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MAGNETIC TROUBLE LAMP ASSEMBLY

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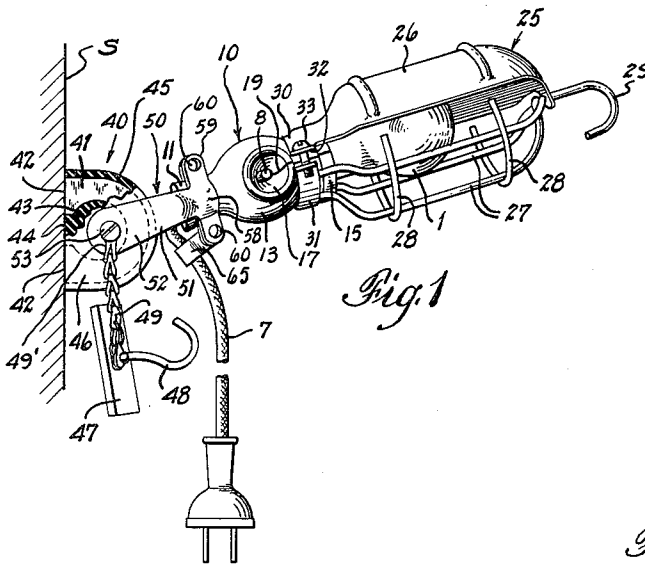


Fig. 1

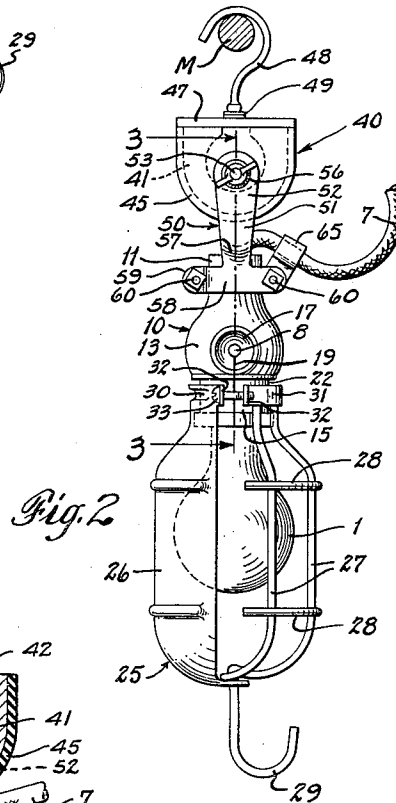


Fig. 2

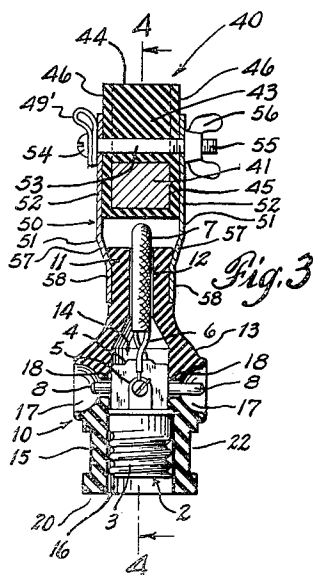


Fig. 3

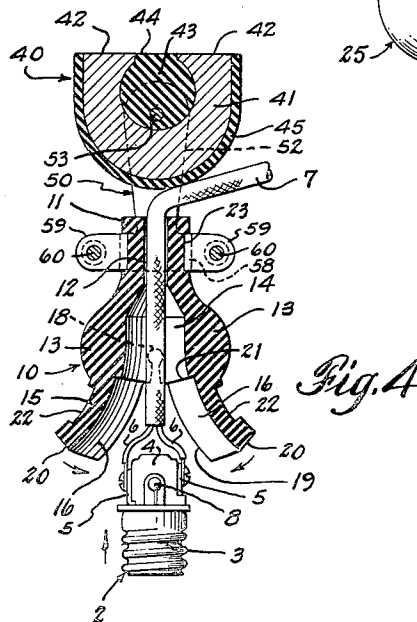


Fig. 4

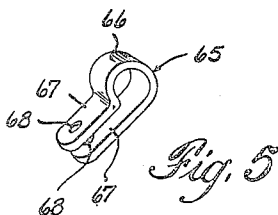


Fig. 5

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MAGNETIC TROUBLE LAMP ASSEMBLY

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3 Claims. (Cl. 240—52.15)

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This invention relates to an improved trouble lamp assembly, and more particularly to a lamp assembly having plural means for adjustably mounting the same in numerous positions and at any selected angle to assure brilliant lighting of all difficultly accessible areas at which the mechanic must work.

