

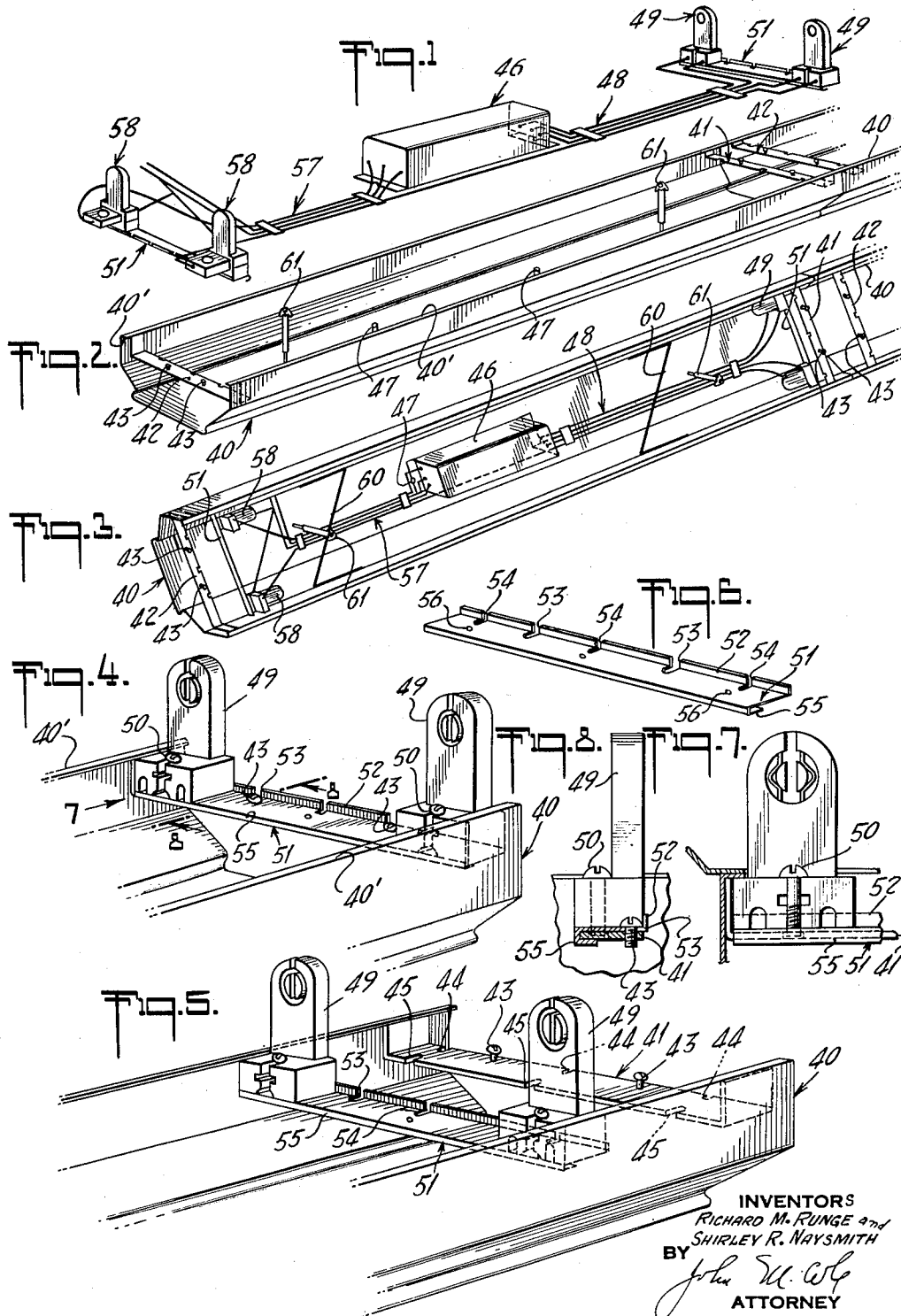
May 6, 1952

R. M. RUNGE ET AL
FLUORESCENT LIGHTING FIXTURE

2,595,487

Filed May 26, 1948

6 Sheets-Sheet 1

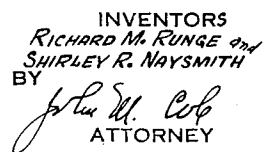


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FLUORESCENT LIGHTING FIXTURE

