

Jan. 24, 1956

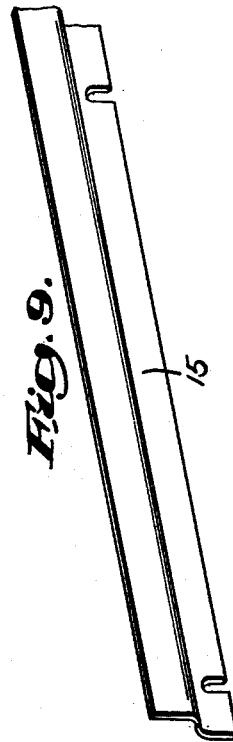
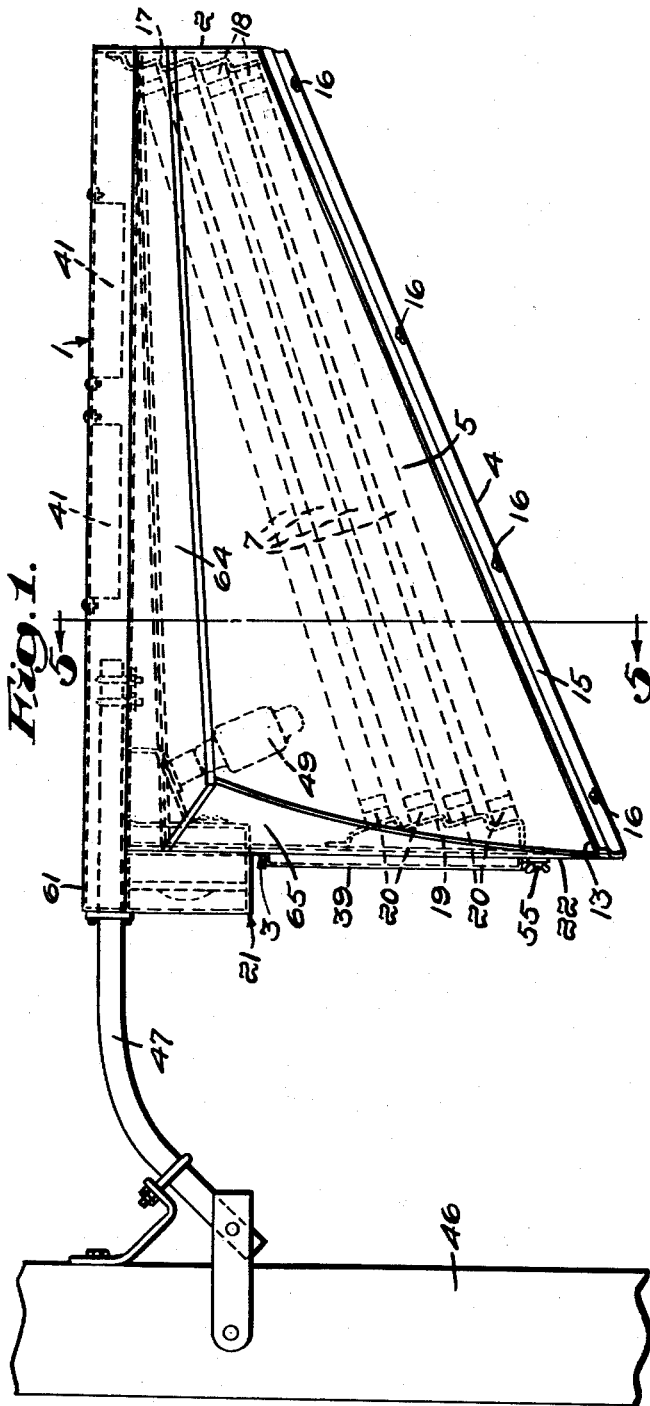
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2,732,483

