

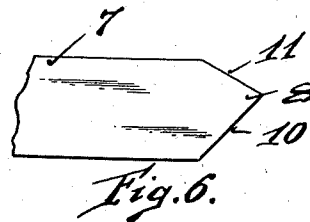
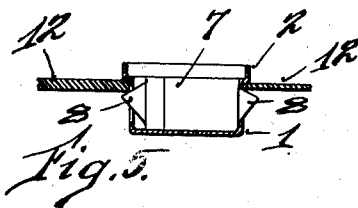
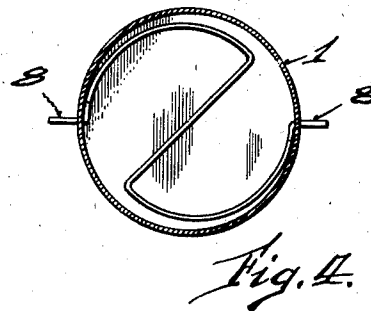
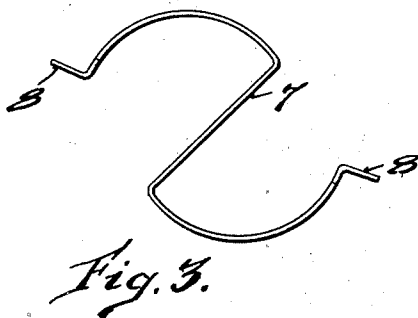
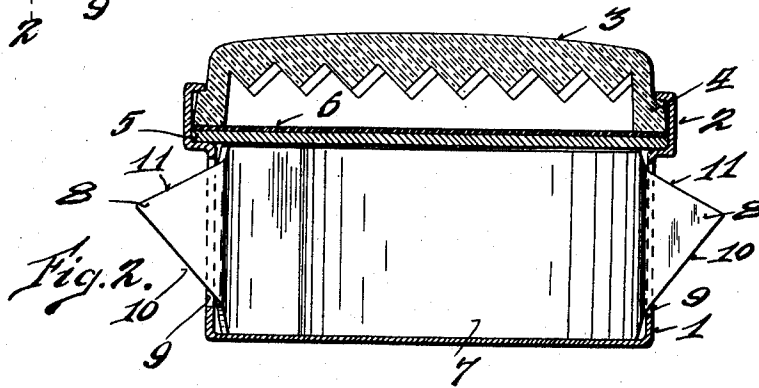
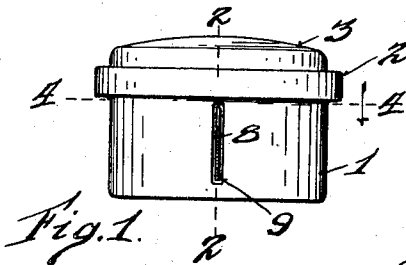
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C. D. RYDER

2,432,810

SIGN REFLECTOR BUTTON MOUNTING

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INVENTOR.  
Charles D. Ryder  
BY  
Oliver B. Haiser  
att'y.

## UNITED STATES PATENT OFFICE

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## SIGN REFLECTOR BUTTON MOUNTING

Charles D. Ryder, Covington, Ky., assignor to  
The Grote Manufacturing Company, Bellevue,  
Ky., a corporation of Kentucky

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This invention relates to a mounting for reflector buttons, adaptable for making a snap-on fastening connection to a plate, as a sheet metal signal sign plate, by insertion through an aperture in the plate in forming letters or other forms of light reflecting characters.

An object of the invention is to provide a mounting for a reflector button, comprising a closed end cylindrical shell having its opposite end of a formation for making a bezel setting of the reflector button and to constitute an annular head. The shell in rear of the button providing a chamber for housing a spring fastener element having its terminals, as tangs, each respectively depressively protruding through a slot in the shell for bearing against the underside of a plate and radially of an opening through the plate which the shell traverses to compressively latch the mounting to the plate.

