# United States Patent [19]

**Buzza**

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[45] **June 4, 1974**


[54] **DROP LIGHT**


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**Related U.S. Application Data**

[63] Continuation-in-part of Ser. No. 10,562, Feb. 11, 1970, abandoned.

[52] **U.S. Cl.** ..... **240/54 A,** 240/8.18, 240/102

[51] **Int. Cl.** ..... **F21l 1/00,** F21v 21/00

[58] **Field of Search** ..... 240/54 R, 54 A, 102 R, 240/102 B, 52 R, 8.18, 52.3



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*Primary Examiner*—Joseph F. Peters, Jr.

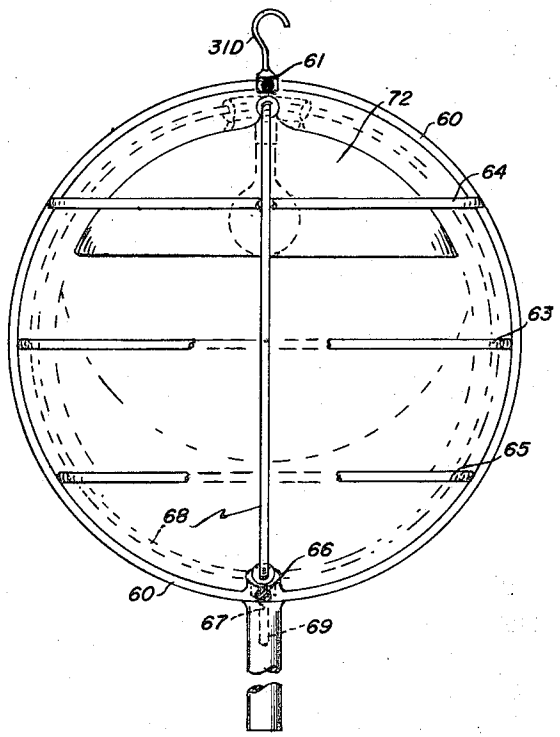
*Attorney, Agent, or Firm*—Howard T. Jeandron



[57] **ABSTRACT**

A drop light with an extension cord having a protective shield or cage about the lamp and a hanging support or clamp. Said protective shield and cage may be provided with heat dissipating means to prevent accidental burns. Said protective shield may be a half-round or half-sphere shaped reflector that is rotatably adjustable to direct the reflected light in a desired direction, and maintain the direction of reflected light.

