May 8, 1945. G. G. ELLNER 2,375,354

ELECTRICAL FIXTURES FOR USE WITH FILAMENT GASEOUS LAMPS OR THE LIKE

Filed Nov. 11, 1942 2 Sheets-Sheet 1

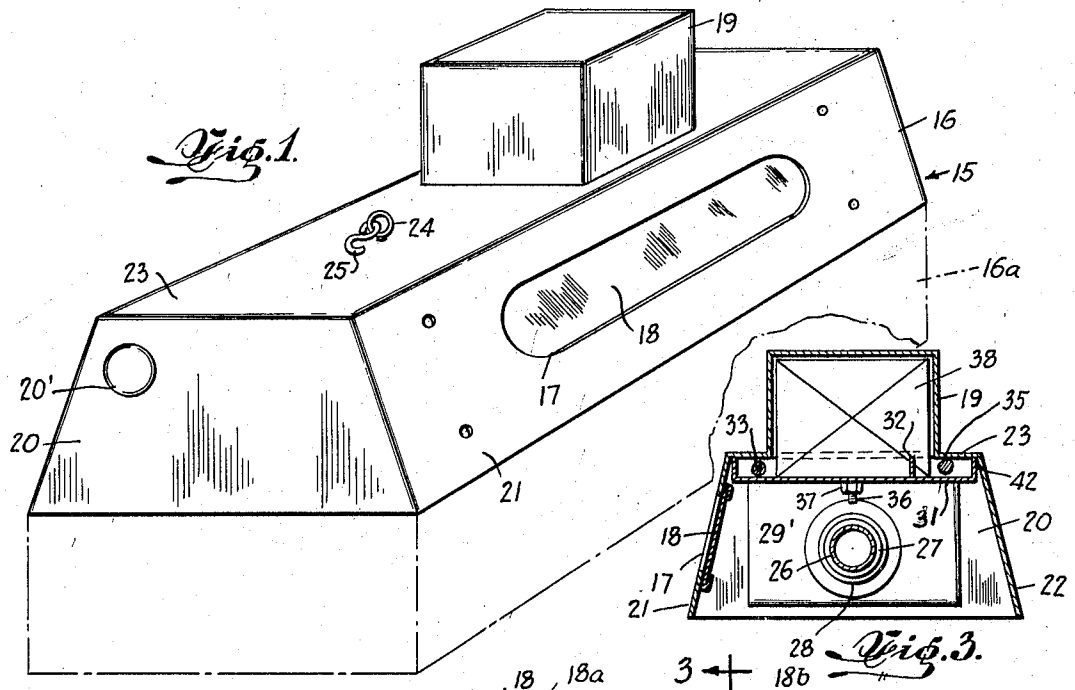


Fig. 1.

Fig. 3.

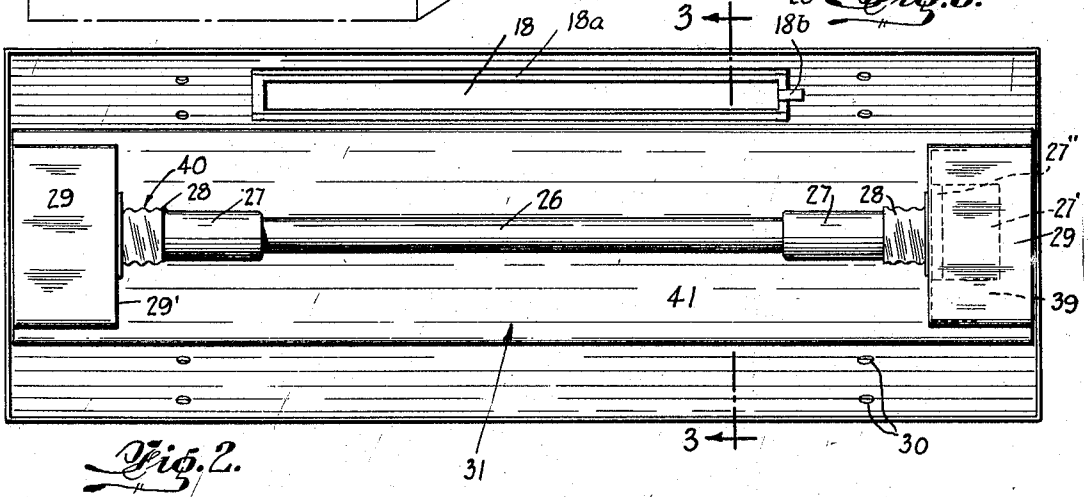


Fig. 2.

