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SIGN UNIT MOUNTING

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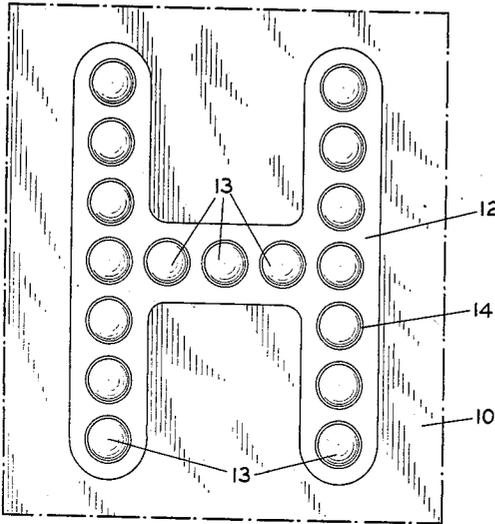


Fig. 1.

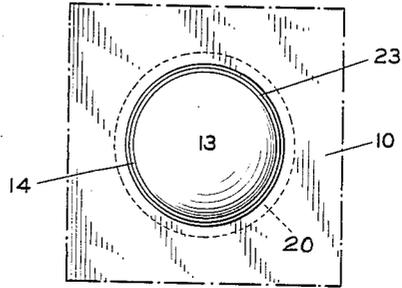


Fig. 2.

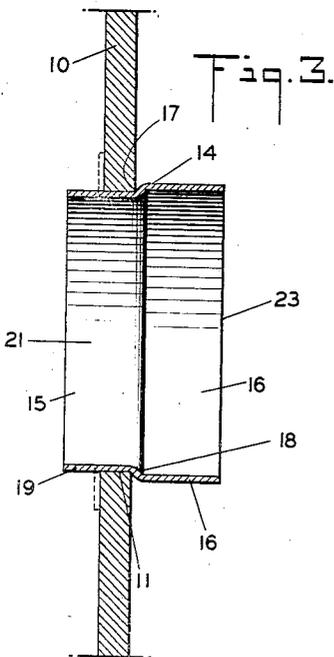


Fig. 3.

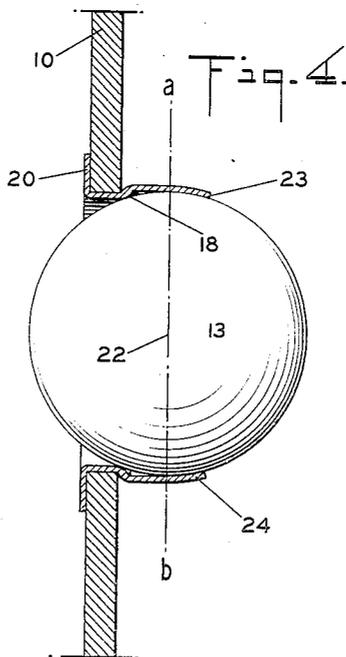


Fig. 4.

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## SIGN UNIT MOUNTING

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3 Claims. (Cl. 40—130)

The invention relates in general to a sign of the character in which light is transmitted through openings formed in the sign to cause sign characters to be visible from the front side of the sign either by direct light reflected from the front of the sign character, or light transmitted through optical spheres fitted in the openings, and the invention specifically relates to the mounting for securing the optical spheres in place on their support forming part of the sign.

The primary objects of the invention are to provide a simple and inexpensive form of sphere mounting which can be easily and permanently secured in place in accurately preset relation to the support; to provide a form of mounting which can be located in position on the support by simple machine operation and which will mount the optical sphere in position likewise by mechanical means and in such way as will minimize breakage during the period of mounting the spheres in place as well as during the period of subsequent use.

Various other objects and advantages of the invention will be in part obvious from an inspection of the accompanying drawing and in part will be more fully set forth in the following particular description of one form of sign embodying the invention, and the invention also consists in certain new and novel features of construction and combination of parts hereinafter set forth and claimed.

In the accompanying drawing:

Fig. 1 is a view in front elevation of a portion of an awning showing a sign character with its component optical spheres mounted in position following the method herein disclosed and illustrating a physical embodiment of the invention;

Figs. 2 and 3 and 4 are detailed views of one of the optical sphere mountings shown in Fig. 1; Fig. 2 being an enlarged view in rear elevation; Figs. 3 and 4 being vertical sectional views axially through the mounting; Fig. 3 showing in full line the initial step of inserting the ring in the support and showing in dotted lines the securing of the flange in position in the absence of the optical sphere; and Fig. 4 showing the finished structure with the optical sphere in position.

In the drawing and referring first to Fig. 1, there is shown a support 10 which may be a canvas drop or metal plate forming a part of the complete sign. The support 10 is provided with a set of spaced apart openings 11 arranged to form a sign character 12, the instant case shown to be the letter "H". Mounted in each of the openings 11 is a solid glass ball hereinafter some-

times referred to as an optical sphere or more accurately as a spherical light transmitting element 13, and which element projects both forwardly and rearwardly beyond the support 10 as shown in Fig. 4. These elements and their associated mounting rings 14 are of identical construction so that the brief description of one will be sufficient for all the others.

The mounting ring 14 is initially of the form shown in full line in Fig. 3 and in the illustrated embodiment is a thin brass tube which can be easily bent to shape. The ring comprises at one end a relatively narrow tubular end portion 15 of relatively small diameter and at its other end a relatively wide end portion 16 of larger diameter, there being formed therebetween an external shoulder 17 and an internal shoulder 18. The openings 11 are designed so that the end portion 15 has a snug fit therein and the ring as a whole is inserted in the support with this end portion of smaller diameter, more or less snugly fitting in the opening 11 so as to prevent light leakage between the support and the mounting ring. The extreme edge portion 19 of the small diametrical portion 15 is bent outwardly against the adjacent side of the support 10 to form an outstanding attaching flange 20. At this time the sphere 13 is not in position. By means of suitable flanging dies rotated in the bore 21 of the ring, the flange 20 may be readily formed and in this way the support 10 is clamped between flange 20 and the external shoulder 17.

