April 2, 1963 F. FUREDY 3,084,258

THERAPEUTIC LAMP

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Fig. 1.

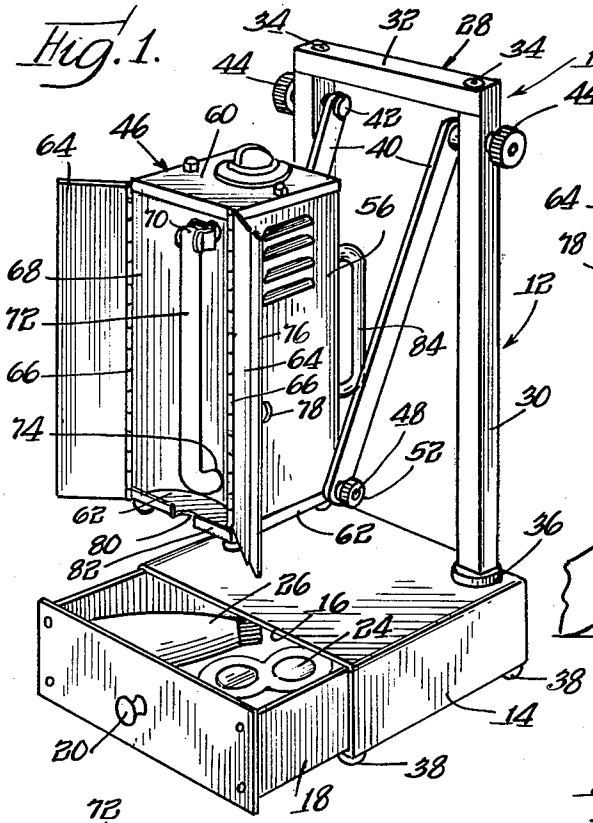


Fig. 2.

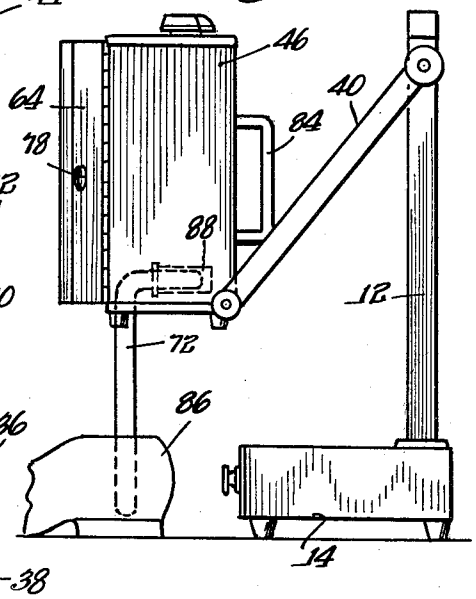


Fig. 3.

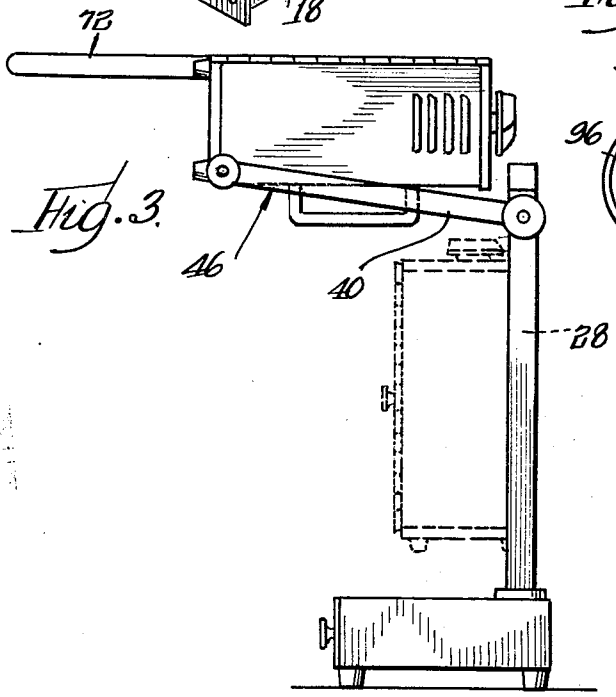
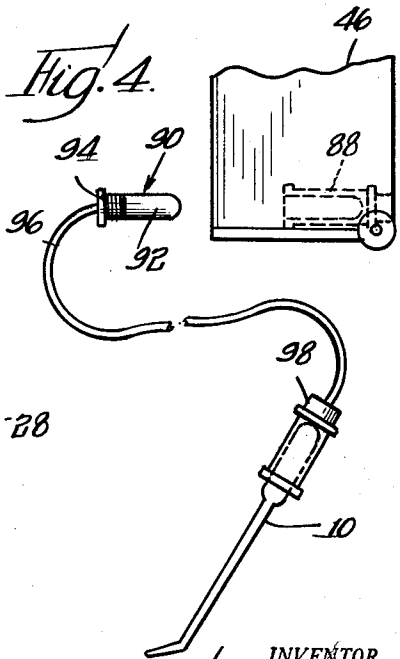


