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INSTRUMENT COVER MEANS
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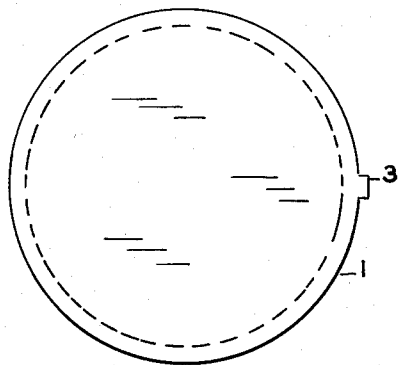


FIG 1

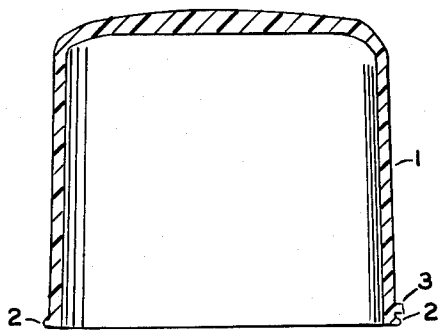


FIG 2

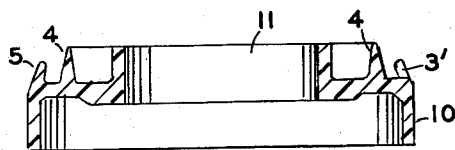


FIG 3

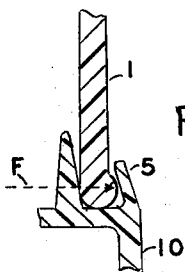


FIG 4

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INSTRUMENT COVER MEANS

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1 Claim. (Cl. 220-60)

This invention relates to instrument cover means and more particularly to snap-in cover means which are adapted to be tightened in place by an internal explosion.

The present invention is a cover primarily for a photoelectric control device for street lights. Modern street lights each have their own individual photoelectric control which is mounted on top of the lamp glove, generally by an electrical twist-on type socket.

The photoelectric device generally comprises a base member containing a socket end mounting the photoelectric cell and control switches, and also incorporates a lightning arrester comprising a spark gap. The cover must be translucent to operate the photo cell and is generally made either completely of translucent plastic or has a translucent window. The cover must be weatherproof and adapted to withstand great temperature variations.

Conventional covers are generally attached to the base member with three or four mounting screws extending into tapped holes in the cover. These covers are somewhat difficult and time consuming to remove and expensive to manufacture. Therefore, various attempts have been made at making snap-type covers which have not been successful due to the fact that lightning jumping the spark gap of the lightning arrester creates an internal explosion which blows the covers off. These lightning explosions are quite common in this type apparatus.

The present invention solves this difficulty by providing a snap type cover with a connecting joint which is tightened by any internal explosion.

More particularly, the present invention comprises a molded translucent cover generally cylindrical in shape and closed at its top end and open at its bottom end and having a circular bottom rim with a small bead around its lower external periphery. The base member has an internal guide ring, and an external ring which tapers inwardly, the cover being adapted to snap in between these two rings. The inside diameter of the external ring is less than the outside diameter of the cover rim. However, the inwardly tapering external ring expands sufficiently to seat the cover when fairly strong manual pressure is applied. An internal explosion applies a force against the upwardly tapering external rim which tends to increase the holding force so that the cover will not be blown off by lightning spark explosions. The coefficient of expansion of both the cover and the base member are made substantially equal to accommodate large temperature variations.

Accordingly, a principal object of the invention is to provide new and improved cover means.

Another object of the invention is to provide new and improved snap type cover means.

Another object of the invention is to provide new and improved snap type cover means adapted to withstand internal explosions without blowing off.

Another object of the invention is to provide a new and improved cover means for photo electric control devices for street lamps.

Another object of the invention is to provide snap type cover and a base member adapted to receive said cover, said base member having an inwardly tapering external ring which is adapted to expand sufficiently to seat the cover in such a manner that an internal explosion will create a force tending to tighten the grip of the base on the cover.

