Dec. 29, 1953 F. L. REYNOLDS 2,664,497

COMPOSITE MOLDED ORNAMENTAL LIGHT FIXTURE

Filed March 1, 1950

Fig. 2

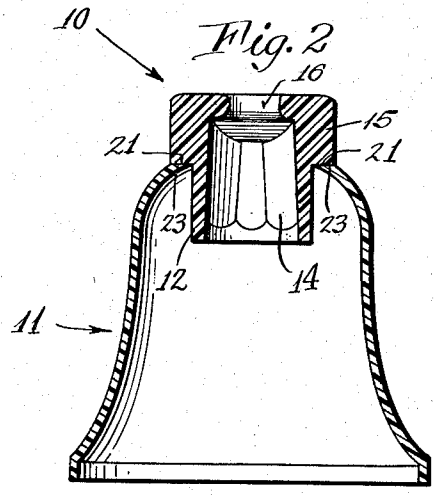


Fig. 3

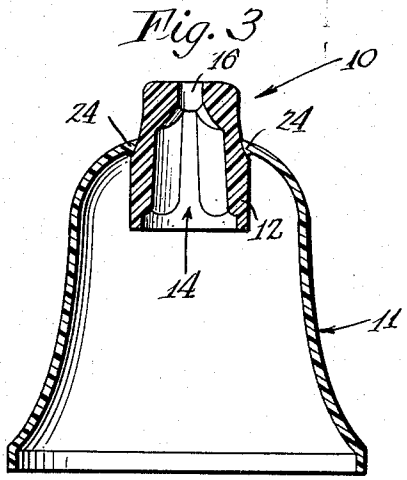


Fig. 1

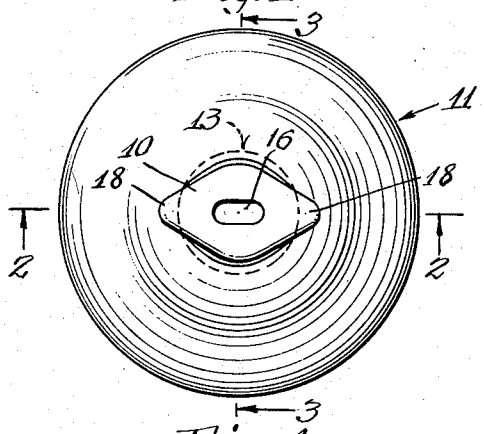


Fig. 7

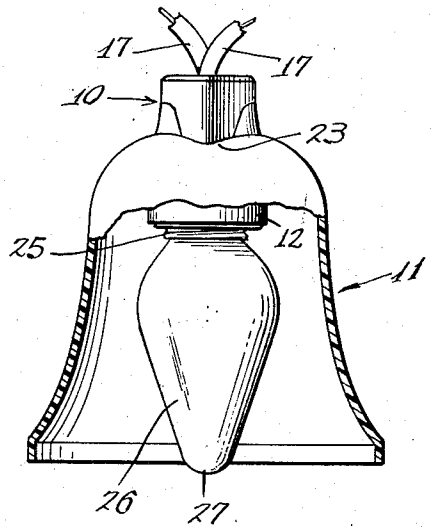


Fig. 4

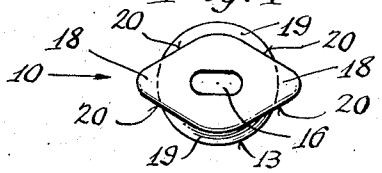


Fig. 5

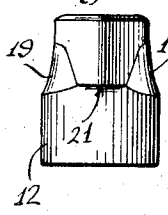
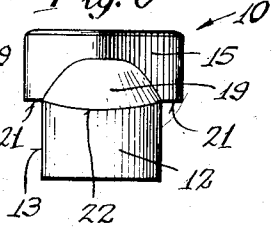


Fig. 6



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COMPOSITE MOLDED ORNAMENTAL LIGHT FIXTURE

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6 Claims. (Cl. 240—10)

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This invention relates to composite, molded articles and methods of making the same.