Fig. 4.



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Fig. 5.

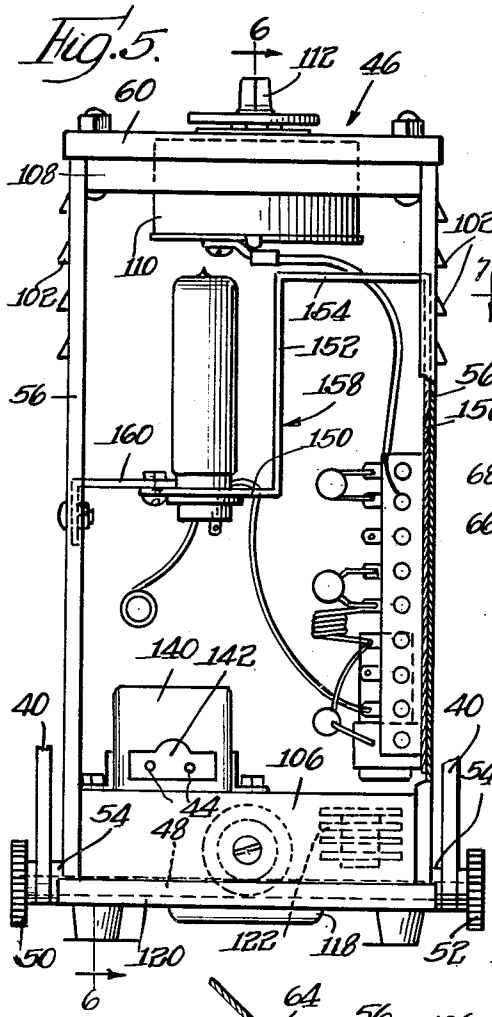


Fig. 6.

