Dec. 19, 1944. F. A. BEST 2,365,447

REFLECTING DEVICE FOR SIGNS AND THE LIKE

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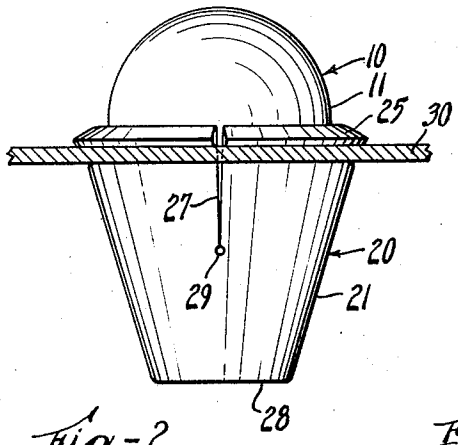


Fig.-2

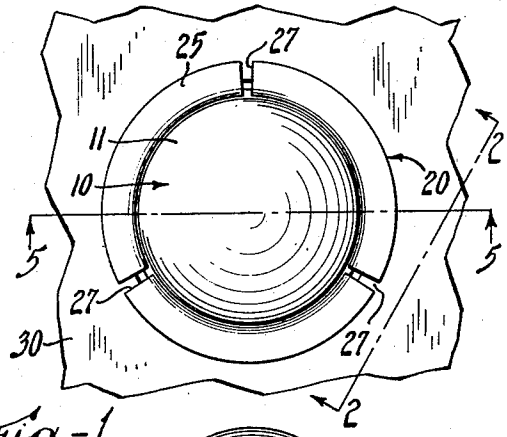


Fig.-1

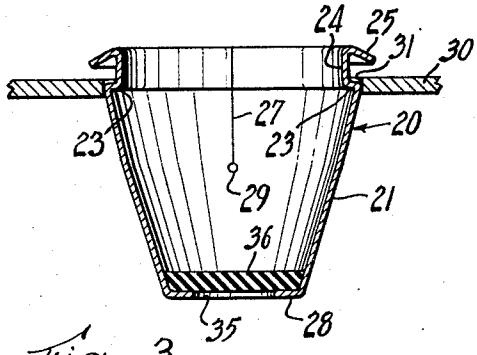


Fig.-3

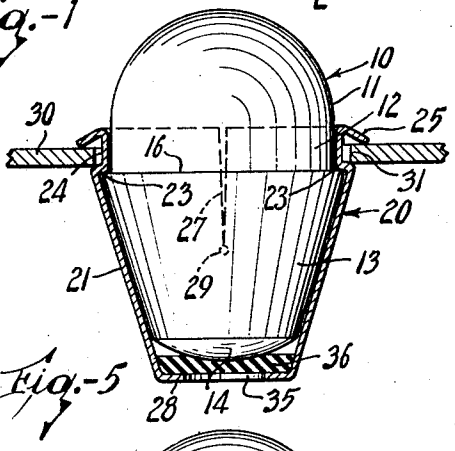


Fig.-5

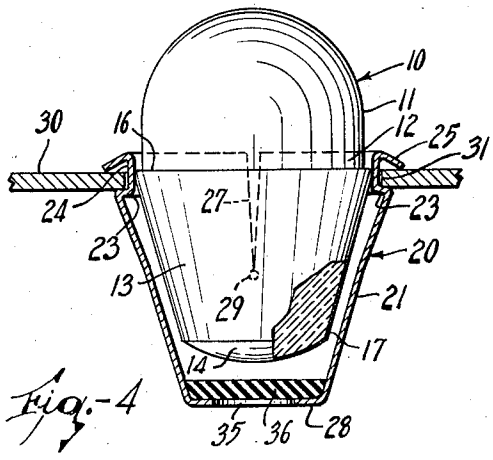


Fig.-4

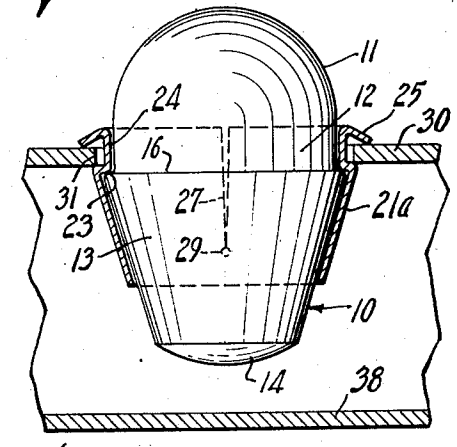


Fig.-6

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REFLECTING DEVICE FOR SIGNS AND THE LIKE

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7 Claims. (Cl. 88—82)

This invention relates to display signs, such as the directional, caution or warning signs which are displayed along public highways, and in which the letters or characters of the signs are formed by reflector buttons, the signs being rendered visible at night by the reflected illumination of the buttons from light rays directed thereon from the head lights of approaching motor vehicles.

