

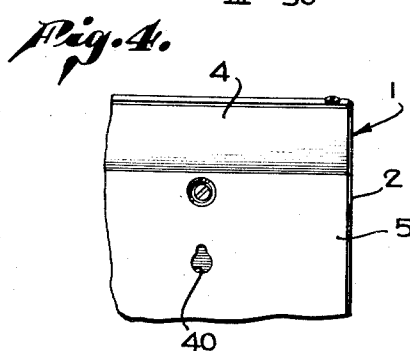
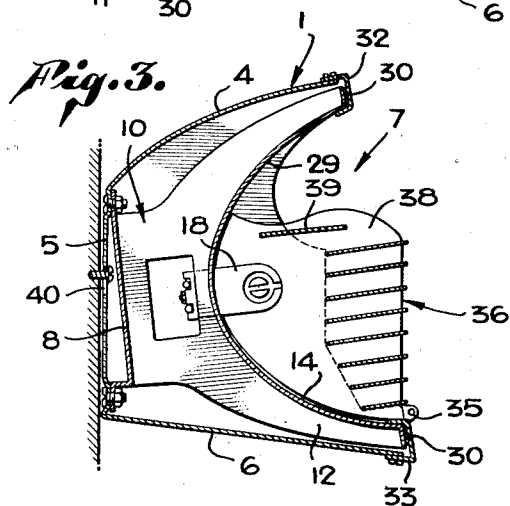
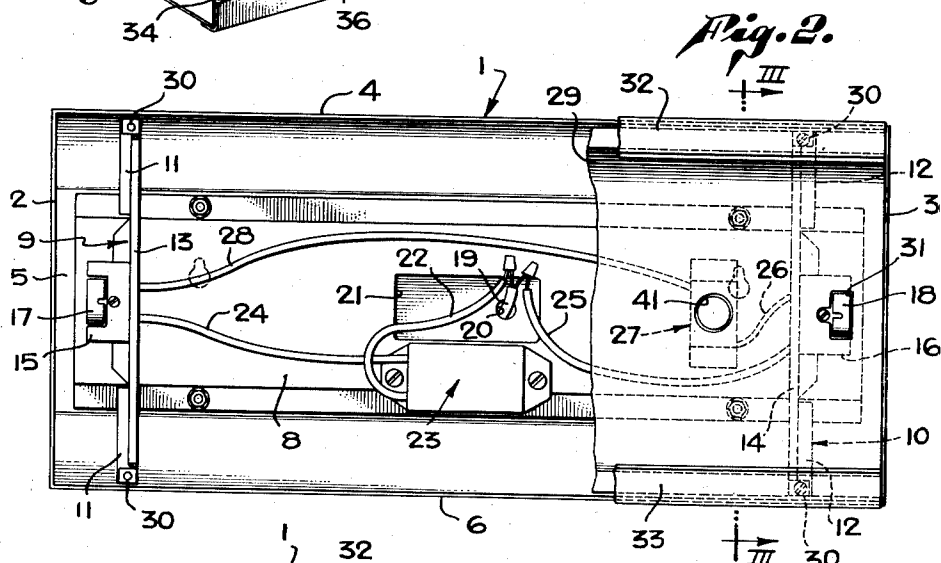
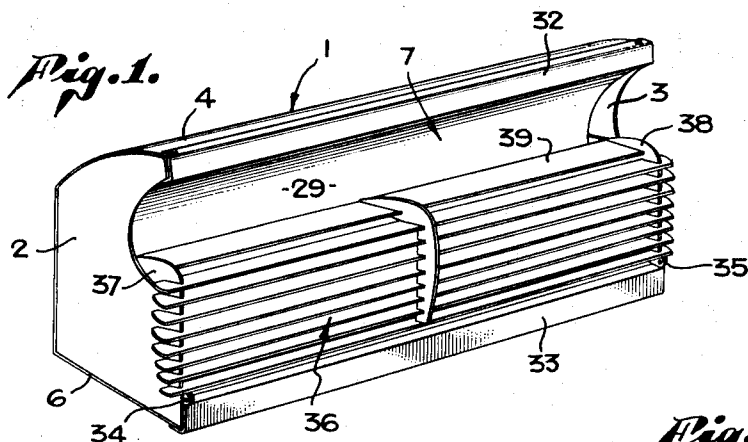
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GERMICIDAL LAMP MOUNTING AND REFLECTOR

