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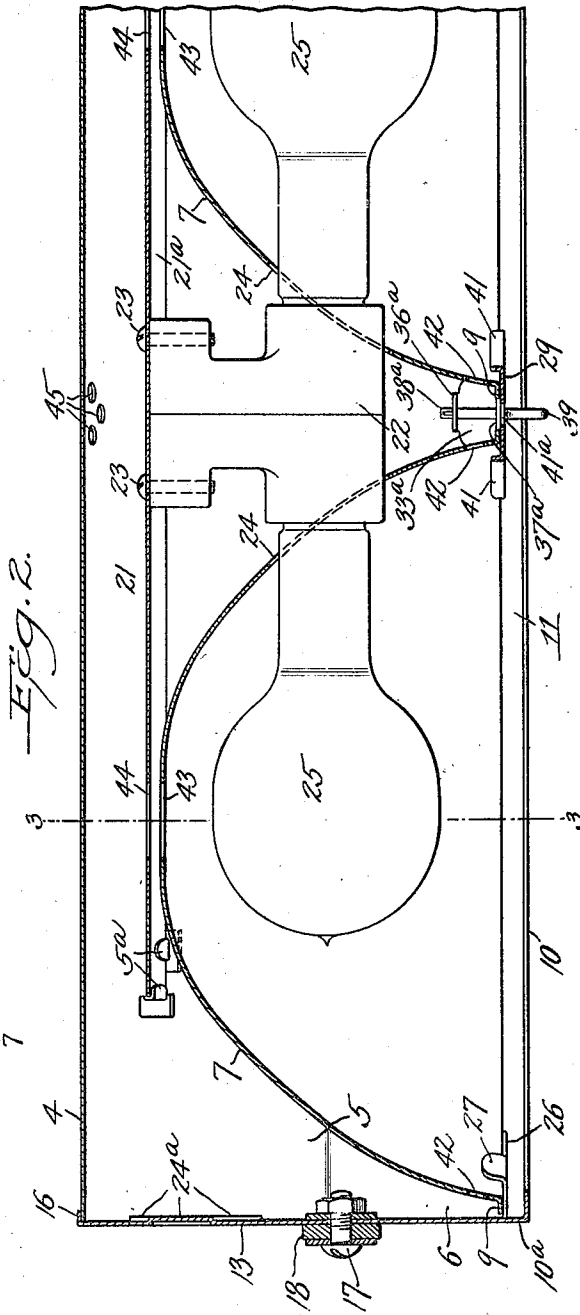
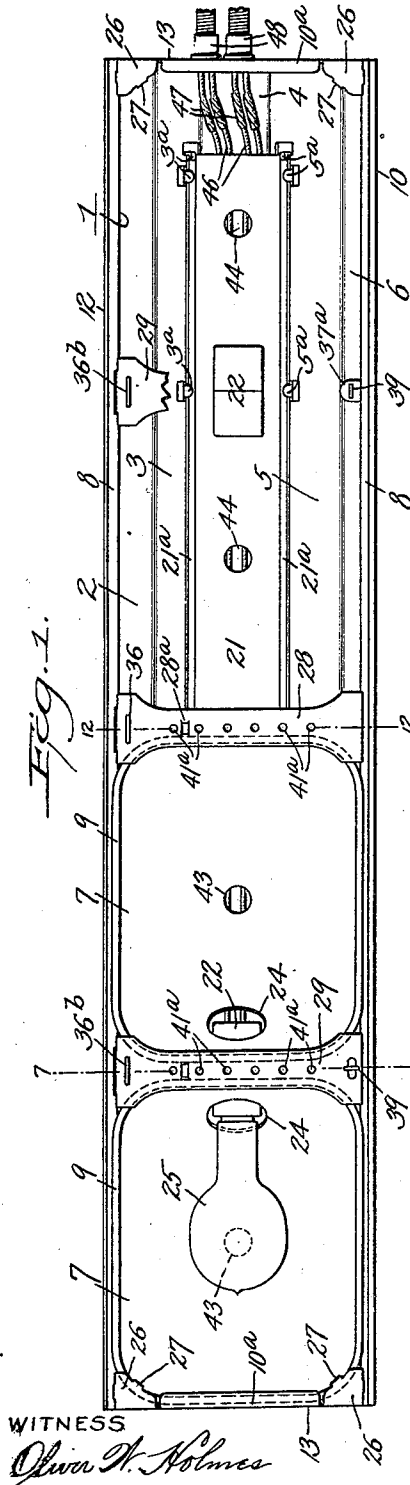
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W. H. SPENCER

