Feb. 21, 1956 C. H. WEIGHT 2,735,930

PORTABLE HAND LAMP

Filed Sept. 20, 1952

Fig. 1.

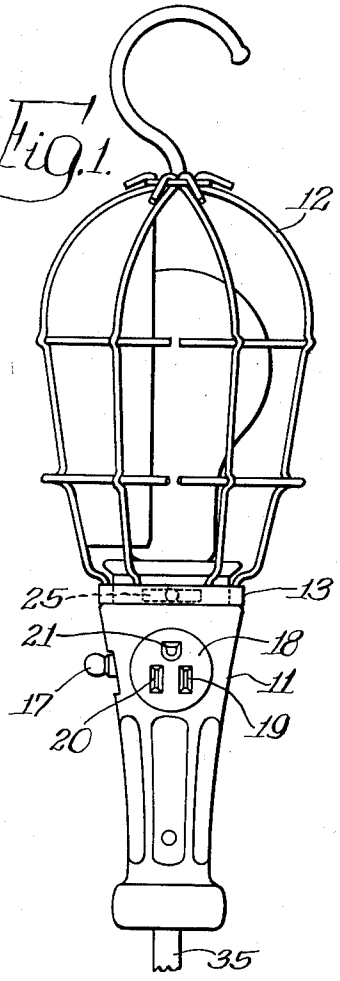


Fig. 2.

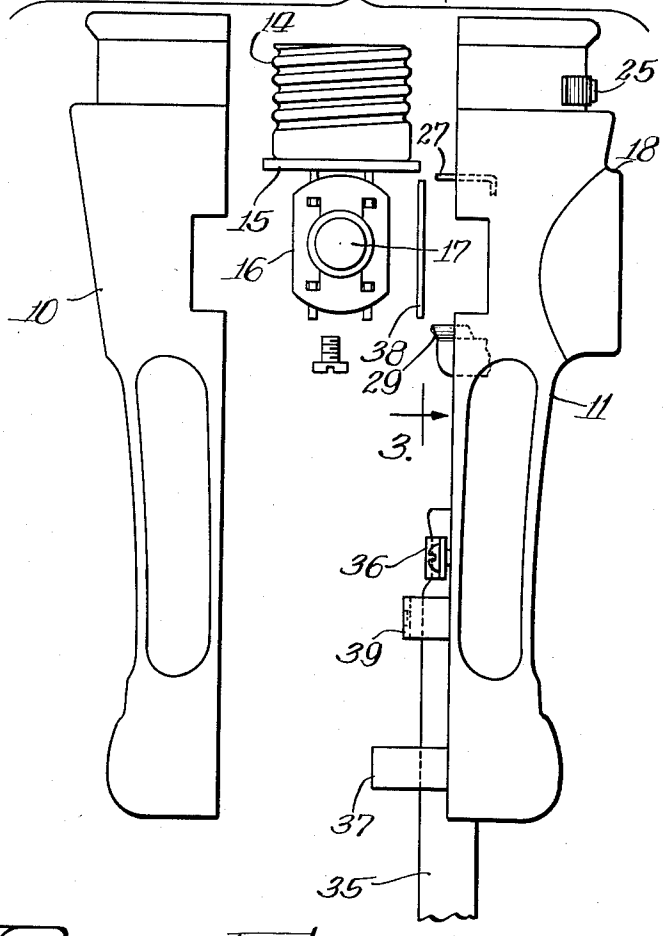


Fig. 3.

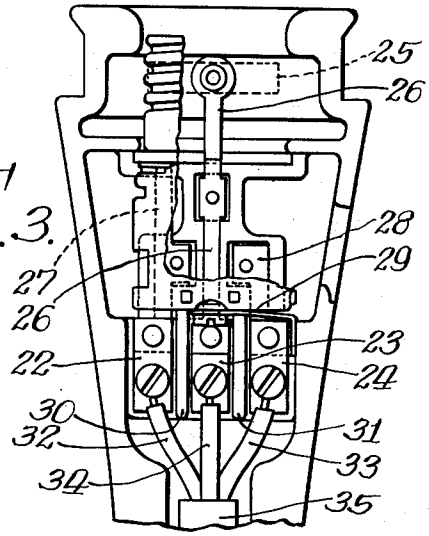
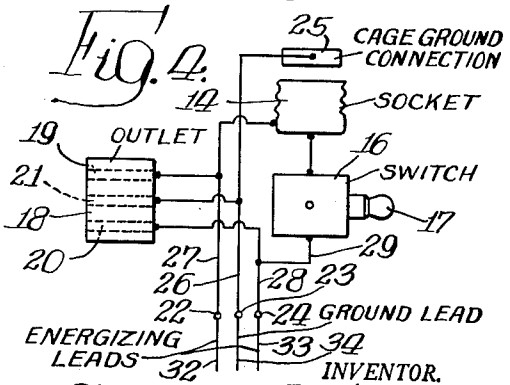


Fig. 4.



