

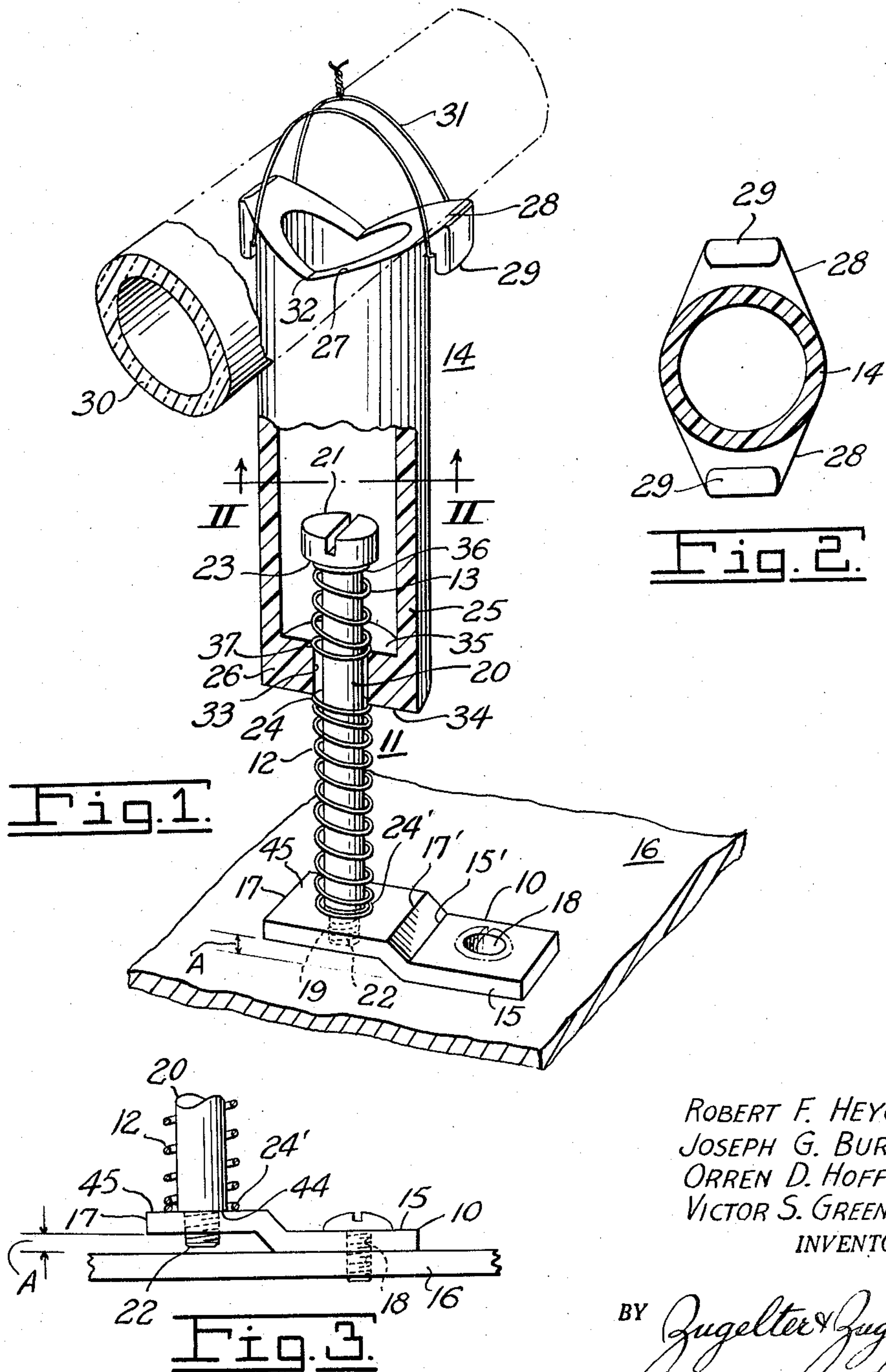
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NEON TUBE SUPPORTS

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## NEON TUBE SUPPORTS

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This invention relates to supports for luminous tubing and particularly to resilient supports for luminous tubular sign elements.

An object of this invention is to provide for neon and like luminous tubes a resilient support having a long service life and being of simple sturdy construction adapted for manufacture at low cost.

A further object of this invention is to provide a support of the above described character which automatically adjusts in height to conform to the space between a sign body face and the luminous tube supported in spaced relation thereto and incidentally subjecting the luminous tube member to forces of insufficient magnitude to cause any mechanical damage thereto.

A further object of this invention is to provide a resilient support of the above described character having a luminous tube-engaging member adapted for resilient tilting to permit positioning of the tube-engaging saddle portion thereof in firm supporting engagement with the luminous tube and adapted to co-operate with binding means for securing the tube-engaging member and said tube in co-operative relation to each other.