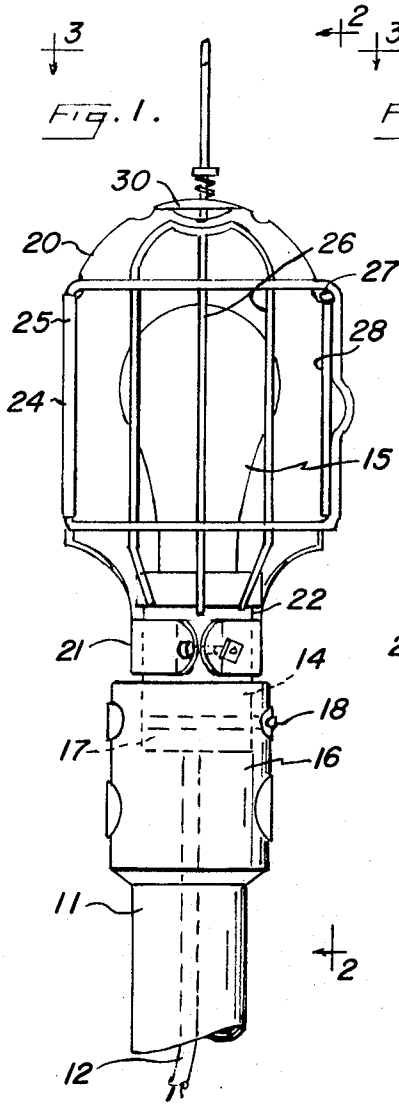

**2 Claims, 16 Drawing Figures**

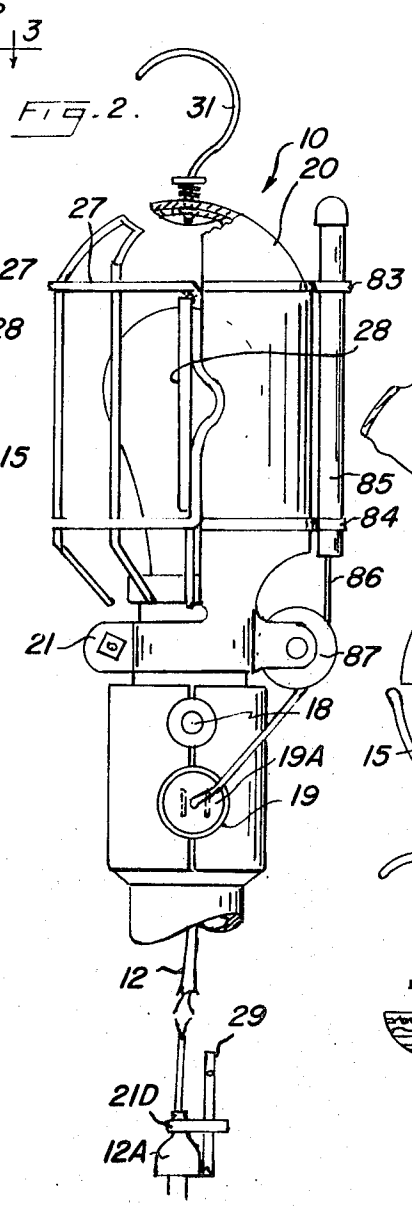


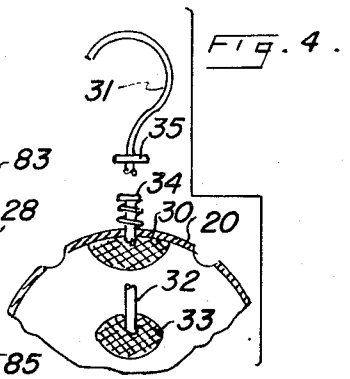
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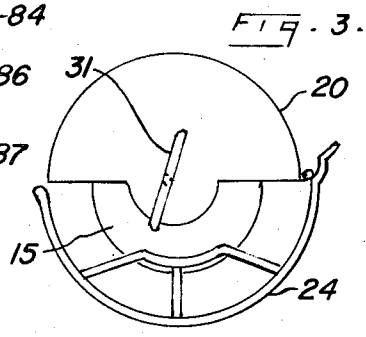
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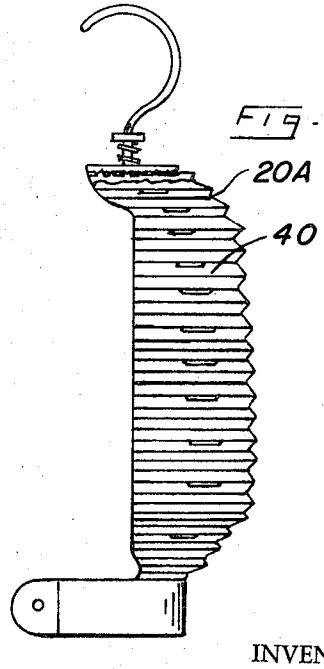
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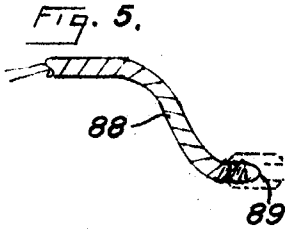


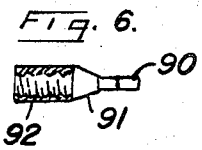




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Fig. 9.

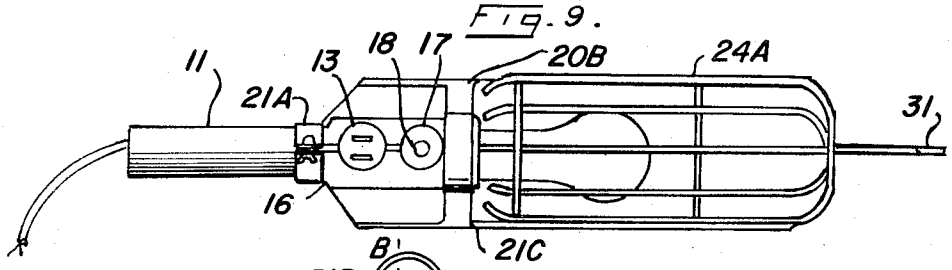



Fig. 8.