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GERMICIDAL LAMP MOUNTING AND REFLECTOR

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This invention relates generally to an improved mounting and reflector for longitudinal gaseous discharge lamps, and more specifically, to a germicidal or bactericidal gaseous discharge lamp mounting and reflector adapted to be horizontally mounted on a vertical wall of a room above head height of the average adult, and arranged to emit bactericidal or germicidal radiation in a controlled manner, whereby the optimum bactericidal or germicidal effect is achieved upon the air circulating in the room while the possibility of injury to human occupants of the room from the radiation is avoided.

It is desirable that the radiation emitted from the lamp pass virtually all the way across the room from side to side at an angle slightly above the horizontal. Thus a large portion of the upper region of the room will be traversed by the radiation and virtually all of the rising, warm, bacteria-laden air will pass therethrough and be rendered aseptic thereby. Furthermore, the radiation will be so attenuated by the distance travelled, and will impinge the walls and ceilings at such angles of incidence that virtually none of the radiation will be reflected to the occupants of the room below in sufficient intensity to produce any deleterious or harmful effects.

Generally speaking, the apparatus of this invention comprises a longitudinal housing open along one side thereof. Parabolically shaped supporting means are mounted within the housing facing the open side thereof and are slightly angularly inclined. A thin sheet reflector is mounted upon and fixed to the parabolically shaped supports whereby said reflector is caused to assume a virtually true parabolic shape. A longitudinal, gaseous, electric discharge lamp is mounted within the parabolically shaped reflector adjacent the focus thereof. Angularly inclined louver means are positioned across at least a portion of the open side of the housing, whereby to reduce the vertical, angular spread of radiation emitted through the open side of the housing.

Among the many advantages of this construction are the ease of assembly, and the fact that the thin sheet reflector does not have to be manufactured as a true parabola, since it is to be mounted upon and forced into contact with the parabolically shaped supporting means and thus caused to assume a virtually true parabolic shape. This is a decided advantage over most prior art constructions which try to manufacture the reflector as a true parabola, this being exceedingly difficult and costly to accomplish. The present

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construction is capable of being hung on a vertical surface above the average height of the occupants of a room so as to direct the rays for the optimum germicidal effect by causing said rays to virtually traverse the upper region of the room at an angle slightly above the horizontal plane and thus avoiding the disadvantages of prior art constructions hereinbefore mentioned. This construction also permits the rapid replacement of the gaseous discharge lamps and the ballast or choke coils and starting relays therefor.

With the above points in mind, it is an object of this invention to provide an improved germicidal lamp mounting and reflector adapted to be mounted upon a vertical wall of a room and to emit germicidal or bactericidal radiation of a controlled, vertical angular spread and mean direction, whereby the optimum germicidal or bactericidal effect is obtained upon the circulating air in the room while avoiding any deleterious or harmful effects to human occupants of the room.

Other and allied objects will be apparent to those skilled in the art upon a careful examination of the illustrations, specifications, and appended claims. To facilitate understanding, reference will be had to the following drawings of one embodiment of this invention, in which:

Fig. 1 is a perspective view of one embodiment of this invention.

Fig. 2 is a front view, partly broken away, of the apparatus illustrated in Fig. 1 with the louvers removed therefrom and with the gaseous discharge lamp not mounted therein.

Fig. 3 is a sectional view, taken along the plane III—III of Fig. 2.

Fig. 4 is a fragmentary view of a portion of the rear wall of the housing showing one of the mounting slots by which the lamp may be mounted on a vertical surface, such as a wall of a room, or the like.

