usual block of insulating material 15 carrying any or the usual connections 16 each equipped with a binding screw or post 17 and forming electrical connections with the usual central and screw shell lamp contacts, not shown. At its end opposite its skirt portion 13 the cap 11 is provided with an end wall 18 having an opening therethrough and through which opening extends a reduced portion 19 of a ferrule 20 comprising part of the handle 7. The ferrule is internally screw threaded as at 21 and is adapted to have the reduced externally threaded screw portion 22 of a hand piece 23 threaded therein. Through the handle 7 there is carried a cable 24 including a pair of conductors 25 and 26 each connected with one of the binding posts or screws 17. Of course, wires or conductors 25 and 26 are the power leads to the socket 6 and are adapted to supply current for energizing the lamp or bulb 8.

As will be clear from an inspection of Figs. 1 and 2, a shoulder 27 results toward the inner end of the ferrule 20 when the reduced portion 19 of the ferrule is formed. When the ferrule is applied to the cap 11 this shoulder 27 of the ferrule engages the outer surface of the end wall 18 of the cap and against the inner surface of said wall there is disposed a metal washer 28 including an annular body portion 29 having an off-set portion 30 tapped as at 31 for the reception of a binding screw 32. The washer 28 is held in firm engagement with the inner surface of the end wall 18 of the cap whereby a good electrical connection is provided and this washer may be formed of copper or other material. To secure the washer in place and also to secure the ferrule to the cap the inner end of the reduced portion 19 of the ferrule is rolled or riveted over as at 33 against the underside of the washer.

The parts are therefore securely united with the washer in firm engagement with the cap and disposed within the cap whereby to all outward appearances the socket 6 is of the usual construction. A third or grounding conductor 34 is preferably included in the cable 24 with the conductors 25 and 26 and this grounding conductor 34 is secured about the binding screw or post 32 or clamped beneath the head of the binding screw or post and the under surface of the offset portion 30 of the washer 28.

It will be evident that without the grounding conductor 34 the socket 6 is insulated and if one of the leads or conductors 25 and 26 become loose and touch the shell or cap the operator would probably be injured if his hand came in contact with the shell or cap. However, with the present arrangement the shell and cap portions of the casing are in contact as usual and the washer

28 is in contact with the cap portion of the casing and is connected with the grounding conductor 34. Therefore, should one of the power leads or conductors work loose and come in contact with any portion of the metal casing the casing will be thoroughly grounded through the conductor 34 and a workman would not be injured should he touch the shell.

Figs. 4 and 5 disclose a slightly modified construction of washer, the other parts being constructed as described in connection with Figs. 1 and 2. In this modified construction the washer generally designated 35 is at one side provided with a depending arm 36 carrying an outwardly inclined ear 37 tapped as at 38 for the reception of a binding screw 39. The binding screw 39 is, of course, adapted to have the grounding conductor 34 connected therewith and the washer 35 is held in engagement with the inner surface of the end wall 18 of the cap 11 by riveting or rolling over the inner end portion of the ferrule as at 33.

Since the device of Figs. 4 and 5 functions as already described in connection with Figs. 1 through 3 further description is believed unnecessary although attention is directed to the fact that in either form of the device the washers are tightly clamped against the metal casing and particularly the cap portion thereof and the grounding wire or conductor is connected to a binding post on the washer.

If desired, and as a further safety feature, a disc of insulating material 40 may be provided in the cap 11 and between the binding post 32 and the binding post 17. This disc 40 is preferably formed of a relatively stiff insulating material as compressed fibre. Further, the disc is provided with a pair of spaced perforations for the passage of the conductors or leads 25 and 26 and in operation this plate is to prevent the conductors or leads 25 and 26 from moving around freely in the socket should they become free of their binding posts 16. The disc will also prevent the exposed ends of the conductors 25 and 26 from coming into engagement with the binding post 32 of Figs. 1 and 2 or 39 of Fig. 4.