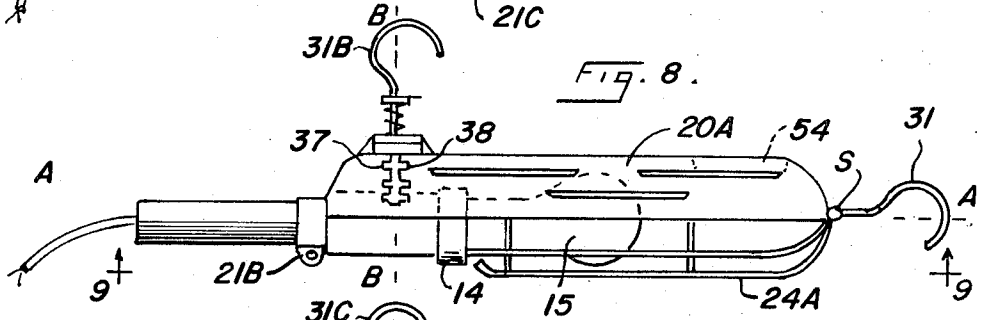



Fig. 10.

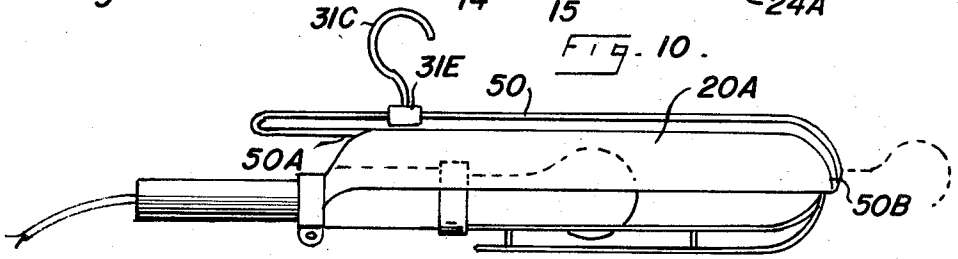



Fig. 11.

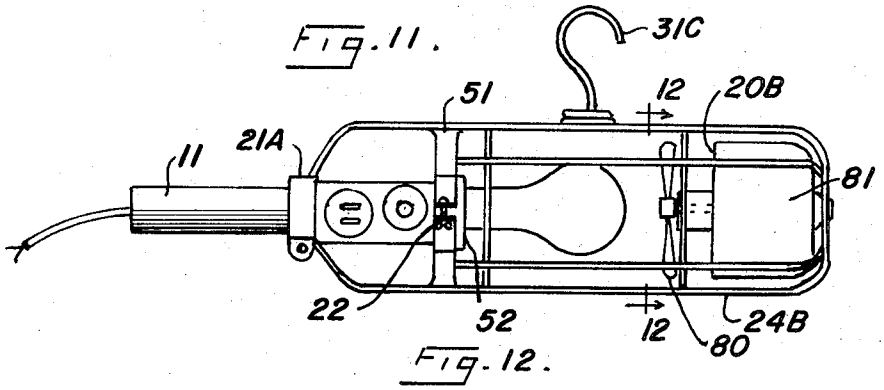



Fig. 12.

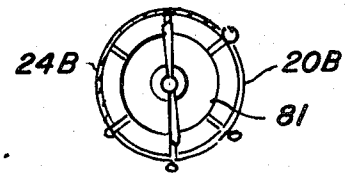



Fig. 13.

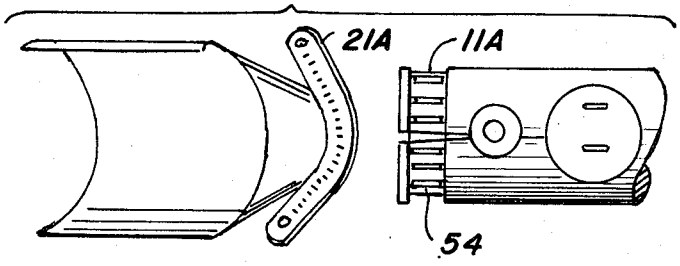


FIG. 14.