A further object of this invention is to provide a device as above described comprising a base or mounting member adapted to be secured to the face of a sign, a screw post, an elongate cup having an axial aperture in the bottom thereof and an helical spring in said cup, a second helical spring between the cup and the base member, the post screw extending axially through the helical springs and the cup aperture into threaded engagement with the base, the head of the screw post being disposed within the elongate cup and being spaced inwardly from the open end thereof to provide an air gap between same and the wall of a luminous tube supported thereon.

The foregoing and other objects and advantages of the invention will be apparent to those of ordinary skill in the art to which the invention pertains, from the following description taken in conjunction with the accompanying drawing.

In the drawing:

Figure 1 is a view in perspective of a device embodying this invention, portions thereof being broken away to more clearly illustrate details of construction;

Fig. 2 is a view in cross section of the device shown in Fig. 1, taken along the line II-II in Fig. 1; and

Fig. 3 is a fragmentary view in elevation of the base member, a portion of a post and a portion of a sign body.

We have illustrated a form of support embodying our invention, in Figs. 1, 2 and 3 of the accompanying drawing. The support comprises a base or mounting member 10, screw post 11, resilient helical spring members 12 and 13, and a cup 14. Cup 14 may be made of any suitable material which is a non-conductor of electricity, or insulation. We have found that a cup 14, having very satisfactory performance characteristics, may be made by die-casting polystyrene plastic to the form illustrated in the drawing.

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The base or mounting member 10 shown in the drawing, is formed from an elongate rectangular blank of metal having a rectangular transverse cross section. The blank is bent along fold lines 15' and 17' to form parallel oppositely extending tab portions 15 and 17. The under face of tab 17 is substantially coplanar with the upper face of tab 15 and distance A is substantially equal to the thickness of tab 15. A central aperture 18 is provided in tab 15 for receiving a portion of a screw or other means for securing tab 15 in face-to-face abutment with the face of panel 16. A threaded aperture 19 adapted to receive and co-operate with threaded stud portion 22 of screw post 11, is provided centrally of tab 17.

Screw post 11 has a stop-head portion 21 and a threaded stud-root portion 22 integrally joined to opposite ends of an elongate cylindrical shank of body 20 in coaxial alignment therewith. Stop-head 21 is larger in diameter than body 20 and its face 23 extends radially outwardly from the shank 20.

Root portion 22 is preferably of a length greater than the thickness of tab 17 and less than the distance from the face 45 of tab 17 to the subjacent surface 16 in order that a portion thereof may project beyond tab 17 toward face 16 and be provided with threads adjacent the free end of portion 22 of slightly undersize diameter to facilitate engagement thereof with threaded aperture 19 provided in tab 17. Root portion 22 is advanced into threaded engagement with tab 17 until the adjacent abutment end face 44 of shank 20 is in face-to-face abutment with a portion of the upper face 45 of tab 17 adjacent aperture 19. When screw post 11 and member 10 are so joined, face 45 is parallel to and spaced from opposite face 23.

Helical spring 12 has end portions 24 and 24' coiled to form end rings tending to lie in spaced parallel planes. Spring 12 is of sufficiently large diameter to receive a portion of shank 20 for free reciprocation therein. Helical spring 13, having end rings 36 and 37, is similar to spring 12, but may be of a different length, for example, in the device illustrated in the drawing, spring 13 is approximately one-half as long as spring 12.

Elongate cup 14 has a cylindrical side wall 25, bottom 26, exterior pads 28 and lugs 29. The pads 28 extend outwardly from diametrically opposite portions of wall 25 adjacent the mouth of cup 14. Lip face 27 lies in two planes intersecting at 32 in an obtuse angle of approximately 120 degrees along a diameter perpendicular to a diameter through the centers of exterior pads 28, and serves to provide a V-rest notch or saddle for a neon or like tube 30. Lip face 27 is narrowest adjacent the line of intersection 32 of the two planes and widest adjacent the pads 28 intermediate the narrow portions. Lugs 29 extend from pads 28 in parallel spaced relation to the exterior surface of wall 25 away from lip face 27 and serve to retain tie-wire 31 in co-operative engagement with pad 28. Bottom 26 has an axial bore 33 extending there-through. Bore 33 is larger in diameter than shank 20 and smaller in diameter than springs 12 and 13 and is adapted to permit cocking of cup 14 to swing the inner face of its wall 25 into contact with head 21. The faces 34 and 35 of bottom 26 are substantially parallel abutment faces adapted to co-operate with end rings 24 and 37 of springs 12 and 13, respectively.