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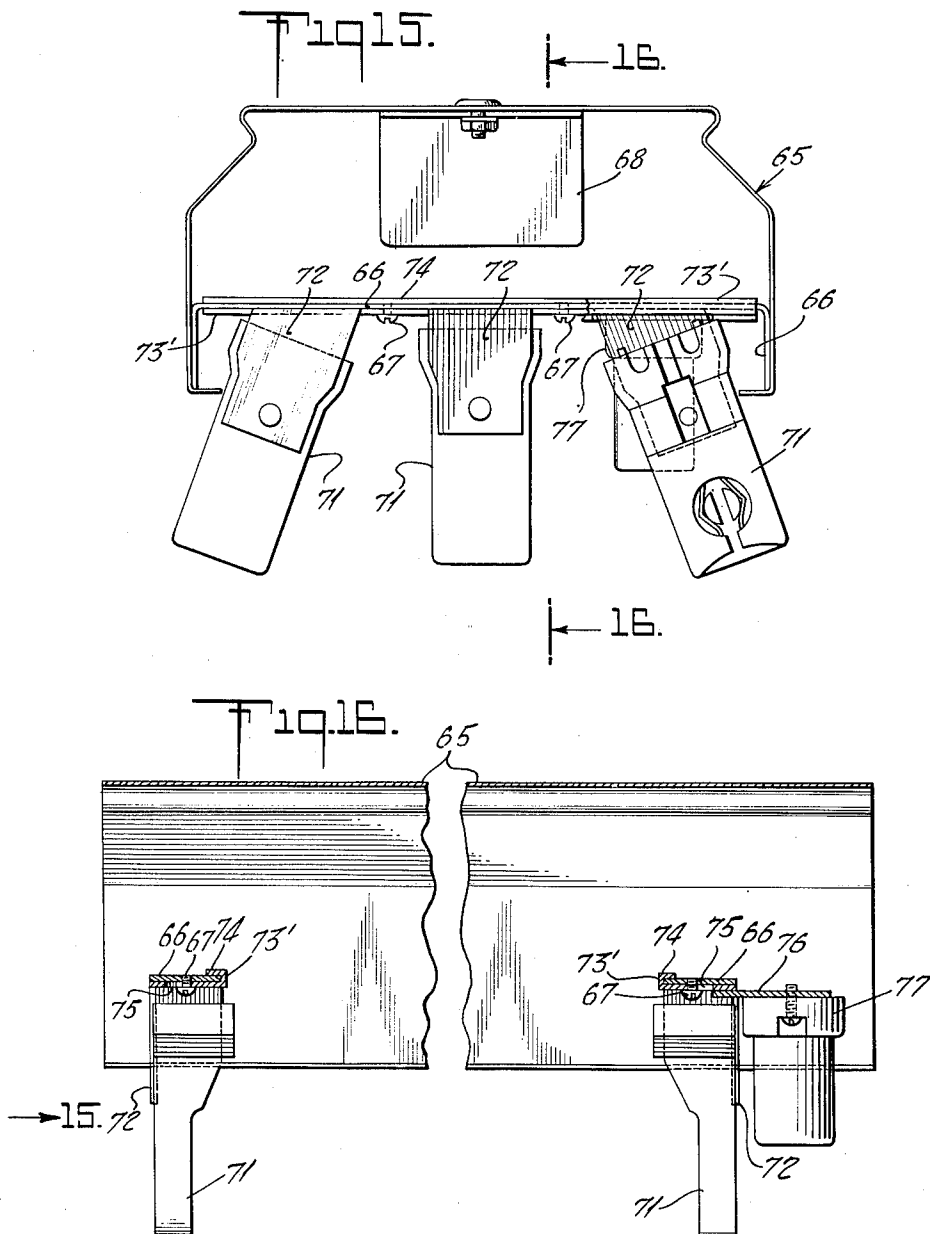
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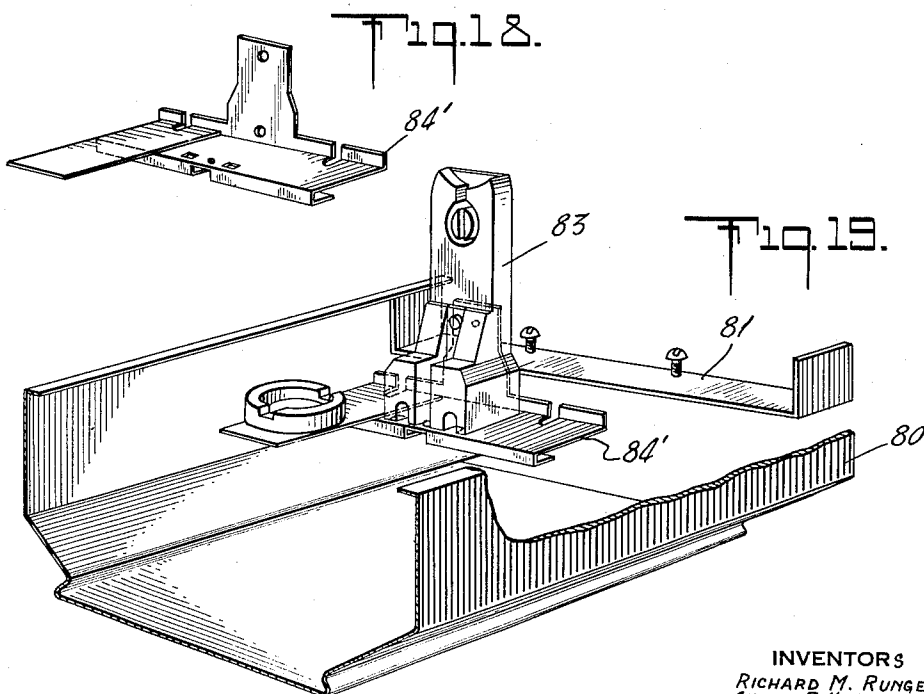
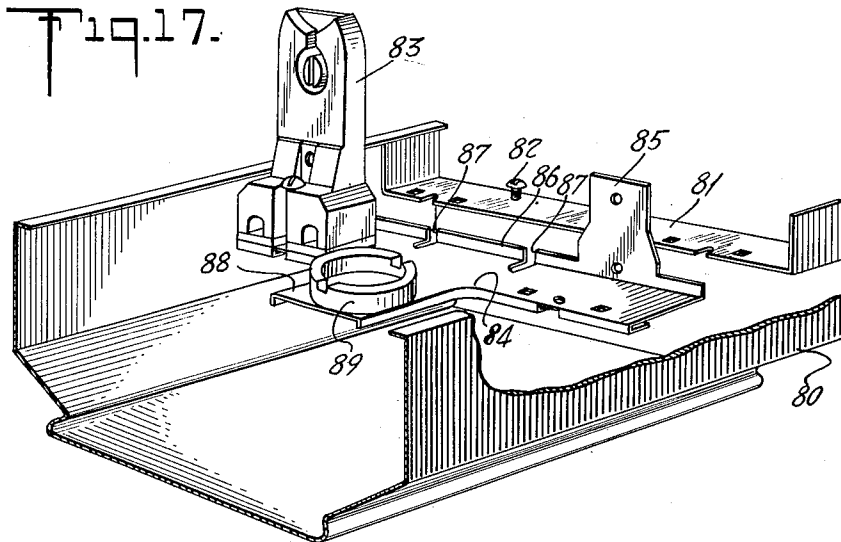
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6 Sheets-Sheet 4