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2,735,930

PORTABLE HAND LAMP

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4 Claims. (Cl. 240—54)

This invention relates to portable hand lamps, and more particularly to a portable hand lamp of improved construction which incorporates useful features that are not to be found in prior units of this general type.

Portable hand lamps are known in which an electrical outlet and switch are included in the handle portion, the arrangement usually being such that the switch controls the lamp, but has no effect upon the energization of the outlet. Such a lamp has great practical utility since it provides the operator with a convenient source of energy for power tools and the like at the working position. Copending application Serial No. 99,001, entitled "Handle for Portable Lamp," filed June 14, 1949, in the name of Rudolf Popp, and assigned to the present assignee, and which application has now issued as Patent 2,653,219, September 22, 1953, discloses and claims an improved portable lamp of the type described above. In the lamp disclosed in that application, the handle is divided longitudinally into a pair of complementary handle sections so that the switch and other components may be installed within the handle. The various components are so arranged within the handle that they are relieved from all strains and stresses, and also in such a manner that the handle section may be secured with a single screw fastener.

The present invention is directed to an improved electrical system for a portable hand lamp which may be of the same general type as that disclosed in the Popp application, and which system incorporates new and improved safety and convenience features.

It is, accordingly, an object of this invention to provide an improved electrical system for a portable hand lamp assembly constructed to incorporate safety and convenience features not found in prior art assemblies.

A further object of the invention is to provide such an improved electrical system for a portable hand lamp assembly having an electrical outlet, which system is constructed so as to enable the lamp to be used in conjunction with a wide variety of electrical apparatus.

A feature of the invention is the provision of a hand lamp which is constructed to have an electrical system providing a ground connection to the guard cage associated with the lamp so that any metallic part upon which the cage may be hung is established at ground potential for the protection of the operator.

Another feature of the invention is the provision of an electrical system for a hand lamp assembly incorporating an electrical outlet by means of which a ground connection is provided to enable the lamp to be used in conjunction with the wide variety of present day power tools which require a ground connection.

The above and other features of the invention which are believed to be new are set forth with particularity in the appended claims. The invention itself, however, together with further objects and advantages thereof, may best be understood by reference to the following description when taken in conjunction with the accompanying drawing in which:

Fig. 1 shows the completed hand lamp assembly of this invention,

Fig. 2 is an exploded view of the assembly,

Fig. 3 is a partial view, taken along the lines 3—3 of Figures 2 of one-half of the handle structure of the assembly showing the various components supported thereon, and

Fig. 4 is a schematic representation of the internal connections to the various components of the assembly.

The portable hand lamp incorporating the electrical system of this invention includes a hollow insulating handle. A metallic guard cage is secured to the forward end of the handle, and a lamp socket is also disposed in the forward end coaxially with the longitudinal axis of the handle. A switch is disposed within the handle to the rear of the socket and has a front contact connected to the socket and also has a rear contact. An electrical outlet is formed in one of the handle sections adjacent the switch and comprises a pair of energizing contacts and a ground contact. A group of electrical terminals is mounted on the internal surface of the last mentioned handle section on an axis traversing the section to the rear of the outlet. A ground connection is mounted on the external surface of the last mentioned handle section at the forward end thereof in electrical connection with the cage. A first electrical conductive strip is provided which connects one of the terminals to one of the energizing contacts of the outlet and to the socket, a second conductive strip is provided which connects a second of the terminals to the ground contact of the outlet and to the aforementioned ground connection, while a third strip connects a third one of the terminals to the other of the energizing contacts of the outlet and to the rear switch contact.

Referring now to the drawing, the hand lamp assembly of this invention includes a hollow insulating handle divided longitudinally into a pair of complementary handle sections **10** and **11**, with a metallic guard cage **12** secured in well known manner to the forward end of the handle by means of a retainer strip **13**. A lamp socket comprising a screw shell **14** is rigidly mounted on a transverse, rectangular insulating plate **15**, as in the previously mentioned Popp application, plate **15** snugly engaging grooves on the inside surface of the handle sections so that the socket may be rigidly supported within the handle. A switch **16** is secured to the under side of plate **15** and has its front contact electrically connected to the center contact of the lamp socket. Switch **16** has an operating key **17** which extends outwardly between the handle sections **10** and **11** through appropriate slots formed therein. The construction of switch **16** in itself is known, the switch comprising a pair of spaced, parallel frame members between which a rotatable member is supported. The rotatable member is actuated by the operating key **17** successively to make and break contact between the front and rear contacts of the switch, the rotatable member being actuated by the operating key in a ratchet fashion.