STREET LIGHTING LUMINAIRE

Filed Feb. 24, 1953

5 Sheets-Sheet 1



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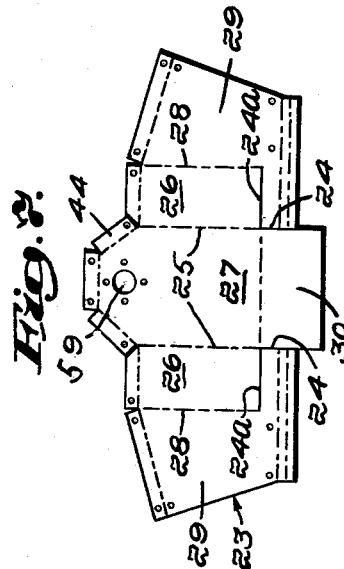
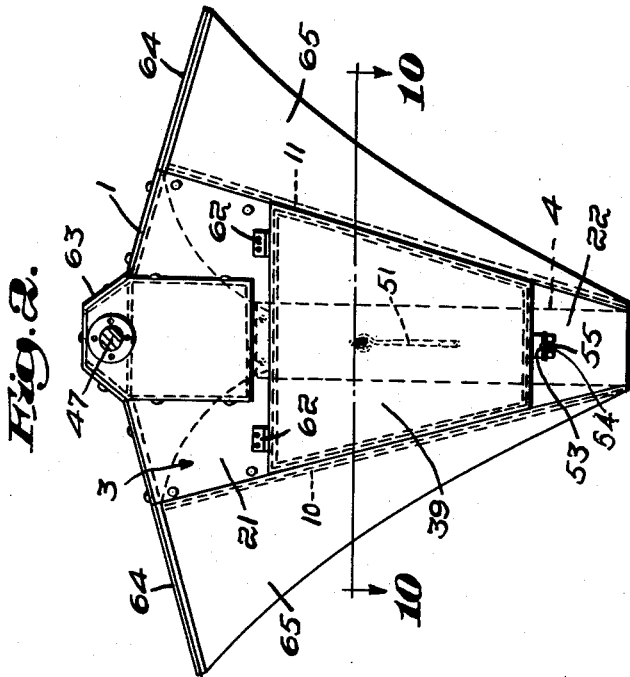
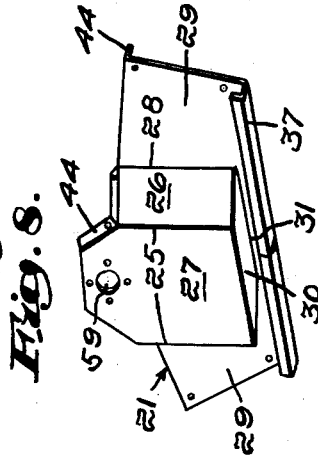
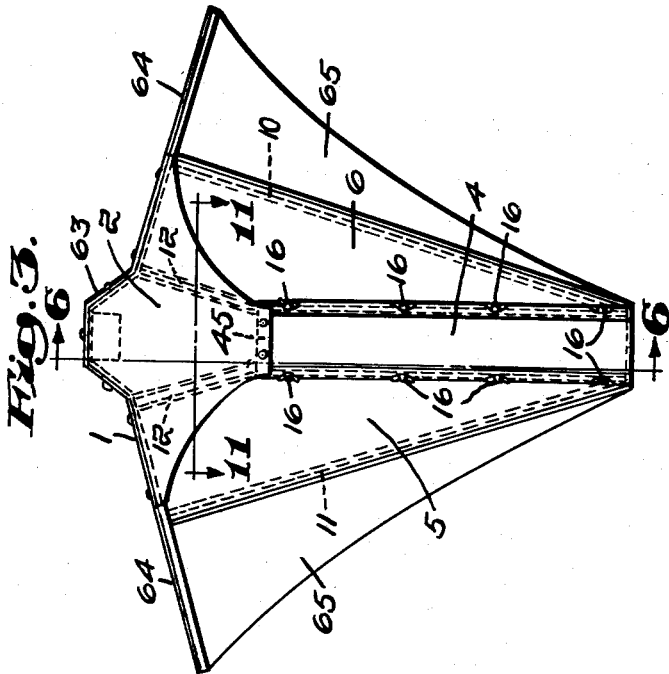
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5 Sheets—Sheet 2



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STREET LIGHTING LUMINAIRE

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5 Sheets-Sheet 3

Fig. 4.

