May 13, 1952 L. E. PALMER 2,596,718

ELECTRIC LAMP RECEPTACLE HAVING EYELET SHELL SECURING MEANS

Filed Oct. 20, 1949

Fig. 1.

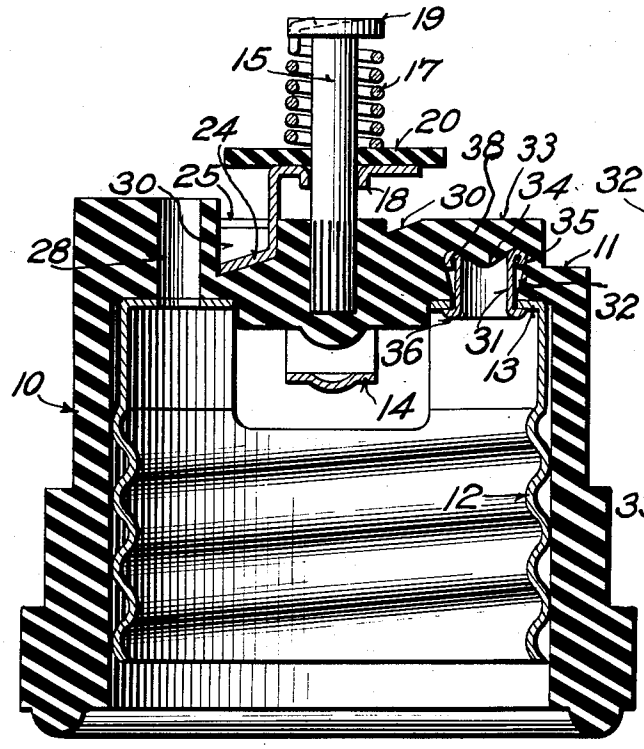


Fig. 3.

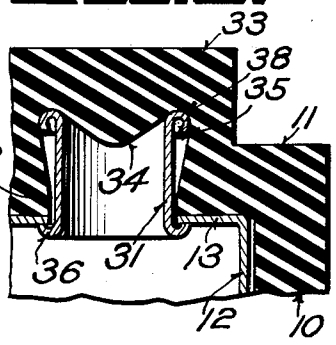


Fig. 4.

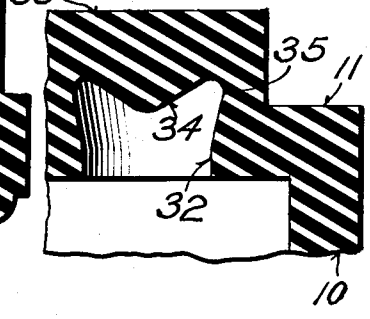


Fig. 2.

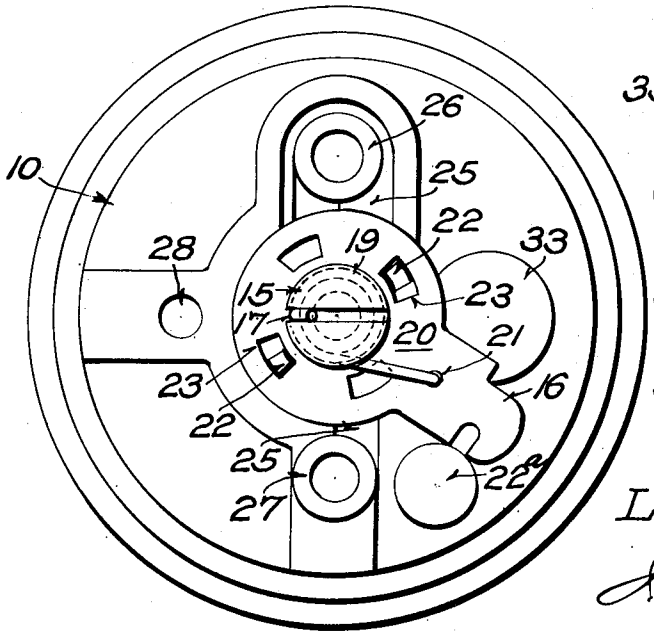
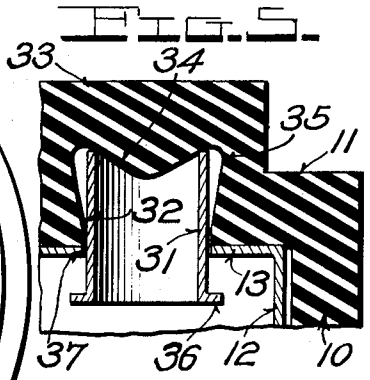


