June 6, 1961 E. M. HAULTER 2,987,612

EXTENSION OR TROUBLE LIGHT WITH MAGNETIC SUPPORTING MEANS

Filed Feb. 17, 1960

FIG. 1

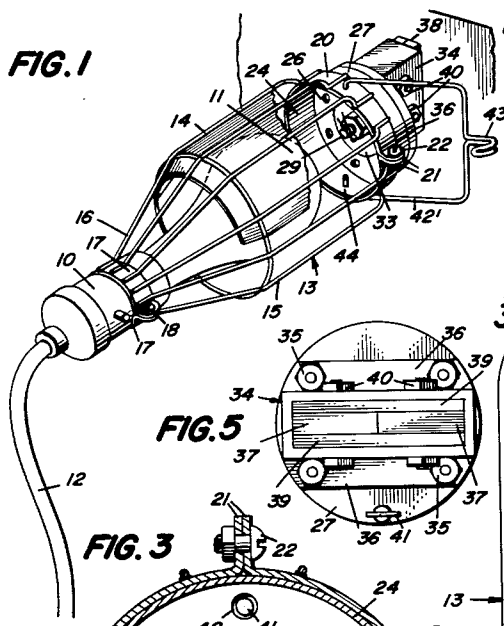


FIG. 2

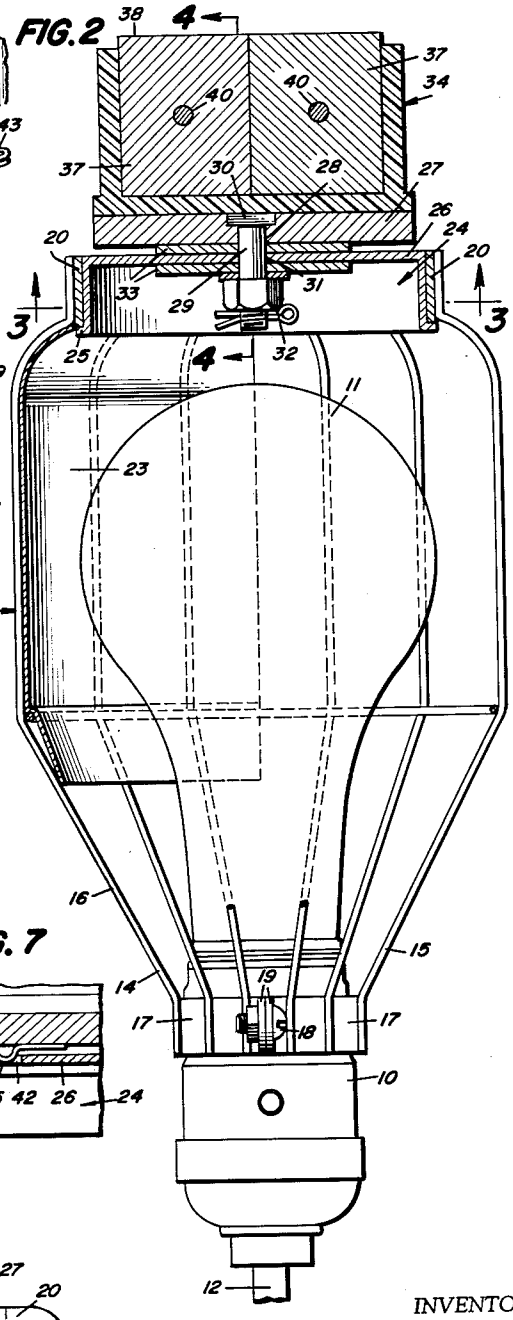


FIG. 5

FIG. 3

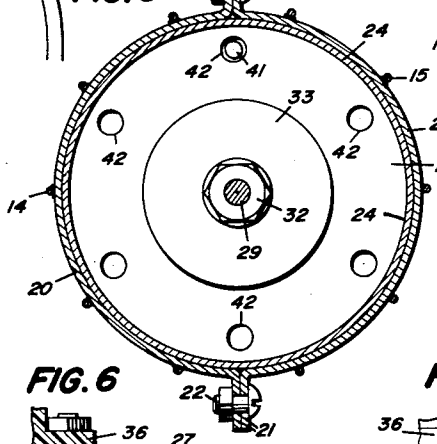


FIG. 6

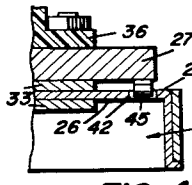


FIG. 7

FIG. 4

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EXTENSION OR TROUBLE LIGHT WITH MAGNETIC SUPPORTING MEANS

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This invention relates to extension or trouble lights, and to means for supporting the same.

An object of the invention is to provide an extension or trouble light having simplified and highly compact permanent magnet supporting means adjustably secured thereto so that the trouble light may be readily secured magnetically to any readily available surface or structure formed of paramagnetic material.

Another object of the invention is to provide magnetic supporting means for an extension or trouble light which will afford a maximum grip or holding force upon the metallic structure to which the trouble light is magnetically secured during use.