In the construction of this type of sign, the reflector buttons are usually mounted in suitable apertures in the front face or panel of the sign, the buttons being inserted from the rear of such apertured panel, and the sign frequently including a rear casing or the like to protect the rearwardly projecting shank portions of the buttons and to prevent unauthorized removal of the buttons. The buttons used have been of various shapes and although the means by which they have been mounted in the apertures of the sign panels have been of even greater variety, no prior button mounting means has been entirely satisfactory.

The present invention therefore has for its primary object the provision of a reflecting device comprising a simple and efficient reflector button and a simple and effective holder therefor capable of being easily, quickly and securely mounted in the aperture of a sign panel.

A more specific object of the present invention is the provision of a reflecting device in which both the reflector button and its holder can be mounted in an apertured sign panel from the front thereof, without the use of tools and without resorting to metal deforming operations.

A further object of the present invention is the provision of a reflecting device in which both the reflector button and the holder therefor are mounted in place by simple snap-action.

A further object of the present invention is the provision of a reflecting device in which the reflector button is so secured within the holder therefor that such holder can not be detached from the panel on which it is mounted unless the reflector button is first removed, and in which the reflector button can be removed from its holder only from the rear of such holder.

A further object of the present invention is the provision of a reflecting device in which the holder for the reflector button completely encloses the rearwardly projecting shank of the button which carries the light-reflecting faces thereof, so that the sign in which the button is used need not have a casing or the like for enclosing said button shank, insofar as the protection of said light-reflecting faces are concerned.

Further objects of the present invention, and many of its practical advantages, will be referred to in or will be evident from the following description of two embodiments of the invention, as illustrated in the accompanying drawing, in which

Fig. 1 is a front view of a reflecting device embodying one form of the present invention, the device being mounted in an aperture of a fragmentarily shown sign panel;

Fig. 2 is a sectional view thereof, on the line 2—2, Fig. 1;

Fig. 3 is a central sectional view of the holder for the reflector button, in partially inserted position in a sign panel aperture;

Fig. 4 is a central sectional view, showing the holder for the button secured in the sign panel aperture and showing the reflector button in partially inserted position in said holder;

Fig. 5 is a central sectional view of the button and its holder in final position in the sign panel aperture, the view being on the line 5—5 of Fig. 1, and

Fig. 6 is a view corresponding to Fig. 5 but showing a reflecting device embodying another form of the present invention.

Before the embodiments of the invention herein illustrated are specifically described, it is to be understood that the present invention is not limited to the details of construction and/or the specific arrangement of parts herein illustrated or described, as devices embodying the invention may take various forms. It also is to be understood that the phraseology herein employed is for purposes of description and not of limitation, the scope of the present invention being denoted by the appended claims.

Referring first to the reflecting device illustrated in Figs. 1 to 5 inclusive, it will be noted that the reflector button 10 of such device has a domed or semi-spherical head portion 11 which merges smoothly into a generally cylindrical neck portion 12. The shank 13 of the button, which lies directly behind the neck portion 12, is of frusto-conical form having a convex rear end face 14, and as the front end portion of the button shank is of greater diameter than that of the button neck, an annular shoulder 16 is provided at the front end of the button shank, as shown in Figs. 4 and 5. The reflector button may be made of any suitable size, and of any suitable material, such as glass or a transparent plastic, and for light-reflecting purposes, the tapered side

face and the convex rear end face of the button shank are here provided with a reflecting metal coating 17 deposited thereon by the well known vaporization and condensation method.

The holder 20 for said reflector button is a simple cup-shaped member stamped or otherwise formed in one piece from sheet metal, and hence is capable of being made in large quantities in a rapid manner and at low cost. The body portion 21 of said holder is of frusto-conical form to receive and house the correspondingly shaped button shank 13, and at its front end, the holder body portion is provided with an inwardly extending annular flange 23 to overlie the button shoulder 16. At the inner edge of such flange, the holder is provided with a forwardly extending annular collar 24 to receive the button neck, and at the front end of said collar, the holder is provided with a rearwardly and outwardly extending annular rim 25.