Another object is to provide means for latching the button mounting to a sheet metal plate, self-accommodating for various sheet metal gauge thicknesses of plates, for effecting a compressive latching connecting upon engagement of the button mounting through an aperture in the plate.

Another object is to provide a reflector button mounting with means for making a snap-on latching connection with a plate upon insertion of the mounting through an aperture in the plate and capable of being clinched by a hand tool to prevent malicious removal of the mounting.

Another object is to provide a reflector button mounting with a spring latch for making a snap-on fastening of the mounting to a sheet metal plate, when engaged through an aperture therein of simple and durable construction and produced from a single metal strip, spring tempered.

Various other features and advantages of the invention will be more fully set forth in the following description of the accompanying drawings forming a part hereof and depicting a preferred embodiment, in which:

Figure 1 is a side elevation of the improved reflector button mounting.

Figure 2 is an enlarged section on line 2, 2, Figure 1.

Figure 3 is a plan view of the spring fastener element, in its condition before application in the button mounting shell.

Figure 4 is a section on line 4, 4, Figure 1.

Figure 5 is a central section through the button mounting, shown in a conventional size, illustrating at opposite sides thereof, relatively different gauge thicknesses of button mounting supporting plates or panels.

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Figure 6 is a plan view of a terminal section of the spring fastening elements.

The improvement is primarily directed to reflector button mountings, extensively employed in the character set-up for road traffic signal or other light reflecting signs and particularly to a spring fastener element for the reflector button mounting for making a snap-on locking connection with the sign plate or panel, upon pushing the mounting from the face side of the sign plate into and through the aperture in the plate. The fastener element constitutes a single spring unit formed from a flat metal strip, shaped to produce an elastic body structure, housed and confined within the button mounting shell, having its terminals shaped and bent to provide tangs or lugs for protrusion through slots or openings in the shell to impinge against the rear side of the plate or panel, or edge formed by the aperture through the plate, and compressively hold the mounting upon the plate. In the drawings, the various views, in general, for the sake of clearness, show the product in an enlarged scale, from that of its conventional commercial size, which is comparative to that shown in Figure 5. In such miniature size, considerable difficulty has heretofore been encountered in the production of an efficient and durable self-locking mounting.

Referring to the drawings, 1 indicates a sheet metal shell of closed end cylindrical or cup form, having its opposite open end of hub contour, to provide an annular head 2 for a shouldered engagement with a plate, when the shell is engaged through an aperture in the plate, and for making a bezel setting of a reflector button 3 by clinching the free margin or flange of the hub downwardly over an annular flange 4 about the base of the button.

The structure of the button is optional and as illustrated preferably comprises a transparent refractory body having a recessed underside and a smooth front face upon which rays from a source of light are adapted to impinge. The rear recessed surface is of a prismatic reflecting structure, as fully shown and described in U. S. Letters Patent No. 2,216,325, issued October 1, 1940, and to which reference may be had for a more complete description than contained herein.

The button seats within the hub of the shell upon a disk 5, the disk at its upper side is covered with a suitable pliable sealing disk 6 as a closure for the shell and recessed underside of the bottom, sealing against the admission of moisture or other foreign matter which may be deleterious to the refraction characteristics of the

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button and also to protect the upper surface of the sealing disk exposed to the prismatic reflector portion of the button, should it possess reflector characteristics.

The shell beneath the reflector button provides a housing and chamber for a spring latching element 7 formed from a flat flexible metal spring, bent or shaped in plan to a Z, S or zig-zag configuration and spring tempered, providing a series of alternating turns with its terminals bent at an angle forming tangs 8, 8, diametrically disposed, for relative protrusion, each through a slot 9 in the wall of the shell to impinge against the underface of the plate to which the unit is attached.

