Nov. 7, 1933. R. W. LUCE 1,933,633

REFLECTOR

Filed May 28, 1930

Fig. 1.

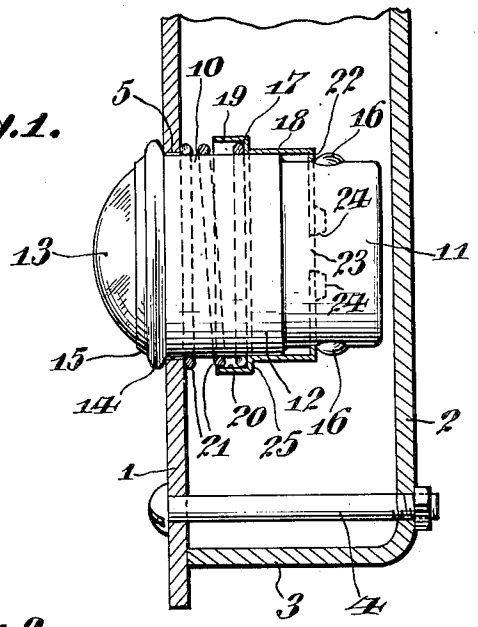


Fig. 2.

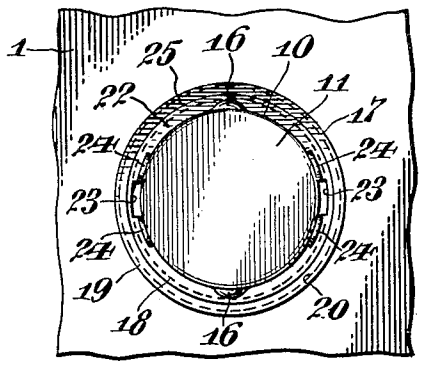


Fig. 3.

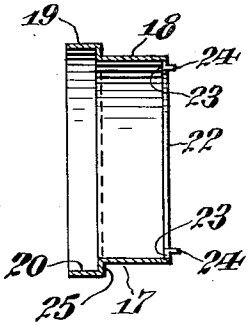


Fig. 4.

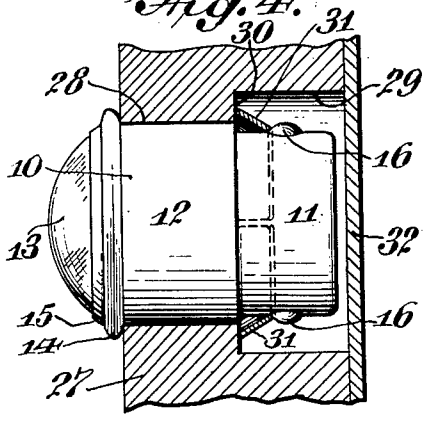
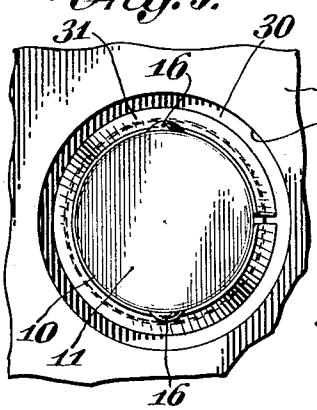


Fig. 5.



Inventor

Richard W. Luce

By

Lyman R. Anderson

Attorney

Patented Nov. 7, 1933 1,933,633

UNITED STATES PATENT OFFICE

1,933,633

REFLECTOR

Richard W. Luce, Mountainside, N. J., assignor to American Gasaccumulator Company, Elizabeth, N. J., a corporation of New Jersey

Application May 28, 1930. Serial No. 456,341

12 Claims. (Cl. 88—1)

My invention relates to reflectors which are adapted for use for sign and signaling purposes upon highways and for other purposes. The reflector to which the invention relates is of small size and such as is usually referred to in the trade as a reflector button, and in the use of the same it is customary to employ a plurality of them in near or contiguous relation to each other so as to render them effective as signs or signals, and frequently they are arranged in such relation to each other as to form letters by which words may be spelled. However, they may be arranged to produce any configuration or design desired.

Primarily the invention relates to means to facilitate the mounting of the reflectors separately upon supports therefor, and it has for its general object to provide means whereby the supports for reflectors may be varied in their characteristics without the necessity of a variation of the means for mounting and fastening the reflectors thereon.

It also is an object of the invention to provide means whereby the reflectors may be attached to and detached readily from the supports therefor, and whereby also any one of the reflectors may be removed from its support without disturbing any other reflector of a group of reflectors.