LIGHTING EQUIPMENT

Filed July 1, 1925

3 Sheets-Sheet 1



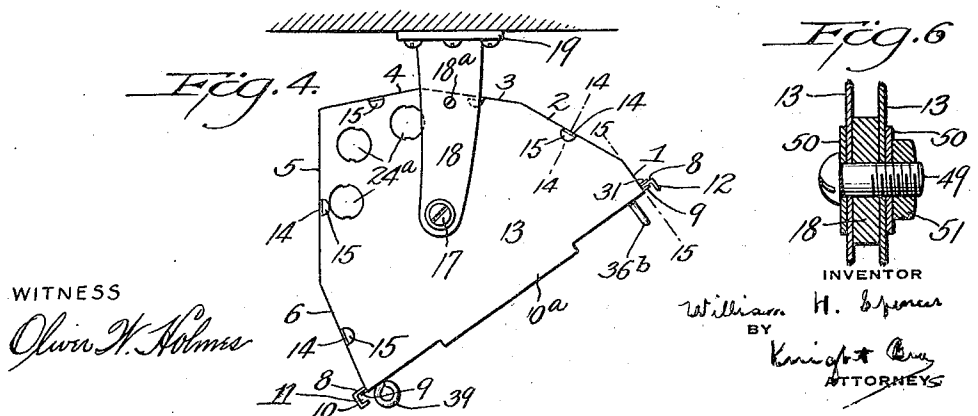
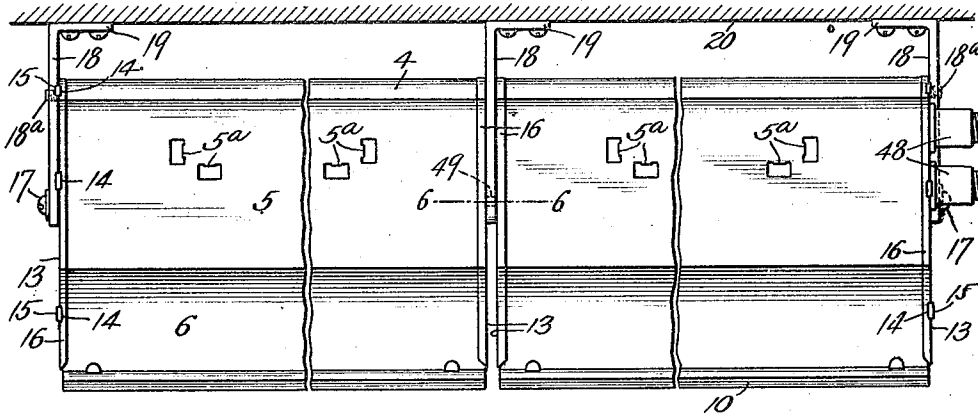
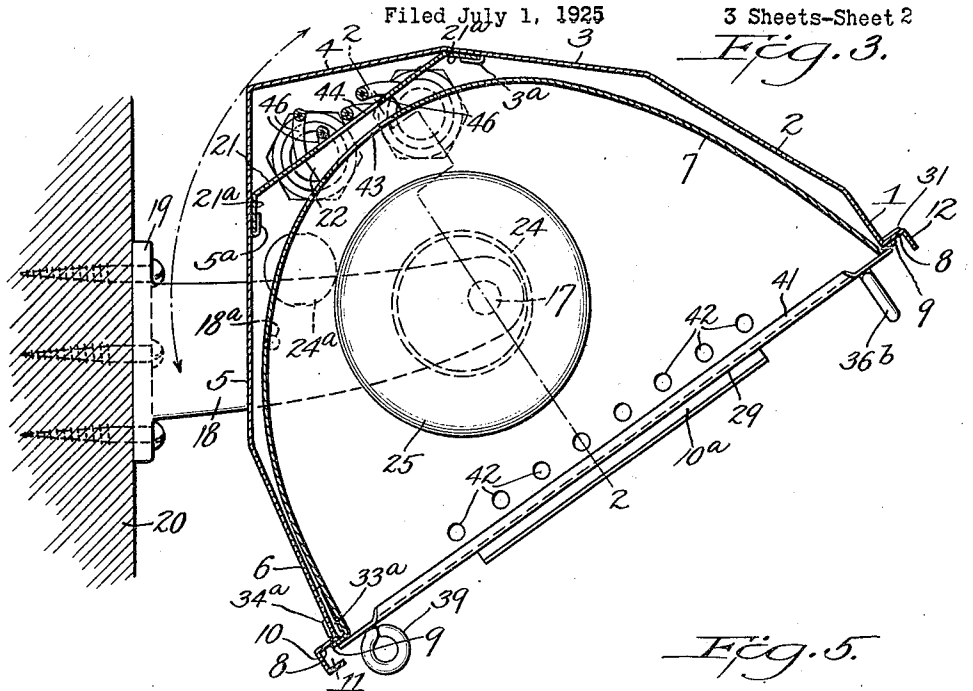
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3 Sheets-Sheet 2



