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2,284,745

LAMP SOCKET

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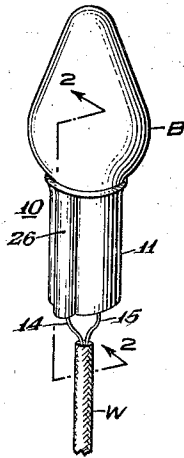


FIG. 1.

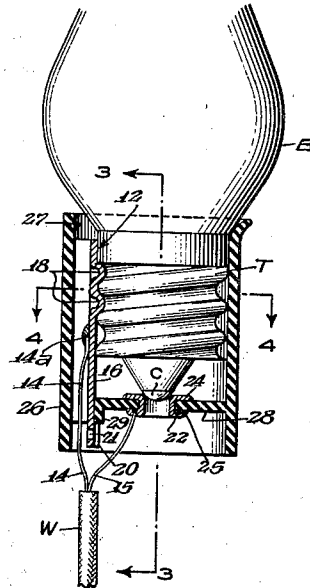


FIG. 2.

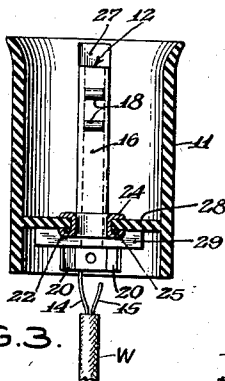


FIG. 3.

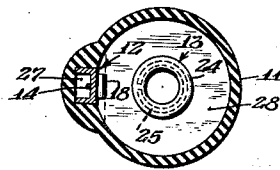


FIG. 4.

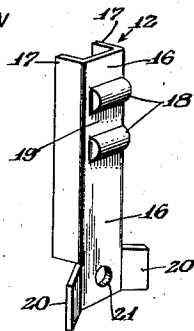


FIG. 5.

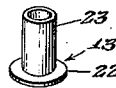


FIG. 6.

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LAMP SOCKET

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2 Claims. (Cl. 173-358)

This invention relates to electric light sockets and more particularly to sockets adapted for use in connection with a series of Christmas tree bulbs or other decorative lights or bulbs.

Essentially this invention relates to a means of simplifying the electric light socket and reducing the parts thereof in such a manner as to render the cost thereof substantially less than that of existing electric light sockets while at the same time facilitating construction and assembly operations and consequently reducing the cost thereof.

Heretofore in the construction of electric light sockets or electrical outlet sockets of the type where the electric light bulb or other attachment was to be screwed in, it has been necessary to provide an internal metallic threaded cylinder within the socket casing to retain the threaded end of the light bulb or other attachment and at the same time to provide an electrically conductive button at the end of the casing insulated from the metallic threaded cylinder.

The casing itself was thus merely a container for the two connections and the two connections, especially in the metallic cylinder, were such that they might be used in other ways and with other types of containers or casings.

This type of construction has been utilized wherever it has been necessary to connect an attachment to an electrical circuit by screwing a plug thereinto. This type of construction has been utilized not merely for heavier constructions and permanent constructions, but even for such temporary apparatus as decorative lamp circuits and Christmas tree light strings.

An object of the present invention is to form a simplified electrical socket wherein electrical connecting members may be screwed, which socket shall be simple in construction and operation, and inexpensive to assemble and manufacture.

A second and most important object of the present invention is to provide, in connection with light bulbs, a socket of simplified construction and inexpensive to manufacture, wherein such light bulbs may be screwed in order to establish electrical connection and in order to support the light bulb.

Another important object of the present invention is the provision of simplified supporting and circuit connecting means for decorative lamps such as Christmas tree bulbs.

In my invention, I have found that it is unnecessary to provide a fully cylindrical metallic internal threaded container for establishing elec-

trical connection to one pole of the lamp and for supporting the lamp.

Indeed, I have found that a small metallic insert for establishing such a connection may be used, said insert having one or more projections thereon to engage the thread of the lamp that is placed within the socket. Such metallic insert may well occupy less than twenty degrees of the interior circumference of the socket depending upon the size of the socket. Such metallic insert will therefore be much less expensive to manufacture than the fully cylindrical metallic threaded container heretofore used, while at the same time it will provide for the electrical connection to the lamp and for support of the lamp.

Instead of providing an end connection for the member or lamp to be screwed into the socket, which end connection must be secured in place by complicated supporting means, I have found that a perforation in the end wall upon which a rivet may be mounted, the flanges thereof being bent over the edges of the end wall, will be sufficient support for the end connection, the said rivet being the end connection itself. That is, on the outside of the end wall, the lead-in wire is wound about the rivet and encased within the bent-over flange thereof, while on the inside of the end wall the bent-over flange of the rivet forms the end connection against which one of the terminals of the light bulb is pressed.