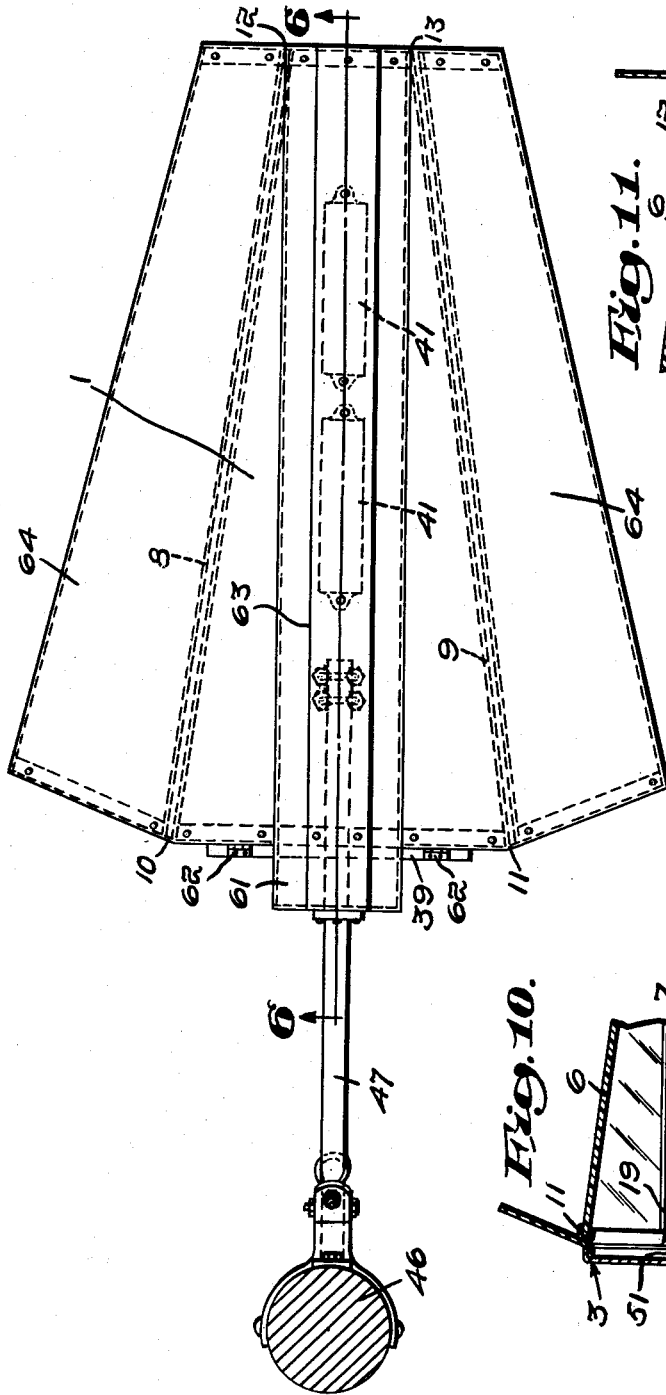


Fig. 11.