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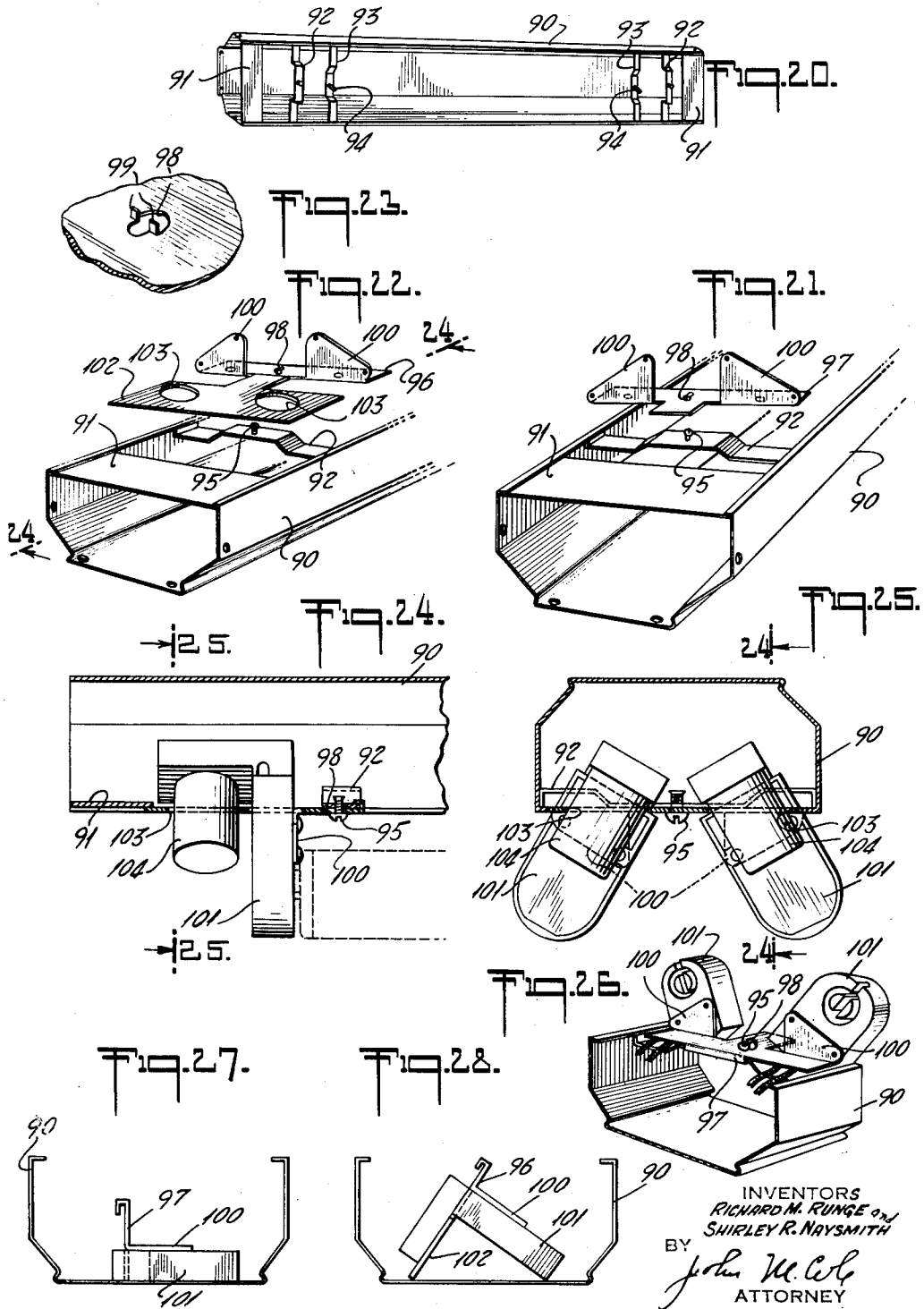
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