A further object is to provide improved permanent magnet supporting means for a trouble light, and which may be adjusted or oriented with respect to the light reflector, while the permanent magnet supporting means is disposed in the most effective gripping position relative to the metallic structure, upon which the light is supported.

Still another object is to provide permanent magnet supporting means for an extension or trouble light constructed so as to occupy a minimum of space, while affording a maximum holding or gripping action with the metallic structure upon which the light is mounted.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings, forming a part of this application, and in which like numerals are employed to designate like parts throughout the same,

FIGURE 1 is a perspective view of an extension or trouble light according to the invention and showing the same magnetically supported upon a vertical support surface.

FIGURE 2 is an enlarged central vertical longitudinal section through the trouble light, parts in elevation.

FIGURE 3 is a horizontal transverse section taken on line 3—3 of FIGURE 2.

FIGURE 4 is a fragmentary central vertical section taken on line 4—4 of FIGURE 2.

FIGURE 5 is an end elevation of the trouble light on a reduced scale and with parts omitted.

FIGURE 6 is a fragmentary vertical section similar to FIGURE 4 and illustrating a slight modification of the invention.

FIGURE 7 is a fragmentary side elevation of the elements shown in FIGURE 6.

In the drawings, wherein for the purpose of illustration are shown preferred embodiments of the invention, attention is directed first to FIGURES 1 through 5, wherein the numeral **10** designates a lamp socket of any suitable type, adapted to receive a light bulb **11** secured therein, and having an extension cord **12** of suitable length extending therefrom, as shown in the drawings.

A wire guard **13** is provided, preferably formed in companion halves or sections **14** and **15**, so as to be readily separable to permit changing the bulb **11**. The guard **13** is tapered at its end adjacent the socket **10**, as shown at **16**, and each guard section **14** and **15** carries at corresponding ends a semi-circular band section **17**, adapted to surround and grip the neck of socket **10** and to be detachably rigidly secured thereto by bolt means **18**, engaging through apertured extensions **19** of the band section **17**.

The other or forward end of the guard **13** is likewise equipped with a band comprising mating semi-circular

band sections **20**, permanently secured thereto, and having apertured radial extensions **21**, receiving fastener means **22**, serving to detachably rigidly secure the forward end of the guard **13** to the permanent magnet supporting means presently to be described.

The design or shape of the guard **13** is immaterial and may be varied as desired.

A suitable light reflector and shade **23** is suitably secured to the inner side of one guard section, as best shown in FIGURE 1, and this reflector may extend over the major portion of the area of the guard section carrying it or over a smaller area of the guard section if preferred.

A shallow rearwardly opening cylindrical cup or adapter **24** has its annular side wall engaged snugly between the band sections **20** and tightly gripped thereby when the fastener means **22** are tightened. A flange **25** may be provided upon the inner end of the cup **24** to abut the inner edges of the band sections **20**, as shown in FIGURE 2. The forward wall **26** of cup **24** is flat and preferably flush with the forward end of the guard **13**, defined by the band sections **20**.

A circular plate **27** lies just forwardly of the cup **24** and has a central counterbored opening **28**, receiving rotatably a bolt **29**, having an enlarged cylindrical head **30** at its forward end. The bolt **29** engages through a central opening **31** in the end wall **26** of the cup, and projects rearwardly into the cup **24** and carries a nut **32**, as shown. Preferably large flat washers **33** are disposed upon opposite sides of the wall **26**, with one such washer interposed between the plate **27** and wall **26**, as shown in the drawings. This arrangement adds rigidity to the structure without increasing its weight materially. The plate **27** is freely rotatable upon the bolt **29** and has sliding contact against the forwardmost flat washer **33**.

A preferably plastic forwardly opening box-like rectangular magnet holder **34** is mounted upon the forward side of plate **27**, and rigidly secured thereto by screws or the like **35**, engaging through registering openings in the plate **27** and side longitudinal flanges **36** of the holder **34**, and integral therewith. As illustrated, the plastic holder **34** is elongated laterally or transversely of the longitudinal axis of the trouble light in one direction and for a purpose to be explained.

Disposed within the plastic holder **34** in side-by-side or edge-to-edge relation is a pair of strong rectangular permanent magnets **37**, having their forward edges **38** projecting somewhat forwardly of the open end of holder **34**. Armature plates **39** of paramagnetic material are also mounted within the holder **34**, outwardly of and on opposite sides of the magnets **37** and contacting the same. Together, the magnets **37** and armature plates **39** fill the interior of the rectangular box-like holder **34**. The forward edges of the armature plates **39** are flush with the forward edges **38** of the magnets as best shown in FIGURE 4. The magnets **37** and armature plates **39** are rigidly and detachably secured within the holder **38** by transverse bolt means **40**, or the like.