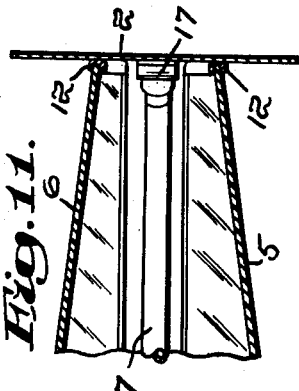
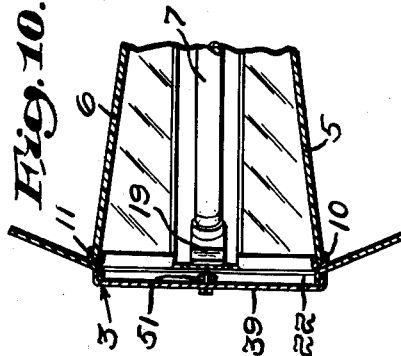


Fig. 10.



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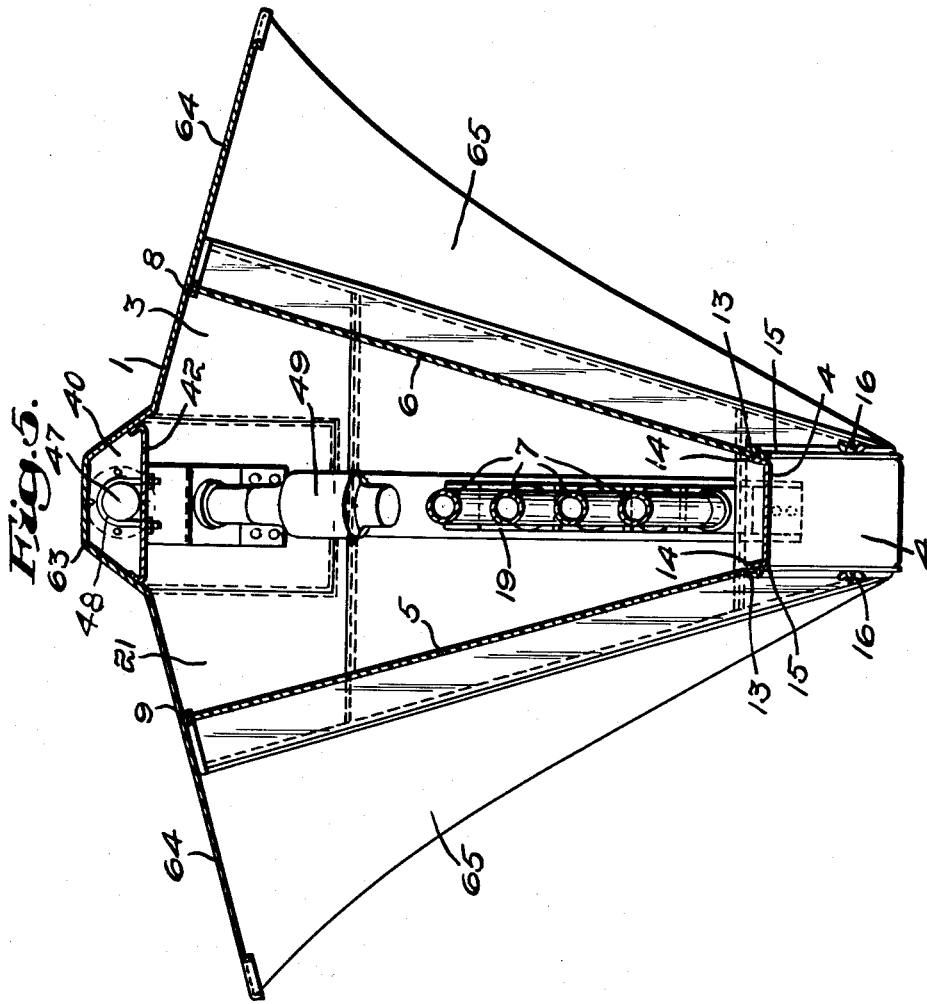
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5 Sheets-Sheet 4