A further object of the invention is to provide means whereby a reflector when in place upon a support may not be removed without first removing a portion of the housing for the reflector in order that access may be had to the rear portion of the reflector.

To the foregoing and other ends my invention comprehends the construction as hereinafter described in detail, particularly defined in the appended claims, and as illustrated in the drawing wherein I have illustrated certain mechanical embodiments thereof. It is to be understood, however, that changes in the details of construction may be made within the scope of the claims without departing from the invention.

In order that the invention may be readily understood and its many practical advantages fully appreciated reference should be had to the accompanying drawing wherein I have illustrated certain embodiments of the invention.

In the drawing:

Fig. 1 is a view in transverse section of a portion of a housing and of means for mounting and fastening thereon a reflector embodying the invention, the said means being shown partly in section and partly in elevation;

Fig. 2 is a view in rear elevation of the reflector, of a fragmentary portion of the support therefor and of the means for retaining the said reflector upon said support;

Fig. 3 is a view in longitudinal section of the means for retaining the reflector upon its support;

Fig. 4 is a view showing in section a portion of a modified construction of support for the reflector, the reflector being shown in elevation on said support and a modified construction of means for retaining the said reflector in place upon said support, said means being shown in section; and

Fig. 5 is a view in rear elevation of the structure shown in Fig. 4 with the rear cover plate removed.

In the drawing I have shown at 1 a portion of a plate, preferably of metal, upon which the reflectors (only one being shown) are supported and which constitutes a part of a housing, the remaining portion of the housing being indicated at 2 and consisting of a plate provided with a flange 3. The plate 2 constitutes the rear wall and the flange 3 the side of the housing. A portion only of the housing is shown because a housing of any suitable construction may be employed. The two parts, 1 and 2, of the housing are held together by bolts such as indicated at 4, only one of which is shown. The housing may be supported by any suitable means, which means, however, is not shown.

The plate 1 which constitutes the immediate support for the reflectors may be provided with a series of holes, one of which only is shown at 5, into which the reflectors are inserted. Each of the reflectors comprises a metal casing 10 which is circular in cross section and in which the rear end portion 11 is of smaller diameter than the front end portion 12. The lens 13 of the reflector is mounted in the open end of the casing and projects from the casing as shown in Fig. 1, the surface of the projecting portion being spherical as shown; and the said lens being retained within the casing by means of a ring 14 shaped as indicated to provide a circular lip portion 15 which overlies an annular surface portion of the front spherical end of the reflector lens.

The front surface portion of the ring 14, including the lip portion 15 may be of any color desired or it may be of neutral color, by which is meant a color such as that approximating nickel.

For the purpose of retaining a reflector within an opening 5 I have provided lateral projections 16 upon the rear end portion 11 of the reflector casing which are adapted to engage the rear end of a ring member 17 which may be placed upon

and removed from the casing of the reflector. In the construction as illustrated the member 17 comprises rear and front portions 18 and 19, the former being of smaller diameter than the latter. Preferably the internal diameter of the former should be such as to form a close fit upon the front portion 12 of the casing 10, but there should be sufficient looseness to permit movement. The internal diameter of the portion 19 of the ring member 17 is considerably greater than the external diameter of the portion 12 of the reflector casing for the purpose of providing an annular space 20 within which is seated the rear end of a wire spring 21 which is coiled about the portion 12 of the casing of the reflector.

In the construction as illustrated the portion 18 of the ring member is provided at its rear end with a narrow inwardly turned flange 22 which is provided with notches or slots 23 so as to permit the passing of the ring member 17 onto the rear end portion of the reflector into position in front of or beyond the projections 16. The inwardly turned flange 22 upon the rear end of the ring member 17 is provided with rearwardly extending short projections 24 which are located upon opposite sides of and in adjoining relation to the notches 23. In placing the ring member 17 upon the rear end portion of a reflector it is positioned in such relation to the latter that the notches 23 will register with the projections 16. After the ring member 17 has been placed in position upon the reflector with the rear ends of the projections 24 beyond or in front of the projections 16 it is turned in one direction or the other so as to carry one or the other of the projections 24 laterally beyond the projections 16, whereupon the latter projections will contact with the portions of the inwardly turned flange 22 outside of the said projections 24. The projections 16 and the ring 17 thus form an abutment for one end of the coiled spring 21.

The front end of the coiled spring 21 is seated against the rear side of the plate 1 in adjoining relation to the opening 5 therein and is held under compression between the said plate 1 and the shoulder 25 of the ring member 17. The tendency of the coiled spring 21 to expand tends to cause rearward movement of the ring member 17 and the contact of the rear end of the latter (being the flange 22 in the construction shown) with the projections 16 operates to hold the reflector in its rearmost position with the rear side of the retaining ring or stop means 14 in contact with the front outer edge of the opening 5 through the plate 1.