The invention is illustrated in connection with a composite, molded electric-light ornament for Christmas decoration purposes.

In the field of Christmas-tree lighting, lighting of wreaths and the like by means of electric bulbs, certain safety requirements have been set up by the authorities. One of these requirements concerns the kind of plastic material of which the electric bulb sockets are molded, and because of the considerable heat created by certain types of bulbs a specification was adopted requiring plastic socket parts to be of a heat-resistant thermosetting material, preferably having a phenolic base. Such material has been found to successfully meet the safety requirements of strength and heat resistance.

However, where plastic bulb shades or casings for attachment to the sockets are concerned, the phenolic, thermosetting materials are not satisfactory due to their limited color range, opacity, and high cost. Thermoplastic material such as acetate and the like are much more suitable for use as shades and casings adapted to surround the bulb and be illuminated thereby, since these materials are available in a wide range of colors, are simple and economical to mold, and have desirable light-transmitting properties.

An example of an electric-light ornament incorporating a phenolic socket and an acetate casing surrounding the bulb which is carried by the socket, may be found in the well-known Christmas tree bubble lights. Normally, in bubble lights the shade or globe for the bulb is not secured to the phenolic socket member, since the shade is permanently carried by the bulb and unscrewed therewith from the socket. The shade, in such an arrangement, is entirely independent of the electric part of the assemblage, and consequently it is considered safe to make such shades of a thermoplastic material like acetate because if by some chance the shade should soften it would not result in electrical failure of the unit.

According to the present invention a novel and unique, molded, composite electric-light ornament is provided for Christmas trees and the like, wherein the shade for the bulb is molded of thermoplastic material and is rigidly and permanently secured to an electric socket part molded of thermosetting plastic so that a unitary structure is produced.

An object of the invention accordingly is to provide an improved and novel composite molded unitary structure constituting both socket and

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shade parts for an electric bulb, which meets the requirements of material as set forth above and is at the same time extremely simple and economical to produce.

Another object of the invention is to provide an improved composite molded structure as above set forth, which is reliable and sturdy when in use and not subject to failure either under normal conditions of use or under intensified test conditions.

A further object of the invention is to provide an improved method of making composite, molded articles of the above type.

Yet another object of the invention is to provide an improved electric-light ornament for Christmas trees and the like, which is in the form of a bell illuminated by the electric bulb, the clapper of the bell being simulated by the tip of the bulb.

In accomplishing the above objects I provide a composite structure comprising a thermosetting socket member and a thermoplastic shade member adapted to surround the bulb of the socket member, said shade and socket members being permanently secured together by interlocking portions, and being assembled to each other during the forming and molding of the shade member, by using the socket member as an insert in the mold for the shade. An initial step in this process or method is the separate molding of the socket members, apart from the shade members. By virtue of the socket members being of thermosetting material, they will withstand the temperatures encountered in molding the thermoplastic shade material around them, without breakdown or change in shape. I further provide the socket members with novel shapes enabling them to be withdrawn from simple mold cavities without requiring movable mold parts, while at the same time producing an interlock with the shade members when the latter are molded around the socket members. Thus I accomplish an extremely effective and economical assembly of thermosetting parts and thermoplastic parts by using the thermosetting parts as inserts in the mold for the thermoplastic parts. Besides this method for securing together the two said parts being extremely quick and economical, the securement is permanent as long as the parts are not broken or deformed, due to the interlocking engagement between contacting portions of said parts.

In the accompanying drawings:

Figure 1 is a top or plan view of the composite molded electric-light ornament of this invention.

Fig. 2 is a vertical sectional view taken on line 2—2 of Fig. 1.

Fig. 3 is a vertical sectional view taken on line 3—3 of Fig. 1.

Fig. 4 is a top or plan view of the thermosetting socket member of the ornament.

Figs. 5 and 6 are side elevational views of the socket member; and

Fig. 7 is a side elevational view of the ornament with part of the bell broken away, disclosing the electric bulb carried by the socket member.

As shown, the improved composite molded electrically lighted ornament of this invention comprises a socket member 10 and a bell-shaped shade member 11, the latter being permanently secured to the member 10 by being molded around it.