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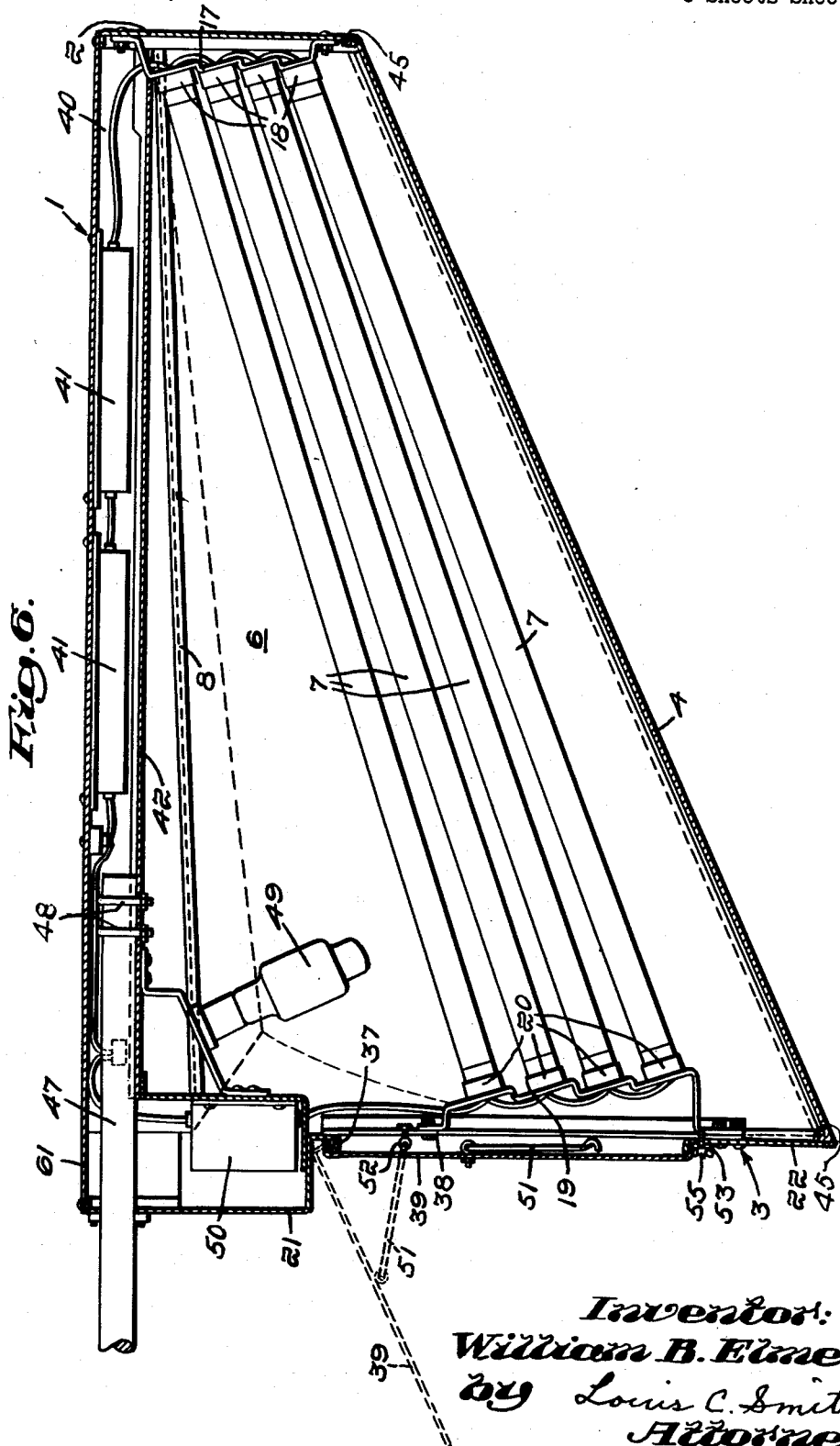
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STREET LIGHTING LUMINAIRE

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5 Sheets-Sheet 5



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1

2,732,483

STREET LIGHTING LUMINAIRE

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Application February 24, 1953, Serial No. 338,538

4 Claims. (Cl. 240—25)

This invention relates to street lighting luminaires.

