Dec. 19, 1950 L. LUDWIG 2,534,361

FIXTURE FOR FLUORESCENT LAMPS

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Fig. 1.

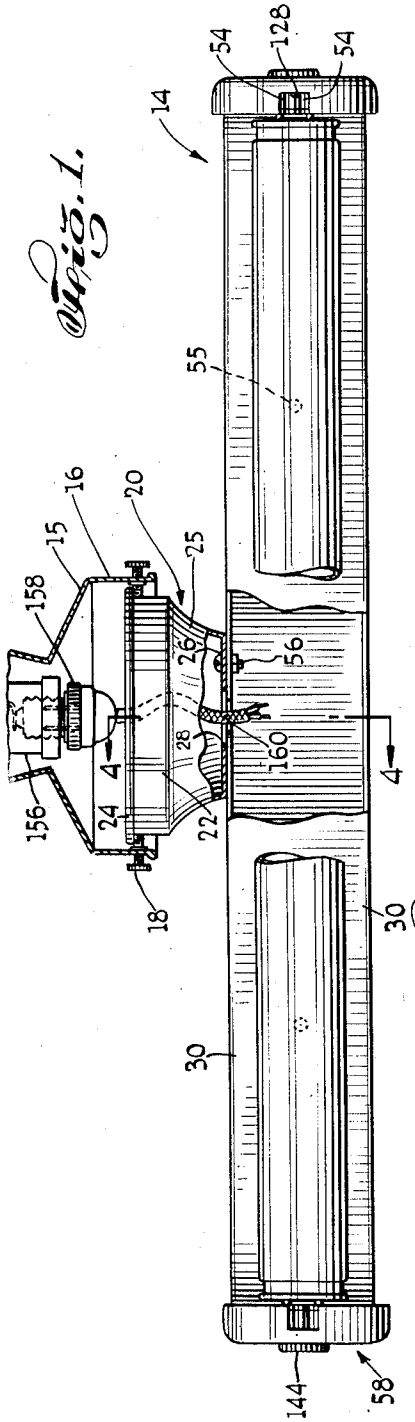
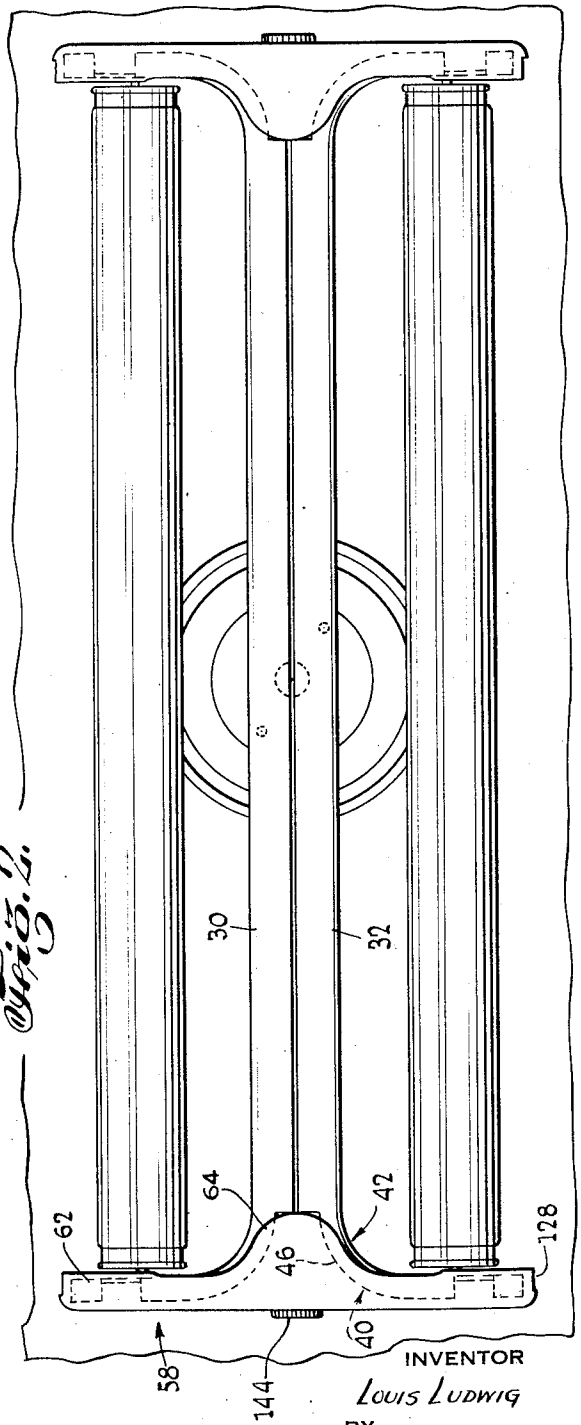


Fig. 2.