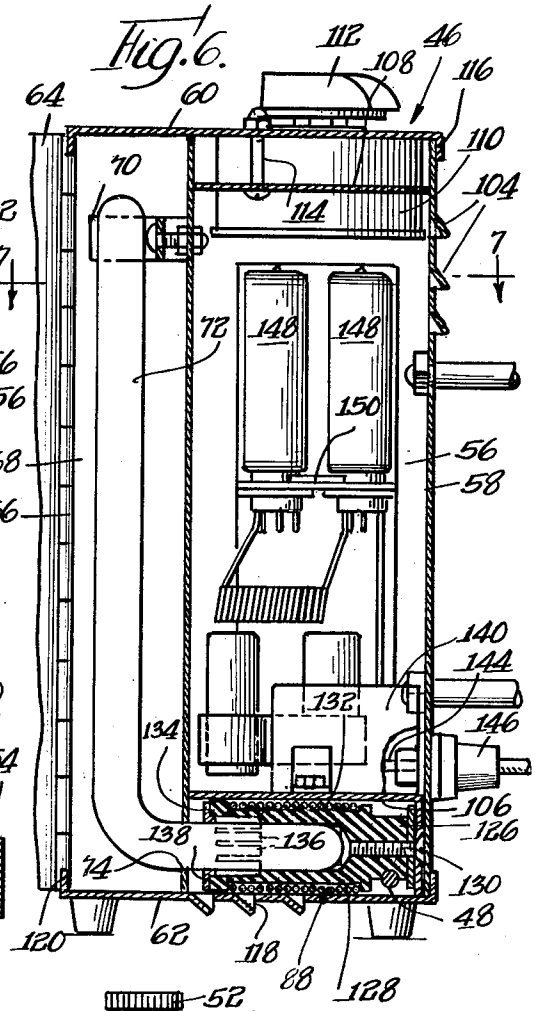
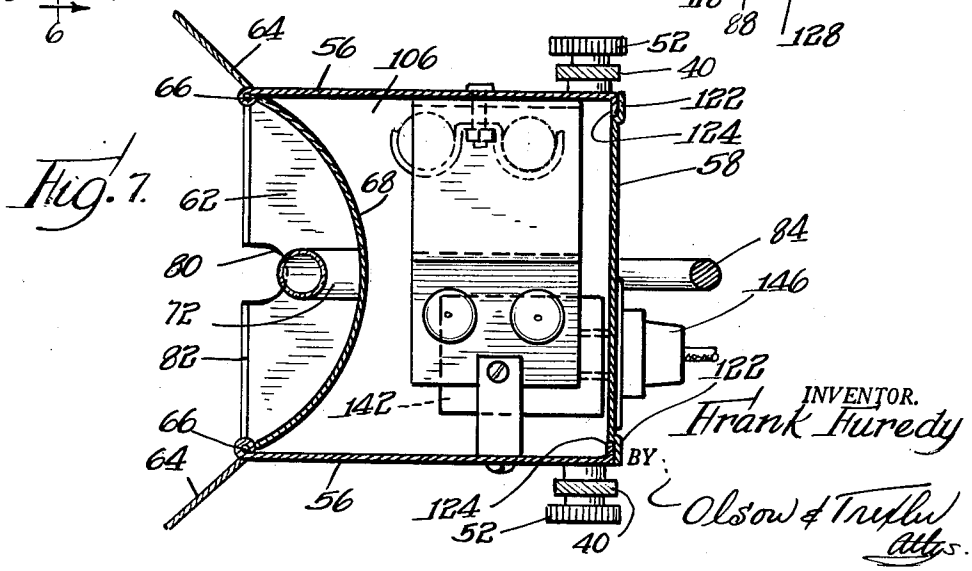


Fig. 7.



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THERAPEUTIC LAMP

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2 Claims. (Cl. 250—88)

This invention is concerned with a therapeutic lamp, and more particularly with a portable ultra-violet ray generator of high quality especially adapted for professional use, but also usable in the home.

This application comprises a continuation-in-part of my copending application Serial No. 481,791, now abandoned, for "Therapeutic Lamp" filed January 14, 1955.

Ultra-violet ray generators generally include a tube of quartz or other ultra-violet ray transmitting material containing mercury vapor. These ultra-violet ray tubes are energized by high frequency electrical oscillations to cause emission of ultra-violet rays from the mercury vapor. The tubes may be provided with internal electrodes, or may be of the so-called "electrodeless" type wherein electrical energy is transferred to the tube through external detachable electrodes.

Ultra-violet lamps have marked beneficial results when the body is exposed to the rays thereof. A person bathed in such rays is likely to feel refreshed and invigorated. Temporary relief is apt to be obtained from aches and pains due to over-exertion or muscular fatigue. A pleasant lasting warmth is provided in the area of the body irradiated, and an attractive ruddy outdoor glow is produced in the skin. However, there are certain precautions to be observed in the use of such lamps. One should never look directly at an ultra-violet emitting lamp with the naked eye. The ultraviolet radiations are likely to cause damage to the retina of the eye. Accordingly, goggles should be worn when one is treated by ultra-violet radiation. Furthermore, improved results are obtained if an approved type of skin cream is used along with radiation. Furthermore, it is most important that the non-professional user be provided with adequate instructions.

Accordingly, it is an object of this invention to provide an ultra-violet ray emitting lamp for use professionally and in the home, which lamp incorporates a drawer for storing goggles, skin cream, instructions, and the like.

In addition to general irradiation of the body, ultra-violet lamps have remarkable beneficial effects when specifically applied, as to the oral cavity, or other body cavities or the like. Accordingly, it is an object of this invention to provide an ultra-violet light having superior means for operating the ray emitting tube at a remote location.

More specifically, it is an object of this invention to provide an electrodeless type ultra-violet ray lamp wherein the ultra-violet ray tube is plugged into a receptacle for electrodeless operation, and wherein a connection for an extension irradiating tube is alternatively plugged into the same location.