One object of the invention is to provide a street lighting luminaire adapted to use fluorescent lamps. An advantage of a fluorescent lamp is that it provides a large luminous area at the light source and has low surface brightness thereby reducing the glare caused by most street lighting units now in common use.

One characteristic of a fluorescent lamp is that its efficiency is reduced when it is operating in a very cold atmosphere. Accordingly another object of the invention is to provide a street lighting luminaire using fluorescent lamps which is equipped with means for supplying heat to the atmosphere in which the fluorescent lamps are located, thereby maintaining their efficiency even in very cold weather.

Another object of the invention is to provide a street lighting luminaire using fluorescent lamps which is inexpensive to manufacture, which is not excessively large or heavy, and which does not present an especially ungainly appearance.

Referring now to the drawings, wherein I have illustrated a selected embodiment of my invention,

Fig. 1 is a side view of a street lighting luminaire embodying my invention.

Fig. 2 is a rear end view thereof looking toward the right of Fig. 1.

Fig. 3 is a front end view looking toward the left, Fig. 1.

Fig. 4 is a top plan view.

Fig. 5 is a section on the line 5—5, Fig. 1.

Fig. 6 is a section on the line 6—6, Fig. 3.

Fig. 7 is a view of the sheet metal blank which is used in making the upper section of the rear end element.

Fig. 8 shows the manner in which said upper section is fashioned from the blank shown in Fig. 7.

Fig. 9 is an enlarged fragmentary view of the retaining strip.

Fig. 10 is a section on the line 10—10, Fig. 2.

Fig. 11 is a section on the line 11—11, Fig. 3.

The luminaire embodying my invention presents a housing to receive the fluorescent lamps and which is formed by a top element 1, a front end element 2, a rear end element 3, a bottom element 4, and two trapezoidal panels 5 and 6 which are made of some light transmitting material, such as glass or Plexiglas. The top element, end elements, and bottom element are secured together to form a skeleton-supporting frame in which the light transmitting side panels 5 and 6 are supported.

The side panels are so mounted in the skeleton frame that they incline toward each other from the top to the bottom and also incline toward each other from the rear end member 3 toward the front end member 2.

These elements thus form the walls of a chamber in which the fluorescent lamps 7 are located, said chamber being wider at the top than at the bottom, and wider at the rear end than at the front end.

The top element 1 and the end elements 2 and 3 and bottom element 4 are made of sheet material having a

2

highly reflecting interior surface such as would be provided by making these elements with an inner surface of white porcelain enamel.

The top element 1 is wider at its rear end than at the front end, and is provided with two downwardly opening grooves 8 and 9 in which the upper edges of the light transmitting panels 5 and 6 are received. These grooves are well spaced from the edges of the top element and converge toward each other from the rear to the front, said grooves being very nearly parallel to the side edges of the top element.

The rear end member 3 is also wider at the top than at the bottom and is provided with two open grooves 10 and 11 in which the rear edges of the panels 5 and 6 are received. These grooves 10 and 11 converge toward each other from the top to the bottom, and at the bottom the two grooves are spaced apart a distance corresponding to the width of the bottom element. The front end element is provided with open grooves 12 in which the front end of the panels 5 and 6 are received, said grooves also converging from the top to the bottom and being parallel to the grooves 10 and 11. The rear end element 3 is longer than the front end element 2, and the bottom ends of the two end elements have substantially the same width. The bottom element inclines upwardly from the rear end element to the front end element and has a substantially uniform width.

The bottom edge of each side panel 5 and 6 is received in a bottom groove 13 with which the bottom member 4 is provided. Said member 4 has a channel shape, as shown in Fig. 5, and the lips 14 of said bottom member provide the inside walls of the grooves 13. The outside wall of said grooves is provided by a strip 15 which is detachably secured to the corresponding lip 14 by means of screws 16.