WITNESS

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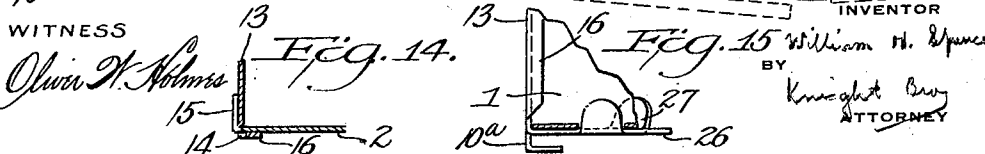
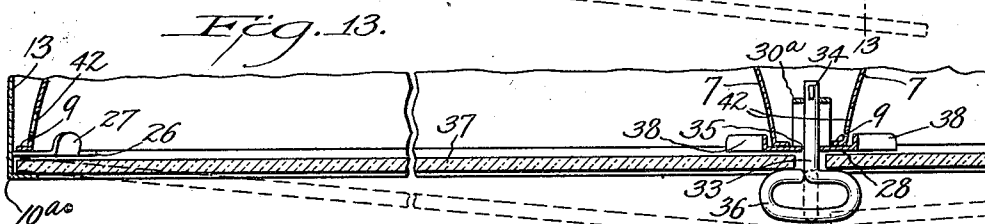
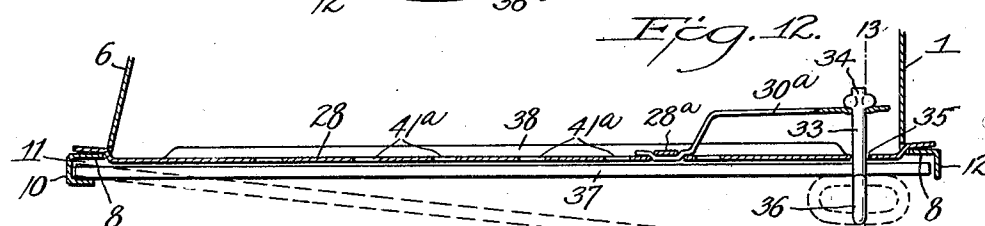
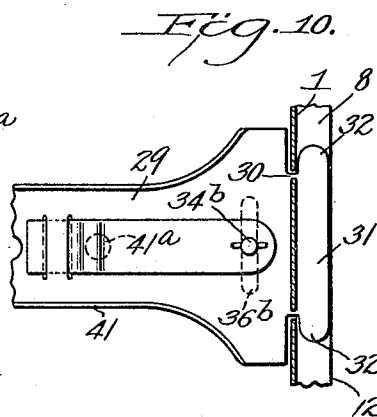
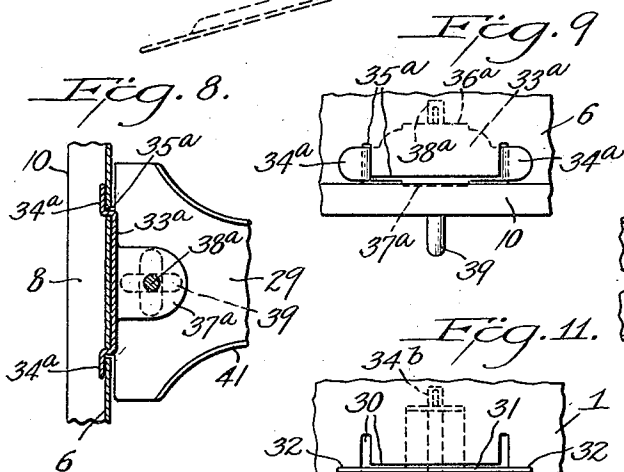
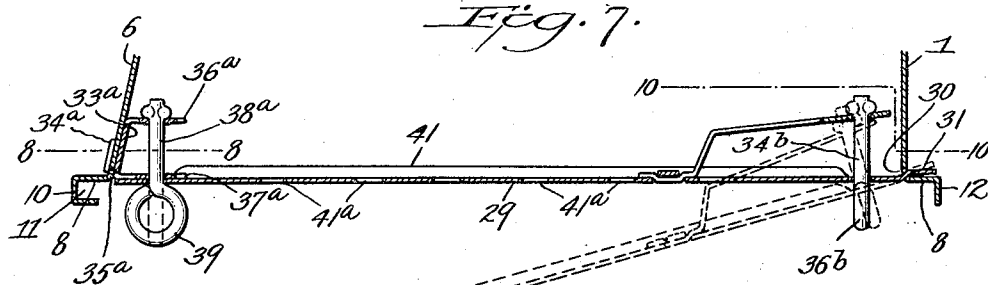
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W. H. SPENCER

LIGHTING EQUIPMENT

Filed July 1, 1925

3 Sheets-Sheet 3



WITNESS

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Patented Dec. 6, 1927.

