United States Patent

Griffin

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[54] PORTABLE SAFETY LAMP STRUCTURE

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[52] **U.S. Cl.**.....**339/14 R,** 339/59 L, 339/108 L, 339/147 R, 339/158

[51] **Int. Cl.**.....**H01r 3/06,** H01r 13/48

[58] **Field of Search**.....240/54, 102; 339/14 R, 14 T, 339/59, 60 R, 63 R, 108 L, 154 R, 154 L, 155, 157 R, 158, 159 R, 167, 168, 180, 181

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[57] **ABSTRACT**

A portable safety lamp includes a socket assembly, an elongated hollow dielectric handle for housing the socket assembly therewithin and a wire mesh cage for protecting a light bulb screwed into the socket assembly. The socket assembly includes a pair of contacts that interconnect an extension cord to the socket assembly, and a freely detachable unitary dielectric adapter that acts as a spacer and resilient retainer of the pair of contacts. The adapter and the pair of contacts are uniquely designed so that they provide two-pronged and three-pronged outlets. The adapter eliminates a large number of structural pieces used in the prior art socket assembly and simplifies the socket assembly manufacture.

8 Claims, 7 Drawing Figures

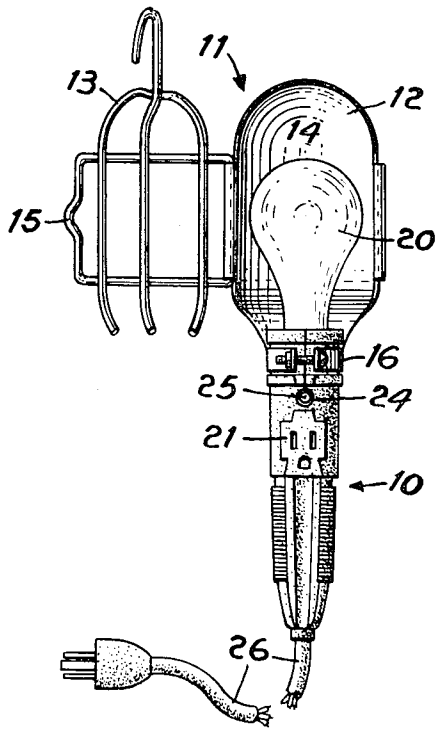


Fig. 1

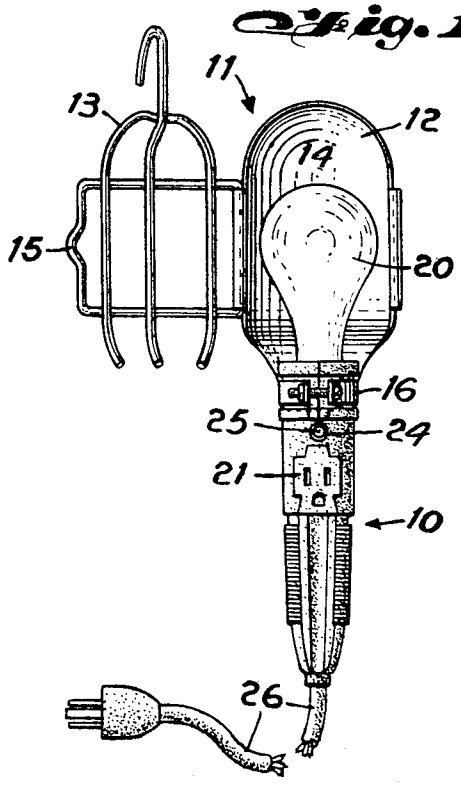


Fig. 2

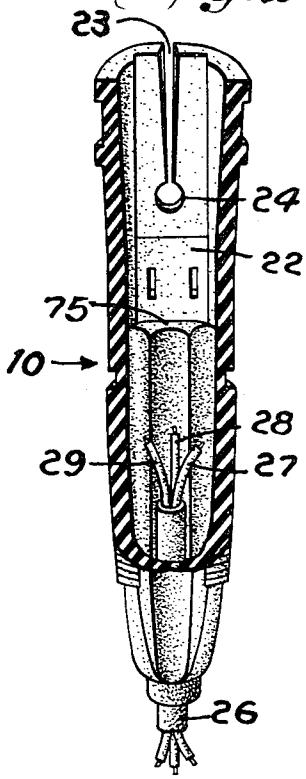


Fig. 3

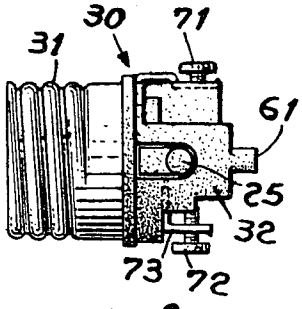


Fig. 5

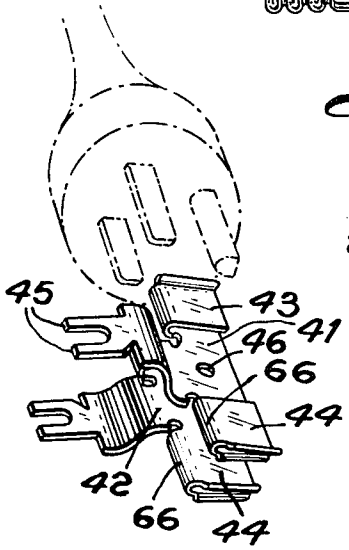


Fig. 6

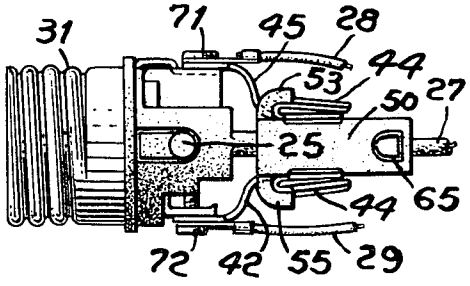


Fig. 4

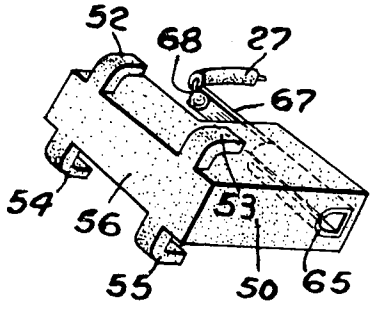
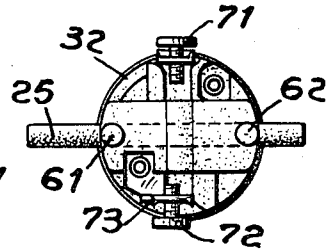


Fig. 7



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PORTABLE SAFETY LAMP STRUCTURE

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a portable safety lamp and more particularly to a simplified and an improved socket assembly in the portable safety lamp.

2. Description of the Prior Art