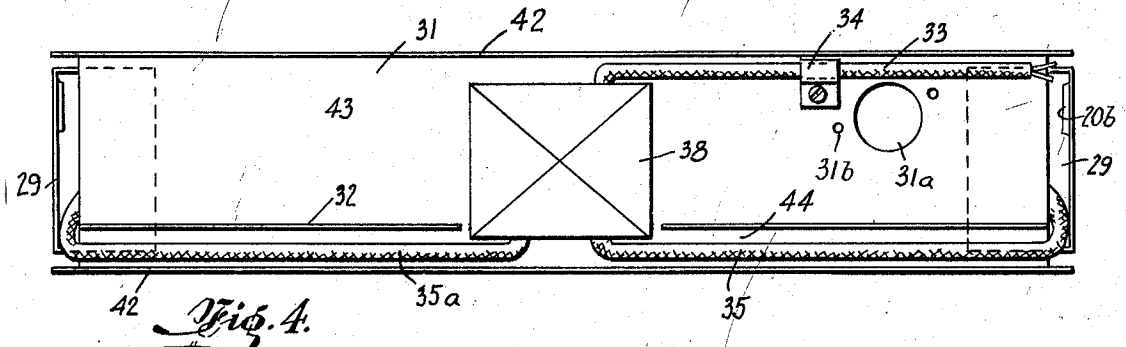


Fig. 4.

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ELECTRICAL FIXTURES FOR USE WITH FILAMENT GASEOUS LAMPS OR THE LIKE

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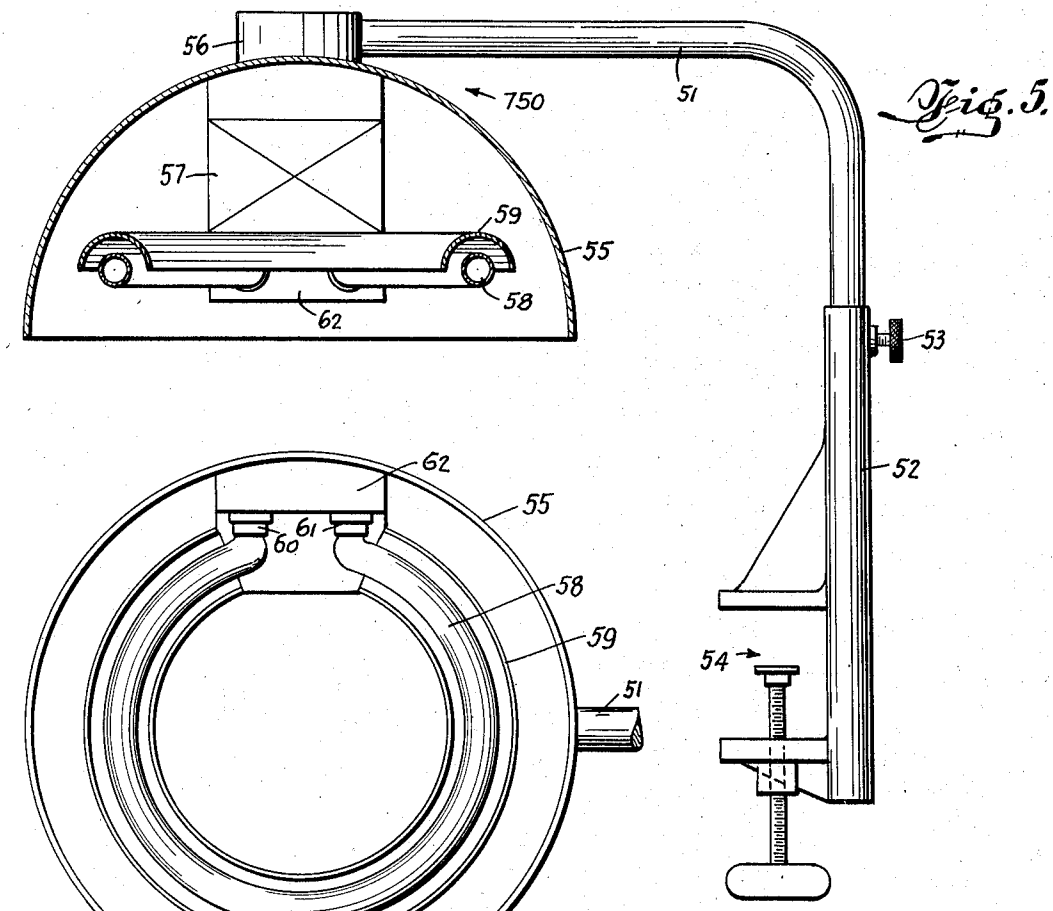


Fig. 5.