It will be observed upon reference to Fig. 1 of the drawing that the front edge of the portion 19 of the ring member 17 is located a considerable distance from the rear side of the plate 1 and the coiled spring 21 being compressible it is apparent that the plate 1 may be of considerably greater thickness than shown without interfering with the mounting of the reflector in the opening 5. It will be seen that by this means it is not necessary that the thickness of the plate 1 be uniform and that there may be substantial variation in the thickness of the same without interfering with the operation of the means for mounting and fastening the reflector thereon.

Although in the construction as illustrated in Figs. 1 to 3 inclusive of the drawing I have shown the rear end of the ring member 17 as being provided with an inwardly turned narrow flange 22 yet it will be understood that such flange may be omitted and that other arrangements than that shown may be provided for permitting the placing of the said ring upon and its removal from the said reflector.

In the construction as illustrated in Figs. 4 and 5 of the drawing I have provided a support 27 for the reflectors of relatively great thickness provided with openings, only one of which is shown, said openings each comprising a front portion 28 and a rear portion 29, the diameter of the latter being considerably greater than that of the former. The presence of these portions 28 and 29 of different diameters provides an annular shoulder 30.

In the construction shown in these two figures of the drawing the reflector is identical with that shown in the previous figures of the drawing and the diameter of the portion 28 of the opening through the support 27 is substantially equal to the external diameter of the portion 12 of the said reflector.

For the purpose of retaining the reflector in place, as shown in Figs. 4 and 5, I employ a split ring 31 which is tapered or of truncated cone shape as illustrated. In the use of the said ring to retain a reflector in place within an opening through which it has been inserted said ring is placed on the rear end portion of the reflector, the said ring expanding to permit it to slide over the projections 16. The base or wider portion of the ring faces toward the front and when in place the front edge thereof contacts with the shoulder 30 while the rear edge of smaller diameter contacts with the projections 16.

For the purpose of closing the rear ends of the openings through the support 27 I have provided upon the latter a cover plate 32 which may be secured in place by any suitable means.

It will be apparent that in either form of construction in order to remove any reflector from an opening in the support therefor it will be necessary first to remove the cover plate 2 or 32 as the case may be in order that access may be had to the rear end portions of the reflectors.

In the case of the construction as illustrated in Figs. 1 to 3 of the drawing the ring member 17 may be removed by first pushing the same toward the front and then turning it so as to bring the notches 23 into registry or alinement with the projections 16 whereupon the expansion of the coiled spring 21 operates to push the ring 17 toward the rear from the reflector. Upon removal of the ring member 17 from the reflector the latter may then be removed from the opening 5 in the supporting plate 1 therefor.

In the case of the construction shown in Figs. 4 and 5 it will be apparent that upon removal of the cover plate 32 access may be had to the split ring for its removal and that it may be removed by expanding the same so as to enable it to pass rearwardly over the projections 16. The ring being split, as described, its expansion is permitted to enable its removal over the projections 16.

The necessity for the removal of the cover plates of the housings in both structures tends to prevent disturbance or removal of the reflectors from their supports by unauthorized persons because in order to remove the cover plates of the housings it will be necessary for a person desiring to effect such removal to have a suitable tool. The lack of such a tool would prevent the removal of the covers of the hous-

ings and thereby would prevent interference with or removal of the reflectors.

It will be seen that by my invention of means for mounting and retaining reflectors upon their supports I have provided constructions which are extremely simple but which have great flexibility in that they are adapted for use upon supports having different or varying characteristics.

The readiness with which the reflectors may be removed from their supports for replacement or repair by one authorized to make replacements or repairs is an advantage which practically is of substantial importance.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. In means of the character described, the combination of a support having an opening therethrough, a reflector located in said opening and projecting rearwardly therefrom, stop means on said reflector for engaging said support to limit rearward movement thereof in said opening, and yielding means mounted upon the said reflector in rear of the said support and engaging the said reflector and the said support for retaining the stop means in engagement with the support.

2. In means of the character described, the combination of a support having an opening therethrough, a reflector mounted in said opening and projecting rearwardly therefrom, said reflector having projections upon its rear end portion, stop means on said reflector for engaging said support to limit rearward movement thereof in said opening, and yielding means interposed between said projections and the said support for retaining the said stop means in engagement with the support.