1,651,640

UNITED STATES PATENT OFFICE.

WILLIAM H. SPENCER, OF BOGOTA, NEW JERSEY, ASSIGNOR TO I. P. FRINK, INC.,
OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

LIGHTING EQUIPMENT.

Application filed July 1, 1925. Serial No. 40,775.

This invention relates to lighting equipment for show windows, theatres and the like and has for its principal object to provide an improved construction comprising reflector units mounted in a housing equipped with lamp sockets and completely wired and assembled prior to installation.

One of the objects of my invention is to provide a lighting equipment of improved sectional construction which may be adapted to installations of different size and disposition, wherein lamps of different powers may be used interchangeably, and whereby more light in a useful direction may be secured.

Another object is to provide an improved built-up construction of interlocking parts which may be assembled without the use of bolts, screws, nuts or solder and in standard sectional units.

Another object of the invention is to provide improved means for mounting a lighting equipment of this character so as to secure the most favorable results with respect to its disposition and adjustment.

For this purpose, my invention contemplates an improved construction consisting of reflector units assembled in completely furnished sections, wired and ready for installation by a simple electrical connection with established circuits.

In virtue of its several features of construction alluded to above and hereinafter described and claimed, practically 80% of the work heretofore required of an electrical contractor under present-day practice, can be eliminated. Thus, for example, the present-day practice in making an installation of individual reflector units in show windows, consists in running conduit the entire width of the window, in providing condulets or outlet boxes for each individual reflector, in pulling through the feed wires and providing taps to the lamp receptacles, after which the lamp receptacles and reflector holder are attached, and finally, in installing the reflectors.

Other and further objects of the invention will appear in the specification and be pointed out in the appended claims.

In the drawings, which show a preferred embodiment of my invention,

Figure 1 is an inverted plan view of a shop window reflector constructed in accordance with the principles of the present

invention, parts being broken away and some of the reflector units being removed.

Figure 2 is a partial longitudinal section of the same on an enlarged scale, said section corresponding to line 2—2 of Figure 3, parts being shown in elevation.

Figure 3 is a section on the line 3—3 of Figure 2, parts being shown in elevation.

Figure 4 is an end elevation of the reflector as it appears when supported from above.

Figure 5 is a rear elevation of a battery of reflector units supported from above by suspension brackets of improved construction.

Figure 6 is an enlarged section on the line 6—6 of Figure 5.

Figure 7 is an enlarged fragmentary section on the line 7—7 of Figure 1, parts being shown in elevation.

Figure 8 is a fragmentary section on the line 8—8 of Figure 7, parts being shown in plan.

Figure 9 is a side elevation from the left in Figure 8.

Figure 10 is a section on the line 10—10 of Figure 7, parts being shown in plan.

Figure 11 is a side elevation taken from the right in Figure 7.

Figure 12 is an enlarged fragmentary section on the line 12—12 of Figure 1, parts being shown in elevation.

Figure 13 is a section on the line 13—13, Figure 12, parts being shown in elevation.

Figure 14 is an enlarged fragmentary section on the line 14—14 of Figure 4.

Figure 15 is a fragmentary section on the line 15—15 of Figure 4, parts being broken away and parts shown in elevation.

The drawings show an embodiment of my invention adapted more especially to the requirements of show-window lighting but applicable in principle to the theatre and other purposes. Within a trough-like housing constructed of sheet metal suitably bent to form panels 1, 2, 3, 4, 5 and 6 of unequal widths, are a plurality of removably mounted reflector units 7. According to Figure 3 of the drawings, panels 1 and 6 of said housing are provided with flat, longitudinal seats 8, 8, for seating the outwardly presented flanges 9 of the reflector units 7. A U-shaped bend 10 along the edge of panel 6, provides the rear seat 8 as well as a channel-shaped groove 11 for the reception of

the rear edges of a plurality of screens or plates of glass. The panel 1 is provided with a right-angled bend along its forwardly presented edge to form a retaining flange 12 for said screens or plates. Suitable end-plates 13, 13 for the housing, may be provided with bent-over flanges 16 fitting over the end edges of panels 1, 2, 3, 4, 5 and 6, and in order to avoid the use of screws, bolts and so forth, the end plates 13, 13 are provided with suitable slots or openings 14 (see Figure 14) adapted to receive the tongues or projections 15 which form integral portions of said panels. As shown in Figures 2, 3 and 4, each of the end plates 13, 13 is provided with a circular bearing aperture for the reception of a bolt or screw 17 carried in the outer end of a bracket 18, said bracket being provided with a base pad 19 which may be mounted on a window head 20, or suspended from the ceiling as shown in Figure 4. By means of this construction, the reflector housing is adapted to be adjusted angularly to present the aperture thereof in any desired direction within certain limits determined by conditions to be hereinafter referred to.