The support illustrated in the drawing may be assembled by inserting screw post 11 successively through spring 13, bore 33, spring 12 into aperture 19 in threaded engagement, with face 44 in face-to-face abutment with the upper face of tab 17. In so assembling the device, springs 12 and 13 are loaded in compression with their respective end ring coils 24 and 37 abutting bottom faces 34 and 35 and ring coils 36 and 24' abutting face 23 and the upper face of tab 17. Cup 14, with its bottom 26



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clamped between coil rings 24 and 37, floats resiliently for longitudinal axial reciprocation along shank 20 of screw post 11 and for limited cocking from coaxial alignment with the post 11. The face of bore 33 co-operates with the face of shank 20 and head 21 co-operates with the adjacent face of wall 25 to limit cocking of cup 14 relating to post 11. The limit positions of the axis of cup 14 in the device shown in the drawing, lie in a cone, for any position of axial displacement of cup 14 relative to shank 20. The apex angle of the cone of limit positions of the axis of cup 14 varies, being smallest when cup 14 is advanced as far as possible toward base member 10 (the position in which spring 12 is fully compressed), and being greatest when cup 14 is advanced as far from base member 10 as possible (the position in which spring 13 is fully compressed).

It may be noted that when cup 14 is advanced to the limit position in which spring 12 is fully compressed, an insulating air gap is preserved between the wall of tube 30 and post head 21 by reason of the relative dimensions of post 11, spring 12 and cup 14.

Having thus described the invention it will be apparent to those having ordinary skill in the art to which this invention pertains, that various changes may be made in the disclosed embodiment, without departing from either the spirit or the scope of the invention.

Therefore what is claimed as new and desired to be secured by Letter Patent is:

1. A load responsive, protective support for a luminous tube which comprises an elongated cup-shaped body member, means at the open end of said body member for attaching a luminous tube thereto, there being an opening in the base of the body member, an elongated post extending through said opening, an enlarged head on one end of said post and reciprocable inside the body member, a mounting bracket attached to the other end of said post, and a pair of springs mounted on said post, an end of each spring engaging the base of the body member, the second end of one of the springs engaging the head of the post and the second end of the other spring engaging the bracket, both springs being normally loaded in compression, said other spring serving as a stop limiting advancement of the cup toward the bracket to provide an insulating air gap between said post and a luminous tube secured to said cup, whereby the body member is resiliently mounted on the post, there being clearance between the head of the post and the walls of the body member, whereby the body member can swing with relation to the post, the springs urging the body member into alignment with the post.

2. A load responsive, protective support for luminous tubing comprising an elongate insulating cup having a bottom, at least one side wall of the cup being joined to the bottom and having a lip defining a V-notch rest for a luminous tube remote from said bottom, said cup having a pair of pads projecting laterally outward and substantially perpendicular to said V-notch, each pad having at least one finger spaced outwardly from and projecting parallel to the side wall of the cup and toward the plane of the cup bottom, a central aperture in said bottom, an elongate post having a head portion adjacent one of its ends and being secured to a base member adjacent the other end, said post extending through the aperture in said cup bottom, a first resilient means between and abutting said head and the inward facing face of the cup bottom, a second resilient means between and abutting said base member and the outward facing face of the cup bottom, said second resilient means serving as a stop limiting advancement of the cup toward the base mem-

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ber to provide an insulating air gap between said post and a luminous tube secured to said cup each of said resilient means urging the cup bottom longitudinally of said post and toward the other of said resilient means, whereby a portion of a luminous tube may be resiliently supported in spaced relation to an adjacent member and securely fastened in co-operating relation to said V-notch rest by a tie wire co-operating with said cup and insulated from said post.

3. A load responsive, protective support for luminous tubing comprising an elongate insulating cup having an aperture extending centrally through the bottom thereof and having a lip formed to provide a V-notch rest for luminous tubing and means projecting laterally of said V-notch and adapted to co-operate with means for securing a luminous tube in co-operative relation therewith, an elongate post member having a body portion and a head portion of larger diameter provided adjacent one end thereof and being secured to a base member adjacent the other end thereof said post member extending through the aperture in said cup bottom, resilient means having opposite ends abutting said post head and the inwardly facing face of said cup bottom, respectively, a second resilient means between and having opposite ends abutting said base member and the exterior face of said cup bottom, said second resilient means serving as a stop limiting advancement of the cup toward the base member to provide an insulating air gap between said post and luminous tubing secured to said cup, each of said resilient means urging the cup bottom longitudinally along said post toward the other of said resilient means and being adapted to maintain the respective end portions thereof in flatwise abutment with the co-operating faces of said cup bottom and resiliently urging said cup toward coaxial alignment with said post when said cup is cocked out of coaxial alignment with said post.

4. For luminous tubing a protective support responsive to loading forces and comprising an elongate insulating cup having a central aperture in the bottom thereof, an elongate post having an enlarged head portion adjacent one of its ends, a first resilient means within said cup, a second resilient means exteriorly of said cup, said post extending successively through said first resilient means, the aperture in said cup bottom, the second resilient means and into engagement with said base member whereby said resilient means are loaded in compression with the remote end portions thereof respectively abutting a portion of said post head and said base member, and their adjacent end portions abut opposite faces of the cup bottom in compression, biasing the cup toward co-axial relation to said post, said second resilient means serving as a stop limiting advancement of the cup toward the base member to provide an insulating air gap between said post and luminous tubing secured to said cup, whereby said cup is resiliently supported for longitudinal reciprocation and cocking from co-axial relation to said post under force imposed incident to supporting of luminous tubing.

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