

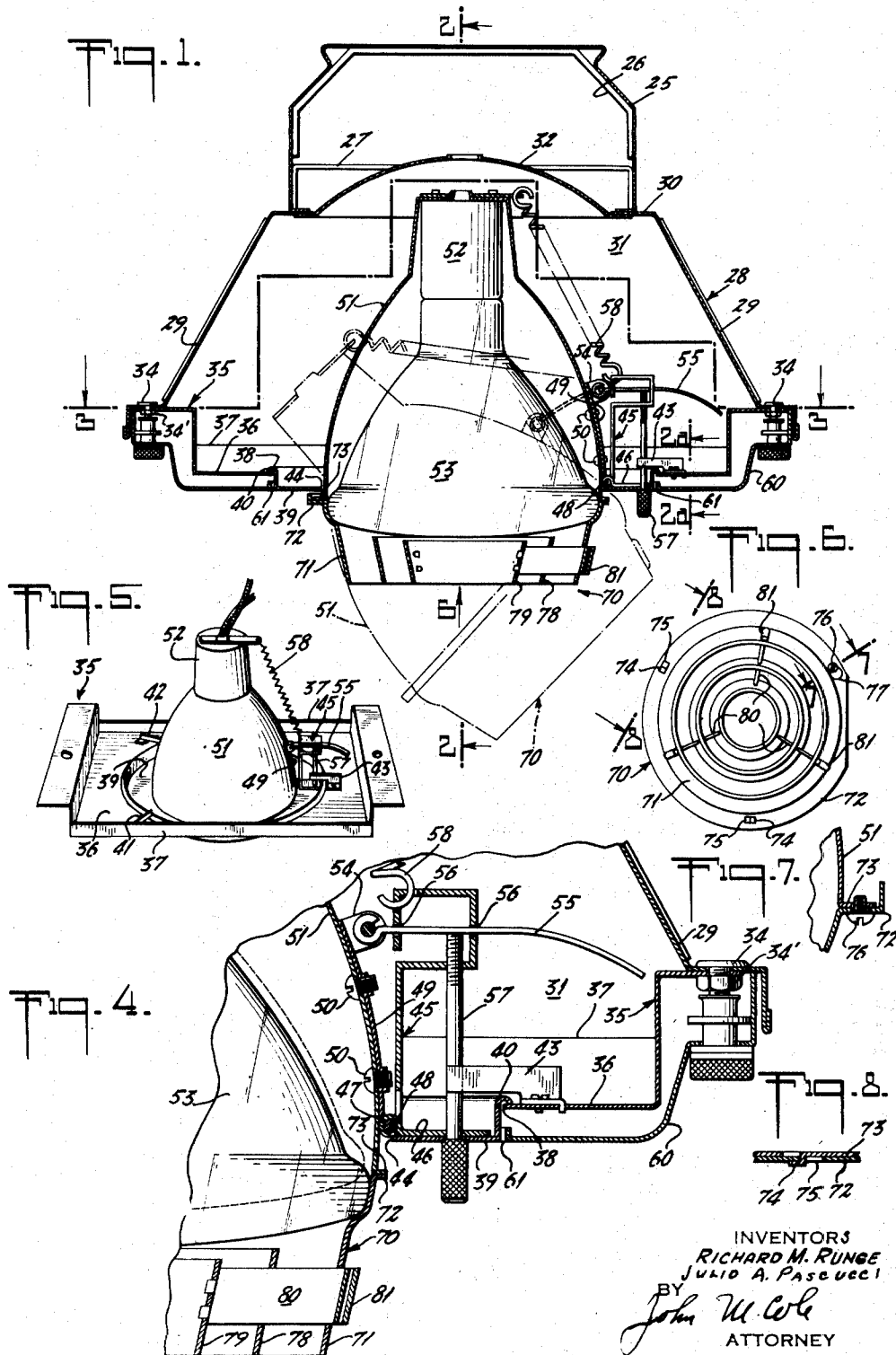
Oct. 6, 1953

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DIRECT LIGHTING EQUIPMENT