In the inspection, investigation, repair and construction of automotive equipment, machinery, boats, buildings and structures, the work of the mechanic can be greatly expedited, his workmanship improved, and his comfort and convenience served, by the use of a rugged and compact lighting assembly having associated therewith a variety of means for mounting, attaching, suspending and adjusting the lighting assembly in the most effective lighting position.

This invention is directed to the provision of a trouble lamp assembly which is rugged and compact in construction, which has a combination of means which permit the mounting, suspension, securement, and attachment thereof to any conveniently adjacent surface or member in the area at which the mechanic is to perform his work, which provides means for the convenient and fixable adjustment of the lighting angle in either a vertical or horizontal direction to throw brilliant light rays into otherwise dark corners and obstructed areas, which is so designed and constructed as to quickly and conveniently permit adjustment and replacement of the parts thereof, and which can be manufactured at relatively low cost.

This improved trouble lamp assembly embraces a compact magnet unit comprising a highly powered permanent magnet encased within a non-conducted covering, the magnetic ends of the magnet being exposed and presenting flat surfaces, permitting firm magnetic attachment thereof in any position to a ferrous metal surface or member, unhindered by paint or other foreign matter with which the metal is coated.

This improved trouble lamp assembly also includes a bracket unit sturdily and inexpensively constructed from stamped metal parts, which is adjustably connected to the magnet unit in a manner so that the bracket unit may be swingably adjusted and then conveniently clamped and frictionally retained at any desired adjusted angle.

The lamp bulb is threaded to a socket unit having a convenient current switch associated therewith, the socket unit being removably encased within a retainer unit formed from vulcanized rubber or other non-conducting material.

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The retainer unit is so constructed as to permit ready insertion and removal of the socket unit therefrom, and the convenient attachment and detachment of the power cable thereto. The retainer unit is provided with a neck section to which the bracket unit may be firmly and removably clamped. The retainer unit is also provided with a throat section designed to conveniently permit the firm but removable attachment of the lamp guard thereto.

A further important novel feature of this improved trouble lamp assembly, is the provision of a protective plate which is positively tied to the magnet unit and which can be conveniently placed over the magnetic ends of the magnet unit to protect and preserve its magnetic power when not in use. The magnet protector plate also has a hook member associated therewith providing additional means for conveniently suspending the lamp assembly with the lamp bulb in inverted position.

The assembly also includes as a part of its plural attaching means, a convenient hook which extends from the end of the lamp guard by means of which the assembly can be vertically suspended with the lamp bulb in upright position. This improved trouble lamp assembly thus combines in one compact and rugged assembly, three mounting devices which may be selectively employed by the mechanic to insure brilliant lighting of the area at which he is to work.

Other objects and advantages of this invention will become apparent as the disclosure proceeds.

Although the characteristic features of the invention will be particularly pointed out in the claims appended hereto, the invention itself, and the manner in which it may be carried out, may be better understood by referring to the following description taken in connection with the accompanying drawings forming a part hereof, in which

Fig. 1 is a perspective view of the improved trouble lamp assembly shown adjustably mounted by its associated permanent magnet on a vertical metallic surface, certain parts of the magnet covering being broken away to illustrate details of construction.

Fig. 2 is another view of the trouble lamp assembly as it appears when vertically suspended from the hook of the magnet protecting plate associated therewith.

Fig. 3 is a longitudinal cross-sectional view through the trouble lamp assembly as the same would appear when viewed along lines 3—3 of

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Fig. 2, this view showing further details of the construction with the lamp guard removed.

Fig. 4 is another longitudinal cross-sectional view through the trouble lamp assembly as the same would appear when viewed along lines 4—4 of Fig. 3, this view showing the manner in which the socket retainer unit may be flexibly opened to facilitate attachment of the lamp socket unit to the cable lead wires; and

Fig. 5 is a perspective view of the guide which supports the power cable adjacent the entry end of the socket retainer unit, as illustrated in the assembly shown in Figs. 1 and 2.