INVENTOR
Louis Ludwig
BY
ATTORNEY

Dec. 19, 1950 L. LUDWIG 2,534,361

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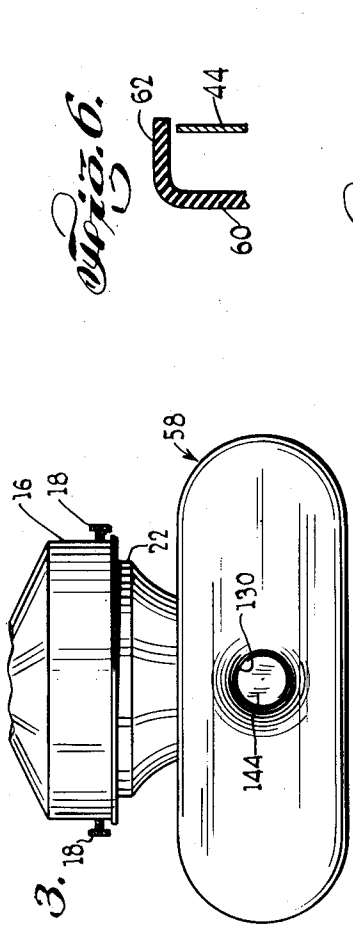


Fig. 3.

Fig. 6.

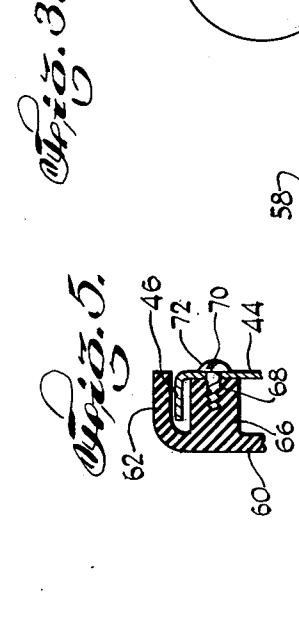


Fig. 11.

Fig. 5.