2,654,830

Filed Nov. 13, 1947

3 Sheets-Sheet 1



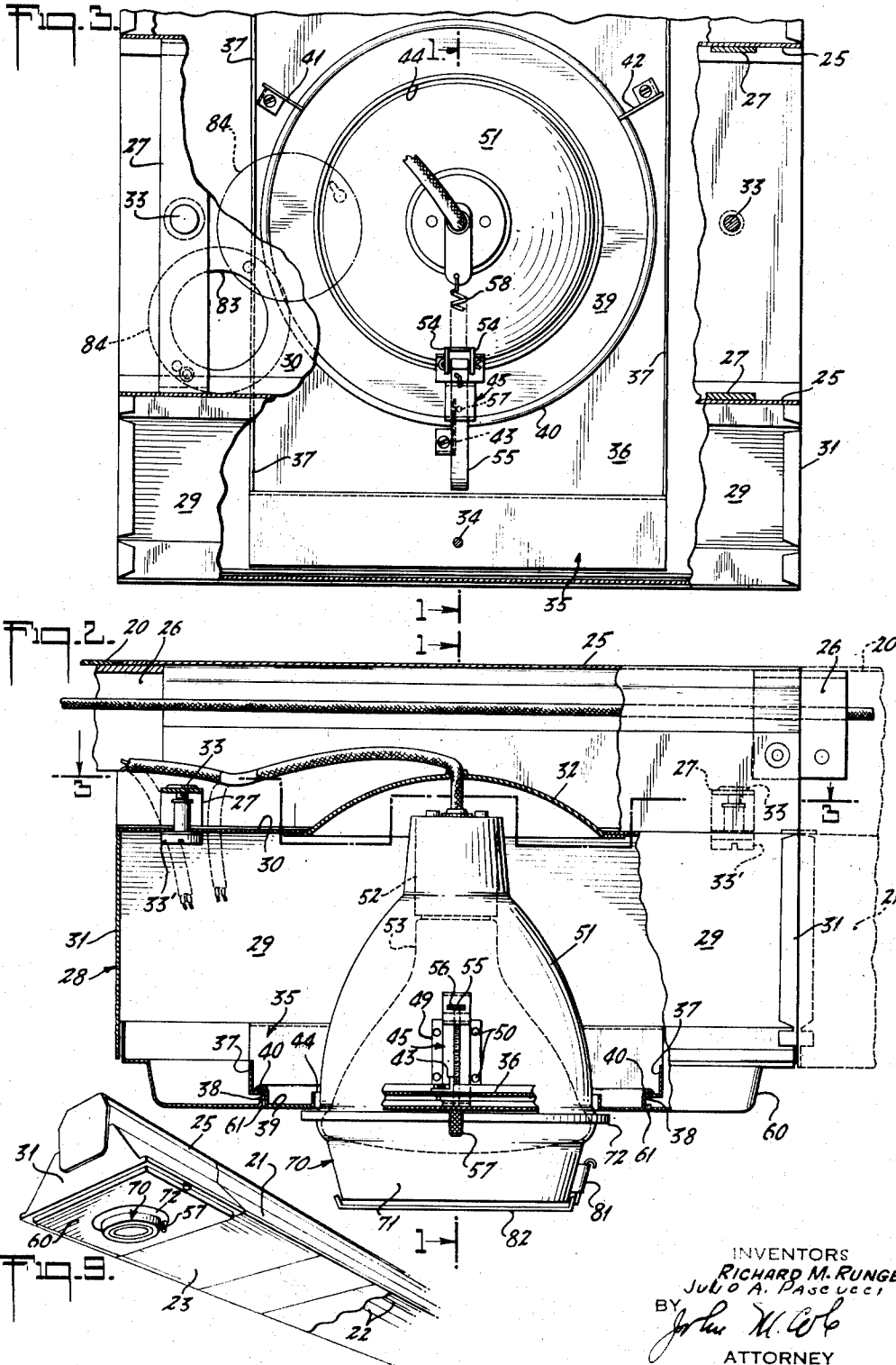
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