More specifically, a longitudinal housing indicated generally at 1, is provided with two parallel, end walls, 2 and 3, an upper curved wall 4, a flat back wall 5, and a flat bottom wall 6. The housing 1 is provided with an open side indicated generally at 7 opposite the back wall 5. Mounted within the housing 1 upon the back wall 5, by suitable fastening means, is a longitudinal base 8 which is slightly upwardly angularly tilted. Mounted upon the tilted base 8 by suitable fastening means, adjacent opposite ends thereof, are two supports, indicated generally at 9 and 10. These supports 9 and 10 are respectively provided with saddle-shaped yokes 11 and 12. Said yokes 11 and 12 are respectively provided

with accurately made, parabolically shaped inner edges 13 and 14. Suitably mounted upon the supports 9 and 10 respectively are suitable mounting brackets 15 and 16 adapted to support the upstanding lamp supports 17 and 18 respectively. The upstanding lamp supports 17 and 18 are adapted to both support and make electric contact with opposed ends of a longitudinal, gaseous discharge tube (not shown) and are well known in the art.

The input A.-C. power line 19, which is externally connected to a source of alternating current, enters the lamp through a hole 20 in the back wall 5 of the housing 1 and an aperture 21 in the tilted base 8. One of the A.-C. input leads 19 is connected by means of a conductor 22 to one side of a ballast or choke coil indicated generally at 23, the opposite side of which is connected by a conductor 24 to one electric terminal of the upstanding lamp support and connector 17. The other A.-C. input lead 19 is connected by a conductor 25 to one electric terminal of the other upstanding lamp support and connector 18, the other side of which is connected by a conductor 26 to a starting relay indicated generally at 27. The other side of the starting relay 27 is connected by a conductor 28 to the other terminal of the first mentioned upstanding lamp support and connector 17, thus completing the lamp electric circuit. The choke coil 23 and starting relay 27 are mounted upon the base 8.

A thin sheet reflector 29 is held in contact with the parabolically shaped edges 13 and 14 of the supports 9 and 10 and caused to assume a virtually true parabolic shape thereby. Said thin sheet reflector is fixed to the supports 9 and 10 by suitable fastening means, such as screws or the like, passing through outer edges of the thin sheet reflector 29 and into the ends of the yokes 11 and 12 of the supports 9 and 10 at 30. The thin sheet reflector is provided with suitable apertures indicated at 31 for allowing the upstanding lamp supports 17 and 18 to pass therethrough so as to be capable of mounting a longitudinal, gaseous, discharge lamp (not shown) in front of the parabolic, thin sheet reflector 29, with the center line of the lamp virtually in line with the focus thereof. The starting relay 27 also is shown extending through an aperture 41 in the reflector 29. Retaining channels 32 and 33 are fitted over the outer edges of the upper wall 4 and the lower wall 6 of the housing 1 and over the point of attachment of the outer edges of the thin sheet reflector 29 to the ends of the yokes 11 and 12 of the supports 9 and 10, so as to cover same. Said channels may be fixed in position by suitable screw means or the like.

Pivotally mounted at points 34 and 35, adjacent the lower, outer edge of the end walls 2 and 3 of the housing 1, is a louver assembly, including a plurality of spaced, longitudinally extending louvers indicated generally at 36. Said louver assembly includes end plates 37 and 38 having parabolically curved inner surfaces arranged to nest within the reflector and against the parabolically curved surfaces thereof so as to hold the louvers in upwardly inclined planes adapted to reduce the vertical, angular spread of the radiation emitted from the lamp by removing part of the lower portion of the beam. The ends of the louvers abutting the edges of the end walls 2 and 3 also act to position the louver assembly 36. Spaced from and fixed to the upper side of the louver assembly 36 is a longitudinal shield 39

arranged to shield the gaseous discharge lamp so as to prevent radiation from being emitted directly from the lamp through the open side of the housing not traversed by the louver assembly 36.

The operation of the device may be described as follows. The lamp is adapted to be mounted with the back wall 5 thereof against a vertical surface such as a wall or the like by suitable fastening means, indicated at 40, at a level higher than the head level of the occupants of a room. The tilted base 8 acts to effectively rotate the parabolic reflecting surface of the thin sheet reflector 29 slightly upwardly so that the radiation therefrom will be slightly upwardly inclined from the horizontal.