With this arrangement the strips 15 may be removed and the two panels 5 and 6 slipped into place with the top edges occupying the grooves 8 and 9 and the end edges occupying the grooves in the front and rear elements 3 and 4. After the panels 5 and 6 have been installed the retaining strips 15 may be secured to the lips 14 of the bottom member 4 thereby firmly holding the side panels in place.

The front end element has mounted thereon a plural socket member 17 carrying sockets 18 to receive the fluorescent lamps 7 and the rear end member 3 also has mounted thereon a plurality of sockets 20 to receive the other end of the fluorescent lamps 7.

The rear end element 3 is made in two sections, an upper section 21, and a lower section 22. The upper section 21 is preferably formed from a sheet metal blank 23 of the shape shown in Fig. 7. This blank is provided with two parallel cuts 24 and two lateral cuts 24a and thereafter the blank is bent along the dotted lines 25, so that the sections 26 stand at right angles to the central section 27 and the blank is then again bent in the opposite direction along dotted lines 28 to provide the wing sections 29. The portion 30 between the cuts 24 is then bent inwardly, as shown in Fig. 8, and suitably welded to the bottom of the sections 26.

By thus fashioning the blank the edges of the cuts 24 are brought together, as indicated at 31, said edges being suitably secured together, as by welding. This provides an upper section 21 which presents two flat wings 29 and a rearwardly projecting chamber formed by the sections 26 and 27.

The lower edge of the finished section 21 is bent into the U-shape 37, as shown in Fig. 8.

The lower section 22 is made from a suitably shaped piece of sheet metal which is cut away to provide a door opening 38 to provide access to the fluorescent lamps 7.

3

This door opening is closed by a door 39 which is hinged at its upper end to the upper section 21 by suitable hinges 62.

The top element 1 is deformed to present a downwardly facing channel 40 which extends the full length thereof and which is adapted to receive the usual ballast elements 41 for the fluorescent lamps. The bottom of the channel 40 is closed by a sheet metal strip 42, the edges of which are welded or otherwise secured to the side walls of the channel.

The top element and end elements may be secured together in any suitable way. As herein shown the end elements are provided with wings or tabs 44 adapted to be folded under the top of the top element and either riveted or welded thereto. The bottom element 4 is also shown as having at each end an upturned tab 45 adapted to be welded or riveted to the bottoms of the end members.

The luminaire may be mounted on a pole 46 in any suitable way. As herein shown said pole has a bracket arm 47 suitably secured thereto, the outer end of which extends through an opening 59 formed in the upper section 21 of the rear end member 3 and occupies the upper portion of the channel 40. The end of the arm is clamped by U-bolts 48 to the plate 42, as best seen in Fig. 6.

With the above construction the fluorescent lamps 7 are situated directly behind the side panels 5 and 6 and since the light transmitted through a flat light-transmitting panel is greatest in a direction perpendicular to the panel and since the fluorescent lamps 7, four such lamps being shown arranged one above the other, present a substantially flat diffusing light source, the maximum light which is transmitted through the panels will be a broad beam extending at right angles to the panels. These panels are inclined to the vertical, as shown in Fig. 5, and hence the strongest light beams which, as stated above, extend at right angles to the panels, will have a downwardly inclined direction. Furthermore, since these panels are inclined toward each other from the back to the front of the luminaire, the beam of light will have a slight angle to the length of the street which is important where the luminaire is mounted on a pole at the side of the street. The desired light distribution for illuminating a street is therefore obtained without the use of supplementary internal reflectors other than the interior reflecting surfaces of the housing.