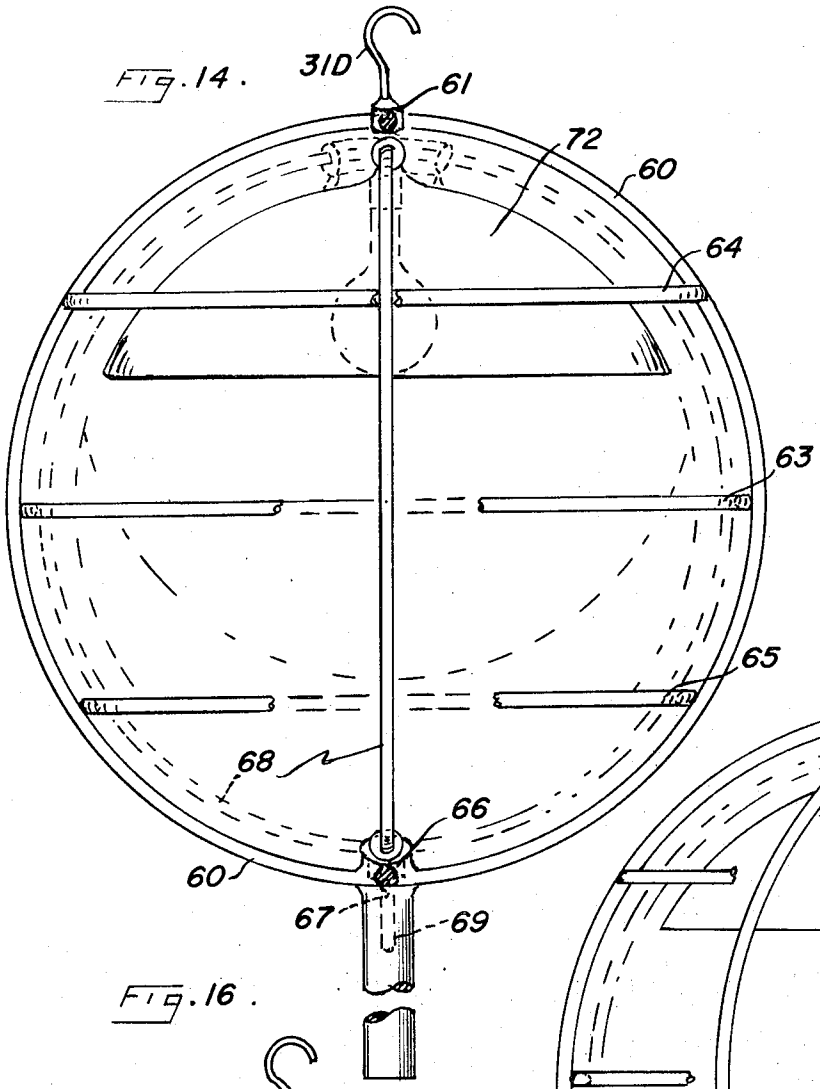



FIG. 15.

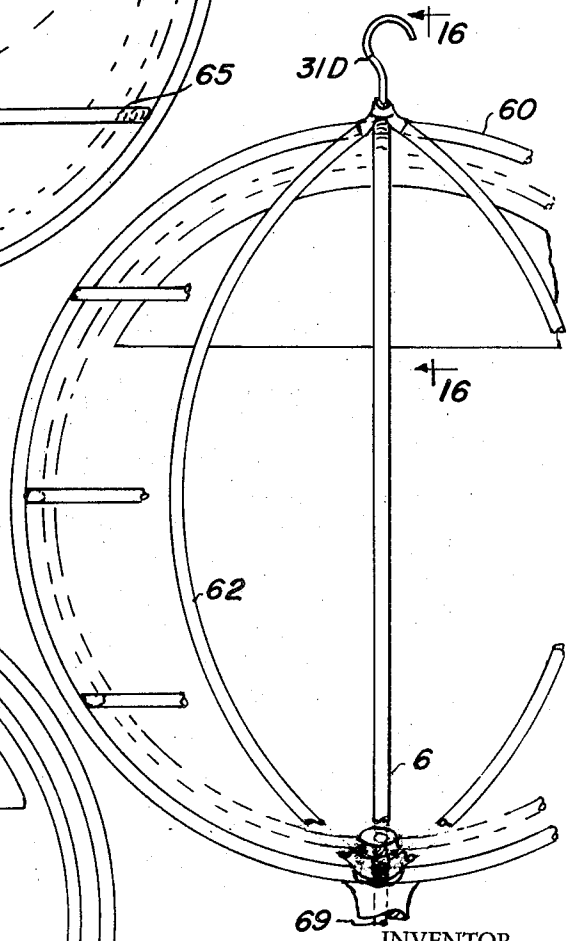
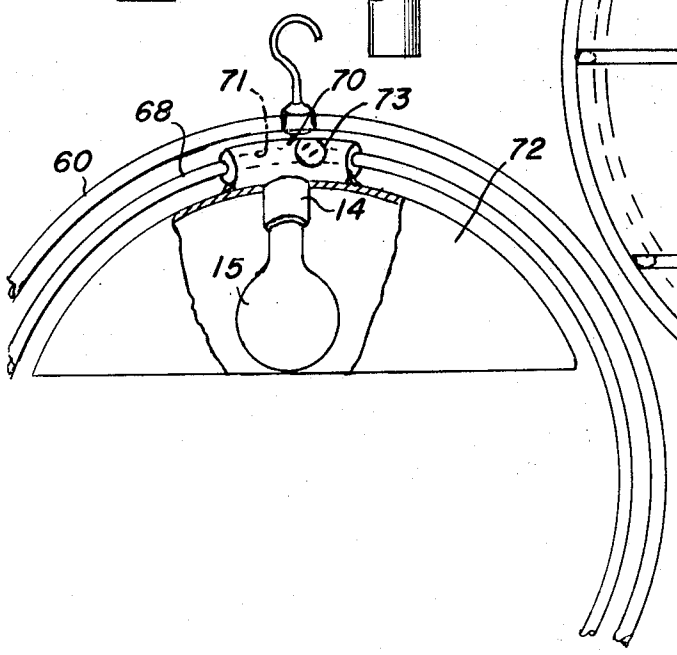