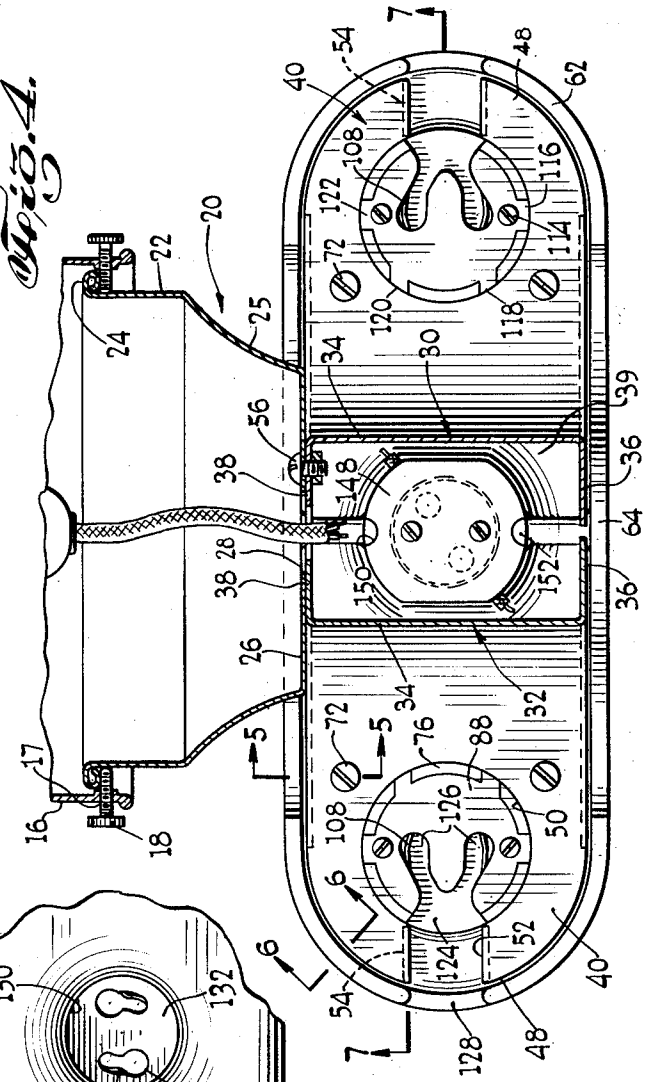


Fig. 4.

INVENTOR
Louis Ludwig
BY
Edgar Bernstein
ATTORNEY

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FIXTURE FOR FLUORESCENT LAMPS

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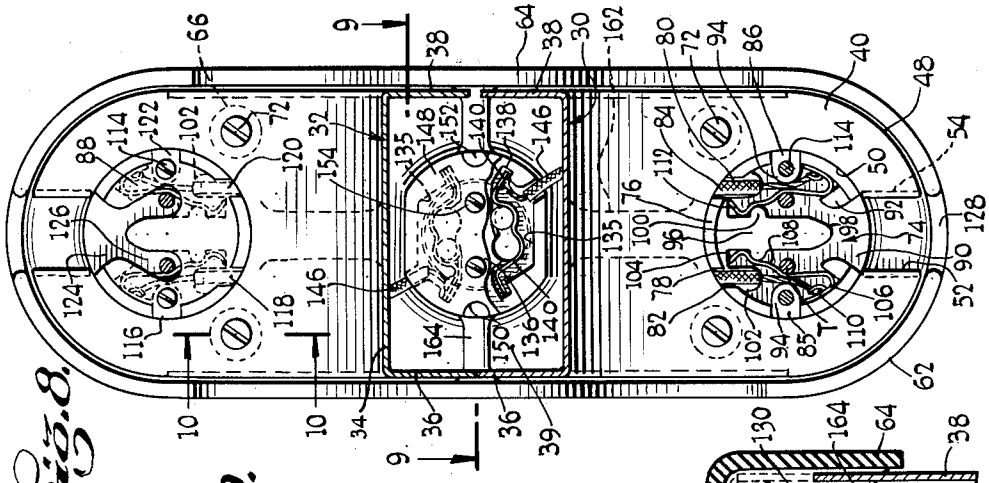


Fig. 8.

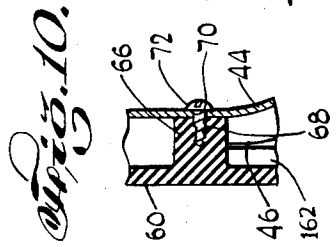


Fig. 10.

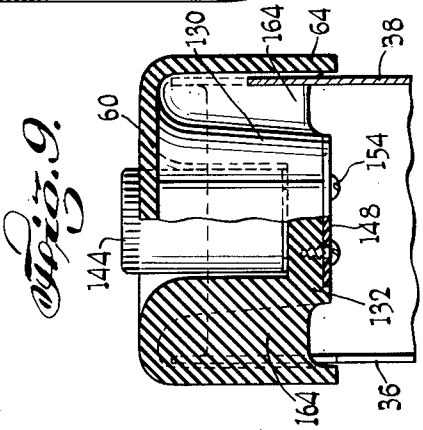


Fig. 9.