Fig. 6.

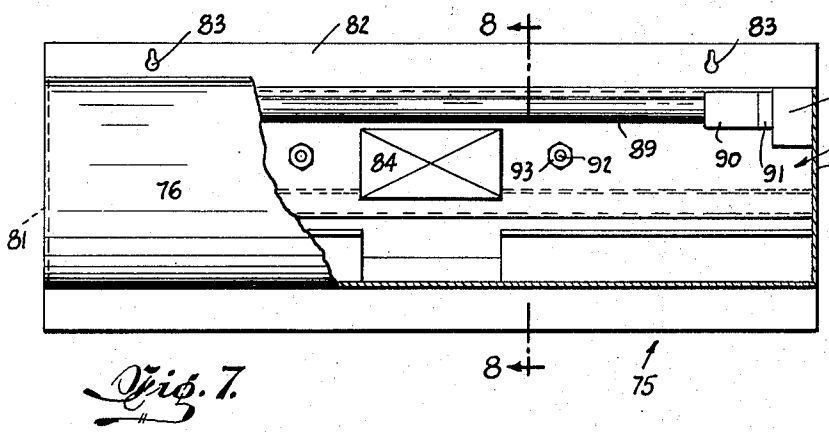


Fig. 7.

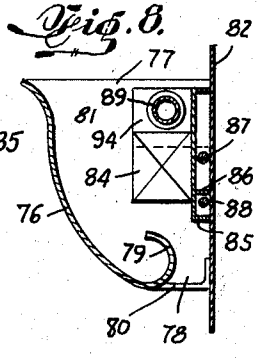


Fig. 8.

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UNITED STATES PATENT OFFICE

2,375,354

ELECTRICAL FIXTURE FOR USE WITH FILAMENT GASEOUS LAMPS OR THE LIKE

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Application November 11, 1942, Serial No. 465,232

5 Claims. (Cl. 240—78)

This invention relates generally to electrical fixtures employing either gaseous carbon arc or filament lamps for the emission of rays and has further reference to that class of electrical devices which generate the bactericidal band of the ultra-violet spectrum for killing bacteria, mold, etc., and for other germicidal or sterilizing purposes. It has more particular reference to fixtures for use with tubular gaseous lamps designed for the emission of ultra-violet radiation for extermination of bacteria and for general sterilization.

In considering the production of efficient devices of the above nature, it is essential that provision be made for eliminating all hazards, for controlling and directing the ultra-violet radiation, and for increasing the ultra-violet intensity within the effective field of operation.

It is an object of the present invention to provide means for housing, controlling and directing the radiation of electrically operated lamps and more specifically bactericidal or sterilizing ultra-violet ray emitting lamps.

It is a further object of the present invention to provide for such lamps a hood in the form of a trough-like shell in which is housed a removable channel on which is mounted a complete assembly of transformer, sockets to receive the lamp tube, splice box for making the primary connection without removing the channel, and a partition which divides the channel into two raceways for containing the primary and secondary wiring for the said tube.

It is a still further object of the present invention to provide means whereby a plurality of said hoods may be connected together.

Another object of the present invention resides in providing a hood for an ultra-violet lamp, which by its construction increases the ultra-violet intensity within the effective field of the hood, and embodying an instrumentality or instrumentalities possessing high co-efficient of ultra-violet reflection for controlling and reflecting the rays, whereby the effectiveness of the bacteridical ultra-violet lamp is increased in more rapidly destroying bacteria, mold, virus, yeasts in critical areas, particularly, where sterile environment is vital.

Yet another object of the present invention resides in the provision of an inspection window in said hood which will prevent the passage of ultra-violet rays therethrough thus safeguarding the eyes of a person inspecting the device.

Another object of the present invention is to provide a hood for an ultra-violet sterilizing lamp which will protectively shield from the eyes of workers, the ultra-violet rays emitted from the lamp and control the direction of the rays for irradiation of objects or articles which are to receive the bactericidal or sterilizing treatment. Thus conjunctivitis (severe eye irritation) and skin irritation of workers are prevented and the purpose intended efficiently effectuated.