A portable safety lamp is generally connected at an end of a long extension cord and is used to illuminate locations of work areas which are ordinarily inaccessible or removed some distance away from an electrical outlet. The safety lamp usually includes a dielectric elongated handle with a socket assembly rigidly mounted therewithin, and the handle usually provides one or more outlets through which additional electric connections may be made to the socket assembly. A light bulb is screwed into the receptacle or the head of the socket assembly and the bulb is protected within a wire cage. A reflector is usually provided for increasing the illumination of the light. The prior art lamp, however, requires a number of piece parts such as nuts and screws for fastening and rigidly attaching electrical contact element to the head of the socket assembly which require a substantial amount of labor to assemble.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide an improved portable safety lamp of a simplified design which is easy to assemble.

In accordance with the present invention, the safety lamp includes a socket assembly having a socket head, a switch connected to the socket head, a pair of electrical contacts connected to the switch and axially extending from the socket head, and a detachable unitary dielectric adapter positioned between the pair of contacts. The adapter has a bearing surface in free contact with the socket head and in one form has a plurality of flexible hook-like fingers projecting from the bearing surface for resiliently holding and urging the pair of contacts toward each other against the adapter. The adapter is preferably a relatively resilient one piece molded structure made of a dielectric material having an aperture spaced from the bearing surface for accommodating a ground lead contact. The pair of contacts, the adapter and the handle are designed to provide two-pronged and three-pronged outlets.