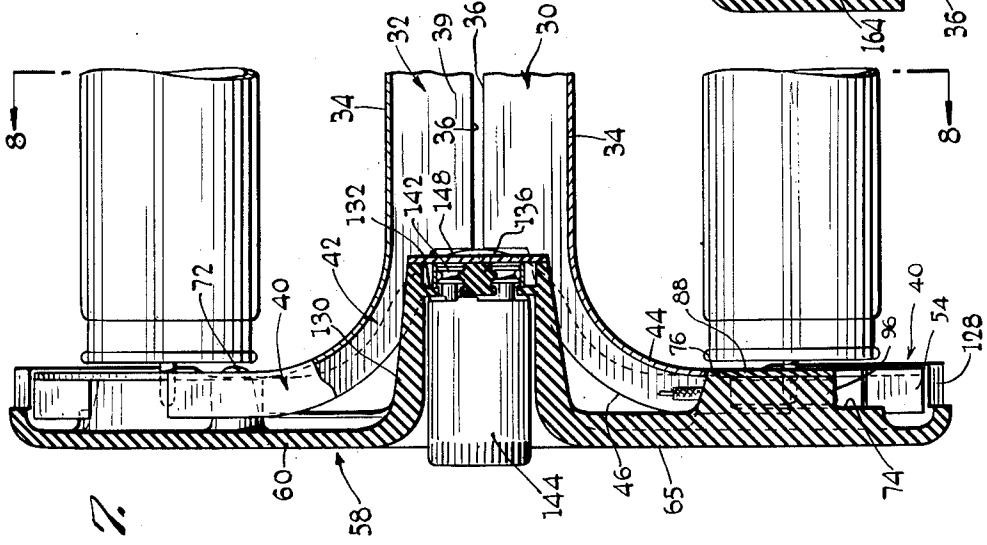


Fig. 7.

INVENTOR
LOUIS LUDWIG
BY
ATTORNEY

Patented Dec. 19, 1950

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2,534,361

FIXTURE FOR FLUORESCENT LAMPS

Louis Ludwig, Brooklyn, N. Y.

Application November 16, 1946, Serial No. 710,318

7 Claims. (Cl. 240—51.11)

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This invention relates to electric light fixtures and, more particularly, is concerned with that type of fixture which is adapted to be used in conjunction with a fluorescent lamp.

The actual fixture shown and described in the instant application is specifically designed for use as a kitchen fixture, but it is to be understood that this embodiment of the invention is given by way of example only and is not to be interpreted as limitative, except to the extent that it may be included in the appended claims.

It is an object of the invention to provide a fluorescent electric fixture in which all the parts that house contact blades are formed integrally with the fixture rather than mounted thereon as is done in present-day conventional fixtures.

More specifically, it is an object of the invention to provide a fluorescent electric fixture in which the starter sockets, and desirably the lamp sockets as well, are molded integrally with a part of the fixture instead of being furnished as separate items which have to be individually attached.

It is a further object of the invention to provide a fluorescent fixture comprising an elongated central metallic member having molded plastic members at both ends thereof to support the fluorescent lamp and/or starter so that the potential carrying elements of the starter and lamp sockets can be insulated better and with greater ease.

It is another object of the invention to provide a fluorescent electric fixture of the character described in which the molded end members are fashioned with integral lamp sockets and starter sockets.

It is an additional object of the invention to provide a fluorescent electric fixture in which a molded member has integral lamp and starter sockets disposed on opposite faces thereof.

It is still another object of the invention to provide for use in a fluorescent electric fixture, a lamp socket having contacts backed up by an integrally molded portion of the socket and covered on the side facing the lamp by a separate member so as to impart a neat external surface to the socket and fixture with the use of a minimum number of parts.

Other objects of the invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists in the features of construction, combinations of elements and arrangements of parts which will be exemplified in the construction hereinafter described, and of which the scope of application will be indicated in the appended claims.

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In the accompanying drawings, in which is shown one of the various possible embodiments of this invention,

Fig. 1 is a side view of a fixture constructed in accordance with the invention, and having portions thereof broken away to better illustrate certain details;

Fig. 2 is a bottom view of the fixture;

Fig. 3 is an end view of the fixture with the starter in place;

Fig. 4 is an enlarged sectional view taken substantially along the line 4—4 of Fig. 1;

Figs. 5, 6 and 7 are sectional views taken substantially along the lines 5—5, 6—6 and 7—7, respectively, of Fig. 4;

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

Figs. 9 and 10 are sectional views taken substantially along the lines 9—9 and 10—10, respectively, of Fig. 8; and

Fig. 11 is a fragmentary end view of the fixture with the starter removed.