The sphere 13 is then inserted into the end portion 16 which is designed to fit the sphere rather snugly. The sphere is advanced until it engages the annular stop provided by the internal shoulder 18. The parts are so designed that the center 22 of the sphere is in the plane  $a-b$  which extends parallel to the support 10 and substantially bisects the tubular portion 16. The extreme outer edge 23 of the end portion 16 is then bent slightly inwardly to form an annular band 24 which will form a section of a sphere, particularly on its inner side which conforms more or less to the configuration of that portion of the spherical surface which lies externally of the plane  $a-b$  and between this plane and the edge 23. Care is exercised in forming this inwardly bent edge 24 and which is preferably formed by a rotary die engaging the outer face of the portion 14, that no crushing action be exerted upon the sphere but only such pressure as will force the sphere gently in an axial direction against the retaining stop 18.

By means of a mounting of the type herein

disclosed it is possible to draw the original tube constituting the mounting ring so that the larger end will fit over standard sizes of the optical lens or spheres and in this way provide economically mounting rings in large quantities and any one of which will receive interchangeably any one of the standard spheres.

The device herein disclosed is designed to be operated upon by special forms of mounting machinery which include revolving flanging dies centered in the bore of the ring in the initial ring mounting steps suggested in Fig. 3. With the ring thus securely mounted in the support by the out-bending of the portion 19 to form the flange 29, the associated sphere may then be mounted in the wider end of the ring manually, and then by means of a suitable tool engaging the end of the ring into which the sphere has been intruded, this end may be bent gently as by means of a rotating die engaging the external portion of the ring and the same may be curved slightly into the clamping position illustrated at the right of Fig. 4. It will be understood that the degree of clamping effect exerted on the spherical lens will determine whether the lens is to be clamped fixedly in position against even rotary motion or is to be permitted at least a limited freedom of rotary movement about its contained axis. In the case of vari-colored spheres or spheres which have some distinctive design, variable different effects may be produced in the sign character considered as a whole by rotating some or all of the spheres from time to time.

It is highly desirable in forming signs of the type designed to be exposed to the weather that they be water-tight in their joints, and it is accordingly herein suggested that even if the portion 24 of the retaining ring be actually out of contact or in light contacting engagement with the sphere, the extreme outer edge 23 be drawn down snugly into engagement with the perimeter of the sphere so as to provide a more or less water-tight circular line joint between the glass sphere surface and the retaining ring at its exposed edge. In this way water falling on the top side of the projecting portion 24 will flow down and off the sphere without leaking backwardly through the support.

It is herein suggested that the character 12, such as the "H", be painted on the support and in one form of the invention the character is formed of enamel baked on steel before the mounting ring is installed in place as above suggested. In this way the ring may be mounted in place without in any way marring the finish provided by the enamel used on either face.

It is also suggested that both sides of the support, when made of metal, be coated with some rust-preventing material, such as the enamel used for forming the character. The color of the enamel used to form the character is of a color contrasting with that used for the background.

While there have been shown, described and pointed out in the annexed claims, certain novel features of the invention, it will be understood that various omissions, substitutions and

changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention.

I claim:

1. In a device of the class described, the combination of a one-piece tubular mounting means open at opposite ends having one end portion of a greater diameter of bore than the other end portion and providing an internal shoulder connecting the portions of different diameters, said shoulder forming an annular stop, a light transmitting element having a snug fit in the portion of larger diameter and engaging firmly against the stop provided by said inclined internal shoulder, the portion of larger diameter adjacent the shoulder being of cylindrical form between the shoulder and a plane perpendicular to the axis of the tubular mounting means at the center of the spherical element and the portion on the other side of said plane having its inner face forming a section of a sphere contoured substantially to that of the portion of the spherical element encircled thereby and in clamping engagement therewith and the extreme outer edge of said last named portion being drawn snugly into engagement with the perimeter of the sphere to provide a more or less water-tight circular line joint between the sphere surface and the mounting means and the tubular end of less diameter adapted to be flanged outwardly to form an attaching flange to secure the mounting means to a support.

2. In a device of the class described, the combination of a one-piece metallic tubular member having a portion of relatively small diameter and a portion of relatively large diameter forming an annular stop shoulder connecting said portions, the outer end of the portion of smaller diameter constituting an attaching flange between which and the stop shoulder a support may be fitted, a light transmitting element fitted in the bore of the portion of larger diameter and engaging against the stop shoulder, the bore of said large portion being of cylindrical form adjacent the stop and at least at its inner end spaced from the portion of the element encircled thereby and said bore gradually reducing from the cylindrical portion to form a section of a sphere conforming to the portion of the element encircled thereby.

3. A one-piece open end tube for mounting a light transmitting unit on a support, said tube having one end portion with a greater diameter of bore than the other end portion and providing an internal shoulder connecting the ends of different diameters, the portion of larger diameter adjacent the shoulder being of cylindrical form between the shoulder and a plane perpendicular to the axis of the tube and the portion on the other side of the plane having its bore forming a section of a sphere for encircling the light transmitting unit and having an axial length substantially equal to the cylindrical portion and said other end portion of less diameter adapted to be flanged to secure the tube to a support.

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