These and other objects and features of the present invention will be more fully apprehended from the following detailed description of the invention in conjunction with accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 shows a schematic view of the assembled portable safety lamp embodying the present invention;

FIG. 2 shows a partial cross-section of the elongated dielectric handle of FIG. 1 with a portion thereof being broken away to show the interior and opposite side;

FIGS. 3, 4 and 5 respectively show the socket head, the adapter and the pair of contact elements in a separated form;

FIG. 6 shows these elements in an assembled form; and

FIG. 7 shows an end view of the socket head along A—A of FIG. 3.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

As shown in FIGS. 1 and 2, a portable safety lamp includes an elongated handle 10 which houses a socket assembly having a socket head, a pair of contacts and an adapter in assembled form such as that shown in FIG. 6. The socket head is situated at an end of the handle into which a light bulb 20 can readily be screwed. The safety lamp includes a hood assembly 11 to provide protection and for enclosing the light bulb therewithin. The hood includes a reflector 12 and a wire cage 13. A hinge 14 couples the wire cage 13 to the reflector 12 to permit closing and opening of the cage to the reflector 12. The cage 13 includes a suitable snap action hook 15 which engages the cage into a locking position with the hood assembly 11. The reflector 12 further includes, as an integral part thereof, a strip 16 for strapping the assembly in a fixed position around an end portion of the handle containing the socket assembly.

The handle has a tapered tubular form and is made of somewhat flexible dielectric material. The handle includes a pair of outlets 21 and 22 positioned substantially opposite to each other intermediate the handle. The outlet 21 includes three apertures for permitting insertion of a three-pronged plug having a pair of contacts and a ground contact therethrough to connect to the interior of the socket assembly from one side of the handle. The outlet 22 on the opposite side of the handle includes a pair of apertures for allowing insertion of a two-pronged plug having a pair of contacts therethrough to the socket assembly.

As shown in FIG. 2 in detail, the handle has a slit 23 extending from one end along the longitudinal axis of the handle up to an intermediate position to provide a wider opening along the slit portion so that the socket assembly can be readily inserted into the interior of the handle. The slit portion ends with a pair of oppositely positioned circular openings 24 to permit positioning of a push rod type switch 25 shown in FIGS. 1 and 6. A conductor cord 26 terminates at an end of the handle opposite where the socket assembly is enclosed and includes three conductor leads 27, 28 and 29 disposed inside the handle for providing electrical connections to the socket assembly.

In FIGS. 3–7, showing various views of the novel socket assembly including a pair of contacts and an adapter in accordance with the present invention. The same numbers are used to designate the same element in different figures.

FIG. 3 shows a socket head 30 which includes a receptacle 31 in the form of a threaded tubular shell into which a light bulb may be screwed as shown in FIG. 1. The receptacle is in turn rigidly connected to a dielectric member 32. The push rod switch 25 is housed within the member 32 in a conventional manner as shown in FIGS. 3, 6 and 7 such that by pushing the rod in one direction an electrical continuity is established from the cord 26 to the light bulb 20 and the other way to disconnect the circuit to turn off the light.

The socket assembly also includes a pair of contacts 41 and 42 each in a T-shape as shown in FIG. 5, each contact including a pair of folded arms 43 and 44 at each end. Each folded arm has two U-shaped flat sides which are closely positioned to each other to provide a receptacle having a substantial gripping pressure on a flat contact element of a plug, shown in dashed lines in FIG. 5, that may be inserted between them. The leg of each T-shaped contact is bifurcated at the end portion 45 as shown. Each of the pair of leads 28 and 29 is coupled to a bifurcated tip 46 and the tip 46 is aligned with and coupled to the bifurcated tip 45 of the corresponding contact 41 in the manner shown in FIG. 6.

The socket assembly further includes a detachable adapter having a unitary structure of a relatively resilient dielectric material, as shown in detail in FIG. 4, which has a substantially L-shaped body 50 and pairs of fingers 52, 53 and 54, 55 on each side of parallel surfaces of the L-shaped body. The adapter body 50 has a bearing surface 56 which freely engages the tip ends of two rod-like members 61 and 62, as shown in an end view in FIG. 7, protruding from the dielectric body member 32 of the socket head assembly 30. The adapter is not attached permanently or rigidly to the dielectric body by fastening means such as screws, as is the case with the prior art assembly, but is in free contact with the posts. Thus, the adapter can be mounted or removed from between the contacts 41 and 42 by merely sliding it in and out by hand without necessitating any further steps of screwing or unscrewing it from the dielectric member. The fingers 52, 53, 54 and 55 extend outwardly from the bearing surface 56 transverse to the parallel surfaces of the L-shaped body and are bent away from the bearing surface toward the opposite end of the body to

form a generally hook-shaped configuration. The hook-shaped fingers **52, 53, 54** and **55** are relatively flexible and are designed to resiliently hold the shoulder portions **66** of the contact arms **43** and **44** of contacts **41** and **42**, as shown in FIGS. **5** and **6**. When the contacts **41** and **42** are assembled with the dielectric member **32**, the fingers hold the contacts toward each other against the parallel surfaces of the adapter which is thus resiliently secured to the socket head without rigid fastening means.