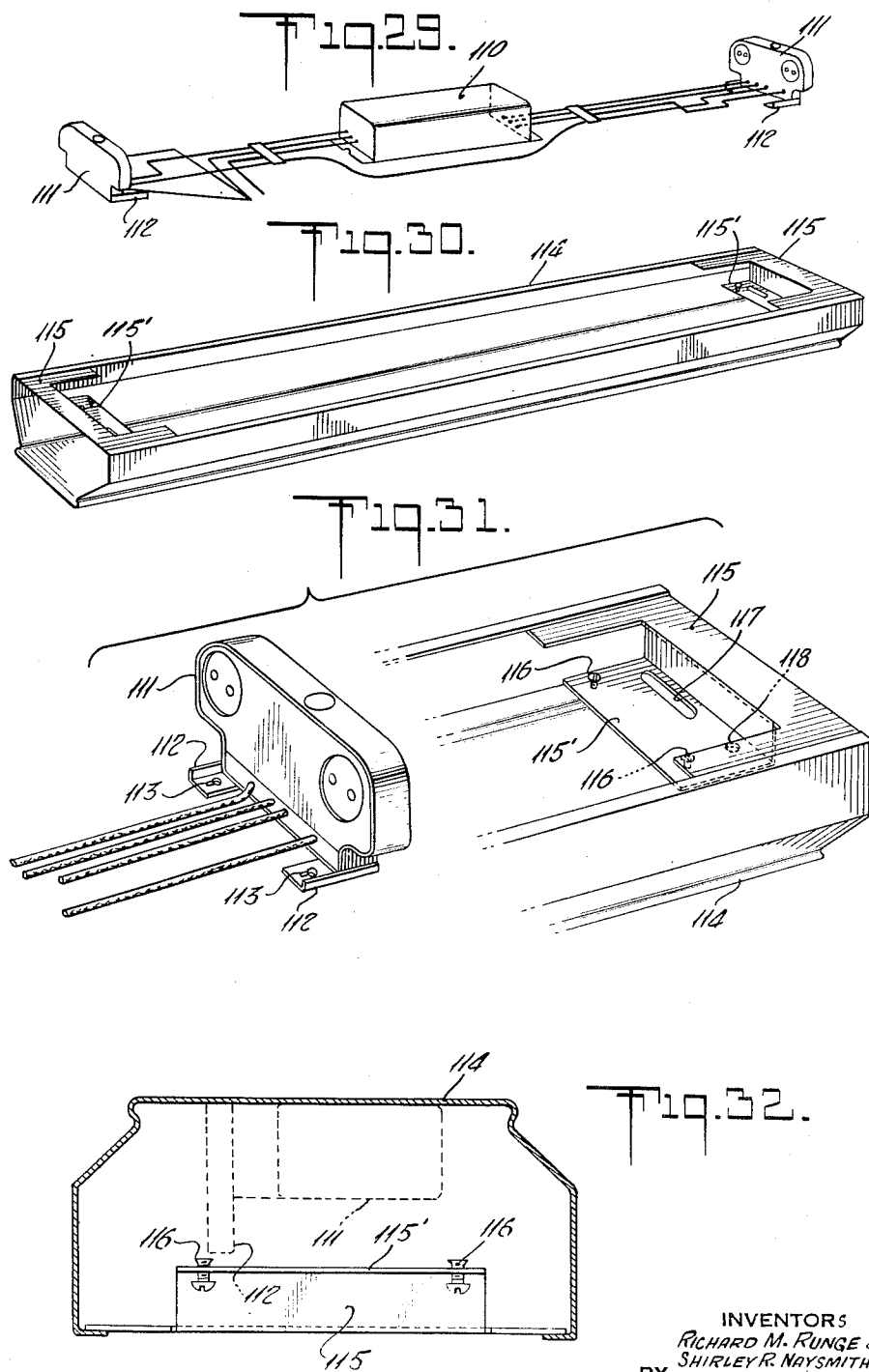
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UNITED STATES PATENT OFFICE