It is yet another object of this invention to provide improved receptacle for plugging in an ultra-violet ray emitting tube or extension unit.

Another object of this invention is to provide an ultra-violet lamp having an L-shaped emitting tube reversible in position for general or local irradiation.

Other and further objects and advantages of the present invention will be apparent from the following description when taken in connection with the accompanying drawings wherein:

FIG. 1 is a perspective view of an ultra-violet ray lamp embodying the principles of this invention;

FIG. 2 is a side view thereof showing a modification of position;

FIG. 3 is another side view showing yet another position;

FIG. 4 is a fragmentary side view, somewhat of a schematic nature showing the plug-in extension unit;

FIG. 5 is a rear view with the back cover removed;

FIG. 6 is a vertical sectional view taken substantially along the line 6—6 in FIG. 5; and

FIG. 7 is a horizontal cross-sectional view taken substantially along the line 7—7 in FIG. 6.

Referring now in greater particularity to the drawings, and first to FIG. 1, there will be seen a therapeutic or ultra-violet ray lamp designated generally by the numeral 10. The lamp includes a base or support designated generally by the numeral 12 and including a base 14. The base is of shallow, rectangular configuration, opening along the front as at 16, and slidingly receiving a drawer 18 having a knob 20 on the front thereof. The front panel 22 of the drawer is of the same external dimensions as the corresponding dimensions of the base 14, whereby to fit flush thereagainst with the drawer in closed position. This drawer is intended to hold necessary supplies for use in conjunction with the lamp, including such items as goggles 24, skin lotion 26, and an instruction sheet obscured beneath the goggles and skin lotion.

The support further includes an upright, inverted U-shaped frame 28 having relatively long legs 30, and a relatively short bight 32. The members of the frame are of rectangular cross-section, preferably square. The bight 32 preferably is secured to the legs 30 by means of screws 34 recessed in the bight and threaded into the legs. Similarly, the legs preferably are secured to the base 14 by means of cap screws or the like extending through the base from the underside thereof, through ornamental spacers or washers 36, and threaded into the legs. The base is provided on the underside thereof with four rubber feet 38 to prevent marring of a supporting surface, and to provide clearance for the heads of the screws supporting the legs 30.

Two arms 40 are respectively secured at their upper ends near the upper portions of the legs 30 by means of threaded pivot members or pins 42 suitably fixed to the arms 40 and extending through the legs 30 and receiving knurled, internally threaded nuts 44. Suitable frictional locking means is provided, preferably including a known type of conical bearing between the arms 40 and legs 30 for wedging engagement.

A lamp head 46 is pivotally mounted between the free ends of the arms 40 by means of a threaded bolt 48 extending through suitable apertures in the arms and through a suitable aperture in the lamp head. The bolt is provided at one end with a knurled head 50, and a knurled nut 52 is threaded on the opposite end. Conical locking structure 54 of known configuration is preferably provided between the arms and the lamp head for frictional wedging in place to hold the parts in fixed relation.

Thus, the lamp head can be pivotally adjusted about the bolt 48, or the lamp head may be entirely removed from the arms 40 simply by removal of the nut 52 and bolt 48 for portable, hand-held operation of the lamp head.

Both the base 14 and the lamp head 46 preferably are made of sheet metal, aluminum being a preferred example. The lamp head includes side walls 56 (see also FIGS. 5–7), a back wall 58, a top cover 60, a bottom 62 and hinged front doors 64. The doors 64 are hinged to the side walls by continuous hinges 66, and a cylindrical parabolic reflector 68 is trapped between the side walls 56 behind the hinges 66. The reflector is provided near the top thereof with a clip 70 for positioning the upper end of an L-shaped ultra-violet ray emitting

tube 72, the lower end of which is bent at right angles and which is inserted through an opening 74 in the reflector for energization, as will be explained presently.

One of the doors is provided with an offset edge portion as indicated at 76 for overlapping the other door, and also is provided with a knob 78 for opening thereof. In the vicinity of the overlap the two doors, the bottom 62 is provided with a recess 80. The recess is curved at the back or inner portion, and opens through the front flange 82 of the bottom 62. The recess is of sufficient depth that the L-shaped ultra-violet ray emitting tube 72 may be inverted from the position shown in FIG. 1 to the position shown in FIG. 2, projecting out through the recess 80. The doors can be closed with the tube so projecting, as indicated in FIG. 3.