In the construction of a socket of my invention, I provide for a recess in the socket within which to mount the metallic strip carrying the projections which are to engage the threads on the member to be screwed in. This recess is such that the metallic strip will lie substantially flush with the interior surface and only the projections thereon extending into the interior of the socket to engage the threads of the plug which is screwed in.

By the utilization of the means of my invention, therefore, the socket when constructed or molded, is provided with all of the support elements for the metallic connections and no other supporting elements such as screws or rivets or sealing wax are necessary to complete the support. That is, as will hereinafter be pointed out, the metallic strip is of such form that when inserted within the socket it cooperates with the supporting elements of the socket to provide for permanent engagement of the metallic strip within the socket while the other connection is riveted about a perforation in the end wall of the socket.

The integral structure thus formed is in-

capable of disarrangement either by the action of heat or of any other influence and is permanently arranged to cooperate with any electrical apparatus which may be mounted therein.

The socket may be formed by a simple molding operation and it is no more expensive to form the socket in the specific form necessary for the construction of my invention than to form the existing conventional socket structure.

Accordingly, it is a further object of my invention to provide an integral socket unit having by its inherent formation, supporting structure for the electrical connections to any element which may be mounted therein, and further providing supporting structure for the metallic means which in turn cooperates to support the structure mounted therein.

Many other objects and uses of this invention will in part be apparent and in part pointed out in the following description and drawing, in which:

Figure 1 is a view in perspective of the exterior of a socket of the type of my invention, with a bulb mounted therein.

Figure 2 is a cross-sectional view taken on line 2—2 of Figure 1 looking in the direction of the arrows.

Figure 3 is a cross-sectional view taken on line 3—3 of Figure 2, also looking in the direction of the arrows.

Figure 4 is a cross-sectional view taken on line 4—4 of Figure 2 looking in the direction of the arrows.

Figure 5 is a view in perspective of the supporting and connecting strip to be mounted within the socket of Figures 1 to 4.

Figure 6 is a view in perspective of the rivet to be inserted in the end wall of the socket of Figures 2 to 4.

Referring now to Figure 1, I have here shown a socket structure 10 within which an electric light bulb B is mounted, the said light bulb having been screwed into the socket in the normal way.

The socket comprises a molded container or socket element 11 having an extruded outer surface 26. Wires 14 and 15 of the electrical conduit W are connected to the socket in the manner shown in Figure 2. The socket and connections are of such nature that the electrical wires or conduit W may support the socket or may support a series of sockets in similar manner in the fashion commonly utilized in connection with the draping and supporting of Christmas tree bulbs.

Referring now to the remaining figures, which show the various parts of the internal construction of the socket structure 10, I have shown in Figure 5 a metallic strip member 12 having a front surface 16 and supporting and positioning flanges 17, and additional supporting and positioning wings 20, 20. The front surface 16 has thereon a plurality of bumps or projections 18 preferably two in number, with spaces 19 therebetween, the spaces 19 being preferably of a width equal to the width of each bump 18.

For purposes of the present invention, it may be possible to utilize only one such bump or projection 18, although two, three, four or more such bumps or projections may be used. Where a plurality of such bumps are utilized, the spaces 19 therebetween should be approximately equal to the over-all width of the bumps or projections 18.

The bumps or projections 18 need not neces-

sarily have the form shown in Figure 5. They may constitute projections of any shape or form which may be suitable for engagement with the recesses or threads of a screw shaped member.

The strip 12 of Figure 5 is mounted in the recess 27 (Figures 2, 3 and 4) contained within the projection 26, Figure 1. The socket container 11, when it is molded, is formed with a protrusion 26 and the recess 27 integrally formed therein, said recess 27 being substantially of the same width as the distance between the flanges 17, 17 (Figure 5) of the metallic strip 12.

The metallic strip 12 is slid or forced into the recess from the bottom or back end of the unit and is placed in such a manner that the flanges 17, 17 engage against the sides of the recess while the front 16 lies substantially flush with the interior surface of the socket; the projections 18 projecting somewhat into the interior of the socket.

The supporting wings 20, 20 are wider than the opening at the bottom of the recess and hence prevent the metallic strip 12 from moving beyond a predetermined position into the recess. The projections 18, 18 are thus positively positioned in the recess by making the front surface 16 the proper length and by striking up the wings 20, 20 which prevent further movement into the recess.