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These and other objects of the invention will be apparent from the following specification and drawings, of which

FIG. 1 is a sectional view of the base member,

FIG. 2 is a sectional view of the cover,

FIG. 3 is a top view of FIG. 2, and

FIG. 4 is a detail sectional view illustrative of the operation of the invention.

Referring to the figures, the cover comprises a molded plastic member 1 having a generally cylindrical shape which is closed on top and which is open on the bottom. A small external bead 2 extends outward slightly from the lower external rim. A small projection 3 near the rim is also provided primarily to index the cover to a particular angular position with respect to the base. The projection 3 is adapted to fit into a corresponding notch 3' on the base member and also serves to lock the cover to the base against rotation. The rotation is not desired as these devices are generally mounted by means of a twist-on type electrical socket and the size of the cover is such that it can conveniently be held in one hand for inserting in the socket and twisting.

The base member 10 is also circular and hollow in the center 11 to accommodate the electric plug which is not shown. The base has a first internal ring 4 which is adapted to fit inside the lower rim of the cover. The outside surface of the ring 4 tapers slightly inwardly to permit easy application of the cover. The base also has a second external ring 5 which tapers inwardly in the upward direction. The upper inside of the ring 5 is rounded off to facilitate insertion of the cover. The inside diameter of the ring 5 is made smaller than the outside diameter of the bead on the cover rim. For instance, in a typical application the inside diameter of the ring 5 was 2.687" and the outside diameter of the bead 2 was 2.695". Therefore the ring 5 must expand in order to insert the cover with manual pressure and it is able to expand because of the tapering construction of its inside and outside surfaces. Both the cover and the base are molded of commercially available plastics having substantially the same coefficient of expansion. In one application the cover has been made of translucent tenebutyrate and the base has been made of "Cyclocac," (Acrylonitrile-butadiene-styrene) manufactured by the Marbon Chemical Division of Borg-Warner Corp.

FIG. 4 shows a detailed view illustrating the gripping of the cover by the external ring 5, and ring 4. Note that the bead 2 has a greater outside diameter than that of the inside top surface of the ring 5. Therefore an internal explosion will create a force F which will tend to expand the lower rim of the cover and tightening the bead 2 in place underneath the inwardly over-hanging upper portion of the external ring 5. The normal locking force is such that the cover cannot be removed manually but must be removed by inserting a screw driver in the notch 3' of the base and prying the cover out of the base by exerting a considerable amount of force on the cover.

The base member 10 is a difficult part to mold because the mold form must fit like the cover between the internal and external rings 4 and 5 and the outside diameter of the mold portion will be greater than the inside diameter of the ring 5. Therefore the mold can only be removed by expansion of the ring 5 and considerable force must be exerted to snap the mold out of the molded base member. This force is generally supplied by mounting pins in the mold which are used to force the base member out of the mold. The desired expansion of the ring 5 would not be possible except for the inwardly tapering design.

Therefore, the present invention provides new and improved cover means which are adapted to snap securely

in place and which will not be blown off by an internal explosion since such an explosion will cause a force tending to lock the cover onto the base.

Many modifications may be made by those who desire to practice the invention without departing from the scope thereof which is defined by the following claim. 5

I claim:

Snap type cover means adapted to be tightened by an internal force comprising a molded plastic cover of generally cylindrical shape closed at one end and open on its other end and having a circular rim having a small external bead, a molded base member having an internal ring adapted to fit against the inside surface of said cover and an external ring adapted to fit against the outside surface of said cover, said external ring tapering inwardly, the inside diameter of said external ring being smaller than the outside diameter of said cover bead, said external 10
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ring being expandable and adapted to exert a downward force on said bead after said cover is snapped between said internal and external base rings, means to receive a lever in said cover to remove it comprising a notch in said external ring and a combined indexing and unlocking projection on said rim adapted to fit in said notch said projection being spaced from the bottom of said notch sufficiently to insert a screw-driver thereunder as a lever.

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