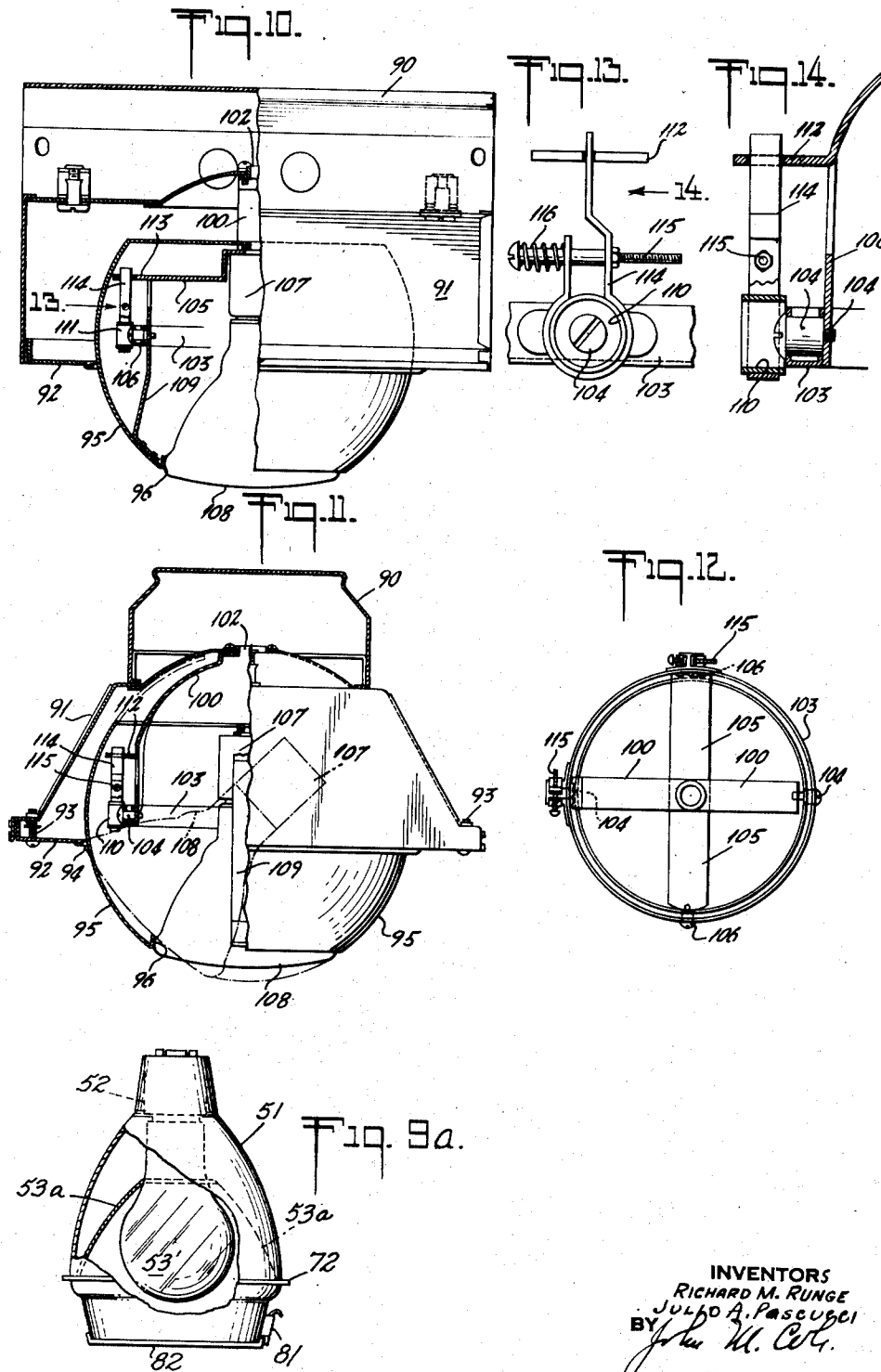
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DIRECT LIGHTING EQUIPMENT