Referring now to Figures 1, 2 and 3, an elongated plate or support 21 which is arranged substantially parallel to the aperture of the housing, has its lateral edge portions 21^a, 21^a bent over at an angle to bring said portions flat against the panels 3 and 5. At suitable intervals, tongues 3^a and 5^a are stamped from the panels 3 and 5 to interlock with said bent-over portions of said plate or support. At either end the plate 21 terminates short of the end walls 13, additional tongues 3^a and 5^a being stamped from the panels 3 and 5 to hold said plate against endwise displacement.

From an inspection of Figure 2, it will be seen that a sectional double ended socket 22 is arranged between and exteriorly to each pair of reflectors 7, said socket being secured to the plate or support 21 by suitable screws 23. For this purpose, the adjacent wall of each of said reflectors is provided with an opening 24 in coaxial alinement with said socket to accommodate the latter and to permit the arrangement of incandescent lamps 25 in proper relations to said reflectors 7. With this arrangement, lamps using 75, 100, 150 or 200 watts may be interchangeably employed in proper focus with respect to the reflectors 7. According to the embodiment of my invention shown on the drawings, each reflector unit is positively located within the outer housing by its confinement between the longitudinal seats 8, 8, which engage the lateral flanges 9, 9 of reflectors 7 and other fixed and movable supports which releasably lock the flanges 9, 9 in position against said seats. For this purpose, suitable transverse supports are ar-

ranged at intervals to extend across the aperture of said housing and in suitable position to engage the flanges 9, 9 at the ends and around the corners of said reflectors. From an inspection of Figures 1, 2 and 13, it will be seen that within each corner of the housing at the aperture thereof is a bracket or plate 26 provided with an upwardly bent lug 27, the inner rounded corners of the end reflectors 7 permitting one end of said reflectors in tilted positions to be passed over said lugs 27 and afterwards swung on said corner plates 26, 26 until the lateral flanges 9, 9 on the reflector units are brought to rest on the seats 8, 8. Midway of its length, the opposite apertural edges of said housing are permanently connected by a fixed bar or support 28 which is secured at opposite ends by interlocking slot and tongue connections similar to those shown in Figures 10 and 11 for the releasable straps or bars 29 to be presently referred to. Thus, as shown in Figures 10 and 11, the right hand end of each of the releasable straps or supports 29 carries an integrally-formed tongue 31 provided with laterally presented ears or lugs 32 which may be bent upwardly at right angles to the tongue to adapt them and the tongue to be passed through substantial U-shaped slots 30, and afterwards pressed flat against the top surfaces of the channelled section 10 and right-angled flange 12. Adjacent one end of the strap or cross bar 28 as at the right of Figure 12, a leaf spring 30^a has one end interlocked with an upwardly pressed portion 28^a of strap 28. Through the free end of leaf spring 30^a extends a pin 33 which has its upper end 34 upset to prevent its retraction from said spring. Said pin extends through an aperture 35 in the strap or support 28 and is provided below said support with a finger grip or loop 36 which is raised into engagement with the under surface of said support by the tension in leaf spring 30^a or into clamping engagement with one edge of a screen or plate 37 as shown in full lines in Figure 12, the other edge of said plate or screen being disposed in channelled section 10 and retained against displacement therefrom by flange 12 in conjunction with loop 36 when in position shown in full lines in Figure 12. The opposite lateral edges of the strap or support 28 are provided with upwardly turned flanges 38 over which the adjacent ends of reflector units which are to be supported by said strap may be passed after which the lateral flanges of said units are moved into engagement with lateral seats 8, 8 along the apertural edges of said housing. This movement brings the other ends of reflector units 7, 7 adjacent to the inwardly presented end flanges of those reflector units respectively which rest at their outer ends upon the corner plates 26, 26 at opposite ends of the