The flanges 17, 17 are of sufficiently tight fit in the recess 27 to frictionally prevent withdrawal of the member from the socket or recess and in fact, the very fact of supporting the bump within the socket or even of screwing the bulb into the socket further assists in positioning the elements 18, 18 at the greatest possible distance from the back end of the socket. That is, when the light bulb is screwed in after the bulb has reached its limit of travel, further rotation thereof results in a pulling of the projection 18 towards the mouth or opening of the socket.

The opening 21 may be provided in the end of the metallic strip 12 to assist in positioning the same in a loading machine and to assist in withdrawing the same when that is necessary for replacement and repair should such occasion arise.

It should be noted therefore from an inspection of Figures 1 to 4 inclusive, that the light bulb need not have any special conformation and the threads T thereof may cooperate with the projections 18 whether one projection, two projections or more of such projections are used for the purpose of positioning the bulb within the socket and at the same time for establishing electrical connection from the strip 12 to the threads T of the bulb.

One of the wires of the electrical conduit W, as for instance wire 14, may at 14a be secured in any suitable manner to the strip 12 for the purpose of establishing electrical connections to one terminal of the source of electrical current.

Where it is desirable or necessary or where the connection at 14a should for any reason be disregarded, then the wire 14 may be passed through the opening 21 in the metal strip 12 to establish a temporary or even permanent electrical connection to the metallic strip.

The end wall 28 of the socket or container 11 has an opening therein, preferably a round perforation, the edges of which are encased within the flanges of a rivet 13.

As will be seen from Figures 2, 3, 4 and 6, the cylindrical portion 23 at the rivet is inserted through the opening in the bottom wall so that

the flange 22 rests against the bottom wall. And then the cylindrical portion 23 is struck down or bent over upon the other side of the bottom wall, thus encasing the edges of the openings or perforation within the flanges of the rivet.

The wire 25 which is an extension of the wire 15 is placed around the rivet in the manner shown in Figures 2, 3 and 4 before the rivet is finally fastened in place. When the cylindrical portion 23 is struck down, as at 24, to encase the edges of the perforation, then the wire 25 (extended from the wire 15) is permanently secured to the rivet 13.

As will be seen, particularly in connection with Figure 2, the end contact C of the bulb B, when the threads T thereof are in engagement with the projections 18 and when the bulb has been screwed finally into place is pressed against the flange 24 of the rivet and hence establishes electrical connection between the other terminal of the bulb and the other terminal of the current supply.

Obviously, it will be clear that the rivet may be inserted from either wall and the wire 25 extended from the wire 15 may be placed around either the existing flange of the rivet or the pressed down flange of the rivet.

In order to prevent any possibility of short-circuiting between any strands which may become unravelled or which may be loosened from the rivet and the metallic strip 12, a wall 29 (see especially Figure 3) is provided as an integral extension or projection of the end wall 28. Any wires which may thus become unravelled from the strand 15 at the rivet flange 22 will tend to strike the wall 29 and thus there will be an avoidance of any possible short-circuiting effect.

This wall 29 may be integrally molded with the bottom wall at the time the socket element is constructed, and hence utilization of the wall 29 does not require any increased manufacturing operations. The rivet may be inserted in the opening so that the flange 22 is within the container and the post 23 to be turned down is on the outside to engage the wire. Or the reverse procedure as above described may be followed.

The manner in which the insertion is made depends upon the manufacturing equipment utilized for effecting the connection.

Where desirable or necessary, it may be possible to provide a metallic insert in the end wall of any other type of form supported therein in any suitable manner for establishing contact with the contact C of the electric light bulb or any other apparatus which may be thus connected to the socket. And any other suitable connecting means may be provided with the wire conduit.

Likewise, in connection with the metallic strip 12 and the projections or bumps 18, any suitable form of such projection or bump 18 may be utilized and such projection or bump 18 may be supported in any suitable manner within the container.

In certain cases it may be desirable to provide projections or bumps for support integrally molded with the container and to insert but one metallic projection or bump for the purpose of effecting electrical contact.

In suitable cases metallic projections or bumps of the type described in the present application may be mounted in the wall of the socket or housing 11, in any other suitable manner, provided electrical contact is established between at

least one of said bumps and one terminal of the source of current.

The actual thickness of the projection or bump (whatever its shape may be) or the distance which it projects into the interior of the housing may vary within reasonable limits. The bump should project into the housing so that the diametric distance from the tip of the bump to the other side of the housing is less than the greatest diameter taken at the raised portions of the threads T of the member which is screwed in, while the shortest diameter between the tip of the bump and the opposite wall should not be less than the diameter at one of the depressions of the members screwed in.