Similar reference characters refer to similar parts throughout the several views of the drawing and specification.

Referring to the figures of the drawing, the lamp bulb 1, of the desired voltage and amperage capacity, threads into the threaded sleeve 3 of a socket unit 2. The sleeve 3 may have a switch section 4 attached to the base thereof. The socket unit 2 has lead wire connectors 5 associated therewith to which the terminal ends of the lead wires 6 of the power cable 7 may be detachably secured. The switch section 4 has a reciprocable switch stem 8 associated therewith for manually controlling the current flow to the light bulb.

A socket retainer unit 10, formed of non-conducting material such as vulcanized rubber, provides a protector container for the lamp socket unit 2 and the base of the lamp bulb 1, and is so constructed as to permit convenient attachment of the lead wires 6 of the power cable to the socket unit 2.

The socket retainer unit 10 comprises a neck section 11, having a power cable receiving bore 12 extending axially therethrough. The neck section 11 merges into an enlarged body section 13, having a central cavity 14 which is dimensioned to snugly house the lower part of the socket unit 2. The other end of the body section 13 merges into a throat section 15 which has cavity 16 therein dimensioned to receive the remaining part of the socket unit 2 and the lower part of the lamp bulb 1 in a manner to provide support and protection thereto.

In cases where the socket unit 2 also has a switch section 4 associated therewith, as shown in Fig. 3, the body section 13 of the socket retainer unit 10 may have a pair of exterior finger wells 17 on the opposite sides thereof, with a switch stem hole 18 leading from the interior socket switch cavity 14 into each of the depressed wells 17. When the lamp socket unit 2 is housed in operative position within the socket retainer unit 10, the ends of the switch stem 8 thereof extend through the diametrically opposite stem holes 18 and into the depressed wells 17 so that the switch stem 8 may be manipulated by the fingers in either direction to control the current flow to the lamp bulb.

Insertion and removal of the socket unit 2 and the associated switch section 4 may be readily effected by providing diametrically opposed cut lines 19, as shown in Figs. 2 and 4 which extend from the free upper end 20 of the throat section 15 down to the switch stem holes 18 in the body section of the retainer unit, thereby dividing the throat section 15 and the adjacent portion of the body section 13 into half sections which can be readily spread apart as illustrated in Fig. 4.

When it is desired to attach the lead wire 6 of the power cable 7 to the wire connectors 5 of the socket unit 2, the lead wire end of the power cable 7 is drawn through the bore 12 of the

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neck section 11 and out through the body cavity 14 and throat cavity 15 of the socket retainer unit 10, as shown in Fig. 4. The lead wires 6 can then be conveniently attached to the wire connectors 5 of the socket unit 2. When this connection has been completed, the socket unit 2 may be drawn into its proper housed position within the retainer unit 10 by exerting a light pull on that portion of the power cable which extends outside of the neck section 11. By spreading the half-portions of the throat section 15 apart, the ends of the switch stem 8 may be located to extend through the stem holes 18 and into the sunken wells 17 of the body section 13.

The lower end of the socket cavity 16 in the throat section 15 terminates in an inwardly extending shoulder 21 against which the base of the threaded socket sleeve 3 is designed to seat, thereby fixing the position of the lamp socket unit 2 within the retainer unit 10. The socket cavity 16 in the throat 15 is so dimensioned that the throat section normally exerts a resilient grip on the outer wall of the socket 3 when in properly housed position therein, which resilient grip further serves to retain the socket unit in properly housed position within the retainer unit 10.

This improved trouble lamp assembly makes provision for the attachment of a lamp guard unit 25 to the socket retainer unit 10. The lamp guard 25 may be of any desired construction, but desirably includes a light reflector section 26 of semi-circular form which surrounds and encloses one side of the lamp bulb 1. The other side of the lamp bulb is protected by a series of longitudinally extending guard wires 27 which are strengthened and reinforced by transversely extending guard wires 28. The upper ends of the longitudinally extending guards are suitably connected to the upper end of the reflector 26, a suspension hook 29 extending from the upper end of the reflector section 26 to permit upright suspension of the lamp bulb.