FIG. 16.




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# DROP LIGHT

This application is a continuation in part of my application Ser. No. 10,562 filed Feb. 11, 1970 now abandoned.

This invention relates to a drop light with a reflector and extension cord of the type used by mechanics for illumination upon a particular area and more particularly a drop light that may be not only easily hung or attached in close proximity to the desired area but may be balanced and focused or directed directly upon a particular point in the desired area.

Drop lights as provided for general use are constructed with a protective cage or shield around the illuminating lamp and the shield becomes a reflector to increase the intensity of the light and direct the light output in one direction. The cage and shield are also provided with a hook or clamp to permit easy hanging of the drop light in close proximity to the desired work area. Unfortunately the rigid attachment of the cage, shield and attaching hook of all known models does not permit the mechanic to direct the reflected illumination exactly upon the area most desired. It is also to be noted that the flat metal shield and round iron wire cage common to most all drop lights are heat collectors. The heat generated by the illuminating lamp is not dissipated at a sufficient rate and consequently the cage and shield becomes dangerously hot and are a constant danger to the user.

It is an object of this invention to provide a drop light having an adjustable cage, shield and hook so that the user may re-direct the illumination from said drop light to the desired area.

It is a further object of this invention to provide a drop light with a protective cage, hook and an adjustable shield reflector, so that when the drop light is hung adjacent the work area, the reflector may be adjustably positioned to direct the illumination to the exact area desired, and thus maintain said direction and illumination where desired.

It is a still further object of this invention to provide a shield and cage for a drop light in which the cage and shield are designed with reflective surfaces toward the illuminating lamps and heat dissipating surfaces away from the lamp to reflect the illumination and to dissipate the heat absorbed by these elements.

A still further object of this invention is to provide a cage about a drop light and a reflecting shield mounted pivotally within said cage but shaped to surround a portion of the illuminating lamp, said shield formed with a reflecting surface toward said lamp and a heat dissipating surface on the outer surface of said shield, said cage elements covered with a protective nonconducting material to provide an external surface about the lamp that will not burn on contact with the user.

A still further object of this invention is to provide a spherically shaped drop light with a handle and a supporting hook for hanging said light and in which the light is surrounded by a protective spherical cage with a spherical shield reflector moveably mounted within said cage with means to position said reflector in any position to cast the reflected light anywhere in 360° of rotation and from directly downward to 60° upward in any direction.

A still further object of this invention is to provide a drop light that may be hung and balanced in a horizontal attitude and in which said drop light is provided with a horizontally extending reflector that is movable about a horizontal axis to redirect the light reflection toward either side of its horizontally balanced position.



A still further object of this invention is to provide a drop light that may be hung and balanced in a variety of positions with the reflector adjustable to a wide scope of area to be illuminated.

A still further object of this invention is to provide a drop light and extension cord that is provided with additional accessories to expand the uses of the drop light.

Further objects of this invention shall be apparent by reference to the accompanying detailed description and the drawings in which:

FIG. 1 is a front elevational view of a drop light,

FIG. 2 is a side elevational view, partially in cross section taken on line 2—2 of FIG. 1,

FIG. 3 is a top plan view taken on line 3—3 of FIG. 1,

FIG. 4 is an exploded view, partially in cross section, of the pivotal adjustable hook and shield elements,

FIG. 5 is a further embodiment illustrating an attached accessory,

FIG. 6 is an additional accessory for the embodiment of FIG. 5,

FIG. 7 is a further embodiment of the lamp shield,

FIG. 8 is a side elevational view of a further embodiment of a drop light,

FIG. 9 is a front view taken on line 9—9 of FIG. 8,

FIG. 10 is a side elevational view of a further embodiment of FIG. 8,

FIG. 11 is a side elevational view of a further embodiment,

FIG. 12 is a cross sectional view taken on line 12—12 of FIG. 11,

FIG. 13 is an exploded view of a further embodiment of this invention,

FIG. 14 is an elevational view of a further embodiment,

FIG. 15 is an elevational view of the spherical cage support of FIG. 14, and

FIG. 16 is a view partially in cross section taken on line 16—16 of FIG. 15.