It has been discovered in practice that the holding or attracting power of the magnets **37** is greatly increased by the presence of the two paramagnetic plates **39** on opposite sides of the magnets. If these plates **39** are removed from the assembly, the holding power of the magnets **37** is considerably lessened. The permanent magnet structure as above described is considerably elongated transversely of the longitudinal axis of the trouble light, in one direction, as clearly shown in FIGURES 1 and 2.

The plate **27** is provided at one point near its periphery with a screw-threaded opening, receiving an adjusting or lock screw **41**, selectively engageable within any one of a plurality of circumferentially spaced adjustment

openings 42 in the forward wall 26 of cup or adapter 24. This arrangement permits the permanent magnet assembly including holder 34 and plate 27 to be turned or adjusted upon the longitudinal axis of the bolt 29 and locked in the selected adjusted position relative to the reflector 23.

This is an important feature, because it is desirable during the support of the light upon a vertical wall surface, FIGURE 1, to have the permanent magnet holder 34 extending vertically longitudinally of the holder so as to provide the maximum magnetic holding force. That is to say, with the trouble light supported horizontally upon a vertical wall surface, as indicated in FIGURE 1, the elongated permanent magnet assembly should always extend vertically to afford maximum resistance to tilting or pivoting of the magnet structure under the influence of gravity and under the weight of the cord 12. The light will support itself however on a vertical wall surface with some degree of efficiency, regardless of the angular disposition of the holder 34 and permanent magnet assembly. With my arrangement including the locking screw 41, the magnet holder 34 may always be arranged vertically on the vertical wall surface and the guard 13 may be adjusted circumferentially with the reflector 23 to the desired position and locked in such position by the screw 41 without disturbing the position of the magnet holder 34 and plate 27.

Obviously, the trouble light may be supported by the magnet means upon a surface which is horizontal or at any intermediate angle between horizontal and vertical. To support the light in instances where no metallic supporting members are readily available, I provide a suitable wire bail 42' having a hook 43 for attachment to any convenient support element. The bail 42' is pivoted to one of the band sections 20 as indicated at 44. The bail 42' may be omitted entirely if preferred.

In FIGURES 5 and 6 there is shown a slight modification of the means for releasably securing the plate 27 and associated elements in the selected adjusted position relative to the cup 24. The means shown in FIGURES 6 and 7 may be used instead of the locking screw 41 and associated elements. The same openings 42 are employed in the forward wall 26 of the cup. A small spring detent element 45 is secured by welding or the like to the inner face of the plate 27 near the periphery of such plate and the resilient detent element 45 is selectively engageable within the openings 42 when the plate 27 and associated elements is turned relative to the cup 24 upon the axis of the bolt 29. The detent element 45 cooperates with the openings 42 to releasably secure the magnet assembly in the selected adjusted position relative to the guard 13 and reflector 23. The arrangement shown in FIGURES 6 and 7, while not as positive in action as the screw 41, is somewhat more convenient and more time-saving for adjusting the relative positions of the magnet structure and guard 13.

It is to be understood that the forms of the invention herewith shown and described are to be taken as preferred examples of the same, and that various changes in the shape, size and arrangement of parts may be resorted to, without departing from the spirit of the invention of the scope of the subjoined claims.

Having thus described my invention, I claim:

1. A portable extension light comprising light bulb socket means, a guard secured to the socket means in surrounding relation to the light bulb and having a reflector part on one side of the light bulb and extending forwardly of the light bulb and socket means, circular band means carried by the forward end of said guard, a shallow cylindrical cup element engageable within the band means and snugly held by the latter and having a forward wall and being open at its side facing the light bulb, a plate element arranged forwardly of the cup element and close to the forward wall of the cup element, means rotatably connecting the plate element to the cup element so that the plate element may turn upon the longitudinal axis of the extension light, detent means interconnecting said plate element and cup element so that the plate element may be releasably locked in selected adjusted positions about the circumference of the cup element, a forwardly opening transversely elongated box-like magnet holder secured to the forward side of the plate element and projecting forwardly thereof, and permanent magnet means mounted within said holder for holding engagement with a paramagnetic support structure.

2. An extension light comprising light bulb socket means, a guard including companion separable guard sections clamped about the socket means and enclosing the light bulb, a rearwardly opening shallow cylindrical cup, semi-circular clamp sections carried by the forward ends of the guard sections and clampingly engaging the periphery of said cup to hold the same stationary upon the guard, an axial bolt element carried by the forward wall of said cup and projecting into the cup and forwardly thereof, a plate journaled upon the bolt element for rotation, a transversely elongated permanent magnet holder secured to the forward side of the plate, transversely elongated permanent magnet means within said holder, a detent element carried by said plate and projecting rearwardly thereof, and interlocking means on the forward wall of said cup and spaced circumferentially thereon for engagement by the detent element to releasably secure said plate in the selected adjusted position circumferentially of the cup.

3. An extension light according to claim 2, wherein said detent element is a screw carried by said plate for selective engagement with said interlocking means.

4. An extension light according to claim 2, wherein said detent element is a resilient leaf spring carried by said plate for selective engagement with said interlocking means.

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