The lamp head may be positioned as shown in FIG. 1 for general irradiation of the body or the like, or it may be held in horizontal position, for instance with the arms 40 extending more or less horizontally, either to the front or the rear of the support upright frame 28. Alternatively, the lamp head can be hand supported by the U-shaped handle 84 on the back thereof. For local irradiation, as mentioned, the tube 72 may be inverted, as shown in FIG. 2. In such inverted position, the tube may project into an item to be sterilized. For example, a shoe 86 may be both sterilized and deodorized by the ultra-violet rays and by the accompanying ozone generated thereby. The tube also may be dipped into a container of milk or the like for irradiation and sterilization thereof in a very short time.

The lamp head may be supported in a horizontal position as in FIG. 3, either by means of the upright frame 28 including the arms 40 (shown in dashed lines in FIG. 3) or by hand. The reflector may point either up or down, or even sideways depending on the type of radiation desired. When the lamp is so used for local radiation, the horizontally projecting tube as shown in FIG. 3 conveniently may be inserted into the mouth, both for sterilization and deodorization therefor.

The short end of the tube 72 plugs into a receptacle 88, hereinafter to be described in greater detail. When it is desired to use the lamp with a remote applicator, as in FIG. 4, an applicator plug 90 is inserted into the receptacle 88. The applicator plug comprises an electrically conductive, preferably aluminum tube 92 closed at one end, and similar in size and shape to the end of the tube 72. A plastic stopper and closure member 94 is threaded into the open end of the aluminum sleeve or tube 92, and carries a single insulated wire 96, having one bare end thereof exposed and engaging tightly against the inner surface of the aluminum tube or sleeve 92. The opposite end of the wire 96 is connected to a remote socket or receptable 98 similar in construction to the receptacle 88, and into which a remote applicator ultra-violet ray tube 100 is inserted. The remote tube 100 may be of the shape shown, with a reduced diameter extending end and a deflected tip, or may be of any other suitable or desired shape. Electrical high frequency energy is picked up from the receptacle 88 by the aluminum tube 92, and is transferred through the wire 96 to the remote receptacle or socket 98 for energization of the ultra-violet ray tube 100.

Certain details of the parts heretofore described, as well as the internal construction of the lamp head will be seen with reference to FIGS. 5–7. Thus, the side walls 56 will be seen to be provided near their upper portions with ventilating louvers 102, similar louvers 104 being provided on the back wall 58. The side walls are secured by suitable means such as rivets (not shown) to an inverted pan 106 at the bottom thereof. An upright pan 108 is similarly secured to the side walls at the top thereof, both pans being arcuately recessed at the front portions thereof complementary to the back side of the reflector 68. The upper pan 108 supports a timer unit 110, part of which depends below the pan, and which has a shaft extending through the top cover 60 and carrying a knob 112 cooperable with suitable indicia to indicate the running time for which the lamp is set. Bolts 114 extend through the upper pan 108 and through the top cover 60, having nuts on the upper end thereof for holding the cover in place. It will be observed that the cover has a peripheral flange 116 overlying the side walls 56 and back 58, and serving as a stop for the doors 64.

The bottom 62 is held in place in a manner similar to the top, and will be observed to be provided with louvers 118. The bottom is provided with an upstanding peripheral flange 120 lying outside of the side walls and back, and serving as a stop for the doors. The back 58, as best seen in FIG. 7, will be observed to have rearwardly offset lateral flanges 122. These hold the back behind right angularly disposed longitudinal flanges 124 on the side walls, while the upstanding peripheral flanges 116 and 120 on the top cover 60 and bottom 62, respectively, hold the back forward with the back flanges 122 firmly against the flanges 124, whereby to hold the back in place. Obviously, the back readily can be removed simply by removing the top cover and the bottom. Alternatively, the back can be removed simply by removing the bottom, and by thereafter pulling the back rearwardly to disengage the electrical connections hereinafter to be described, and by sliding the back down a short distance.

Beneath the pan 106 there is provided a rectifier 122. This rectifier is of the dry disc type and cannot be allowed to operate in an environment above a given temperature. Disposition of the rectifier below the pan, with the louvers 118 provided in the bottom, allows operation of the rectifier in a suitably cool environment, shielded from heat from the remaining electrical components as hereinafter to be described.