Referring to the drawings and particularly view 1-4, there is an illustration of a drop light 10 with extension cord 12. The drop light 10 is comprised of a rubber handle 11 through which extends the electric wired extension cord 12. A male socket 12A is affixed at the end of the cord 12. The cord 12 extends to a socket 14 in which a lamp 15 is mounted. The socket 14 is retained in a split portion 16 and the socket 14 includes an on-off switch 17. The switch 17 is provided with a pushbutton 18 that extends to the exterior of portion 16. Portion 16 is also provided with a plug-in female socket 19, which is connected to the feed cord 12. A metal shield 20 is mounted to surround lamp 15. The shield 20 at its base is provided with a clamp 21 to be clamped about the extended portion 22 of the rubber handle. The shield 20 encloses approximately 50 percent of the circumference about the lamp 15, and is provided with an open front. A cage 24, semi-circular in form, is pivotally mounted on one side in a hinged portion 25 of shield 20. The cage 24 is made up of a plurality of bars 26 positioned in spaced relationship across a frame 27. Frame 27, at its free side, is formed as a snap closure with the edge 28 of the shield 20.

Thus the cage **24** may be pivotally opened to insert or remove lamp **15** and may be snapped closed when in normal use. At the top of the shield **20** there is provided an aperture **30** and the surface around aperture **30** is scored. A hook element **31** is provided so that its stem **32** extends through aperture **30.** The lower end of stem **32** is affixed or welded to a curved button shaped portion **33.** The upper surface of **33** is also scored so that when pulled upward through aperture **30,** the surface of **33** will bind with the scored surface of the shield **20,** to maintain this binding relation. A spring **34** is inserted between the top surface of shield **20** and a pin **35** that passes through the hook element **31.** The spring thus maintains the hook lifted and in a binding relation with the shield **20.** However, if it is desired to turn the relationship between shield **20** and hook **31,** the hook may be pushed downward to release its binding relationship with shield **20** and turned to a desired degree and released to again retain a binding relationship with shield **20.** Thus, in use, the drop light may be hooked in a hanging position and if the illumination plus reflection from the shield **20** is not where it is desired, the shield **20** may be turned with relation to the hook **31** until the reflected light is cast in the desired position. It is to be noted that the shield **20** is provided on its exterior surface with a pair of friction clamps **83** and **84.** A pen shaped flashlight **85** is mounted in these clamps or clips. The penlight **85** is provided with a bulb for 110 volt A.C. and the penlight is connected by an extension cord **86** to a springwound automatic recoil spool **87.** The spool in turn is pivotally supported by an extension of clamp **21.** The cord **86** is electrically connected to a male plug **19A** so that it may be plugged into the female socket **19.** Thus power is supplied to illuminate the penlight.

Referring to FIG. **2,** there is illustrated a still further embodiment of this invention in which the extension cord **12** extends and is connected to a male plug **12A.** The male plug may have a clamp **21D** and a pen battery operated flashlight **29** mounted therein. The pen flashlight only being used when the plug **12A** is to be plugged in an invisible or inadequately visible outlet.

Referring to FIG. **5** there is illustrated a further embodiment in the form of an accessory used with a penlight, namely, a flexible goose neck extension **88** that may be connected to the penlight by removing the lamp and reflector and thus the lamp and reflector **89** at the end of element **88** is electrically connected so that the light is at the end of the flexible goose neck extension. This accessory permits pinpointing a beam of light in many inaccessible spots. It is to be noted that the extension **88** is bendable into various shapes and will retain that shape until it is reset.

Referring to FIG. **6** there is illustrated a further embodiment in the form of a small permanent magnet **90** with a very small holder **91.** The holder is provided with a bore **92** that will fit over the end of the extension **88** and be threadably secured thereto. Thus this accessory permits extending the flexible neck into many inaccessible spots and by means of the light, seeing within the area. In addition if a metal object is dropped within such an area, the magnet **90** may be used to retrieve same.