Referring now in detail to the drawings, 14 denotes a two-lamp fluorescent electric kitchen fixture constructed in accordance with the instant invention. This fixture is of the type which is adapted to be substituted for the glass globe of a conventional kitchen fixture having an incandescent bulb. Such conventional fixtures typically comprise a metal canopy 15 terminating at its lower end in an annular sleeve 16 provided with a plurality of radially oriented tapped apertures 17 (Fig. 4) in which knurled head screws 18 are threaded. Ordinarily, the canopy 15 supports a glass globe (not shown) at whose upper end a collar is formed, the same being provided with a short outwardly extending bead or flange. In normal use, said collar is thrust inside of the sleeve 16 until the bead is above the screws 18, said screws having been retracted sufficiently for this purpose. Then the screws are turned to position their tips beneath the bead whereupon said bead can rest on the screws.

The fixture 14 which is the subject of the present invention replaces the aforesaid globe with a member such as an adaptor 20 detachably receivable in the canopy. Said adaptor comprises a metal collar 22 having an outwardly extending bead 24 adapted to be thrust through the sleeve 16 when the screws 18 are sufficiently retracted. Thus, when said screws are again moved said bead 24 can rest on their ends. Said adaptor also includes a tapered portion 25 which terminates in a bottom closure 26 having an aperture 28.

The central portion of the fixture 14 comprises a pair of sheet metal mounting channels 30, 32

each consisting of an elongated base 34 having lateral flanges 36, 38. The channels are so arranged that said flanges face each other and are disposed in close proximity and registration, thus causing the channels mutually to define an elongated space 39 of rectangular cross-section which is adapted to house the standard electrical elements of a fluorescent fixture, these elements comprising by way of example a ballast (coil or transformer) and wiring.

Both ends of the channels have outwardly extending short integral legs 40 connected to the channels by curved portions 42, said curved portions and legs in the main being of channel-shaped cross-section and comprising a base 44 and flanges 46. As is best seen in Figs. 2 and 7, the leg flanges 46 are somewhat shorter than the body flanges 36, 38, this relative dimensioning being employed to facilitate bending the ends of the channels at the time the legs and curved portions 40, 42 are formed. The tips 48 (Fig. 8) of the legs 40 are rounded as viewed from an end of the fixture and the flanges 46 terminate where the curvature resulting from said rounded formation begins.

Each leg has a larger circular opening 50 which, for the sake of appearance, may be concentric with the radius of curvature of the tip 48. The diameter of said opening is substantially in excess of the space between the contact pins of a fluorescent tube adapted to be used in the fixture 10, this additional space being supplied, as will be apparent later on, to provide room for contact blades and insulation. A wide slot 52 leads from the opening 50 to the outer edge of the tip of the leg 40. The portions of the base 44 of the leg in the region of said slot are reinforced by flanges 54 which define a depressed path of which the slot 52 is the open side.

The two mounting channels are fastened together by suitable means such as bolts 55 which clamp the bases 34 of said channels to each other and hold the ballast in place. The channels are secured to the closure plate 26 by nuts and bolts 56.

It will be appreciated that the ballast enclosure defined by the channels is open at both ends and that said channels conjointly form a squat H-shaped element, the ends of which are adapted to support a pair of fluorescent tubes about as long as the cross bar of the H. The open ends of the ballast enclosure are capped by end members 58 whose construction and arrangement are primary features of the present invention. Inasmuch as said end members are identical, only one will be described.

Said end members are molded in any suitable manner, e. g. transfer molding, from a plastic electrically non-conductive material which preferably is thermosetting, phenolic resins being typical. Each end member constitutes a base wall 60 having an end on configuration which matches the profile of the two mounting channels 30, 32. The edges of the end members are formed with an integral inwardly extending (extending toward the center of the fixture) flange 62 deep enough to cover the leg flanges 46 and the edges of the flanges of the connecting portions 42. Moreover the portions 64 of said flange 62 are deeper at the center of the end member (see Fig. 9) in order to cover the edges of the flanges 46 on said connecting portions 42 as they run into the body flanges 36, 38.

The base wall 60 is essentially flat, and particularly so on its external surface 65, but said wall is provided with various apertures, ribs, bosses, ledges, platforms and wells for different purposes, such as to reinforce the end piece, to secure the end member to the fixture, to support the ends of fluorescent tubes, to support a starter, and to house contact blades which are adapted to engage the contact terminals of said tubes and starter.

Said base wall is provided with a plurality, e. g. four, bosses 66 (Figs. 5 and 10), each having a well 68 in registry with an aperture 70 in the leg bases 44. Drive screws 72 are inserted through the apertures 70 and forced into the wells 68 whereby to firmly hold the molded plastic end members to the elongated H-shaped metallic member.