2,595,487

FLUORESCENT LIGHTING FIXTURE

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11 Claims. (Cl. 240—51.11)

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The present invention relates to fluorescent lighting fixtures and is more particularly directed toward industrial and commercial lighting fixtures of the type employing wiring troughs or channels and detachable reflectors.

It has heretofore been customary in the manufacture of fluorescent lighting fixtures and lighting equipment to provide a metal wireway or channel of the length corresponding with lamp length or of the length of two lamps or slightly longer than such lengths, and to completely wire and test these wireways or channels at the factory before shipment. Such prewired channels carry a number of fluorescent lamp sockets or holders which in normal use project below the mouth or opening in the channel so as to pass through the cover or reflector to be secured to the channel and support the lamps inside the reflector or below the channel cover.

The lamp sockets or lamp holders are made of insulating material and owing to the general custom of having such lamp holders project below the wiring channel, they have been subject to substantial damage in the handling of the fixture before packaging and in shipment. When a lamp socket or holder is broken or damaged, repairs or replacements of the broken socket must be effected before the fixture can be hung or put in service. The protection of these projecting sockets or holders requires elaborate packing and larger packages than would be the case if the sockets were not exposed or so vulnerable.

The present invention contemplates improvements in such fluorescent lighting equipment according to which the wiring channel can be completely prewired at the factory and tested, after which the sockets, together with their mountings may be detached as units from the wiring channel and shifted to positions such that the units are completely housed within the confines of the wiring channel. The wiring channel then completely protects these fragile parts so that there is no likelihood of damage in handling or shipment. As the wiring can be completed and tested there is no likelihood of fixtures erroneously connected appearing at the point of installation.

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

Figure 1 is an inverted perspective view illus-

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trating the ballast, sockets, socket carrying straps and wiring, preassembled and out of the wiring channel, the lamp sockets being of the type which support the starter socket and of the size used for T-12 lamps;

Figure 2 is an inverted perspective view illustrating the wiring channel;

Figure 3 is a similar perspective view showing the channel with ballast installed and wiring and sockets positioned in the channel for shipment;

Figure 4 is a perspective view of one end of the wiring channel at a larger scale, omitting the wiring, and showing the sockets and socket mounting secured to a channel carried strap in place for receiving the reflector and then the lamps;

Figure 5 is a perspective view showing the socket carrying strap or mounting and sockets separated from the channel carried strap;

Figure 6 is a perspective view of the socket carrying strap or mounting;

Figure 7 is an elevation taken in the direction of arrow 7 of Fig. 4 showing the socket mounting in elevation;

Figure 8 is a section on line 8—8 of Fig. 4.