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The present invention relates to direct lighting equipment and is more particularly directed toward direct lighting equipment employing elongated fluorescent lighting units for general lighting and auxiliary spot lighting units connected to the fluorescent lighting units so as to provide spot lights for the illumination of special displays and the like.

It is customary to install fluorescent lighting equipment in comparatively long runs. For recessed mounting such equipment employs wireways and reflectors arranged end-to-end so as to occupy the entire length of the lighting equipment. It is customary to make the reflectors of such length and width as to fit into the tiled ceiling.

The present invention contemplates individual spot lighting units which employ an incandescent lamp, each unit being attachable to the continuous units used for general lighting.

According to the present invention the auxiliary spot lighting unit employs a short length of wireway of the same contour as the wireway employed for the general lighting equipment and secured to it so as to provide a continuous wireway. The inserted wireway unit is preferably one foot in length or a multiple so as to occupy a length corresponding with the length of the standard 12" tile. A two foot unit may carry two independent spot lights. This wireway unit or wiring channel can be secured to the other wiring channel and made part of the equipment to support the wires.

The present invention contemplates securing to this short length of wiring channel a spot lighting fixture which preferably has an enclosure of the same contour as the reflector used with the general lighting units so that it all fits into an opening in the ceiling of uniform width. This spot lighting unit is so constructed that a single downwardly acting projector type incandescent lamp can be shifted about axes transverse of and longitudinal of the wireway to direct the beam of light from the projector lamp in oblique downward directions.

Other and further objects will appear as the description proceeds.

The accompanying drawings show, for purposes of illustrating the present invention, two embodiments in which the invention may take form, it being understood that the drawings are illustrative of the invention rather than limiting the same.

In these drawings:

Figure 1 is a transverse sectional view taken on

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the line 1—1 of Figures 2 and 3 illustrating one form of auxiliary lighting unit;

Figure 2 is a longitudinal sectional view taken on the planes 2—2 and 2A—2A of Figure 1, parts being in elevation; this figure also showing the securement of the auxiliary unit to the general lighting units;

Figure 3 is a sectional view taken on the broken line 3—3 of Figures 1 and 2;

Figure 4 is a fragmentary view on the same plane as Figure 1 but on an enlarged scale;

Figure 5 is a perspective view showing the structure which supports the projector lamp from the enclosure;

Figure 6 is a view taken on the arrow 6 of Figure 1 to show a form of louver used with the projector lamp.

Figure 7 is a fragmentary section taken on the line 7—7 of Figure 6;

Figure 8 is a fragmentary section taken on the line 8—8 of Figure 6;

Figure 9 is a perspective view illustrating the installment of the auxiliary unit at the end of a row of general lighting units;

Figure 9a is a fragmentary view illustrating a modification;

Figure 10 is a side elevational view with parts in section showing a modified form of auxiliary unit;

Figure 11 is a transverse sectional view through the structure of Figure 10 with parts in elevation; Figure 12 is a top plan of the socket carrier only;

Figure 13 is an elevational view taken on the arrow 13 of Figure 10 showing a friction brake; and

Figure 14 is a view in the direction of the arrow 14 of Figure 13.

The general lighting equipment may be of the type shown in Naysmith Patent No. 2,321,099 of June 8, 1943 and may utilize inverted sheet metal wiring channels 20 of Figures 2 and 9, detachable reflectors 21, fluorescent lamps 22. The reflectors may be open or may be covered with plates or louvers as indicated at 23 in Figure 9. The auxiliary lighting unit shown in Figures 1 to 9 inclusive employs a length of wireway or wiring channel 25 of similar contour to the wiring channel 20. It may be at the end of a run of fluorescent lighting equipment as indicated in Figure 9 or it may be placed between two units of the fluorescent lighting equipment as indicated in Figure 2. The wireway section 25 is secured to the wireway section 20 of the general lighting units by connector straps 26 similar to those cus-

tomarily employed for connecting the wireways of general lighting apparatus as shown in the above mentioned patent. This makes it possible to complete the wireway installation at one time and run all the wires.