Referring to FIG. **7,** there is illustrated a further embodiment of the invention in which the shield **20A** is crimped or formed into a plurality of channels **40** to increase the external area of shield **20A.** The interior surface of shield **20A** may be formed as a perfectly smooth surface similar to the embodiment shown in FIGS. **1** and **2** except that the shield may have slits or perforations to release the heat and the shield may be coated with an asbestos or asbestos paint to provide a protection from the heat that does build up in the reflector and does prevent hot surfaces being in a dangerous position for burning the user.

Referring to FIGS. **8** and **9,** there is illustrated a further embodiment of this invention in which the elements of the previous embodiment are similar, that is, the handle **11** with a split end **16** and a socket **14** is mounted therein and an on-off switch **17** with pushbutton **18,** also a plug-in socket **19.** The metal shield **20A** is similar but elongated (for balance) and is provided with a mounting clamp **21A** to be mounted about a groove **21B** in the rubber handle. The shield **20A** is half-round in form and provided with an open front. An additional clamp **21C** is affixed to the shield at **20B** and secured to the rubber handle **11** at the end adjacent the pushbutton **18.** Thus the shield **20A** is securely retained. The shield **20A** may have a cage **24A** similar to the cage **24** of the previous embodiment, however it will be longer to match the shield **20A.** The shield **20A** similarly has a supporting hook **31** at its unattached end. In addition, a second hook **31B** is attached to the shield adjacent the attached end and extends at 90° to the central axis A—A. This provides a hanging support to hold the drop light in a horizontal attitude. The hook **31B** is attached to shield **20A** through an elongated slot **37** so that the shield **20A** may be rotated about the axis B—B of the hook support. Thus the shield may also be tipped to the right or left as desired and the hook may be set in the slot at any of the cutout portions **38** to retain the shield at a desired angle. Hook **31** may be swivelly retained by a swivel S so that the hook may be moved back or forward to an out of the way position. The drop light may also be hung from the handle end by means of the extension cord. A permanent magnet **54** may be imbedded in the reflector **20A** but it is to be understood that if a metal shield is used, the permanent magnet will be separated by an insulating border or washer. The permanent magnet is used primarily by the mechanic or user to retain a nut, bolt, or light wrench without having to stop his work and is quickly and easily available throughout the use of the drop light.

Referring to FIG. **10** there is illustrated a still further embodiment of the drop light shown in FIGS. **8** and **9.** In this embodiment the shield **20A** is provided with a rod **50** that parallels the outer surface of shield **20A** and is spaced slightly from shield **20A.** Rod **50** is attached to the shield **20A** at opposite ends **50A** and **50B** and hook **31C** is provided with a base block **31E** that is slidably mounted on rod **50** so that the hook **31C** may be moved along rod **50** to a desired balance position or unbalanced hanging position.

Referring to FIGS. **11** and **12** there is illustrated a still further embodiment of the drop light. In this embodiment the cage **24B** and reflector **20B** surrounds the lamp **15** and a fan **80** and motor **81.** The cage and reflector are attached to the handle by means of the clamps **21A** and **51.** Thus although the lamp **15** may radiate heat, the fan **80** driven by motor **81,** will induce an air flow to keep the reflector **20B** cool, expelling all heat that is radiated by the lamp.

Referring to FIG. **13,** there is illustrated a further embodiment of this invention in which the handle **11** and

particularly the socket end of the handle **11**, is provided with a recessed collar **11A** where the retaining band **21** or **21A** is affixed to support the cage and reflector. In mounting the reflector **20A** or **20B** as the case may be, the reflector is provided with a band clamp **21** or **21A** as the case may be that is wrapped around the recessed collar **11A**. And, of course, with the bolt, the collar **21** or **21A** may be tightly wrapped and affixed to hold the collar at a particular attitude of rotation. However to change the attitude of the reflector, it is necessary to release the nut and bolt to relax the tension on the recessed collar. To provide a means of retaining the shield in any position without having to release the holding bolt and nut, the recessed collar may be provided with permanent magnets **54** imbedded therein. Thus by simply clamping the collar **21A** loosely but sufficiently to retain the shield, the attitude of the shield may be chanbed by physically turning but when the shield is released at any particular position of rotation, the permanent magnets will hold the collar **21** in that position.