The lower end of the reflector section 26 terminates in a semi-circular band 30 and the lower ends of the longitudinally extending guard wires 27 are also connected to a complementary semi-circular band 31 as shown in Figs. 1 and 2. The semi-circular bands 30 and 31 are so shaped as to seat in a conforming groove 22 extending circumferentially around the throat section 15 of the retainer unit 10. The semi-circular bands 30 and 31 terminate in laterally extending ear portions 32 for the reception of clamp bolts 33 by means of which the lamp guard unit 25 may be clamped and secured to the throat section 15 of the retainer unit. When the lamp guard 25 has thus been clamped and secured to the throat section 15 of the retainer unit 10, lodgement of the socket unit 2 in properly seated position within the retainer unit 10 is positively assured. The lamp guard 25 may however be easily removed to permit replacement of the lamp bulb and replacement of another socket unit 2 as desired.

The socket retainer unit 10 is swingably and adjustably connected to a magnet unit 40 by a bracket unit 50. The magnet unit 40 comprises a permanent magnet 41 formed from a highly magnetized metal having strong magnetic power. The permanent magnet 41, as shown in Figs. 1, 3 and 4, is generally U-shaped and presents flat and smooth ends 42 which are approximately one inch square. The permanent magnet 41 used in this assembly exerts an attracting influence on ferrous metal for a distance approximately two

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inches from the flat face ends 42 thereof, and has such power as to rigidly support the trouble lamp assembly to any ferrous metal surface S as shown in Fig. 1, irrespective of paint or other foreign matter with which such surface may be covered or coated.

The center bore of this permanent magnet 41 is filled with a relatively hard non-conducting material such as vulcanized rubber providing a hard and strong non-conducting core 43 which fills the bore hole and presents an outer surface 44 which is flush with the contact faces 42 of the magnet.

The body of the magnet is also completely encased in a non-conducting covering 45 made from vulcanized rubber or the like, the flat ends 42 only of the magnet being exposed. As thus covered, the magnet unit presents flat side faces 46 which have a friction characteristic which serves a purpose more fully hereafter explained.

The exposed non magnetic ends 42 of the magnet unit are protected, and the magnetic power of the magnet preserved, by the provision of a metallic protector plate 47 which forms a part of the assembly. The protector plate 47 is provided with a hook 48 secured to one face thereof by means of which the trouble lamp assembly may be suspended in inverted position from any convenient support M, as shown in Fig. 2. The protector plate 47 and its associated hook thus serves the double purpose of protecting the magnetic ends 42 when the magnet 41 is not in use, and additionally provides a convenient means for vertically suspending the trouble lamp assembly in downwardly hung position, with the lamp bulb 1 and its associated guard unit 25 lowermost. The protector plate 47 is connected to one end of a suitable tie chain 49, the other end of the chain being connected to a part of the bracket unit 50. Thus the protector plate 47 is at all times conveniently accessible and available for magnetic attachment to the magnetic ends 42 of the permanent magnet 41.

The bracket unit 50 adjustably connects the magnet unit 40 to the socket retainer unit 10 in a manner to permit frictional swinging adjustment of the lamp bulb 1, thereby assuring brilliant lighting of the area at which the mechanic must work. The bracket unit 50 can be advantageously and economically made from two stamped metal sections 51. Each stamped metal section comprises a relatively flat arm portion 52 designed to frictionally seat against the adjacent face 46 of the magnet unit 40. The lower ends of the arm portions 52 are connected to the rubber core 43 of the magnet unit by a bolt 53 extending axially through a bore hole in the rubber core 43. The bracket attaching bolt 53 has a manipulating head 54 at one end thereof and is threaded at the other end 55 thereof.

The bolt 53 extends through the terminal link 49' of the chain 49 to connect the protector plate 47 to the magnet unit, the terminal link 49' being clamped in position between the bolt head 54 and the adjacent arm portion 52, as shown in Figs. 1 and 3.

The projecting threaded end 55 of the bolt 52 carries a wing nut 56. By manipulating the wing nut 54, the arm portions 52 of the bracket unit 50 may be pressed against the friction faces 46 of the magnet unit 40 so as to adjustably and frictionally retain the bracket sections 51 at any desired angle.