Since elements which are to be screwed into the sockets are provided with a thread having a relatively great depth, the tolerance available is a very wide one. Furthermore, where the bumps or projections 18 are mounted on a metallic strip 12 which itself is inherently and necessarily resilient variations even beyond the tolerances above set forth may still not be sufficient to destroy the operability.

As will be noted, the end wall 23 is depressed beneath the edges of the cylinder so that, if desired, a wax filling may be placed in such depression over the connections in order to prevent unskilled tampering therewith. However, by reason of the foregoing constructions, such wax or other plastic insulating filling while it may, in certain instances, be desirable, is by no means necessary.

Various other types of constructions may obviously be used nor is this invention necessarily confined to the particular form or mounting of the bumps or projections hereinabove described. Thus, in particular cases, such bumps or projections instead of being mounted along a single line longitudinally within the socket may be so arranged that one set of bumps or projections extend as shown and other set of such bumps or projections extends along the interior wall of the socket substantially diametrically opposite to the first set. Such other set of bumps or projections may be mounted on their own individual strip or a U-shaped strip may be utilized for this purpose.

Various other formations and placement of the bumps or projections may be utilized either along a single longitudinal line as herein described, or in various staggered positions within the container.

By the foregoing invention, I have devised a socket means for supporting threaded electrical elements, said socket means as has above been pointed out, being simpler to manufacture than existing socket means utilizing fully cylindrical interior metal contacts and contacts which are secured in various different ways to the end walls.

It also utilizes less metal and relies upon pre-formed elements in the socket for supporting the simplified elements. The said pre-formed elements in the socket may be molded integrally with the socket at the same time that the socket is formed and hence once the mold is made, the actual manufacturing operation for the socket or container itself is at least as simple as such operations with sockets or containers for more complicated electrical elements.

While I have particularly described my invention with relation to Christmas tree ornamentation and support of Christmas tree bulbs, it will also be obvious that the socket construction herein set forth may also be utilized for any suitable

purpose including the support and lighting of larger electric light bulbs or the establishment of electrical connection to any other electrical apparatus of any kind whatsoever.

Where the surface 16 of the strip 12 is sufficiently wide and the bumps or projections 18 thereon extend circumferentially a substantial distance, the bumps or projections 18 may be slanted in a suitable direction to prevent too tight a frictional interference with the screwing in of the apparatus.

But in the ordinary case, the strip is sufficiently narrow so that the bumps or projections 18 need not be given any specific direction with respect to any threads of the apparatus that may be screwed in. Likewise, the bumps 18 may have a configuration such that they are not oriented in any particular direction as, for instance, where the bumps or projections are more or less circular.

By reason of this fact, apparatus may be screwed into the socket no matter in which direction the threads of the screw go. That is, whether the apparatus should be screwed from right to left, or left to right, the appropriate rotation of such apparatus will result in the screwing in of such apparatus in the socket.

Accordingly, the socket of my invention is a universal one, wherein the same socket may be utilized for the support of threaded apparatus no matter in which direction the threads thereof run.

Many other objects and uses of my invention will now be obvious to those skilled in the art. I prefer, therefore, to be limited not by the specific disclosure herein, but only by the appended claims.

I claim:

1. An electrical socket for reception of a threaded element, said socket comprising a cylindrical member of insulating material having an open end, and an end wall opposite the open

end, an opening in the end wall, and a metallic projection from the wall of the cylinder, said projection being an integral projection of a metallic strip, a recess in the wall of the socket parallel to the axis of the socket, said strip being mounted in the recess, longitudinal flanges on the strip positioning it laterally within the recess and wings on the strip positioning it longitudinally within the recess, and means for establishing electrical connection to said strip, said recess going through the end wall, said wings being positioned against the outer side of said end wall, and a rivet secured at the edges of said opening encasing the edges thereof, and an electrical connection to said rivet comprising a wire, the end of said wire secured between a portion of said rivet and said end wall.

2. An electrical socket for reception of a threaded element, said socket comprising a cylindrical member of insulating material having an open end, and an end wall opposite the open end, an opening in the end wall, and a metallic projection from the wall of the cylinder, said projection being an integral projection of a metallic strip, a recess in the wall of the socket parallel to the axis of the socket, said strip being mounted in the recess, longitudinal flanges on the strip positioning it laterally within the recess and wings on the strip positioning it longitudinally within the recess, and means for establishing electrical connection to the strip, said recess going through the end wall, said wings being positioned against the outer side of said end wall, and a rivet secured at the edges of said opening encasing the edges thereof, and an electrical connection to said rivet comprising a wire, the end of said wire secured between a portion of said rivet and said end wall, and a guard wall between the portion of the strip extending beyond the end wall and the rivet.

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