The wireway 25 is provided with two stiffening straps 27 which support an enclosure 28. This enclosure has side walls 29, 29 of similar contour to the sides of the reflector 21, a top 30 and end walls 31, 31 similar to the top wall and end walls of the reflector sections. The top wall, however, contains an upwardly convex stamping 32 for clearance. The enclosure 28 is secured in place by welding bolts 33 and slotted nuts 33'. When the enclosure is in place it extends beyond the ends of the general lighting units to provide an extension of the structure so that the entire lighting equipment has uniform width throughout its length.

The side members 29, 29 of the enclosure carry downwardly extending threaded bolts 34, 34 which are employed to support a bridging member or pan 35 shown more in detail in Figure 5. The central portion of the bridging member 36 is at a lower elevation than the mouth of the enclosure and is stiffened by transverse side flanges 37, 37. The depressed portion 36 is provided with a central, comparatively large, aperture 38 and a ring 39 provided with a retaining flange 40 carried in the opening 38. It is held in place by overhanging fingers 41, 42 and 43, the finger 43 being longer than fingers 41 and 42. The ring 39 has a comparatively large central opening indicated at 44.

A bent sheet metal strap 45 has a lower end or foot 46 welded to the ring 39 and a hinge-knuckle-forming member 47 close to the opening 44. This knuckle member receives a hinge pin 48 which also carries a hinge strap 49. The strap 49 is secured by screws 50 to a spun or drawn lamp housing 51 which extends up into the enclosure. This housing carries a lamp socket 52 and projector type lamp 53. The hinge strap 49 has mounting lugs 54 to which is secured a bent strap or tongue 55. This strap passes through holes 55, 56 in the upper part of the strap 45 so as to be above the upper end of thumb screw 57.

When the thumb screw 57 is loosened the parts carried by the hinge can be swung about the horizontal axis as indicated in the drawing and can be locked in the desired position by thumb screw 57. The lamp housing and lamp are urged to the upper position by coiled spring 58. The finger 43 used to hold the ring 39 in place is long enough to be engageable with thumb screw 57 so as to prevent turning the ring through a complete circle. The housing 51 has a contour such that when it is swung from the vertical position to the extreme of position (which is at an angle of 45°) it completely fills the opening 44 in the ring.

The welding bolts 34 extend down below the nuts 34' employed in supporting the bridging members 35 and the lower ends of these welding bolts are utilized for the support of a bottom closure member 60 which preferably is at the same level as the rotatable ring 39. The ring 39 passes through an aperture 61 in the closure member 60.

In order to prevent the escape of stray light from the lamp it is provided with a detachable louver assembly 70. This louver assembly has an outer ring 71 shaped to receive the large diameter portion of the lamp bulb and a flange as indicated at 72, to fit about a flange 73 on the lower end of the housing 51. The flange 73 on

the housing is provided with offset prongs 74 to pass through holes 75 in the flange 72. It is provided with a threaded opening for a screw 76 which passes through a bayonet slot opening 77 in the flange 72. The outer ring 71 supports an intermediate ring 78 and inner ring 79. The rings 71, 78 and 79 are secured together by radial straps 80, the outer ends 81 of which may be used to facilitate securing of a color screen 82, Figure 2.

Splicing is accomplished when the wires are pulled down through opening 83 in the enclosure. They may then be passed up into the wireway and the opening 83 closed by plate 84.

The construction shown in Figures 1 to 9 inclusive is well suited for use with an inbuilt fluorescent lighting equipment with continuous wireways and recessed reflectors. It fits into the openings readily available in tiled ceilings and makes it possible to install a spotlight or auxiliary lighting unit at the end of such a row of general fluorescent lighting units or anywhere in the row. It can also be installed (with closed ends) as a spotlighting unit alone and not related to any other piece of lighting equipment. With it, it is possible to obtain spotlight orientation in any desired direction up to an angle of 45° which is greater than the 30° angle available with gimbal rings and more suitable for spotlighting of displays generally encountered. The entire adjustment may be made by merely loosening thumb screw 57, turning the unit about the hinge 47 and the vertical axis. The device can readily be relamped. Removal of the louver, if one is used, makes the lamp readily accessible. The lamp used is preferably a silvered bulb complete spotlight lamp, for example, the standard PAR 150 spotlight. Instead of using such a lamp one could, as shown in Figure 9a, use in the housing 51 an ordinary clear lamp 53' with a reflector 53a having a contour and inner surface to provide a similar light-concentration.