An electrical outlet **18** is formed in handle section **11**, adjacent the switch and the outlet comprises a pair of energizing contacts **19, 20** and a ground contact **21**. These contacts are of the well known resilient type for firmly engaging prongs of an electrical plug when such plug is inserted into the socket.

A group of electrical terminals **22—24** is mounted on the internal surface of handle section **11** on an axis traversing the section to the rear of outlet **18**. A ground strip **25** is mounted upon the external surface of handle section **11** at the forward end thereof in electrical contact with cage **12**. A conductive strip **26** connects center terminal **23** to ground contact **21** of outlet **18** and to ground strip **25** connected to cage **12**. A second strip **27**

connects terminal 22 to one of the energizing contacts 19 of outlet 18 and to the shell 14 of the lamp socket. A third conductive strip 28 connects terminal 24 to energizing contact 20 of outlet 18, while a bent over transverse strip 29 connects the latter terminal to the rear contact of switch 16. Terminals 22, 23, and 24 are insulatingly separated by projections 30 and 31 molded integrally with handle section 11.

The inlet cord to the hand lamp includes a pair of energizing leads 32—33 which are respectively connected to terminals 22 and 24. The cord also includes a ground lead 34 which is connected to terminal 23. The aforementioned cord, which is indicated as 35, extends through an aperture in the rear of the handle and is supported in handle section 11 by a bracket 36 screwed into the handle section. A rubber gasket 37 is also provided for sealing the bottom of the handle against dirt, oil or water. An insulating plate 38 is provided to separate the side of switch 16 from strips 26, 27 and 28. The handle sections are held together by means of a single C-shaped bracket 39 which, as in the aforementioned copending application, is permanently secured to handle section 11 and which receives a removable screw threaded through handle section 10.

As clearly shown in Fig. 4, the energizing cord supplies an energizing potential between terminals 22 and 24 and ground potential to terminal 23. The energization of terminals 22 and 24 causes a similar energization of contacts 19 and 20 of outlet 18 due to the connection therebetween by strips 27 and 28. Grounding of terminal 23 causes contact 21 of outlet 18 to be grounded and also causes ground strip 25 and, therefore, cage 12 to be grounded. Terminal 22 is directly connected to the shell 14 of the lamp socket by strip 27; and terminal 24 is connected to the center contact of the lamp socket by strip 29 and through switch 16, so that actuation of key 17 causes energization and deenergization of the lamp contained in the lamp socket.

It can be seen, therefore, that the invention provides a new and improved hand lamp assembly which is constructed so that guard cage 12 may be grounded to impart a corresponding ground for safety purposes to any metallic body on which the lamp may be hung. Moreover, an outlet 18 is provided which includes a ground contact enabling a wide variety of power tools requiring a ground connection to be used in conjunction with the lamp. The lamp is so arranged that these new and improved features may be incorporated without unnecessarily crowding its internal constituent parts or detracting in any way from the insulation between the various electrical components within the lamp. Terminals 22, 23 and 24 are rigidly secured to handle section 11 and adequately insulated from one another by the molded projections 30 and 31. The various conductive strips extending from the terminals to the various components of the lamp are also rigidly mounted on the handle section and spaced one from the other a sufficient distance for adequate insulation. Moreover, the parts are arranged and supported in such an improved manner on one of the handle sections that the lamp may be readily serviced.

I claim:

1. In a portable lamp having a hollow handle divided longitudinally into a pair of first and second complementary handle sections, a metallic guard cage secured to the forward end of the handle, a lamp socket mounted in the forward end of the handle coaxial with the longitudinal axis thereof, and a switch mounted in the handle to the rear of the lamp socket having a first contact electrically connected to the lamp socket and having a second contact; an electrical system including in combination, a group of electrical terminals rigidly mounted on the internal surface of the first handle section and spaced and insulated one from the other on a transverse axis to the rear of the switch, an electrically conductive ground strip mounted

on the external surface of the first handle section at the forward end thereof in electrical contact with the metallic guard cage, a group of electrically conductive strips rigidly mounted on the internal surface of the first handle section spaced and insulated one from the other, one of said strips being connected from one of said terminals to the lamp socket, a second of said strips being connected from a second of said terminals to said ground strip, an electrical conductor connected from a third of said terminals to the second contact of the switch, and an inlet cord for connecting the lamp to a source of power and including a pair of energizing leads respectively connected to said one of said terminals and to said third of said terminals and including a ground lead connected to said second terminal.