3. In means of the character described, the combination of a support having an opening therethrough, a reflector mounted within said opening and projecting rearwardly therefrom, the rear portion of said reflector being provided with a lateral projection, stop means on said reflector for engaging said support to limit rearward movement thereof in said opening, and yielding means in engagement with the said projection and with the said support for retaining the stop means in engagement with said support.

4. In means of the character described, the combination of a support having an opening therethrough, a reflector mounted in said opening and projecting rearwardly therefrom, said reflector having means thereon for engaging with said support to limit its movement rearwardly through said opening and the said reflector also having a lateral projection near its rear end, and yielding means located between said lateral projection and the said support and contacting with the said projection and support and operating to hold the said reflector in its rearmost position within the said opening.

5. In means of the character described, the combination of a housing comprising a supporting member and a cover plate, said supporting member having an opening therethrough, a reflector mounted in said opening and projecting rearwardly toward the said cover plate and being protected by the latter, the said reflector having means engaging with said support to limit its rearward movement through said opening and the said reflector having a lateral projection near its rear end, and yielding means interposed between said projection and the said supporting member for retaining the said reflector within the said opening and preventing its removal except upon removal of the said cover plate.

6. In means of the character described, the combination of a support having an opening therethrough, a reflector mounted in said opening, said reflector having lateral projections upon its rear end portion, a ring member mounted upon the said reflector and retained in place by the said projections, the rear end portion of said ring member being of less diameter than the outer end portion thereof, the outer end portion forming with the adjoining portion of the said reflector an annular space, and said ring member having a shoulder between said portions, and yielding means, the rear portion of which is located in the said annular space and bears against said shoulder and the front portion of which bears against the said supporting member and operating to hold the said reflector in its rearmost position and the said ring member preventing removal of the said reflector from said opening.

7. In means of the character described, the combination of a support having an opening therethrough, a reflector mounted in said opening, said reflector having lateral projections in adjoining relation to its rear end, a ring member having an inwardly extending flange at its rear edge, said flange being provided with notches to permit the passage of the said ring member onto the said reflector and the said ring member also having rearwardly extending projections in adjoining relation to the said notches which are adapted to prevent accidental registry of the said notches with the said lateral projections after the ring member has been turned into position to displace the said notches with respect to the said lateral projections, and a coiled spring interposed between the said ring member and the said support and operating to hold the said reflector normally in its rearmost position.

8. In means of the character described, the combination of a support having a circular opening therethrough, a reflector of circular shape in cross section mounted in said opening, said reflector having means in adjoining relation to its front end to prevent passage thereof through said opening and the said reflector having lateral projections near its rear end, a ring member having front and rear portions, the diameter of the former being greater than the latter, a shoulder between said portions and the rear end of said ring member having an inwardly extending flange provided with notches therein which are adapted to register with the said projections to permit the placing of the ring member upon the said reflector and the said ring member having rearwardly extending projections in adjoining relation to the said notches for engagement with the said lateral projections to prevent accidental removal of the ring member from the said reflector, and a wire spring coiled around the front portion of the said reflector in rear of the said support, the rear end of said coiled spring being seated against the shoulder of the said ring member and the front end thereof against the rear side of the said support, the said spring normally being under compression and its tendency to expand operating to hold the said reflector in its rearmost position.

9. In means of the character described, the combination of a support having an opening therethrough, a reflector mounted in said opening and projecting therethrough, stop means on said reflector for engaging said support to limit

rearward movement thereof in said opening, and yielding means in engagement with said reflector and contacting with the rear side of said support to retain said stop means in engagement with the support.

10. In a signal construction, the combination of a supporting plate having an aperture therethrough, a reflector mounted in said aperture, means on one end of said reflector for engaging with said support to limit inward movement of the reflector through said aperture, a lateral projection adjacent the opposite end of said reflector, and yielding means interposed between the said supporting plate and said lateral projection to retain the reflector in position in said aperture.

11. In a reflector construction, the combination of a casing having a lens mounted therein and closing the open end thereof, a support for said casing having an opening therein to receive said casing, stop means on said casing for engagement with said support to limit movement of the casing in one direction in said opening, an abutment on said casing, spaced from said stop means, to limit movement of said casing in the opposite direction, and removable yielding means between said support and said abutment to retain said stop means in engagement with said support.

12. In a reflector construction, the combination of a casing having a lens fixed in one end thereof to close the same, a support having an opening therethrough to receive said casing, stop means on said casing for engagement with said support to limit rearward movement of said casing in said opening, an abutment on said casing spaced from said stop means, and removable means engaging between said abutment and said support to retain said stop means in engagement with said support and thereby retain said casing in position in said opening.

RICHARD W. LUCE.