The invention also includes means for heating the chamber within the housing in which the fluorescent lamps 7 are located thereby to maintain the efficiency of such lamps even in very cold weather. For this purpose I have provided a heating element in the form of a mercury lamp 49 which is installed in the chamber at the rear end thereof above the lower ends of the fluorescent lamps 7. The ballast 50, which is required for operating a mercury lamp, is shown as being housed in the chamber with which the upper section 21 of the rear end member is provided. This mercury lamp serves not only to maintain a proper operating temperature within the housing in cold weather, but it also contributes a substantial amount of light to the enclosure and to the portion of the chamber which otherwise would have been the darkest region.

The door 39 is shown as provided with a hooked rod 51, the end of which can be hooked into an eye bolt 52 for holding the door open while an operator is inspecting the interior of the luminaire, or is removing or replacing fluorescent lamps.

For locking the door closed there is provided a screw threaded stud 53 which is received in a slot 54 formed in the bottom of the door when the latter is closed and on which is screwed a locking nut 55 by means of which the door is locked in its closed position.

It has been stated that the grooves 8 and 9 on the under side of the top element are well spaced from the edges of said element and also converge toward each

4

other from the rear to the front. With this construction the top element presents two side edge portions 64 which extend beyond the panels 5 and 6. The top element is constructed so that the two sides thereof incline downwardly slightly from the center line toward the edges and, as previously stated, the under surface of the top element has a highly reflecting characteristic. The edge portions 64 of the top element which are outside of the grooves 8 and 9 thus constitute reflecting vizer portions by which any light rays from the fluorescent lamps which strike the vizer portions will be reflected downwardly onto the street, thus supplementing the lighting effect produced by the light rays that are transmitted directly from the fluorescent lamps through the side panels.

It may be noted that the grooves 10 and 11 in the rear end member are also well spaced from the side edges of said member so that said end member presents two edge portions 65 which extend beyond the rear ends of the side panels 5 and 6. These edge portions 65, which are wider at the top than at the bottom, constitute shielding portions which serve to shield the buildings on the side of the street from the direct light rays emanating from the fluorescent lamps.

I claim:

1. A street lighting luminaire comprising a housing having a horizontally-disposed top element which is wider at its rear end than at its front end, a vertically disposed rear end element which is wider at its top than at its bottom, a vertically disposed front end element which is also wider at its top than at its bottom, said rear end element being longer than the front end element, both end elements having the same width at the bottom, a bottom element connecting the bottom edges of the two end elements, said bottom element having a substantially uniform width which corresponds to the width of the end elements at their bottom ends, said top element having on its under face two panel-receiving grooves, one on each side of its medial line, said grooves converging toward each other from the rear to the front, each end element having on its inner face two panel-receiving grooves, one on each side of its median line, the two grooves on each end element converging from the top to the bottom and terminating at the edge of the bottom element, two flat side panels of light transmitting material mounted in said grooves, retaining members secured to the bottom member and engaging the bottom edges of the side panels and retaining the latter in place, sockets mounted on the end members, and fluorescent lamps mounted in said sockets.

2. A street lighting luminaire as defined in claim 1 in which the under face of the top element has high light reflecting characteristics and in which the panel-receiving grooves on the under side thereof are well spaced from the side edges of the top element and extend outwardly beyond the side panels, such extending portions of the top element constituting reflecting vizer sections which reflect light from the fluorescent lamps downwardly onto the street.

3. A street lighting luminaire as defined in claim 1 in which the grooves on the inner face of the rear end element converge toward each other from the top to the bottom and are well spaced from the side edges of said end element whereby the edge portions of the rear end elements extend beyond the side panels and constitute shielding sections which shield dwellings on the side of the street from direct illumination by the fluorescent lamps.

4. A street lighting luminaire as defined in claim 1 in which the bottom element has upturned side edges against the outside of which the lower edges of the side panels rest and each said side panel is retained in its grooves by a retaining strip which has its lower edge portion overlying and detachably secured to the corresponding upturned lip of the bottom member and has its upper

5

edge portion offset from its lower edge portion and overlying the outside lower edge of the panel.

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