housing. In order to make all of the reflector units readily removable, suitable releasable transverse supports 29, 29 are arranged midway between the fixed central support 28 and the opposite ends of the housing. These supports 29 are hinged at one end to the lateral edge 12 of said housing in the manner shown best in Figures 7, 10 and 11. For this purpose, panel 1 of said housing is provided near the right-angled flange 12, with a low broad U-shaped slot 30 through which is passed an integrally formed end portion of each strap 29, comprising a flat tongue 31 with upwardly bent tabs or lugs 32. As shown in Figures 10 and 11, the lugs 32, 32 are then flattened down against the top surface of the angular flange 12. Opposite to the hinged end of the cross strap 29 is a bent metal strap comprising central body portion 33^a in contact with the inner surface of panel 6 of the housing, laterally presented attachment lugs 34^a adapted to be bent and passed through slots 35^a, and flattened against the outer surface of said panel 6, and parallel arms or projections 36^a and 37^a. Turnable in aligned perforations in the parallel arms 36^a and 37^a is a pin or key 38^a which is upset at its upper end to retain it against axial displacement. A circular finger grip 39 at the lower end of said pin or key is adapted to be turned from full line position shown in Figure 7 in which the transverse bar or strap 29 is held in raised position, to dotted line position in which it is disposed transversely to said strap 29 and in position to release that end of the strap. As shown in Figures 2, 7, 8 and 10, said strap is provided with lateral flanges 41 which are adapted to engage the inner end walls of the reflector units. The straps 29 in raised position, cooperate with fixed strap 28 in holding the reflector units 7, 7 in position against the seats 8, 8. It will be understood from this description that whenever the reflector units are to be removed for any purpose such as cleaning, repairs, etc., either one or both of said reflector units at either end may be removed or replaced by merely dropping the transverse strap 29 to release the adjacently disposed ends of said units. Both the fixed and hinged transverse straps 28, 29 and 29 are provided with a series of ventilating holes or openings 41^a. From an inspection of Figures 2 and 3, it will be seen that both ends of each reflector unit are provided with ventilating holes 42. It will be further apparent that the holes 41^a are disposed midway between the end walls of different reflector units and adjacent to the holes 42. A central aperture 43 is provided at the top of each reflector dome, said apertures being in register with openings 44 in top plate 21. As shown best at the right-hand of Figure 7, each of the hinged transverse straps 29,

29 is provided with a resiliently mounted pin or bolt 34^b with finger loop 36^b of substantially the same construction and for the same purpose as that shown and described in connection with Figure 12. Arranged above each of the double sectional sockets 22 and in each of the panels 4 and 5 above top plate 21, are clusters of ventilating openings 45 (only one of said clusters being shown in Figure 2) which serve to discharge heated air through the top wall of the reflector housing. It will be understood from this description that cold air admitted through openings 41^a in the transverse straps 28, 29 and 29, is permitted to pass inwardly through the opening 42 to the spaces surrounding the electric lamps 25, upwardly through apertures 43 and 44 and out of the housing through openings 45 in panels 4 and 5 thereof. At the same time cold air is admitted through holes 41^a to the air space surrounding the several reflector units and thence around the ends of top plate 21 or through the holes 44 therein to the openings 45. It will be understood from the foregoing description that while the lamps 25, 25 are placed directly within the paths of well-defined currents of cold air, those portions of the reflector units 7, 7 which are most subjected to the heating effect of said lamps, are similarly exposed to cooling air currents over their inner and outer surfaces.

Referring now to Figure 1, it will be understood that the light wires 46 for lamps 25, may be connected up with the double sectional lamp sockets 22 in such a way as to provide two circuits for single or alternate control. For this purpose, said wires are permanently arranged in the gallery formed between top plate 21 and the top panels 4 and 5 of the housing. It will be seen, therefore, that in making an installation of this character, it is only necessary for an electrician to form splices 47 between the wires 46 and the BX cables 48, for example, which according to the present adaptation of my invention may be connected up through any two of the knock-outs 24^a in one or the other of the end walls 13, 13 of said housing. For this purpose, the end brackets 18 are provided with more or less curvature and are constructed to be mounted in either one of two reversible positions, so as to facilitate the arrangement of the knock-out holes with respect to said brackets by an angular adjustment of the housing upon its axis. After such an adjustment has been determined to meet the requirements of any particular situation or installation, a spur or set screw 18^a which is threaded in bracket 18, is driven into positive interlocking engagement with the adjacent end wall 13 of the housing. Figure 5 shows in rear elevation three brackets 18 employed to suspend two lighting sections, each of said sections

being constructed similar to that hereinbefore described. By reversing the position of the right-hand bracket in Figure 5 with respect to the other two brackets, the curvature in the arms of all of said brackets may be similarly arranged, thus permitting a more favorable arrangement of the knock-outs 24^a, as may be seen in Figure 4. As shown in Figure 6, the arm of central bracket 18 is interposed between adjacent end walls 13, 13 of two housing sections, a combined connecting bolt and pivot 49 being carried thereby. Washers 50, 50 are interposed between the head of said bolt on one end and a nut 51 on the other and the corresponding end walls 13, 13 of the housings.