If the gaseous discharge lamp which is adapted to be mounted between supporting brackets 17 and 18 with the axis thereof in line with the focus of the parabola were a true line source of light, the radiation emitted from the parabolically shaped reflector would be true parallel radiation. However, a gaseous discharge lamp has an appreciable diameter and is not a true line source of light and therefore the radiation reflected from the reflector 29 through the open side 7 of the housing 1 will not be true parallel radiation, but will diverge slightly, or in other words, have a slight angular spread, so that the radiation will encompass an increasing vertical distance at increasing horizontal distances from the lamp. It is desirable that the lower portion of this angular spread in the radiation be eliminated so that no deleterious or harmful effects upon the occupants of the room below the lamp will occur.

The louver assembly 36, when in the position shown in Figs. 1 and 3, is arranged to accomplish this effect, since radiation directed angularly downward either from the gaseous discharge lamp directly or from the reflector 29 may not pass through the upwardly angularly inclined louvers 36. Such radiation is removed from the beam of radiation emitted from the lamp. However, radiation directed in a mean direction slightly above the horizontal may pass through the louvers 36 virtually unimpeded and relatively non-attenuated. Thus a portion of the vertical angular spread at the bottom of the radiation emitted from the lamp has been effectively eliminated. The shield 39 is so positioned with respect to the gaseous discharge lamp as to prevent radiation from being emitted directly from the lamp through the open side 7 of the housing not traversed by the louver assembly 36. This is desirable since otherwise such direct radiation would rise rather abruptly at too sharp an angle above the horizontal and be reflected from the ceiling downward into the room with possibly deleterious or harmful effects to the occupants thereof.

The louver assembly 36, being pivotally mounted at 34 and 35, may be swung away from the open side 7 of the housing 1 so that the gaseous discharge lamp may be readily removed and changed, if desired, the thin sheet reflector 29 may be removed or changed, if desired, and the lamp starting relay 27, ballast or choke coil 23, lamp supports 17 and 18, or various other portions of the lamp may readily be repaired or changed. After such repairs or changes the louver assembly 36 may be swung back into position and the lamp is ready for operation.

The apparatus is preferably, although not necessarily, made of sheet metal. The surfaces

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of the louver assembly 36 are preferably painted, processed or otherwise treated to render them relatively ray-absorptive and non-reflective. The thin sheet reflector is preferably, although not necessarily, made of aluminum sheet processed by the Alzak process, or otherwise suitably provided with a highly reflective, mirror-like, inner surface. The electric circuit is of standard type including the ballast or choke coil 23 and, starting relay 27 and is adapted to energize a gaseous discharge lamp of the hot cathode type. This functions in a manner well known in the art and need not be specifically described herein.

I claim:

1. A germicidal lamp mounting and reflector comprising: a longitudinal housing open along one side thereof; a longitudinal, tilted base mounted on the inner surface of the housing opposite the open side thereof; a plurality of spaced supports mounted on said tilted base, each of said supports having a parabolically shaped marginal edge facing the open side of the housing and slightly angularly upwardly directed; a thin sheet reflector; means for holding said reflector against the parabolically shaped margins of the supports, whereby said reflector is caused to assume a virtually true parabolic shape; means for mounting a longitudinal gaseous electric discharge lamp within the parabolically shaped reflector adjacent the focus thereof; and a louver assembly including a plurality of longitudinally extending upwardly, angularly, inclined louver means positioned across the lower portion of the open side of the housing whereby to reduce the vertical angular spread of the radiation emitted through the open side of the housing, virtually all of said angular reduction being at the bottom of the beam of radiation, said louver assembly being pivotally connected to the lower portion of the housing and being provided with a shield positioned adjacent the gaseous discharge lamp to intercept radiation emitted

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from the lamp through the open side of the housing above said louver assembly.

2. In a shielded, longitudinal lamp fixture adapted to be mounted upon a vertical supporting surface, the combination of: a lamp housing including top, back, bottom and end walls and an open front; a louver assembly including a plurality of vertically spaced louver means extending across only the lower portion of said open front in parallel, upwardly inclined planes, the forward edges of said louver being in vertical alignment with the lower forward edge of said housing, said assembly being pivotally connected to the lower front portion of the housing.

3. A lamp fixture of the character stated in claim 2, wherein the louver means in the upper portion of the assembly are wider than those in the lower portion of the assembly.

4. A lamp fixture of the character stated in claim 2 including a shield within said housing substantially parallel to said louver means and disposed above and rearwardly thereof.

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