The adapter includes an aperture **65** located toward one end opposite the bearing surface **56** and in parallel therewith. A tubular conductor strip **67** is embedded in the aperture **65** and has a lead **68** extending from an interior portion of the conductor to the outside of the adapter. The extended end portion has a hole **68** through which the ground lead **27** is connected.

The socket head of FIG. **3**, the adapter of FIG. **4** and the pair of contacts of FIG. **5** are readily put together into the socket assembly, as shown in FIG. **6**. The bifurcated ends of the contacts **41** and **42** are first inserted to engage the stems of the screws **71** and **72** provided in the socket head, the screws are tightened and then the adapter is inserted between the contacts. The extending pairs of fingers **52, 53, 54** and **55** of the adapter are positioned to engage the shoulders **66** of the contact arms **43** and **44** of each of the contacts.

The positioning of the adapter is made easier and further facilitated by coupling one contact **42** to a support member **73** pivotally mounted at the base of the dielectric body member **32**. This makes it possible to spread the arm portions of the contact **42** away from the other contact **41** while the adapter is being inserted therebetween. Once the adapter is inserted, the tip ends of the fingers **52, 53, 54** and **55** are flexed to wrap around the shoulders **66** of the folded arms of the contacts.

The socket head, the contacts and the adapter in assembled form, as shown in FIG. **6**, are then inserted and disposed within the handle **10** with two ends of the push rod switch **25** projecting through the openings **24** of the handle. The opposite surface of the adapter may rest on a ledge **75** protruding from the interior surfaces of the handle which prevents the assembly from sliding further into the handle toward the cord end thereof. Afterward the strip **16** of the hood assembly **11** is wrapped around the end portion of the handle **10** and about the socket assembly to secure the hood assembly to the handle.

It is to be understood that the aforedescribed embodiments are merely illustrative of the principles of the present invention. Numerous other modifications of the embodiments may be made by those of ordinary skill in the art without departing from the spirit and the scope of the present invention.

What is claimed is:

1. A portable safety lamp comprising:

a socket assembly including a socket head adapted to receive a light bulb therein, an electrical switch mounted on said socket head for establishing electrical connections between said bulb and socket head, a pair of electrical contacts connected to said switch and axially extending from said socket head, a freely detachable unitary dielectric adapter positioned between said pair of contacts, said adapter having a bearing surface in free contact with said socket head and including a dielectric portion resiliently securing said adapter to said socket head;

an electrical conductor cord connected to said contacts for supplying power thereto; and

an elongated hollow dielectric handle for housing said socket assembly.

2. The lamp according to claim **1**, wherein one of said pair of contacts is rigidly connected to said socket head and the other of said pair of contacts is pivotally coupled to said socket head for movement toward and away from said one contact to accommodate insertion of said adapter between said pair of contacts.

3. The lamp according to claim **2**, wherein said adapter is made of a molded relatively resilient dielectric material having a pair of parallel surfaces adjoining and substantially transverse to said bearing surface, said pair of contacts being spaced by said parallel surfaces.

4. The lamp according to claim **3**, wherein said resilient securing means includes a plurality of flexible hook-like fingers projecting transversely from said parallel surfaces for resiliently holding and urging said pair of contacts toward each other and against said parallel surfaces.

5. The lamp according to claim **4**, wherein said handle includes a first set of apertures for a three-pronged plug including a ground lead and a second set of apertures for a two-pronged plug.

6. The lamp according to claim **5**, wherein said adapter includes an aperture spaced from said bearing surface, a conductor strip disposed in said aperture, and a contact lead extending from said conductor strip providing a contact position for said ground lead.

7. The lamp according to claim **6**, wherein said contact lead extends longitudinally from an end of said conductor strip.

8. The lamp according to claim **7**, wherein each of said pair of contact elements is in the form of a flat strip having a pair of flat folded arms, each arm for receiving a flat contact prong of a plug, a major surface of each folded arm disposed adjacent and in parallel with one of said parallel surfaces of said adapter, wherein one arm from each of said pair of contacts and said aperture at one end of said adapter provide contact positions for said three-pronged plug, and the remaining arms from each of said pair of contacts provide contact positions for the contacts of said two-pronged plug.

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