The means integrally formed with the end members for holding the ends of fluorescent tubes in place and for supplying electric power thereto comprises a lamp socket housing including a low circular plateau 74 around whose periphery a circular ledge 76 is raised. Said ledge is provided with two notches 78, 80 to admit lead wires 82, 84 and with a pair of diametrically opposed notches 85, 86 which are employed to aid in properly positioning a lamp contact retainer plate 88 hereinafter more fully described. The ledge 76 also is provided with a wide slot 90 approximately equal in width, at its entrance, to the width of the slot 52 in the leg 40. Said slot 90 has its edges defined by radially disposed stub ledges 92 extending from the ledge 76 toward the center of the plateau 74.

Platforms 94 rise from the plateau adjacent the slots 85, 86, these platforms being slightly shorter than the ledge 76 so as to support the contact retainer plate 88 which is flush with the ledge 76. Another platform 96 runs diametrically across the plateau 74 toward the slot 90 terminating somewhat short thereof and forming a wall which divides into two equal parts the recess enclosed by the ledge 76. The platform 96 is the same height as the platforms 94 and the tip 98 thereof is tapered toward the slot 70. The lateral edges of said platform 96 are provided with projections 100 which cooperate with platforms 102 extending from the ledge 76 in the region of said projections to form pockets 104 which are adapted to aid in holding in place contact blades 106.

Said blades are formed from resilient electrically conductive strip stock, such for instance as Phosphor bronze, and each blade includes a lamp terminal engaging portion 108 and two bent end portions 110, 112. The end portion 110 is designed to be received between a radial ledge 92 and the adjacent portion of the ledge 76, and the end portion 112 is designed to be received in the pocket 104.

When the contact blades are in position in the lamp socket housing, they are under slight compression, so that they will tend to remain in place. As indicated, a blade is disposed on each side of the wall 96. The lead wires 82, 84 are secured to the contact blades in any suitable manner, as for instance by soldering.

Each of the platforms 94 is formed with a bore and the lamp contact retainer plate 88 has apertures registered with said bores to pass drive screws 114 adapted to be forced into the bores in order to hold the plate in place. The retainer plate is fabricated from electrical insulating material, as, for example, fiber impregnated with a thermosetting plastic. Said plate is received in the space enclosed by the ledges 76 and rests

upon the platforms 94, 96 and the ledges 92, the latter being of the same height as said platforms. The retaining plate has four fingers 116, 118, 120, 122 inserted in the notches 86, 80, 78 and 85 respectively, so that the plate is firmly locked against rotation. The portion of the plate over the slot 90 is cut away as at 124 to provide an opening towards which two deep divergent notches 126 extend. Said notches run to both sides of the wall 96 so that the plate only partially covers the contact receiving recesses. The notches 126 are spaced apart at their bases slightly in excess of the distance between the two contact terminals at the end of a conventional fluorescent lamp. The contact blades 106 are so formed that the terminal engaging portions 108 thereof project into the space in back of the notches 126 adjacent the bases of said notches, as best seen in Fig. 3.

The terminals T of a lamp are introduced into the sockets as follows: Said terminals first are guided through a slot 128 in the flange 62 aligned with the slot 52 in the legs 40. Said terminals next pass through the slot 52 and enter into the cut away portion 124 of the retainer plate. At the same time the terminals pass through the slot 90 in the ledge 76. If one terminal is leading the other, it will either strike the tip 98 of the wall 96 and be diverted to the recess on or the other side of the said wall, or said terminal will already be so oriented that it will enter a recess to one side of the wall without turning the lamp. In either case, the other terminal will enter the recess on the other side of the wall 96, the terminals at such time each extending through a different one of the notches 126. When the terminals reach the bases of the notches, they will press against the engaging portions 108 of the contact blades. Said portions each have a slight outward bend therein pointing away from the wall 96 so that, once the terminals are in said bends they will be held there against accidental displacement and will make good electrical engagement with the contact blades.