Figure 9 is a view similar to Fig. 1 showing an arrangement for use with metal backed sockets; Figure 10 is a view similar to Fig. 2;

Figures 11 and 12 are sections on lines 11—11 and 12—12 respectively of Fig. 10 showing the sockets and mounting positioned in the channel for shipment;

Figure 13 is a perspective view showing a mounting arranged for one, two, or three lamp sockets, the starters being all at the other end of the fixture;

Figure 14 is a fragmentary top plan view of a wiring channel with the three-socket straps in position for shipment;

Figure 15 is an end view of a wiring channel with sockets in normal position taken in the direction of the arrow 15 of Figs. 13 and 16;

Figure 16 is a section on line 16—16 of Fig. 15;

Figure 17 is a perspective view illustrating an arrangement for two lamps, one starter being at each end of the fixture;

Figures 18 and 19 are perspective views of an arrangement for a single lamp;

Figure 20 is an inverted perspective view of a wireway arranged for carrying 100 watt equipment;

Figures 21 and 22 are perspective views illustrating the arrangements for supporting the 100

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watt lamp sockets and the combined lamp sockets and starter sockets respectively;

Figure 23 is an enlarged view illustrating a detail of Figures 21 and 22;

Figure 24 is a longitudinal section on line 24—24 of Figures 22 and 25 showing assembly of parts at the starter end of the channel;

Figure 25 is a transverse sectional view on the line 25—25 of Fig. 24;

Figure 26 is a perspective view showing assembly of parts at the opposite end;

Figures 27 and 28 are views illustrating the 100 watt sockets and socket carrying straps in position for shipment;

Figures 29 and 30 are perspective views illustrating a harness arrangement and wiring channel for push contact, twin lamp holders or sockets;

Figure 31 is a perspective view of an end of the wiring channel and socket mounting; and

Figure 32 is a cross-section illustrating the position of the socket for shipment.

In Figures 1 through 8, inclusive, an inverted channel-shaped wireway generally similar to that shown in Patent No. 2,321,099 is illustrated at 40. In the arrangement of these figures, the wireway is slightly longer than the nominal lamp length of the lamps to be employed. It carries reinforcing straps 41 and 42. The strap 41 is nearer the flanges 40' in the channel than the strap 42. The straps 41 and 42 are provided with non-removable, headed screws 43—43, with slots or notches 44 on their outer or remote edges, and slots or notches 45 at their inner edges.

Each unit length of wiring channel carries a conventional fluorescent lamp ballast 46 secured to posts or bolts 47 in the usual manner. The ballast is connected through wiring indicated at 48 with a pair of fluorescent lamp sockets 49—49 of the non-starter type which sockets are in turn secured by screws 50 to socket mountings 51 shown in detail in Fig. 6. The socket mounting 51 is made of sheet metal, it has upwardly bent flanges 52 and is notched at 53—53 on the same spacing as the screws 43. It has notches 54 above the notches 44 of strap 41 and these aligned notches are available to accommodate the prongs (not shown) which project down from the conventional lamp holders. The mounting 51 is downwardly and inwardly flanged as indicated at 55 so as to fit about the inner edge of the reinforcing strap 41 as more clearly shown in Fig. 8. The mounting screws 50 for the sockets are threaded into holes 56 in the mounting strap 51, the notches 45 in the strap 41 providing clearance. The mounting thus insures the proper spacing of the sockets. When the mounting 51 is to be secured in place on the strap 41 the screws 43 are loosened, the mounting strap 51 moved to the right as shown in Figs. 4 and 5 so that the flanges 52 pass under the heads of the screws 43, whereupon these screws may be tightened to secure the socket mounting strap 51 in place. The engagement of the screwheads and flange 52 insure proper spacing of the mountings from one another.

The wires 57 coming from the other end of the ballast 46 are taken to combined lamp sockets and starter sockets indicated at 58—58 which are secured to socket mounting straps 51 like those at the other end of the fixture and these straps may be secured to the reinforcing straps in the same way.

The wiring of the ballast and sockets and the securing of the sockets to the socket mount-

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ings is done at the bench. The prewired fluorescent lighting circuit harness can be tested before being transferred to the wiring channel or can be tested after the ballast 46 and the socket mountings 51 have been secured in place. After the testing is completed the completely wired unit is prepared for shipment by loosening the screws 43 and removing the socket mounting straps 51 from the reinforcing straps, whereupon the socket mountings and sockets can be folded down into the wiring channel as indicated in Fig. 3. They may be held in place in any convenient manner, as for example, by Z-shaped wire members 60 which engage in the beads of the wiring channel and overlie the wires.