Fig. 5.



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ELECTRIC LAMP RECEPTACLE HAVING EYELET SHELL SECURING MEANS

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2 Claims. (Cl. 173—358)

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My invention relates to electrical devices having parts made of Bakelite or other synthetic resin and more particularly to electric lamp sockets or receptacles.

In the past it has been common practice to mold from synthetic resin tubular lamp socket bodies with end walls and to fasten to the latter by means of tubular metallic rivets or eyelets the usual screw shell and center contacts. In such prior electric lamp sockets the fastening eyelets usually extended entirely through the end wall of the socket so that their outer ends were disposed in close proximity to current conducting parts such as the switch parts of pull-chain sockets. As a result of that construction an arc sometimes formed from the switch mechanism to the top of the eyelet causing electrical failure of the socket. In other cases the tubular rivet had one end molded in the end wall or other piece to which the current conducting part is fastened by the rivet or eyelet. The molding of such small metal fastenings in the plastic body materially increases the cost of producing these inexpensive electrical articles. Further such sockets are sometimes used in electrical fixtures which must be sealed, and it is then necessary to go to the trouble and expense of sealing the upper end of the eyelet. These drawbacks to such sockets and other electrical devices are overcome by my new method of molding a blind hole of particular formation in the synthetic resin piece and setting the standard metallic eyelet in such hole so that the eyelet does not extend through the wall and hence is not exposed at the top or outer end of the socket where current conducting parts must necessarily be located close to these fastening elements.

The principal object of the invention is the provision of means which will permit of the mechanical attaching of parts to the molded synthetic resin piece without the necessity of tapping or other preparatory operations which cannot be done in the molding operation and without the necessity of molding in the plastic piece small metal elements.

Another object is the provision of means of the above character which will allow such attaching so that there is no through hole or exposed metal part on the side of the plastic piece opposite that to which the current conducting part is attached.

A further object is to provide a fastening means of this character in which the ordinary or standard tubular metallic rivet or eyelet either flanged at one end or unflanged at both ends may be used, and the eyelet may be set by the use of a

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standard eyeletting machine in connection with a suitable jig.

The foregoing and other objects and advantages of the invention are attained by the preferred procedures and structures set forth in the following description and shown in the accompanying drawings in which:

Fig. 1 is a central longitudinal sectional view of a portion of an electric lamp socket of the pull-chain switch type on an enlarged scale,

Fig. 2 is a top view of the parts shown in Fig. 1,

Fig. 3 is a detail section of a portion of Fig. 1 on a further enlarged scale, showing an eyelet set in a blind hole molded in the end wall of a synthetic resin lamp socket for securing in the latter the usual screw shell contact,

Fig. 4 is a view similar to Fig. 3 without the eyelet and the part of the screw shell,

Fig. 5 is a view similar to Fig. 3 showing the assembled parts before the eyelet has been set,