At several locations circumferentially spaced about its side wall, the holder is provided with a plurality of slits 27, three being here shown, said slits extending longitudinally of the holder through its rim, collar and flange a substantial distance toward its rear end wall 28. To insure against undesired extension of said slits by tearing of the relatively light sheet metal of which the holder preferably is made, a small aperture 29 may be provided at the rear or inner end of each slit, as here shown.

The provision of the slits 27 divides the outer end of the holder into three circumferentially spaced fingers, each including a section of the rim, the collar, the flange and the body portion of said holder, and the resiliency of such fingers is made use of in the attachment of the holder in an aperture of a sign panel and in the mounting of the reflector button in such holder.

Although the sign or other structure in which is used one or more reflecting devices of the character illustrated in Figs. 1 to 5 inclusive may be of any desired construction, only a portion of the apertured front panel 30 of such a sign or the like is here shown. As will be evident from Fig. 5, the aperture 31 of such panel, for the reception of the reflecting device here illustrated, is somewhat larger in diameter than the holder collar 24 and when the resilient fingers of the holder are in their normal positions, as in Fig. 5, somewhat smaller in diameter than the front end of the inwardly tapered holder body portion 21. As a result, the holder of the present reflecting device can be readily inserted into the panel aperture 31, from the front of the panel, and moved rearwardly in such aperture until the front end of the holder body portion passes therethrough, the holder fingers moving inwardly or assuming a contracted relationship, as indicated in Fig. 3. When the front end of the holder body portion passes through the panel aperture 31, the resilient fingers of the holder automatically spring outwardly to their normal positions for the retention of the holder against forward movement, the front surface of the holder flange 23 engaging the rear face of the panel 30, as shown. The width of the holder rim 25 is such that it overlies the front face of the panel about the aperture 31, the panel being thus disposed between the holder flange and the holder rim. Preferably, the space between the flange 23 and the rim 25 of the holder is such as to enable these opposed abutments to tightly grip the panel, with the consequent retention of the holder in a firm and secure manner. As the contraction of the front end portion of the holder automatically occurs as the holder body portion is pushed rearwardly through the panel aperture 31, only a pushing force is necessary to effect the attachment or securement of the holder to the panel 30. The use of special tools or metal deforming steps are therefore not required or needed.

In a similar manner, namely, by simple snap action, the reflector button 10 is mounted within the holder therefor, it being impossible to simultaneously secure both the holder and the reflector button in place. As indicated in Fig. 4, the diameter of the panel aperture 31 is large enough to permit the collar portions of the holder to move outwardly sufficiently to enable the front end of the inwardly tapered button shank 13 to pass through said collar portions. Thereafter, the resilient fingers of the holder spring inwardly, with the consequent location of the rear surface of the holder flange 23 over or in front of the annular shoulder 16 of the reflector button and the consequent retention of the button in place, as in Fig. 5.

When the reflector button 10 and its holder 20 are mounted in the panel aperture 31, as shown in Figs. 1, 2 and 5, it is practically impossible to remove either or both of them by manipulation from the front of the panel 30. The exposed portion of the button 10 is its dome-shaped or semi-spherical head 11, which is practically impossible to grip with sufficient firmness to effect the removal of the button. It is further impossible, at the front of the panel 30, to squeeze the holder fingers inwardly toward each other to so contract the front or outer end of the holder as to effect its detachment while the button is in place, as the button neck 12 is too large.

However, to enable the reflector button to be removed from its holder 20, and the holder thereafter removed from the panel 30 if desired, an aperture 35 is here provided in the rear end wall 28 of the holder, through which a suitable tool may be inserted for the application of pressure on the rear end face of the reflector button. The application of such rearwardly applied pressure causes the rounded circumferential edge of the button shoulder 16 to snap past the rounded edge of the holder flange 23 and to move into the collar of the holder, as in Fig. 4. The resilient fingers of the holder are thereby caused to move outwardly and further forward movement of the button brings about its ejection from the holder. With the button removed, it is a simple matter to effect the removal of the holder, by manipulation from the rear of the panel. To protect the rear end face of the button 10 from damage when removal of the button is effected, to normally close the aperture 35 in the end wall 28 of the holder and thus prevent the entrance through such aperture of dirt, etc., and to provide a cushioning end bearing for the button 10, a resilient washer or gasket 36 preferably is located within the holder 20 at its rear end, as here shown.