The wiring channel is generally provided with some form of reflector or cover support, such as posts 61—61 illustrated in Figs. 2 and 3. These posts are completely within the wiring channel so that when the sockets and mountings have been secured in position for shipment nothing projects beyond the stiffening flanges along the edges of the wiring channel.

The forms of construction illustrated in Figs. 9 to 16 inclusive are generally similar to that shown and described in Figs. 1 to 9 except that they are designed for use with metal backed lamp sockets, and with starter sockets independent of the lamp sockets. The present invention also makes it possible to install equipment having some sections of wiring channel with lighting equipment and others with merely the reinforcing straps and covers. Should an increase in lighting equipment be later required, harnesses may be installed when a cover is removed, and the cover may be replaced by a reflector.

Figures 9 to 12 relate to arrangements for two lamps side by side, while Figs. 13 to 16 relate to arrangements having three lamps side by side. Here the wireway 65, similar to the wireway 40 carries reinforcing straps 66—66 which are alike and properly spaced. The straps 66—66 carry headed screws 67. The ballast 68 and wiring 69—70 are similar to those above described. The wires, however, are connected in this instance to fluorescent lamp sockets 71, of the type designed to be secured to metal backs 72, and to starter sockets 77. These metal backs are struck up from socket mounting straps 73 or 73' having flanges 74 to fit about reinforcing straps 66 and elongated holes 75 with large and small ends to fit about the screws 67. One of the straps 73 is welded to a supplemental plate 76 on which are secured the starter sockets 77. With these types of construction the prewiring of ballast and sockets and securing of the sockets to the mounting straps is done at the bench, the parts assembled in the wireway (tested as before), whereupon the sockets and mountings may be secured in position for shipment as illustrated in Figs. 11, 12 and 14.

Figure 17 illustrates a form of construction which employs certain features of the forms previously described. Here the wireway 80 carries reinforcing straps 81 provided with screws 82 similar to those above described. The sockets 83 of the metal back type, are secured to socket mountings 84 having brackets 85 for the sockets. The mounting straps 84 have flanges 86 and slots 87 similar to the flanges and slots 52 and 53 so that the mounting strap 84 can be secured to the reinforcing strap 81. The strap 84 has an extension 88 to receive the starter socket 89. A two lamp fixture would employ two of the mountings 84. In this case the starter sockets would be at

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opposite ends of the fixture. The arrangements shown in Figures 18 and 19 is similar to that shown in Fig. 17 except that the mounting strap 84' is designed to carry but one lamp socket 33.

Where the fixtures are to employ slim-line lamps, suitable sockets are to be used and at spacings suitable for such lamps.

The arrangement shown in Figures 20 to 28, inclusive, is designed for heavier duty fixtures employing 100 watt lamps. Here the wireway 90 is provided with stiffening end plates 91 and carries cross straps 92—92 and 93—93. The cross straps 93 carry bolts 94 by which the reflector can be secured in place. The straps 92 are provided with screws 95. Two forms of socket mountings are employed as shown at 96 and 97. Each socket mounting has an elongated hole 98 with upstruck stop members 99 (see Figure 23) by which the socket mounting can be secured to the strap 92 by the screw 95 and infolded edges as indicated at 96' and 97', Figs. 27 and 28. The mountings 96 and 97 have brackets 100 to support the usual 100 watt lamp sockets 101. The socket mounting 96 has an extension 102 provided with apertures 103 to accommodate the starters 104 which are secured to the lamp sockets 101 in the usual manner. With this construction the two starters are at one end of the fixture as shown in Figs. 22, 24, 25, and 28, and the other end of the fixture has merely the lamp sockets, as shown in Figs. 21, 26 and 27.

In Figure 29, a wiring harness for two lamps with a push contact, twin lamp holder or socket is illustrated. The usual ballast 110, is wired as usual to the combined socket-starter socket units 111. To each of these units 111, two mounting brackets 112 are welded. These brackets extend away from the contact face of the socket unit and have elongated holes 113 with enlarged ends. The wireway 114 has welded reinforcing plates 115 with platforms 115' above the level of the wireway flanges. Each platform carries screws 116 adapted to enter the holes 113 and secure the socket units in place. The platform also has holes 117 and 118 which insure against grounding of the binding posts by which the wires are secured to the socket terminals. For purposes of shipment, the socket unit is removed from the cross strap and temporarily secured inside the channel as shown in Fig. 32.