Referring to Figs. 4, 5 and 6, the socket member 10 has a lower portion or body 12 which is tubular in shape, having a cylindrical outer surface 13 and a relatively large bore 14. The socket member 10 also has an upper portion 15 which is generally of diamond or lozenge shape, having a central slot 16 adapted to receive wiring means comprising electric supply wires 17. The slot 16 communicates with the large bore 14 of the lower portion 12 of the member, said bore extending a substantial distance into the upper portion 15 as clearly shown in Figs. 2 and 3.

The upper portion 15 of the member 10 is so proportioned that the two remote corners 18 of said portion project beyond the cylindrical wall of the lower portion 12, as clearly shown in Figs. 4 and 6. Also, the shape of the upper portion 15 is such that a pair of sloping shoulders or ledges 19 may be formed, extending between the cylindrical surface 13 and the opposite side walls 20 of the portion 15.

Thus, considering Fig. 6, undercut side walls will be seen to exist when considering the member 10 from the top. These undercut walls are due to the remote corners 18 projecting beyond the cylindrical surface 13, forming shoulders 21, Fig. 6. Also, considering the member 10 from its bottom, undercut side walls will be seen to exist from an inspection of Fig. 5, due to the existence of the sloping shoulders or ledges 19. It is apparent that the member 10 may be readily molded and withdrawn from simple cavities in a mold without requiring movable parts therein, if the parting line of the mold passes through the shoulders 21 and follows the dividing lines 22 between the shoulders or ledges 19 and the cylindrical surface 13.

I form the socket member 10 by molding it of a thermosetting material, such as one employing a phenolic base, after which the member may be placed in another mold and used as an insert around which the bell-shaped member 11 may be molded, of thermoplastic material. It will be understood that during the molding of the member 11 the member 10 will not deform or otherwise change its shape since it is first completely cured at the time of molding, and is made of thermosetting material which is not adversely affected by the temperatures encountered when molding the member 11.

Referring to Fig. 2 the upper edges 23 of the member 11 are made to engage and cover the shoulders 21 of the member 10, and the edges 24 of the member 11 are made to engage and cover the sloping ledges or shoulders 19 of the member 10. Thus there is interlocking engagement between the members 10 and 11, permanently securing these together and preventing relative movement.

The shoulders or ledges 19 face upward, and the shoulders 21 downward, said shoulders being arranged in staggered relation around the periphery of the member 10. That is, the shoulders alternate, considering the periphery of the member 10 as being traversed circumferentially.

In the appended claims I use the term "facing generally in opposite directions" in describing the disposition of the shoulders 19 and 21 which face upward and downward, and I employ this term in its broadest possible sense since obviously the shoulders 19 and 21 do not face exactly in opposite directions, nor do they need to in order to secure the interlocking relation provided by the invention. Thus the term "facing generally in opposite directions" is to be interpreted broadly rather than in a limited sense.

A lamp socket 25 may be mounted in the bore 14 of the socket member 10 and connected with the supply wires 17 in any desired manner. When an electric bulb 26 of the ornamental type employed for Christmas tree lighting is screwed into the socket 25, the bell-shaped member 11 will act as a shade for the bulb and the tip 27 of the bulb may project slightly beyond the lower portion of the member 11 to simulate a clapper.

By virtue of the socket member 10 being molded of thermosetting material and carrying the electrical components of the ornament, the requirements of the authorities having jurisdiction over safety standards will be met. Also, by virtue of the shade 11 being molded of thermoplastic material, it may have bright and attractive colors and will glow in an attractive manner in response in the illumination provided by the bulb 26.

Variations and modifications may be made within the scope of the claims and portions of the improvements may be used without others.