Referring to the drawings, the numeral 10 denotes a tubular body of an electric lamp socket which is molded from Bakelite or similar synthetic resin and which has an end wall 11. A metallic screw shell 12, to be engaged by the threads on the base or plug of the electric lamp, is positioned in the socket and has an end 13 to contact the inner face of the wall 11 and is also provided with the usual cutaway portion to receive the metallic center contact strip 14 and the mounting means for the latter. A well known form of pull-chain switch is mounted on the upper or outer face of wall 11 and comprises a central pivot stud 15, an oscillatory switch lever 16 moved in one direction by the pull-chain (not shown), a coil spring 17 for moving the lever in the opposite direction and a rotatable switch member 18. The stud or post 15 has one end fastened in the wall 11 and at its other end has a head 19 which is notched and grooved to anchor one end of spring 17. The latter surrounds the post between its head and the circular hub portion 20 of the lever, the other end of the spring being anchored to the lever at 21. Near the end of the lever is a notch for the attachment of a pull-chain. Normally the spring 17 holds the lever against a stop post or stud 22^a molded on top of the wall 11. The movable member 18 of the switch is positioned on the pivot 15 below the lever and has a hub portion which is both slidable and rotatable on the pivot. A ratchet connection is provided between the switch member and the lever to give the former a step-by-step rotary movement, such connection comprising two diametrically arranged, upwardly

projecting, inclined pawls or fingers 22 on the switch member to engage either pair of four equally spaced apertures 23 in the hub portion of the lever. Projecting downwardly from diametrically opposite points on the hub portion of the switch member 18 are two inclined contacts 24 adapted to engage and ride over two diametrically arranged stationary contacts 25 on the wall 11. One of the contacts 25 is electrically connected to the center lamp contact 14 by a tubular rivet 26 which fastens these parts to wall 11. The other contact 25 is fastened by a tubular rivet 27 to which one terminal of the electric current is connected by a suitable fastening. The other terminal of the electric lamp circuit is connected to a bolt or other fastening (not shown) positioned in an opening 28 in wall 11 and in electrical contact with screw shell 12. In the upper face of wall 11 between the fixed switch contacts 25 are inclined depressions 30 into which spring 17 presses the movable contacts 24 when the pull-chain is actuated to move contacts 24 off of contacts 25 to break the electric circuit. All of the above described parts are old and their operation is well known in the art.

In these old pull-chain switch sockets and in other sockets it has been customary to fasten the end 13 of the screw shell by a tubular rivet or eyelet which passed entirely through the end wall 11 and hence the exposed upper end of the eyelet was disposed very close to live parts of the switch or other current conducting parts, and at times there was failure of the socket by arcs forming between said end of the eyelet and the adjacent live current conducting parts. I have discovered that I can mold a blind hole in the inner face of the wall 11 and set the end of a standard tubular rivet or eyelet in said hole to fasten the screw shell and thus overcome the above stated trouble. In Figs. 1 and 3 I have shown an eyelet 31 in its set position in a blind hole 32 molded in the end wall 11 and extending into a thickened portion or projection 33 extending outwardly from the outer face of said wall 11. The hole has a diameter corresponding to the external diameter of the eyelet and on the bottom of the hole is a central projection 34 which is preferably cone-shaped and which is surrounded by an undercut annular recess 35 into which the end of the eyelet is rolled or upset when the eyelet is forced into the hole against the projection. In Fig. 5 a standard eyelet with a flanged end 36 is shown passed through an opening 37 in the end wall 13 of the screw shell and into the hole 32 so that when the eyelet is driven into the hole, the inner end 38 of it will be rolled, upset or headed into the undercut recess to firmly anchor the eyelet, and the flange 36 will be pressed against the end 13 of the screw shell to securely fasten it against the end wall of the socket, as seen in Figs. 1 and 3. It will be noted that the synthetic resin of the projection 33 and portions of the end wall 11 will be between the eyelet and the switch parts or other live-current-carrying parts on the outer face of the end wall, so that electrical failure of the socket by arcing between such parts will be prevented without the use of other sealing or insulating means and at a low cost.