It may be mentioned here that the particular form of socket just described can be considerably modified without departing from the spirit of this phase of my invention which basically resides in forming the socket housing integral with the end member 58. Moreover, said housing preferably is so fashioned that the base thereof (the portion remote from the fluorescent tube) is an integral part of the socket, while the portion of the socket closest to the fluorescent tube is a separate element (the lamp contact retainer plate 88) and is attached by fastening means such as screws or bolts to the socket housing. This arrangement conceals said element and its fastening means, and causes a fixture employing such a socket to present a clean external surface, as seen in Fig. 3. Such appearance is particularly valuable where, as here, said surface is exposed.

The means integrally formed with each end member for holding a starter in place and supplying electric power thereto comprises a starter socket housing including a deep well 130 opening at the external surface 65 of the end member. Said well is closed at its bottom end by a panel 132 in which a pair of concentric arcuate keyhole slots 134 are formed. The side of the panel facing the fluorescent tubes has two recesses 135 therein, the same being separated by a wall 136. Said recesses include spaced notches 138 which receive the ends of contact blades 140. These blades are so shaped that when their ends are disposed in the aforesaid recesses, a portion 141 of each blade will be exposed through the smaller end of a keyhole slot 134. This portion 141 may be indented, as indicated, in accordance with the conventional practice, to hold the terminals 142 of a starter can 144 in place once the same is in operative position. The panel 132 is slightly thinner than the space between the enlarger head of each terminal 142 and the base of the starter can.

Wires 146 are suitably connected to the contact blades 140, as, for example, by soldering. These wires connect the starter socket contact blades and lamp socket contact blades 106 in a conventional electrical circuit, such as is well known in the art.

The recesses 135 and contact blades 140 are covered by a starter contact retainer plate 148 resting on the sides of said recesses. Said plate has two indentations 150 in its periphery which are fitted on bosses 152 raised on the ledges which define the recesses 134, whereby to prevent relative rotation of the plate 148 and the end member 58. Said plate 148 is held in position by a pair of drive screws 154 passing through openings in the plate and forced into bores in the wall 136.

It will be observed that, with the foregoing arrangement, both the starter socket housing and the lamp socket housings are integrally formed with each end member and that the starter socket faces in a direction opposite to that in which the lamp sockets face so that the starter is readily accessible for removement and replacement. The starter well may be made deep enough to conceal most of the starter can so that only the top thereof will be visible.

The power for the fluorescent lamps is derived from an electric light socket 156 disposed within the canopy 15. This socket receives a screw plug 158 which may be of the two-part detachable type including a cap with projecting blades. Said plug is connected to the ballast by a pair of lead wires 160.

Desirably, various portions of the end member may be reinforced to guard against breakage. Thus, the well 130 can be reinforced by longitudinal ribs 162 and transverse ribs 164; these ribs also helping to strengthen the base 60.

Despite the complex configuration of the concealed surface of the end member, the external surface 65 of its base is entirely flat with the exception of the well 130, thus imparting a clean and pleasing appearance to said member.

It will thus be seen that there is provided a fluorescent electric fixture which achieves the several objects of the invention and is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made in the embodiment above set forth, it is to be understood that all matter herein described or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

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

1. A fluorescent electric fixture comprising a pair of elongated sheet metal channels, means to secure said channels with the tips of the channel flanges in registration and proximity and facing one another, and with the channel bases remote, whereby to form a hollow open-ended member, both ends of both said channels being outturned a pair of molded plastic mem-

bers one on each end of said pair of channels and closing the open ends thereof, means to connect each molded member directly to said pair of channels, each of said plastic members having integrally molded therewith at least one socket adapted to detachably support an end of an elongated fluorescent electric lamp, said socket extending through an opening in the outturned end of the associated channel and at least one of the plastic members having integrally molded therewith a socket for detachably supporting a starter.

2. A fluorescent electric fixture comprising a pair of elongated sheet metal channels, means to secure said channels with the tips of the channel flanges in registration and proximity and facing one another, and with the channel bases remote, whereby to form a hollow open-ended member, both ends of both said channels having outturned registered metallic flanges, a pair of molded plastic members one on each end of said pair of channels and closing the open ends thereof, said plastic members covering the outer surfaces of the flanges and leaving exposed the surfaces of said flanges which face each other, means to connect said molded members directly to said flanges, each of said plastic members having at least one socket adapted to detachably support an end of an elongated fluorescent electric lamp, and at least one of the plastic members having a socket for detachably supporting a starter.