Referring now to Figures 2, 12 and 13, it will appear that each end of the housing is provided with a transverse channel section 10^a, said channel sections being adapted to receive the end edges of the endmost screens or plate glass panels 37. The other ends of said endmost sections or panels 37 are supported adjacent the flange 12 by one-half of the loop 36 in full line position shown at the right of Figures 12 and 13. The intermediate sections or panels 37 are supported at opposite ends adjacent the flange 12 by oppositely presented halves of the loops 36. The lateral edges of all of the plate glass or screen sections 37 are disposed in channelled flange 10. It will be understood from this description that when the sections 10 are to be inserted, the end sections are inserted into channel sections 10 and then slid longitudinally to bring their outer ends into the end channels 10^a. The intermediate panel sections 37 may then be inserted along one edge into channels 10 and their other edges lifted into position after which loops 36 may be turned to full line position shown in Figures 12 and 13 to lock said panels in position.

I claim:—

1. The combination with an elongated housing, of a plurality of individual reflectors arranged therein, lamps in said reflectors, conductors for said lamps, the end wall of said housing being provided with a plurality of knock-outs, and brackets pivotally supporting opposite ends of said housing said brackets being provided with spur points adapted to be pressed into the end walls of said housing in variable positions with respect to said knock-outs.

2. The combination with a housing having end walls provided with knock-outs for circuit connections, or brackets provided with trunnions for pivotally supporting said housing, a light source in said housing, a conduit for conductors extending from said light source to a point adjacent said knock-outs, said brackets having curved arms and base pads adapting them to be reversibly and interchangeably mounted, and a set

screw movable into and out of locking engagement with said housing.

3. In a device of the character described, a housing provided with an elongated aperture, a top plate spaced from the top wall of said housing and arranged substantially parallel to the plane of said aperture, a pair of reflector units arranged below said top plate and having apertures arranged in approximately the plane of said housing aperture, oppositely presented sockets depending from said top plate between said reflector units, and said reflector units being provided with lamp openings corresponding to said sockets, and lamps in said sockets, said lamps being arranged on a common axis parallel to said top plate.

4. The combination with a housing, provided with a laterally-presented aperture, of a reflector mounted in said housing and having an aperture in approximately the plane of said housing aperture, a transverse reflector-supporting strap hinged at one end to one edge of said housing aperture, a latch carried by the other end of said transverse strap for releasably engaging the opposite edge of said housing aperture, and a lamp in said reflector.

5. The combination with an elongated housing provided with reflector seats and screen retaining flanges along opposite edges thereof, of reflectors provided with lateral flanges resting on said seats and transverse members extending between the opposite edges of said housing and clamping said reflectors in position, said clamping members being provided with means cooperating with said retaining flanges for holding a screen in position.

6. The combination with a housing, of a reflector mounted in said housing, a hinged transverse member adapted to supportably engage an edge of said reflector, a latch carried by the free end of said transverse member for releasably engaging an adjacent edge of said reflector, and a lamp in said reflector.

7. The combination with a reflector housing having an elongated aperture provided with seats arranged along the lateral edges of said aperture, of reflectors arranged in longitudinal series and provided with outwardly presented lateral and end flanges, means at opposite ends of the housing aperture for supportably engaging the outer end flanges of the end reflectors of the series, transverse straps arranged intermediately of the ends of said housing for supporting adjacent end flanges of adjoining reflectors, and means for releasably connecting some of said straps to said housing.

8. The combination with an elongated housing provided with laterally spaced seats, of reflector units within said housing, said reflector units having flanges engaging said seats along the top surfaces of said flanges,

transverse supports engaging the bottom surfaces of said flanges for holding said reflector units in position on said seats, oppositely presented lamp sockets arranged within spaces between adjacent reflector units, the adjacent ends of said adjacent reflector units having openings in alinement with said sockets, and lamps in said sockets and arranged within the respective reflector units.

9. A show window illuminating device comprising a housing having a lateral aperture, a socket-supporting strip arranged within said housing and spaced from the top wall thereof to form a gallery for conductors, conductors therein, double lamp-socket units mounted on said strip and connected up to said conductors, individual reflector units arranged on opposite sides of said units and between said strip and the aperture of said housing, and lamps in said sockets, said lamps being respectively related to said individual reflectors.