The blind hole 32 with the anvil-like eyelet-spreading projection on its bottom and the undercut recess in its wall surrounding the projection may be formed when the synthetic resin body 10 is molded by merely stripping a properly shaped molding pin or core from the hole after the plastic material has sufficient set for the article to retain its molded shape but before it has cooled and acquired its final set. Certain thermo-setting plastic materials such as phenolic and urea resins have a temporary elasticity immediately after they are molded under heat and pressure between shaping dies. At that time the molded article is still hot and has sufficient resiliency or elasticity to permit the enlarged end of the one-piece molding pin which forms the undercut recess 35 to be sprung out of the hole without the molded shape of the latter being permanently deformed. In other words when the enlarged end of the pin leaves the hole, the material forming the reduced outer end of the hole springs back to its molded shape. The molded socket does not become hard and inelastic until it cools and takes its final set. At that time the material is so hard that it will set the relatively soft metal eyelet. The socket body may therefore be rapidly and inexpensively molded in any standard compression molding press having two solid die members which are relatively movable in a straight-line movement, and which may be multiple dies for molding a plurality of sockets at each operation of the press.

A standard eyeletting machine may be used to set the eyelet 31 but in place of the lower anvil which normally sets one end of an eyelet, a suitable jig is used to locate the molded piece correctly. While most standard tubular rivets or eyelets have the preformed flange 36 it is obvious that a plain or unflanged eyelet may be used and that the flange 36 may be formed at the time the inner end 38 of the eyelet is set or headed by the special molded shape of the hole in the hard synthetic resin body. It will be seen that the rolled or headed end 38 of the eyelet will be forced into tight contact with the wall of the recess opposite the point or projection 34 so that the eyelet will be firmly anchored, and that a very effective and inexpensive fastening is provided.

While I have specifically described the preferred way of practicing my invention, it will be understood that minor variations may be resorted to within the scope of the following claims.

I claim:

1. The improvement in an electric lamp socket of the type having a screw shell contact secured against the inner face of the end wall of a tubular socket body of insulation with live-current-carrying parts mounted on the outer face of the end wall, the improvement comprising a tubular socket body molded from synthetic resin and provided with an end wall having a blind hole molded in its inner face, said hole having on its bottom a tapered projection surrounded by an undercut recess in the wall of said hole said projection being made of synthetic resin and in one piece with said end wall, a screw shell contact in the said body and having an end in contact with the inner face of said end wall, said end of said screw shell contact having an aperture in alignment with said hole, and a tubular metallic eyelet extending through said aperture and into said hole to fasten said screw shell contact in said body, said eyelet having at its outer end a flange engaging the end of said screw shell contact, the inner end of said eyelet being upset into said undercut recess around said projection, whereby a portion of the synthetic resin end wall of the body will be disposed between said eyelet and live-current-carrying parts on the outer face of the end wall to prevent electrical failure of the socket

by arcs forming between the eyelet and the current-carrying parts on the outer face of the end wall of the body.

2. The improvement in a switch-type electric lamp socket of the type having a screw shell contact secured to the inner face of the end wall of a socket body of insulation and live-current-carrying switch parts on the outer face of the end wall of the body, the improvement comprising a projection extending outwardly from the outer face of an end wall of a molded synthetic resin socket body with a blind hole molded in the inner face of said end wall and extending into said projection, said hole having on its bottom a tapered projection surrounded by an undercut recess in the wall of said hole, said projection being of synthetic resin and in one piece with said end wall, a screw shell contact in said body having an apertured end in contact with the inner face of said end wall with the aperture in alignment with said hole, and a tubular metallic eyelet extending through said aperture and into said hole to fasten said screw shell contact in said body, said eyelet having at its outer end a flange engaging the end of said screw shell contact, the inner end of said eyelet being upset into said undercut recess around said tapered projection, said eyelet being electrically insulated from current-carrying switch parts by the synthetic resin projection on the outer face of said end wall.

LEWIS E. PALMER.

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