3. A fluorescent electric fixture as set forth in claim 2 wherein each plastic member and its associated flange defines an enclosed space to house the socket contacts, said plastic member constituting all of the outer sides except one of said space.

4. A two-lamp fluorescent electric fixture comprising a pair of elongated sheet metal channels, means to secure said channels to each other with the tips of the channel flanges in registration and proximity and facing one another, and with the channel bases remote, whereby to form a hollow open-ended enclosure adapted to receive electric equipment for the fixture, both ends of both said channels being outturned whereby to define a squat H-shaped member which is adapted to have an elongated fluorescent lamp disposed on each side of the cross bar thereof and parallel to said cross bar, a fluorescent lamp socket disposed on each outturned channel end, the sockets on the same sides of the cross bar being in registration, a starter socket at each end of the H-shaped member and facing in a direction parallel to and away from the cross bar and molded plastic end members to close both ends of the enclosure and the outturned channel ends, said end members having peripheral flanges which overlie flanges of the outturned channel ends.

5. A two-lamp fluorescent electric fixture comprising a pair of elongated sheet metal channels, means to secure said channels to each other with the tips of the channel flanges in registration and proximity and facing one another, and with the channel bases remote, whereby to form a hollow open-ended enclosure adapted to receive electric equipment for the fixture, both ends of both said channels being outturned whereby to define a squat H-shaped member which is adapted to have an elongated fluorescent lamp disposed on each side of the cross bar thereof and parallel to said cross bar, a molded plastic member mounted on each end of the fixture and closing the ends of the hollow enclosure and the outturned channel ends, each of said outturned channel ends having an opening therein, each of said end members having a pair of lamp sockets, the housing whereof is molded in one piece with the end member and is disposed in registry with the openings in the outturned channel ends, said housings having recesses therein opening toward the center of the fixture, contact blades in said recesses, retaining plates partially covering said recesses, and a starter socket in each of said end members, the housing whereof is molded integrally with said member and has contact blades secured therein.

6. A two-lamp fluorescent electric fixture comprising a pair of elongated sheet metal channels, means to secure said channels to each other with the tips of the channel flanges in registration and proximity and facing one another, and with the channel bases remote, whereby to form a hollow open-ended enclosure adapted to receive electric equipment for the fixture, both ends of both said channels being outturned whereby to define a squat H-shaped member which is adapted to have an elongated fluorescent lamp disposed on each side of the cross bar thereof and parallel to said cross bar, a molded plastic member mounted on each end of the fixture and closing the ends of the hollow enclosure and the outturned channel ends, each of said outturned channel ends having an opening therein, each of said end members having a pair of lamp sockets, the housing whereof is molded in one piece with the end member and is disposed in registry with the openings in the outturned channel ends, said housings having recesses therein opening toward the center of the fixture, contact blades in said recesses, retaining plates partially covering said recesses, and a starter socket in each of said end members, the housing whereof is molded integrally with said member and has contact blades secured therein, said starter socket facing outwardly and being disposed at the bottom of a deep well whereby a starter received therein is substantially concealed.

7. A two-lamp fluorescent electric fixture comprising a pair of elongated sheet metal channels, means to secure said channels to each other with the tips of the channel flanges in registration and proximity and facing one another, and with the channel bases remote, whereby to form a hollow open-ended enclosure adapted to receive electric equipment for the fixture, both ends of both said channels being outturned whereby to define a squat H-shaped member which is adapted to have an elongated fluorescent lamp disposed on each side of the cross bar thereof and parallel to said cross bar, a molded plastic member mounted on each end of the fixture and closing the ends of the hollow enclosure and the outturned channel ends, each of said outturned channel ends having an opening therein, each of said end members having a pair of lamp sockets, the housing whereof is molded in one piece with the end member and is disposed in registry with the openings in the outturned channel ends, said housings having recesses therein opening toward the center of the fixture, contact blades in said recesses, retaining plates partially covering said recess, and a starter socket in each of said end members, the housing whereof is molded integrally with said member and has contact blades secured therein, said

starter socket facing outwardly and being disposed at the bottom of a deep well whereby a starter received therein is substantially concealed, said end members having peripheral flanges which overlie the flanges of the outturned channel ends.

LOUIS LUDWIG.

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