Still another object of the present invention is to provide a bactericidal ultra-violet lamp with a hood which will afford mechanical protection against the accumulation of micro-organisms and thus shield the protected area.

It is still another object to provide a device of the foregoing nature which is simple, convenient, efficient and practical.

This invention accordingly consists in the features of construction, combination of parts and in the unique relations of the members and in the relative proportioning and disposition thereof; all as more completely outlined herein.

To enable others skilled in the art so fully to comprehend the underlying features thereof that they may embody the same by the modifications in structure and relation contemplated by this invention, drawings depicting certain forms of the invention have been annexed as a part of this disclosure, and in such drawings, like characters of reference denote corresponding parts throughout all the views, of which:

Fig. 1 is a perspective view of a bactericidal ultra-violet lamp fixture made in accordance with the invention;

Fig. 2 is a bottom plan view of Fig. 1;

Fig. 3 is a cross-sectional view taken along line 3—3 of Fig. 2;

Fig. 4 is a bottom view of the channel assembly of the fixture;

Fig. 5 is a side elevational view, partly in section, of a fixture embodying the invention in a modified form;

Fig. 6 is a bottom plan view of the lamp portion of Fig. 5;

Fig. 7 is a front elevational view, partly in section of a fixture embodying the invention in a further modified form; and

Fig. 8 is a sectional view taken along line 8—8 of Fig. 7.

Referring now more particularly to the drawings, Figs. 1–4, disclose an embodiment of the invention generally indicated by the numeral 15. This electrical fixture comprises a hood 16 having a top 23, outwardly slanting sides 21, 22, and ends 20. Hood 16 may also be provided with a skirt portion shown in dot-dash outline in Figure 1 and indicated by the numeral 16a to fur-

ther control and direct the ultra-violet rays generated as later on described.

Hood 16 is provided at one of its slanting sides with an inspection window 17 which removably engages a glass or other transparent or translucent member 18, which will prevent the passage of ultra-violet rays therethrough. Member 18 is held in place by a frame 18a provided with a lug 18b which is bent over after the member 18 is placed in position to prevent its accidental removal.

Forming part of or attached to top wall 23 is a housing 19 for the transformer 38. Hood 16 may be suspended from a ceiling by chains, cables, rods or bars (not shown), for which purposes there are provided on either side of housing 19, eyes and links 24, 25; it being understood however, that the hood 16 may be supported or suspended in any other suitable manner, such as, for example, brackets, stanchions, etc.

Disposed within hood 15 and running substantially the entire length thereof is a channel assembly or ultra-violet generating unit 31. Unit 31 comprises a channel-shaped member from each end of which depends a bracket 29 having secured thereto the inner wall 29' forming a pocket 39 having an annular opening through which projects part of the socket assembly 40.

The socket assemblies 40 each comprises a socket 27 having a flange 27'' near one end thereof, the said socket 27 being threaded to receive the clamping sleeve 28, a cap 27' being removably secured to socket 27 adjacent flange 27''. Each socket 27 under cap 27' carries an electrical contact to which is secured respectively the cables 35, 35a connected to the secondary winding of transformer 38. The socket assembly 40 is secured to wall 29' by first projecting socket 27 through the opening in wall 29' so that flange 27'' abuts against the wall 29', and then placing sleeve 28 over the free end of the socket and screwing the sleeve thereon until it is tight up against wall 29'.

The conventional long tube 26 containing the substances which generate the ultra-violet rays is disposed between sockets 27, its ends entering therein and making electrical connection with contacts within the sockets. The tube 26 may be easily placed in operating position by unscrewing sleeve 28, pushing outwardly socket 27 and then after the end of the tube is inserted within the socket, tightening up on the sleeve 28.

Base 41 of the channel-shaped member is provided with upwardly extending side walls 42 and longitudinal partitions 32 dividing the member 41 into two raceways 43, 44. Transformer 38 is mounted on base 41 at about its center. The two-wire cable 33 connects with the primary winding of the transformer and the single-wire cables 35 and 35a connect with the secondary winding of the transformer. Cable 33 is located in raceway 43 and cables 35, 35a are located in raceway 44. The ends of the raceways are preferably rounded off to prevent injury to the respective cables.