In addition, the receptacle 88 is positioned beneath the pan 106. The receptacle 88 comprises an insulating coil form 126 made of reinforced phenolic or the like having a central bore 128 in which the ray emitting tube 72 is received when inserted through the aperture 74. The coil form 126 is provided at its extremity with a tapped aperture threadedly receiving a screw 130 projecting through the back wall of the bottom pan 106, whereby to mount the receptacle. A coupling coil 132 is wound on the form, and has one end thereof connected to the oscillating circuit. The open end of the winding form 126 has an electrically conductive ferrule 134 therein. The ferrule is provided with spring fingers 136 gripping the end of the tube 72 and is provided with a peripheral flange 138 overlying the end of the coil form. A screw (not shown) extends through this flange and is threaded into the coil form, and has the otherwise free end of the coil 132 anchored thereunder for transfer of electrical energy to the tube 72.

On top of the bottom pan 106 there is provided a line filter 140. This filter prevents any oscillation energy from being transferred back to the electric line. The filter is provided with a recessed detachable connector 142 having male prongs 144 thereon. A female connector 146 is secured on the back and is detachably associated with the male connector on the back of the line filter. Thus, when the back of the lamp head is removed there is no power in the lamp head, and it is impossible for one to receive a shock.

Various additional electric components are mounted within the lamp head, including a pair of electron tubes 148 and the sockets into which they are plugged, carried by a horizontal flange 150 on a bracket having a vertical wall 152 approximately along the center line of the lamp head. The vertical wall flange 152 is supported by a horizontal flange 154, and this in turn is formed integral with a vertical flange 156 which is suitably secured as

by screws (not shown) against one of the side walls **56**. All of the electrical components except for those specifically described, namely with the exception of the line filter **140** and connections, the receptacle **88**, and the rectifier **122** are mounted on the bracket **150—156**, hereinafter identified generally by the numeral **158**. An L-shaped brace **160** is connected to the horizontal flange **150** and to the opposite sidewall **56**, as will be apparent. Hence, the electrical components comprising the oscillation circuit are readily preassembled before installation in the lamp housing.

It will now be apparent that a superior therapeutic lamp has herein been described. The specific electrical components and connections of the oscillating circuit have not been described specifically since the oscillating circuit may be of any suitable known type. The various uses and positions of the lamp have been described or suggested, or will be apparent upon contemplation of this specification.

The specific example of the invention as shown and described is intended as illustrative only. Various changes in structure will no doubt occur to those skilled in the art, and will be understood as forming a part of the invention insofar as they fall within the spirit and scope of the appended claims.

The invention is claimed as follows:

1. A portable lamp for the generation and emission of ultraviolet radiation including a lamp head of generally rectangular configuration and open along the front, a pair of doors, hinge means hingedly mounting said doors on the open front of said lamp head, a reflector which is longitudinally straight and laterally concave-convex, back up means in said lamp head complementary to the convex side of said reflector, the hinges for said doors serving as shoulders holding said reflector against said back up means with the concave side of the reflector facing in the direction of said doors, a ray emitting tube, and means

for mounting said ray emitting tube in front of said reflector adjacent the concave side thereof, said last mentioned means including means for transferring electrical energy to said ray emitting tube.

2. A portable lamp for the generation and emission of ultraviolet radiation comprising a base of generally rectangular configuration, a pair of spaced apart uprights on said base near the rear corners thereof, a pair of arms pivotally mounted on said uprights and lockable in pivoted relation thereto, a lamp head pivoted on the free ends of said arms and lockable in pivoted relation thereto, said lamp head having pivotally mounted doors on the front thereof, a reflector behind said doors, an L-shaped ray emitting tube, an electrically dead clip relatively adjacent one boundary of said reflector for optionally holding one end of said tube in front of said reflector, said reflector having only one aperture therein and relatively adjacent the opposite boundary thereof, and electrical means in said lamp head behind said one reflector aperture receiving the other end of said L-shaped tube for mounting said tube and for supplying electrical energy thereto, said lamp head having a transverse wall at the end of the reflector relatively adjacent the aperture therein, said transverse wall having a forwardly opening recess therein, whereby the L-shaped tube may be reversed in position and mounted projecting from said lamp head through said recess.

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