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

What is claimed is:

1. In a fluorescent fixture, in combination, a pre-assembled fluorescent-lamp-circuit wiring-harness including fluorescent lamp and starter sockets, rigid mountings to which the sockets are secured, one mounting for each end of the fixture, a ballast, and wiring interconnecting the ballast and sockets; an inverted wiring channel in which the ballast is secured and completely housed; a pair of transverse channel reinforcing straps in the channel; means for detachably securing the socket mountings to the reinforcing straps and thereby locating the lamp sockets in downwardly projecting, inwardly facing, lamp receiving position where they project below the channel so as to be unprotected by the channel and subject to damage; and means to support the detached socket mountings with sockets attached thereto

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completely housed within the wiring channel and in protected position.

2. A fluorescent fixture as claimed in claim 1, wherein the socket mounting securing means include clamping screws carried by the reinforcing straps and the mountings have openings elongated in the direction of the length of the channel and adapted to receive the screws when unloosened and to permit sliding of the mountings to position them whereupon the screws may be tightened to secure the mountings in place.

3. A fluorescent fixture as claimed in claim 1, wherein the socket mountings are in the form of straps with infolded edges along the side toward the ballast and receiving the edges of the reinforcing straps.

4. A fluorescent fixture as claimed in claim 1, wherein the socket mountings are in the form of straps with infolded edges along the side toward the ballast and receiving the edges of the reinforcing straps, and the socket mounting securing means include clamping screws carried by the reinforcing straps and the mountings have openings elongated in the direction of the length of the channel and adapted to receive the screws when unloosened and to permit sliding of the mountings to position them whereupon the screws may be tightened to secure the mountings in place.

5. A fluorescent fixture as claimed in claim 1, wherein the reinforcing straps are spaced above the lower edges of the channel and the sockets have bases secured to the mountings and occupying space provided by the elevated reinforcing straps.

6. A fluorescent fixture as claimed in claim 1, wherein the reinforcing straps are spaced above the lower edges of the channel and the sockets have bases secured to the mountings and occupying space provided by the elevated reinforcing straps, wherein the socket mountings are in the form of straps with infolded edges along the side toward the ballast and receiving the edges of the reinforcing straps and the socket mounting securing means include clamping screws carried by the reinforcing straps and the mountings have openings elongated in the direction of the length of the channel and adapted to receive the screws when unloosened and to permit sliding of the mountings to position them whereupon the screws may be tightened to secure the mountings in place.

7. A combined lighting unit and reflector support for direct lighting fluorescent lighting luminaires; comprising a preassembled wiring harness including two socket supporting straps, a fluorescent lamp ballast, fluorescent lamp and starter sockets secured to the straps, and wiring interconnecting the sockets and ballast to provide a fluorescent lamp circuit and of a length to allow spacing the lamp sockets according to lamp length; an inverted trough shaped wiring channel having reinforcing flanges along its lower edges and of a width and depth to completely receive the ballast and of at least nominal lamp length; reinforcing cross straps fixedly secured across the channel and spaced according to lamp length; channel carried reflector supports, means to secure the ballast within the wiring channel midway between the reinforcing straps; means to detachably secure the socket carrying straps to the reinforcing straps in position to space the lamp sockets according to lamp length, the reinforcing straps being located relative to the channel mouth to dispose the lamp sockets in down-

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wardly projecting, lamp receiving position where they are unprotected by the channel and subject to damage, and means to support the detached socket supporting straps with sockets attached thereto within the wiring channel in protected position for shipment.

8. In a fluorescent lighting fixture, an inverted wiring channel having a transversely extending reinforcing strap connecting the channel walls intermediate the lower edges of the channel walls and the web of the channel and carrying a headed clamping screw, a pair of fluorescent lamp sockets, a socket mounting to the lower face of which the sockets are secured so that the mounting strap is above the sockets and the sockets are held at fixed spacings, the mounting strap having a hole elongated in the direction of the channel and adapted to receive the screw when unloosened and to permit sliding of the mounting to position it whereupon the screw may be tightened to secure the mounting in place.

9. For use in a fluorescent lighting fixture having a wiring channel provided with a sheet metal cross strap carrying a headed clamping screw, a sheet metal strap, a lamp socket secured to the strap, the strap along one edge having an in-folded alignment flange providing a transversely extending channel of vertical depth to receive the

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cross strap and an elongated opening at right angles to the direction of the flange for reception of the clamping screw.

10. The strap of claim 9, wherein the strap has a flange along the opposite edge through which the elongated opening extends so that the strap may be slid past the loosened clamping screw.

11. The strap of claim 9, wherein the elongated opening is enlarged at the end remote from the flange to accommodate the head of the clamping screw.

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