The upwardly extending walls 42 perform a three-fold function, namely, as outer walls for the raceways respectively, as spacers when the channel assembly 31 is placed within hood 16, in which case these flanges 42 are made to abut against the inside surface of top 23 of the hood 16, and as adjunct which together with housing 19 completes the covering for transformer 38. Bolts 36 and nuts 37 may be used to secure channel assembly 31 to hood top 23. These bolts are secured to the top 23 and also act as guides in positioning the channel assembly thereon.

A splice hole 31a is provided in base 41 of the channel member to facilitate connecting cable 33 with the main power line, and a cover (not shown) may be provided for hole 31a, which may be secured to base 41 by bolts entering holes 31b. A knock-out hole 20' may be provided in each end 20 of the hood to connect together a plurality of fixtures in tandem. Also a knock-out hole 20b may be provided in the channel assembly 31 adjacent cable 33 for facilitating electrical connection of the fixtures. Where it is desired to use two or more lamps in tandem or side by side or both, it might be considered expedient to place the transformer or transformers remotely of the hoods, in which case the channel assembly would be modified to accommodate such battery of lamps without necessitating provision of one or more transformers and transformer housings in the hood, or dual raceways.

It may be readily understood from the foregoing that a complete unit has been provided which contains all of the parts necessary to generate ultra-violet or other rays, upon the application of an electrical current and which together with the hood complete a fixture which is practical and efficient and from which all hazards are eliminated.

The hood may be provided with suitable reflecting surfaces or elements to increase the ultra-violet or other ray intensity within the effective field of the hood. Or the base 43 of the channel 31 may be parabolic or otherwise shaped to provide a reflecting area for the emitted rays.

Figs. 5 and 6 disclose the invention in a modified form. The fixture therein shown comprises a dome-shaped hood 55 having a bracket support 56 to which one end of the curved element 51 of a telescoping bracket is secured, the other element 52 of said bracket being held in adjustable sliding engagement with element 51 by the set screw 53. A conventional clamping arrangement 54 may be provided to secure the fixture to a table, desk or other desirable support or device. It is to be understood that any other instrumentality may be employed to suspend or support the lamp.

Extending within dome or hood 55 is a housing 62 having sockets 60, 61, to which the circular tubular lamp 58 is electrically attached. Housing 62 also supports the substantially annular reflector 59 (arcuate in cross section) disposed over tube 58. Housing 62 and reflector 59 may be made in one piece, if desired. Transformer 57 may be housed in housing 62.

Figs. 7 and 8 disclose a further mode of practicing the invention, in the form of a wall lamp fixture generally indicated by the numeral 75. The channel assembly 85 is disposed within a trough-like hood open at its top 77 and having a curved front wall 76 spaced from the rear wall 82 by a support or bracket 80, the said front wall 76 providing a substantially narrow longitudinal bottom opening 78. The hood is further provided with the sides or ends 81. Slots or other suitable openings 83 are provided to hang the fixture from a wall or other support. It is to be understood that the hood just described may assume any other convenient and practical shape.

The channel assembly 85 which is received within the said hood and secured to the rear wall 82 thereof by the securing means 92, 93, is similar to that described with regard to channel assembly 31, (Figs. 1–4), except that the transformer

84 is disposed below tubular lamp 89, and on the same (front) side of the channel assembly as the sockets and lamp.

Figs. 7 and 8, show to view one of the sockets 90 with its ferrule or threaded clamping sleeve 91, supported on bracket 94; and in Fig. 8, there is also seen the channel partition 86 with the primary cable connection 87 in one raceway and the secondary cable connection 88 in the other raceway.

The device disclosed in Figs. 7 and 8, is particularly adapted for use where it is desired that sterilization or other ray-emitting treatment be effected above and below the location of the device as well as in all other directions, the openings 77 and 78 facilitating such treatment. The unit is so constructed as to eliminate eye, skin or other hazards, including that resulting from possible explosion or breakage of the tubular lamp. Any suitable safety device may be applied to prevent shock in short-circuiting during servicing of essential parts. Further provision may be made to include means of producing forced circulation through the openings 77, 78.

It will thus be seen that there has been provided by this invention electrical fixtures in which the various objects hereinabove set forth together with many thoroughly practical advantages, are successfully achieved.

As many possible embodiments may be made of the above invention, and as many changes might be made in the embodiments above set forth, it is to be understood that all matter hereinbefore set forth or shown in the accompanying drawings is to be intended as illustrative and not in a limiting sense.