The flat metal strip for the body of the spring fastener element 7 is of a width dimension, approximately corresponding to the depth chamber of the shell, or spacing between the bottom of the shell and the closure disk 5, and stationed perpendicular thereto and confined thereby leaving no opportunity for lateral displacement thereof within the chamber. This is of advantage in the assembly of the parts, as well as a reduction in cost, as no auxiliary means are required to retain the spring in an active position, and sufficient play is provided to prevent any bind or interference to any compressive or yielding action of the spring body which would destroy its efficiency in making a snap-on attachment of the button unit to a supporting plate or panel.

The spring body normally is in an expanded condition, before insertion into the shell, requiring it to be compressed to a degree that it will be under tension when the tangs are engaged through and protrude from the slots in the shell. Thus they extend outwardly under an effective pressure.

The end of each tang is pointed by providing relatively divergent angled edges 10 and 11, the lower, 10, is inclined for automatically compressing the spring body for a retraction of the tangs, as the shell is depressed into an aperture in a sheet metal sign plate or panel and to move outward when freed for impingement against the metal plate for making a snap-on connection and to bind the shell to the plate.

The inclination of the upper edge 11 accommodates for various gauge thicknesses of metal plates 12. This permits the ready replacement of broken or damaged button units to a sign while in service and as one size of sign, particularly for road or highway signal service, is made of a different gauge sheet metal than that of another size, the tangs accommodate themselves for such variation in metal gauge.

The spring shaped body structure of the fastener element provides considerable expanding pressure, so that the mounting cannot be extracted by jar, or promiscuously by the slight finger hold permissible on the head of the mounting, particularly as the rear side of the sign plate is usually protected by a cover plate. The tang extends perpendicular to the plane of the sign plate, 12, thus is in a position of greatest stability, and therefore is not easily bent in the snap-on force and the excessive width of strip allows for a low degree of angle or incline for receiving edge of the tang to effect its gradual retreat in the entry and movement of the mounting into and through a plate aperture.

The tangs also permit locking the button unit more securely to the sign plate against malicious

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removal, by slightly clinching or bending the portion of the tangs protruding from the shell, a slight degree in a direction about the outer side of the shell to prevent their retraction unless subsequently restraughtened.

Having described my invention, I claim:

1. A reflector button mounting unit for a snap-on application and latching connection with a mounting plate upon insertion through an aperture in the plate, comprising: a cylindrical shell closed at one end and its opposite end formed to provide a head for a reflector button setting and shouldered engagement with the face side of the mounting plate, and a fastener element of spring structure housed within said shell formed of a flat metal strip shaped into a series of alternating turns bearing edgewise upon the closed end of the shell and having its terminals bent at an angle to provide tangs radially protruding from the shell through apertures therein for edgewise impingement against the underside of the mounting plate for latching the unit to the plate.

2. A reflector button mounting unit for a snap-on application and latching connection with a mounting plate upon insertion through an aperture in the plate, comprising: a cylindrical cup-formed shell, its open end having an annular rim for mounting a reflector button therein and provide an annular shoulder for engagement with the face side of a mounting plate upon insertion of the shell through an aperture therein and a fastening element consisting of a spring metal strip shaped to provide a resilient body bearing edgewise upon the base of the shell and the terminals of the strip extending from the body in relatively opposite directions to provide tangs radially protruding from the shell, each respectively through an aperture in a side of the shell for edgewise impingement against the side of a mounting plate opposite from that engaged by the shoulder of the shell for latching the unit to the plate.

3. A reflector button mounting unit for a snap-on application and latching connection with a mounting plate upon insertion through an aperture in the plate, comprising: a cylindrical cup-formed shell, its open end having an annular rim for mounting a reflector button therein and provide an annular shoulder for engagement with the face side of a mounting plate upon insertion of the shell through an aperture therein and a fastening element consisting of a spring metal strip shaped to provide a resilient body and the terminals of the strip extending from the body to provide tangs radially protruding from the shell, each respectively through an aperture in a side of the shell for edgewise impingement against the side of a mounting plate opposite from that engaged by the shoulder of the shell for latching the unit to the plate.

CHARLES D. RYDER.

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