Complete housing by the holder 20 of the button shank 13, on which the light-reflecting coating 17 is carried, renders unnecessary the provision of a box-like enclosure for the rear of the sign panel 30, at least insofar as the protection of such button coating is concerned. Such an enclosure for the rear of the panel could be utilized however, as a means to prevent unauthorized removal of the reflector button and its holder, even though the holder were provided with an end wall aperture. If the sign includes such an enclosure for the rear of its front panel, and

such an enclosure 38 is fragmentarily shown in Fig. 6, the holder for each reflector button may be of the form illustrated in Fig. 6, wherein the entire rear end of the holder body portion 21a is cut away or dispensed with. As the reflecting device of Fig. 6 is otherwise the same as the one illustrated in Figs. 1 to 5 inclusive and heretofore specifically described, no further reference to the reflecting device of Fig. 6 is believed to be necessary.

To those skilled in the art to which the present invention relates, further features and advantages of devices embodying such invention will be evident from the foregoing description of two such devices.

What I claim is:

1. A reflecting device for securement in the aperture of a supporting panel, said device comprising a reflector button having a generally frusto-conical body portion with its larger end at the front thereof and also having a dome-shaped head at the front end of said body portion, the base of said head being spaced from the outer edge of the front end of said body portion and thereby providing at such front end an annular shoulder surrounding the base of said dome-shaped head, and a generally cup-shaped sheet metal holder having a generally frusto-conical body portion to receive the body portion of said button, said holder body portion having its larger end at the front thereof and being provided at its front end with an inwardly extending annular flange to overlie the shoulder of said button, said holder being provided at the inner edge of its inwardly extending flange with a forwardly extending collar and being provided at the front end of said collar with an outwardly extending annular flange spaced from said inwardly extending annular flange, said holder also being provided with a plurality of longitudinally disposed, circumferentially spaced slits extending through said outwardly extending annular flange and rearwardly into said body portion, the resiliency of the longitudinally extending, circumferentially spaced holder fingers thus provided enabling the holder to be inserted by snap action in said panel aperture and retained by the engagement of the inwardly and outwardly extending holder flanges with the inner and outer faces of said panel, said fingers also enabling the button to be inserted by snap action into the holder and retained therein by the engagement of the inwardly extending holder flange with the button shoulder.

2. A reflecting device as in claim 1, characterized in that the body portion of said holder is provided with an aperture in its rear end to permit the insertion of a tool or the like into the holder for engagement with the reflector button to effect its ejection from the holder and characterized further in that said holder has a yieldable closure for said aperture which engages said button when the button is in said holder.

3. A reflecting device as in claim 1, characterized in that the body portion of said holder is provided with a rear end opening to receive a tool or the like for the application of ejecting pressure to the rear end of said button.

4. A reflecting device as in claim 1, characterized in that the outwardly extending flange of said holder is also rearwardly inclined toward the inwardly extending holder flange.

5. A reflecting device as in claim 1, characterized in that the collar of said holder is somewhat smaller than the panel aperture when the holder and the button are mounted in said aperture.

6. In combination, a panel having an aperture, a reflecting button having a dome-shaped head at its front end and having an annular shoulder surrounding said head at the base thereof, and a one-piece cup-shaped metal holder provided with a plurality of circumferentially spaced, longitudinally disposed resilient fingers each having external and internal shoulder portions receiving said panel therebetween and engaging the external and internal faces of said panel, the internal shoulder portions of said fingers engaging the shoulder of said button for the retention of the button in the holder.

7. In combination, a panel having an aperture, a reflecting button having a body portion of generally frusto-conical form and also having a dome-shaped head at the front end of said body portion, said body portion being provided at its front end with an annular shoulder surrounding said head at the base thereof, and a cup-shaped metal holder provided with a plurality of circumferentially spaced, longitudinally disposed resilient fingers each having external and internal shoulder portions receiving said panel therebetween and engaging the external and internal faces of said panel, the internal shoulder portions of said fingers engaging the shoulder of said button for retaining the button in said holder and the body portion of said holder having a rear opening providing access to the rear end of the button for the application of ejecting pressure to said button.

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