It is to be further understood that although the invention has been described more particularly, with regard to tubular gaseous lamps, principally ultra-violet ray emission types, it is within the contemplation of this invention not to limit its scope, thereto, but to embrace its use in connection with various types of gaseous and filament lamps which may be applicable thereto. It is further intended that the invention be applicable to lighting fixtures; air conditioning, air filtering and air circulating devices; wherein provision may be made for either direct or indirect ultra-violet radiation, or both.

It is to be still further understood that any suitable means, other than that disclosed in the drawings, may be employed to removably and releasably secure the lamp sockets to the channel assembly or the lamp to the sockets. Furthermore, any translucent, transparent or other suitable means may be employed in connection with the above described devices to cut-out undesirable rays and preventing the same from reaching the object or medium to be treated.

The devices contemplated herein are intended to be operable either by conventional house current; or motor-generator sets or batteries, either stationary or in moving vehicles, such as, automobiles, airplanes, ships, etc. Furthermore, any filter or filters may be utilized as an integral or separate part of these devices to reduce or completely eliminate rays of certain specific wave lengths.

In the accompanying drawings, there is illustrated the invention embodied in some of its practical forms but as these illustrations are primarily for purposes of disclosure it will be understood that the invention is not limited to these particular forms of structure and that it may be modified in many respects without departure from the true spirit and scope of the invention as herein defined and claimed. It is to be further understood that the terms which are employed herein are used in a descriptive rather than in a limiting sense, except, however, for such limitations that may be imposed by the state of the prior art.

Having thus described the invention what is claimed as new and desired to be secured by Letters Patent, is:

1. An electrical unit comprising a hood having a top including a transformer housing, and a device within said hood, said device comprising a base having upwardly extending flanges abutting against said top, an upwardly-extending partition between said flanges dividing said base into substantially two raceways, a transformer on said base, electrical wiring connected to the primary of said transformer and disposed within one of said raceways, other electrical wiring connected to the secondary of said transformer and disposed within the other of said raceways, a socket at each end of said base, means connecting said sockets to said base, said other electrical wiring being connected to said sockets, ray-emission means connected to said sockets, means for movably fixing at least one of said sockets relatively to the other of said sockets, said transformer housing and portions of said flanges completing an enclosure for said transformer.

2. An electrical unit comprising a hood having a top including a transformer housing; and a device within said hood, said device comprising a base having upwardly extending flanges abutting against said top, means dividing said base into substantially two raceways, a transformer on said base, electrical wiring connected to the primary of said transformer and disposed within one of said raceways, other electrical wiring connected to the secondary of said transformer and disposed within the other of said raceways, a pocket at each end of said base, a socket projecting from each of said pockets, at least one of said sockets being movable, said other electrical wiring being connected to said sockets within said pockets, ray-emission means connected to said sockets, and means for fixing said movable socket relative to said base after said ray emission means has been connected to said sockets, said transformer housing and portions of said flanges completing an enclosure for said transformer.

3. An electrical fixture comprising a hood, an electrical device in said hood; said device including a transformer, a supporting channel for said transformer, an upwardly-extending partition dividing said channel longitudinally into two sections, electrical wiring connected to the primary of said transformer and disposed in one of said sections, other electrical wiring connected to the secondary of said transformer and disposed in the other of said sections, lamp-holding means projecting downwardly from said channel, said other electrical wiring being connected to said lamp-holding means, ray-emission means connected to said lamp-holding means, said channel having an opening adjacent said wiring connected to the primary of said transformer to facilitate splicing of said wiring to a power line, and a window in said hood for observing the ray-emission means.

4. An electrical fixture as set forth in claim 3, said channel having a reflecting portion disposed above said ray-emission means.

5. An electrical unit comprising a hood having

a top including a housing, and a device within said hood, said device comprising a base having upwardly-extending flanges abutting against said top, an upwardly-extending partition between said flanges dividing said base into substantially two raceways, an electrical control on said base, electrical wiring connected to said control and disposed within one of said raceways, other electrical wiring connected to said control and disposed within the other of said raceways, a socket at each end of said base, means connecting said sockets to said base, said other electrical wiring being connected to said sockets, ray-emission means connected to said sockets, means for movably fixing at least one of said sockets relatively to the other of said sockets, said housing and portions of said flanges completing an enclosure for said control.

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