I claim:

1. In a composite, electrically-lighted ornament formed of molded materials, a member of thermosetting plastic, having a lozenge-shaped portion and an adjacent, substantially cylindrical portion and having a bore in said cylindrical portion for receiving an electric bulb socket and associated wiring means, said lozenge-shaped portion of the member having ends projecting beyond the outside of the cylindrical portion at opposite locations, providing a pair of transverse shoulders facing generally in the same direction, and said cylindrical portion of the member projecting beyond the outside of the lozenge-shaped portion at a second pair of opposite locations, providing a second pair of transverse shoulders facing generally in opposite directions to the first pair; and a thermoplastic bulb shade extending around and having portions conforming to the exterior of said member and covering said shoulders, thereby providing interlocking engagement between said member and shade and permanently uniting the same.

2. A composite article of molded plastic comprising an inner member of thermosetting plastic, having opposite ends spaced apart on an axis of the member and having an irregular generally annular exterior portion extending around said axis in a zone intermediate the ends of the member, said portion at different points around the periphery of the member having shoulders which are sloped in opposite directions longitudinally of the member, and said portion being out-of-round in shape; and an outer member of thermoplastic material, including a wall section

transverse to said axis of the inner member, said wall section extending completely around and having portions conforming to the said annular exterior portion of the inner member and engaging the said oppositely sloped shoulders of the inner member, the opposite slopes of said engaged shoulders and conforming portions providing an interlocking engagement between the members, thereby preventing all relative movement and permanently uniting the members, said outer member being spaced from and out of contact with the ends of the inner member, and the end portions of said inner member projecting in axial directions from both of the opposite sides of said transverse wall section of the outer member.

3. In a composite electric light fixture formed of molded material, an inner socket member of thermosetting plastic, having opposite ends one of which has a bore for receiving the base of an electric bulb, said member having a somewhat annular, irregular exterior portion extending around it intermediate its ends, said exterior portion being out-of-round and having integral means providing a plurality of external transverse shoulder surfaces facing generally axially of the member and respectively in opposite directions; and a thermoplastic bulb shade extending around and having portions conforming to the exterior annular portion of the inner member and engaging the said oppositely facing shoulders, the out-of-round and irregular shape of said engaged shoulders and conforming portions providing an interlocking engagement between the members, thereby preventing all relative movement and permanently uniting the members, said shade being spaced from and out of contact with the ends of the first member.

4. The invention as defined in claim 3, in which one end portion of the socket member is generally circular, in which the other end portion of the socket member is a polyhedron, and in which said end portions merge with each other at the said irregular annular portion to cause the said shoulder surfaces to face alternately in opposite directions.

5. A composite article of molded plastic comprising an inner member of thermosetting plastic, having opposite ends and having an irregular generally annular exterior portion extending around it in a zone intermediate its ends, said portion at different points around the periphery of the member being sloped in opposite directions longitudinally of the member, and being out-of-round in shape; and an outer member of thermoplastic material, extending completely around and having oppositely-directed wall portions conforming to the said annular exterior portion of the inner member, the out-of-round and irregular shape of said conforming portions providing an interlocking engagement between the members, thereby preventing all relative movement and permanently uniting the members, said outer member being spaced from and out of contact with the ends of the inner member, said sloping parts of the irregular, generally annular portion of the inner member comprising staggered pairs of shoulders facing longitudinally of the member and in opposite directions at different points around the periphery of the member, said shoulders engaging the oppositely-directed wall portions of the outer member to produce the interlocking relationship.

6. A composite article of molded plastic comprising an inner member of thermosetting plastic, having opposite ends and having an irregular generally annular exterior portion extending around it in a zone intermediate its ends, said portion at different points around the periphery of the member having shoulders which are sloped in opposite directions longitudinally of the member, and said portion being out-of-round in shape; and an outer member of thermoplastic material, extending completely around and having oppositely-directed wall portions conforming to the said annular exterior portion of the inner member and engaging said oppositely sloped shoulders, the opposite slopes of said engaged shoulders and conforming portions providing an interlocking engagement between the members, thereby preventing all relative movement and permanently uniting the members, said outer member being spaced from and out of contact with the ends of the inner member, one end portion of the inner member being generally circular, and the other end portion of the inner member being a polyhedron, said end portions being joined together by the said irregular annular portion and said slopes of the annular portion comprising lateral projections of the one end portion beyond the other, and lateral projections of the other end portion beyond the one end portion.

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