2. In a portable lamp having a hollow handle divided longitudinally into a pair of first and second complementary sections, a lamp socket mounted in the forward end of the handle coaxial with the longitudinal axis thereof, a switch mounted in the handle to the rear of the lamp socket having a first contact electrically connected to the lamp socket and having a second contact, and an electrical outlet formed in the first handle section adjacent the switch; an electrical system including in combination, a group of three electrical terminals rigidly mounted on the internal surface of the first handle section and spaced and insulated one from the other on a transverse axis to the rear of the outlet, a pair of resilient energizing contacts and a resilient ground contact disposed within the electrical outlet, a group of three electrically conductive strips rigidly mounted on the internal surface of the first handle section spaced and insulated one from the other, one of said strips being connected to one of said terminals and to one of said energizing contacts of the outlet and to the lamp socket, the second of said strips being connected from the second of said terminals to the other of said energizing contacts of the outlet, the third of said strips being connected from the third of said terminals to said ground contact of the outlet, an electrical conductor connected from said second terminal to the second contact of the switch, and an inlet cord for connecting the lamp to an energizing source and including a pair of energizing leads respectively connected to said one of said terminals and to said second of said terminals and including a ground lead connected to said third of said terminals.

3. In a portable lamp having a hollow handle divided longitudinally into a pair of first and second complementary handle sections, a metallic guard cage secured to the forward end of the handle, a lamp socket mounted in the forward end of the handle coaxial with the longitudinal axis thereof, a switch mounted in the handle to the rear of the lamp socket having a first contact electrically connected to the lamp socket and having a second contact, and an electrical outlet formed in the first handle section adjacent the switch; an electrical system including in combination, a group of three electrical terminals rigidly mounted on the internal surface of the first handle section and spaced and insulated one from the other on a transverse axis to the rear of the outlet, an electrically conductive ground strip mounted on the external surface of the first handle section at the forward end thereof in electrical contact with the metallic guard cage, a pair of resilient energizing contacts and a resilient ground contact disposed within the electrical outlet, a group of three electrically conductive strips rigidly mounted on the internal surface of the first handle section spaced and insulated one from the other, one of said strips being connected from one of said terminals to one of said energizing contacts of the outlet and to the lamp socket, the second of said strips being connected from the second of said terminals to the other of said energizing contacts of the outlet, the third of said strips being connected from the third of said terminals to said ground contact of the outlet and to said ground strip, an electrical conductor connected from said second terminal to the sec-

ond contact of the switch, and an inlet cord for connecting the lamp to an energizing source and including a pair of energizing leads respectively connected to said one of said terminals and to said second of said terminals and including a ground lead connected to said third of said terminals.

4. In a portable lamp having a hollow handle divided longitudinally into a pair of first and second complementary handle sections, a metallic guard cage secured to the forward end of the handle, a lamp socket mounted in the forward end of the handle coaxial with the longitudinal axis thereof, a switch mounted in the handle to the rear of the lamp socket having a first contact electrically connected to the lamp socket and having a second contact, and an electrical outlet formed in the first handle section adjacent the switch; an electrical system including in combination, a group of three electrical terminals rigidly mounted on the internal surface of the first handle section spaced and insulated from on another and aligned along a transverse axis to the rear of the outlet to constitute a first outer terminal and an inner terminal and a second outer terminal, an electrically conductive ground connection mounted on the external surface of the first handle section at the forward end thereof in electrical contact with the metallic guard cage, a pair of resilient energizing contacts and a resilient ground contact disposed within the electrical outlet, a first electrically conductive strip rigidly mounted on the internal surface of the first handle section and electrically connected at its respective ends to said first outer terminal and to the lamp socket, said

strip having an intermediate point electrically connected to one of the energizing contacts of the outlet, a second electrically conductive strip rigidly mounted on the internal surface of the first handle section spaced and insulated from said first strip and electrically connected at its respective ends to said second outer terminal and to the other of said energizing contacts of the outlet, a third electrically conductive strip rigidly mounted on the internal surface of the first handle section intermediate said first and second strips and spaced and insulated therefrom, said third strip being electrically connected at its respective ends to said inner terminal and to said ground connection, and said third strip being connected at an intermediate point to said ground contact of the outlet, a fourth electrically conductive strip electrically connected at its respective ends to said second outer terminal and to the second contact of the switch and an inlet cord for connecting the lamp to a source of power and including a pair of energizing leads respectively connected to said first and second outer terminals and including a ground lead connected to said inner terminal.

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