Having thus set forth the nature of my invention, what I claim is:

1. A lamp socket including a metal casing having an opening through an end wall thereof, a metal washer within said casing, a handle including a portion clamping said washer against the inner surface of the end wall of the casing, a pair of contacts in said casing, said contacts adapted to be engaged by the contacts of a bulb, a pair of conductors extending through said opening and connected with said pair of contacts, and a grounding conductor connected with said metal washer and extending out of the casing.

2. A lamp socket including a metal casing having an opening through an end wall thereof, a metal washer within said casing, means clamping said washer against the inner surface of the end wall of the casing, a pair of contacts in said casing, said contacts adapted to be engaged by the contacts of a bulb, a pair of conductors extending through said opening and connected with said pair of contacts, said washer having a portion thereof offset inwardly of the casing, and a grounding wire connected with said portion of the washer and extending out of the casing.

3. A lamp socket including a metal casing having an opening through an end wall thereof, a metal washer within said casing, means clamping said washer against the end wall of the casing, a pair of contacts in said casing, said contacts adapted to be engaged by the contacts of a bulb, a pair of conductors extending through said opening and connected with said pair of contacts, said washer having a portion thereof offset inwardly of the casing, a grounding wire connected with said portion of the washer and extending out of the casing, a perforated fibre disc extending transversely of the casing between the washer and said pair of contacts, and said pair of conductors extending through the perforations in said disc.

4. A lamp socket including a metal casing having an opening through an end wall thereof, a ferrule extending through said opening, a metal washer against the inner surface of said end wall of the casing and about the opening therein, said ferrule having a shoulder against the outer surface of the end wall of the casing, said ferrule having an inner portion engaging the washer whereby the washer and end wall of the casing are clamped between said inner portion and shoulder of the ferrule, a hand piece threaded into said ferrule, a pair of contacts within the casing, said contacts adapted to be engaged by the contacts of a bulb, a pair of conductors extending through said hand piece and ferrule and connected with said contacts, said washer having a portion offset inwardly of the casing, a binding post on said offset portion of the washer, and a grounding wire connected with said binding post and extending through said ferrule and hand piece and included in a cable with said pair of conductors.

5. A lamp socket including a metal casing having an opening through an end wall thereof, a ferrule extending through said opening, a metal washer against the inner surface of said end wall of the casing and about the opening therein, said ferrule having a shoulder against the outer surface of the end wall of the casing, said ferrule having an inner portion engaging the washer whereby the washer and end wall of the casing are clamped between said inner portion and shoulder of the ferrule, a hand piece threaded into said ferrule, a pair of contacts within the casing, said contacts adapted to be engaged by the contacts of a bulb, a pair of conductors extending through said hand piece and ferrule and connected with said contacts, said washer having an ear at one side thereof and extending inwardly of the casing, a binding post on said ear, and a grounding wire connected with said binding post and extending through said ferrule and hand piece and included in a cable with said pair of conductors.

6. A lamp socket including a metal casing having an opening through a wall thereof, a ferrule extending through said opening, a metal washer against the inner surface of said wall of the casing and about the opening therein, said ferrule having a shoulder against the outer surface of said wall of the casing, said ferrule having an inner portion engaging the washer whereby the washer and said wall of the casing are clamped between said inner portion and shoulder of the ferrule, a pair of contacts within the casing, said contacts adapted to be engaged by the contacts of a bulb, a pair of conductors extending through said ferrule and connected with said contacts, said washer having a portion extending out of the plane of the washer, a binding post on said portion of the washer, and a grounding wire connected with said binding post and extending through said ferrule.

7. A lamp socket including a metal casing having an opening through a wall thereof, a handle including a portion extending through said open-

ing, a metal washer against the inner surface of said wall of the casing and about the opening therein, said handle having a shoulder against the outer surface of said wall of the casing, said handle having an inner portion engaging the washer whereby the washer and said wall of the casing are clamped between the inner portion and shoulder of the handle, a pair of contacts within the casing, a pair of conductors connected with said contacts, and a grounding wire connected with said washer and extending out of said casing.

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