The arm portions 52 are of such length as to extend some distance beyond the curvilinear sur-

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face of the magnet unit, and each arm portion 52 thereof merges into an inwardly inclined hip extension 57. Each hip extension 57 terminates in a semi-circular band portion 58 shaped to embrace and be received within a depressed groove 23 which circumscribes the neck section 11 of the retainer unit 10. Each of the semi-circular band portions 58 terminates in a laterally projecting ear portion 59 through which a clamp bolt 60 may extend. Each clamp bolt 60 serves to connect the adjacent ear portions 59 of the semi-circular band portions 58. By a tightening manipulation the clamp bolt 60, the bracket unit 50 may be rigidly secured to the neck section 11 of the socket retainer unit 10, and by loosening the clamp bolts 58, the socket retainer unit 10 may also be readily removed from the bracket unit 50.

A strap member 65, as shown in Figs. 1 and 5, may be advantageously employed to support the power cable 7 adjacent the cable entry end of the throat section 11 of the retainer unit 10. The strap member 65 is preferably made of a non-conducting plastic, and presents a semi-circular body portion 66 having spaced clamping arms 67 extending therefrom. The bore of the body portion 66 is of such size as to snugly embrace the power cable. The arm extensions 67 are provided with aligned holes 68 therein through which one of the clamp bolts 60 may be inserted to adjustably support the clamp member 65 in convenient position adjacent the cable entry end of the neck section 11 of the retainer unit 10.

This improved trouble lamp assembly is constructed and assembled from few component parts of economical cost, is sturdy and lasting in use, is rugged and compact, can be easily taken apart and reassembled, combines plural means for mounting, attaching, suspending and adjusting the light bulb into the most effective lighting position, and otherwise admirably meets the needs and requirements of the mechanic who must perform his work in dark and otherwise poor lighted areas.

While certain novel features of the invention have been disclosed herein and are pointed out in the claims, it will be understood that various omissions, substitutions, and changes may be made by those skilled in the art without departing from the spirit of this invention.

What is claimed is:

1. An improved trouble lamp assembly including in combination, a magnetic base unit comprising a permanent magnet having exposed magnetic attaching ends but otherwise encased by a non-conductive sheathing, a bracket unit adjustably secured to said magnetic base unit, a lamp socket unit, a non-conductive socket retainer unit containing said socket unit, means for attaching the bracket unit to one end of said retainer unit, a protector plate shaped to cover the magnetic attaching ends of the magnetic base unit, and a suspension hook extending from said protector plate by means of which the lamp assembly may be suspended when the protector plate is magnetically held to the exposed ends of said magnetic base unit.

2. An improved trouble lamp assembly including in combination, a magnetic base unit comprising a generally U-shaped permanent magnet having a non-conductive sheathing of substantially uniform thickness covering the outer perimeter and said faces of the magnet with the magnetic end faces exposed for attachment to a metallic supporting surface, a lamp socket unit,

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a non-conducting socket retainer unit for containing said socket unit, a bracket unit connecting said socket retainer unit and its associated lamp socket unit to said magnetic base unit, a protector plate shaped to cover the magnetic attaching ends of the magnet unit, a flexible tie element for connecting said protector plate to said bracket unit, and a suspension hook extending from said protector plate by means of which the trouble lamp assembly may be suspended when the protector plate is magnetically held to the exposed end faces of the magnet.

3. An improved trouble lamp assembly including in combination, a magnetic base unit comprising a permanent magnet having a non-conductive covering with the ends of said magnet exposed, a bracket unit swingably secured to said magnetic base unit, a lamp socket unit, a socket retainer unit of non-conductive material for removably receiving said socket unit, means for removably attaching the bracket unit to one end of said retainer unit, a lamp guard, means for removably attaching the lamp guard to the other end of the retainer unit, a protector plate shaped to cover and be magnetically secured to the magnetic attaching ends of the magnetic base unit, a suspen-

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sion hook extending from said protector plate by means of which the lamp assembly may be suspended when the protector plate is magnetically held to the exposed ends of said magnetic base unit, and a suspension hook extending said lamp guard by means of which the lamp assembly may be suspended from the lamp guard, said magnetic base unit and said suspension hook providing plural means for supporting said lamp assembly from the opposite ends of said lamp assembly in various selected use positions.

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