Referring to FIGS. **14, 15** and **16,** there is illustrated a still further embodiment of this invention. In this embodiment the surrounding protective cage is spherical in form and it may be comprised of two or more intersecting rings that intersect at a central axis. FIG. **14** illustrates two rings **60** and **61** while FIG. **15** illustrates a plurality of rings such as **60, 61** and **62** all intersecting at the top and bottom of a central vertical axis. This cagelike structure is supported in a fixed position generally by a hook **31D**. The cage is further constructed with horizontal rings **63** at the equator of the sphere, **64** above the equator and **65** below the equator. These rings are welded or soldered or affixed permanently to rings **60, 61, 62** as the case may be. The central axis at the bottom of the sphere is provided with a bearing **66** having a central aperture **67** therethrough. The bearing **66** must have an extended aperture **67** and the bearing must have sufficient strength to support mounting of a light supported structure within the cage. Mounted within the cage is a ring **68** of a smaller diameter. Ring **68** is provided with a supporting pin **69** to be mounted in the central aperture **67** thus rotatably supporting ring **68** within the cagelike structure. Ring **68** supports a bulb or lamp **15** by means of the socket **14,** the socket **14** being mounted in a slidable light support **70,** the light support being slidably mounted on ring **68.** Thus the light support is provided with a bore **71** of a diameter to match ring **68** upon which it is slidable but it is a tight fit so that there is constantly a frictional grip between the element **70** and the ring **68** to permit moving the element **70** to the left or right of the vertical axis of the cage. Element **70** is also joined or attached to a light shade or reflector **72.** Element **70** is also provided with a plug **73** so that an extension wire may be plugged into plug **73** to supply the necessary power for illumination of the lamp **15.** Thus in use with an extension line connected to plug **73,** the lamp **15** will be illuminated and the shade or reflector **72** as illustrated in FIG. **14** will cast the light downward as illustrated in FIGS. **14** and **16.** However it is apparent that, referring to FIG. **16,** element **70** may be moved to the left or right changing the attitude of reflector **72** to cast the light to the left or right as desired. And, referring to FIG. **14,** it is apparent that ring **68** may be rotated 360° thus permitting the rotation of reflector **72** and lamp **15** to cast the light to any portion of a complete circle of 360°. It is to be noted that the rings **63** and **65** are affixed within the rings **60, 61** and **62** whereas ring **64** is affixed to these rings to have a greater diameter or may be affixed outside rings **60, 61** and **62.** This is to permit ring **68** in its rotation to bear against the internal periphery of rings **65** and **63** and to stand clear of ring **64** and permit the movement of element **70** past ring **64** to a point close to the equator line **63** of the sphere. Thus the shade and light will be movable in an arc slightly less than 180°. Of course ring **63** may be affixed slightly lower than the equator if desired to increase the movement of element **70** to a full 180°. Although we have shown a hook support **31D,** the hook may be substituted with a clamp or may be clamped to retain the sphere in a fixed attitude wherever desired so that the adjustment of the light will be exact and will not vary due to a loose hanging.

Although we have shown a lamp **15,** socket **14** and reflector **72** it is to be understood that a sealed beam lamp may be similarly plugged into the socket **14** and connected to a **12** volt auto battery. Although we have shown a particular form of drop light, the exterior form or style of the light may vary as long as the elements described are utilized and although we have shown a spring means to retain the relationship between the hook and the supported drop light or between the hook and the position of the reflector, other means of frictionally binding and releasing this relationship may be used, and although we have shown a means of heat dissipation to prevent the surface from becoming too hot and from burning the user, other heat dissipating styles of surface may be used. And although we have shown both a short and elongated form of reflector and cage, the shape of these elements may vary becoming a round or sphere shaped cage or any other form of protective cage and shield to similarly group and be rotatable as described without departing from the spirit of this invention.

The invention described in detail in the foregoing specification is subject to changes and modifications without departing from the principle and spirit thereof. The terminology used is for purposes of description and not of limitation; the scope of the invention being defined in the claims.

What is claimed is:

**1.** A portable drop light with a handle for manual positioning, an extension cord for connection to a power supply, a hook attached to said drop light for supporting same, a lamp support and a lamp to provide illumination, a reflector connected to said lamp support to direct the light from said lamp, and a pair of cages to surround and protect the lamp, one cage mounted within the other and movable in 360°, said lamp support movable to position said lamp in varying attitudes while said drop light is balanced in a hanging relationship, said lamp adjustably supported on the inner cage to provide a direct light in any direction.

**2.** In a device according to claim **1** in which said pair of cages comprise two circular cages, one mounted within the other, in which said drop light is movably supported on the first circular cage that is mounted at its base for rotation in 360° and said cage is supported within a second spherical cage comprised of a plurality of rings, said first cage being pivotally supported by a pin that extends through the mating base of the second spherical cage and said base connected to an extended handle.

* * * * *