In the form of construction shown in Figures 10 to 14 inclusive the wireway 90 and enclosure 91 may be substantially the same as previously described. Here the bottom of the enclosure is covered by a plate 92 held in place by bolts 93. The plate 92 is apertured as indicated at 94 to receive a spherical spinning 95 having a central aperture 96.

The upper part of the housing 91 supports an inverted U-shaped strap 100 having a wireway opening 102 at the top. This strap is secured at its lower ends to a channel-shaped ring 103 by studs 104 having upset ends 104'. The ring 103 supports another U-shaped strap 105 through studs 106 similar to the studs 104. Strap 105 carries a lamp socket 107 which in turn supports the projector type lamp 108. The U-shaped straps or yokes 100 and 105 form a gimbal-like mounting for the lamp and lamp socket. The strap 105, through downwardly extending straps 109, supports the spherical spinning 95 so that when the spinning is adjusted to various positions the lamp is carried with it so that the beam is directed at the desired oblique angle in any azimuth.

In order to keep the parts in adjustment the ring 103 is provided with two friction drums 110 and 111 secured to it by welding. These drums are opposite the axes of the studs 104 and 106. The strap 100 carries an apertured prong 112 while the strap 105 carries a similar prong 113. These prongs cooperate with brake members 114 which extend about the drums and through the

holes in the prongs 112 and 113. The frictional resistance is controlled by bolts 115 and springs 116. These friction devices assure that any adjustment to which the parts are moved will be retained.

Since it is obvious that the invention may be embodied in other forms and constructions within the scope of the claims, I wish it to be understood that the particular forms shown are but a few of these forms, and various modifications and changes being possible, I do not otherwise limit myself in any way with respect thereto.

What is claimed is:

1. The combination with down lighting equipment comprising an inverted channel shaped wireway open at the end and carrying wiring, a downwardly acting trough-shaped reflector secured to the wireway and a tubular lamp in the reflector, the wireway and reflector terminating in the same transverse vertical plane, of auxiliary lighting equipment comprising a wireway of similar shape to the first wireway aligned with it and secured to it in abutting end-to-end relation so that the wiring may enter the latter wireway, a downwardly opening enclosure secured to the second wireway, the enclosure having a rectangular mouth at the same height as the reflector mouth and of the same width, an apertured bridging member carried by the enclosure, an incandescent lamp, a concentrating reflector, means for mounting the lamp and reflector on the bridging member so that they may be shifted to direct the beam downwardly through the opening in the bridging member in all azimuths, and a lamp housing having a contour to close the opening in the bridging member in all positions of the lamp.
2. The combination of claim 1, wherein the enclosure with attached bridging member, lamp and lamp housing is a preassembled structure, and the securement for the enclosure to the second wireway includes means which permit downward removal of the said unit from the supporting wireway.
3. The combination with down lighting equipment comprising an inverted channel shaped wireway open at the end and carrying wiring, a downwardly acting trough-shaped reflector secured to the wireway and a tubular lamp in the reflector, the wireway and reflector terminating in the same transverse vertical plane, of auxiliary lighting equipment comprising a wireway of similar shape to the first wireway aligned with it and secured to it in abutting end-to-end relation so that the wiring may enter the latter wireway, a downwardly opening enclosure secured to the second wireway, the enclosure having a rectangular mouth at the same height as the reflector mouth and of the same width, an apertured bridging member carried by the enclosure, an incandescent lamp, a concentrating reflector, means for mounting the lamp and reflector on the bridging member so that they may be shifted to direct the beam downwardly through the opening in the bridging member in all azimuths, a lamp housing having a contour to close the opening in the bridging member in all positions of the lamp, said mounting means including a ring secured to the bridging member for movement throughout horizontal angles of substantially 360° and a lamp carrier mounted for movement about a horizontal axis in the plane of the ring, the lamp being supported from the lamp carrier.
4. The combination with down lighting equipment comprising an inverted channel shaped

wireway open at the end and carrying wiring, a downwardly acting trough-shaped reflector secured to the wireway and a tubular lamp in the reflector, the wireway and reflector terminating in the same transverse vertical plane, of auxiliary lighting equipment comprising a wireway of similar shape to the first wireway aligned with it and secured to it in abutting end-to-end relation so that the wiring may enter the latter wireway, a downwardly opening enclosure secured to the second wireway, the enclosure having a rectangular mouth at the same height as the reflector mouth and of the same width, an apertured bridging member carried by the enclosure, an incandescent lamp, a concentrating reflector, means for mounting the lamp and reflector on the bridging member so that they may be shifted to direct the beam downwardly through the opening in the bridging member in all azimuths, a lamp housing having a contour to close the opening in the bridging member in all positions of the lamp, said means including a ring supported for movement about a horizontal axis, a yoke supported by the ring for movement about an axis at right angles to the first, and a lamp socket carried by the yoke and supporting the lamp.

5. An adjustable down lighting spotlight comprising a horizontal supporting plate having a relatively large aperture, a ring carried by the plate for angular adjustment about a vertical axis, a bell-shaped lamp housing having its mouth slightly below the opening in the ring and hinged to the ring to swing about a horizontal axis substantially in the plane of the opening in the ring, the lamp housing carrying an outwardly projecting member above the hinge and the ring carrying a member having an aperture through which the outwardly projecting member freely passes, a clamping screw engageable with the outwardly projecting member to secure it against movement, and an incandescent lamp and reflector mounted in the lamp housing.

6. The adjustable spotlight of claim 5, wherein the lamp housing has an outwardly extending flange below the ring, and the housing is biased upwardly by a spring.

7. Direct lighting equipment comprising a length of inverted channel shaped wireway, an enclosure detachably secured to the wireway, the enclosure being of inverted channel shape cross section with an upper wall closing off the bottom of the wireway except for a wiring opening, and having end walls to provide a rectangular mouth, a bridging member extending across the mouth of the enclosure and detachably secured to it, the bridging member having an aperture in a horizontal plane, a horizontal ring carried in the aperture for adjustment about a vertical axis, a downwardly opening bell-shaped housing hinged to the ring to move about a horizontal axis in the plane of the ring, the mouth of the housing being at substantially the level of the ring, a light concentrating reflector and lamp carried in the housing for projecting a light beam axially of the housing and movable down through the ring, and means to secure the housing in adjusted positions about the hinge axis.

8. In combination an inverted channel-shaped wireway open at the ends for the reception of wiring, transversely extending straps in the wireway, an enclosure detachably secured to the straps and having an upper wall closing off the bottom of the wireway, downwardly and outwardly flaring side walls and end walls, the side

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and end walls defining a generally rectangular mouth, a bridging member extending between the side walls and detachably secured to them, the bridging member having a centrally disposed aperture, a ring secured in the aperture in the bridging member for adjustment about a vertical axis, a hinge having one leaf secured to the ring, its hinge pin tangential of the opening in the ring and its other leaf extending upwardly, an annular bell-shaped housing of a diameter to occupy said aperture and secured to the said other leaf with its mouth below the ring, a coaxial lamp socket incandescent lamp and light concentrating reflector fixedly carried in the housing and located to project direct and reflected rays through the mouth of the housing, the housing being swingable about the hinge pivot as an axis to vary the vertical angle of the lamp axis, a spring interconnecting the ring and housing and urging it to a vertical position, a ring carried clamping device for securing the housing in tilted positions, and wiring extending from the socket through the top of the enclosure and into the wireway.

9. The combination of claim 8 having a finishing plate centrally apertured to receive the ring and extending from one end wall of the enclosure to the other and from one side edge of the enclosure to the other.

10. The combination of claim 8, wherein the

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bell-shaped housing has an annular flange held against the bottom surface of the ring by the spring.

11. The combination of claim 8, wherein the profile of the housing opposite the hinge is arcuate about the hinge axis.

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