10. In a lighting device, the combination with a housing provided with an elongated aperture, reflector supports having their opposite ends connected to said housing along the edges of said aperture, said supports forming a plurality of framed openings with the opposite edges of said housing along said aperture, a top plate spaced from the top wall of said housing and terminating short of the end wall thereof, reflector units having apertures corresponding respectively to said frame openings, twin lamp receptacles depending from said top plate between adjacent reflector units, and lamps in said receptacles, said lamps being arranged within said reflector units.

11. The combination with a reflector housing provided with oppositely arranged seats, of a reflector provided with oppositely-presented flanges adapted to rest against said seats, and means for holding said flanges against said seats, said means including a flange on said housing extending transversely to said seats and adapted to interlock with one edge of said reflector transverse to the reflector flanges, and a releasable strap extending between and transversely to said seats for supportably engaging the opposite edge of said reflector to that which interlocks with said housing flange.

12. The combination with a housing having an aperture, of a reflector having an aperture corresponding to the aperture in said housing, said housing being provided with a U-shaped groove presented inwardly from along one edge of its aperture for receiving one edge of a screen and a flange presented downwardly along the other edge of said aperture for preventing the edge-wise displacement of said screen away from said groove, and means releasably supporting said other edge of the screen.

13. The combination with a housing provided with a longitudinal aperture and a screen supporting flange extending along one edge of said aperture and adjacent to the plane of said aperture, of removable reflector units having apertures corresponding to the aperture of said housing, said housing being provided with means for supporting the distant ends of said reflectors, and a transverse support movable into and out of position to support the adjacent ends of said reflector units, and means for releasably securing said transverse support in reflector-supporting position, said means releasably engaging the edge of said screen opposite to said screen supporting flange.

14. The combination with a housing provided with a laterally-presented aperture, of reflectors arranged in longitudinal series within said housing and having laterally-presented apertures arranged in the aperture of said housing, a transverse support movable into and out of position to support the adjacent ends of two of said reflectors, means carried by the housing for supporting the opposite ends of said reflectors, a screen-supporting flange extending along one edge of the housing aperture, and a releasable catch for securing said movable support in reflector-supporting position, said catch being adapted to releasably engage the adjacent edges of screens disposed in front of said reflectors.

15. The combination with a reflector housing provided with a laterally-presented aperture, of adjacently disposed reflectors having apertures arranged within the aperture of said housing, a twin lamp-holder arranged between said reflectors, said lamp-holder being provided with lamp-receptacles presented towards said reflectors respectively, a separate energizing circuit for each lamp-receptacle, and a lamp in each of said lamp-receptacles.

16. In a lighting device of the character described, the combination with a housing provided with an aperture, of a socket-supporting plate arranged within said housing and parallel to said aperture, a pair of adjacently-disposed reflectors arranged within the housing between said plate and aperture, said reflectors being provided with openings coaxially arranged with respect to an axis extending parallel to said plate, a twin socket mounted on said plate between said reflectors, the socket-openings of said twin-socket being presented toward said openings in the reflectors, and oppositely-presented lamps mounted in said socket-openings and within said reflectors.

17. The combination with oppositely-arranged supporting brackets, of a housing provided with end walls trunnioned in said brackets, knock-outs in one of said end walls, said knock-outs being arranged eccentrically

with respect to the axis of the trunnions, a reflector mounted in said housing, a lamp in said reflector, conductors for said lamp, and means carried by one of said brackets
5 for engaging the adjacent end-wall of said housing in any position to which said housing may be adjusted.

18. The combination with a housing provided with a laterally-presented aperture, of
10 a plate arranged within said housing and approximately parallel to the plane of said aperture, a transverse strip hinged to said housing along one edge of said aperture and releasably engaging said housing along the
15 opposite edge of said aperture, reflector units arranged within said housing and having apertures arranged substantially in the aperture of said housing and with their adjacent edges normally supported by said strap, a
20 twin lamp-socket depending from said plate between the adjacent walls of said reflector units, said twin lamp-socket being provided with lamp-receptacles presented respectively towards the adjacent walls of said reflectors,
25 and lamps mounted in said lamp-receptacles and arranged in said reflectors respectively, said reflectors being provided with openings coaxially arranged with said lamp receptacles.

30 19. The combination with a housing provided with laterally-spaced seats, of a pair of reflector units provided with flanges in engagement with said seats, transverse supports engaging said flanges for holding said
35 reflector units against said seats, said reflector units being provided with coaxially arranged openings in the adjacently disposed walls thereof, a twin lamp-socket arranged between said reflector units and having lamp
40 receptacles presented toward said openings respectively, and lamps mounted in said lamp receptacles and arranged in said reflector units respectively.

45 20. In a lighting device, a housing provided with an aperture, a longitudinally-

arranged top plate spaced from the top of said housing, a pair of reflector units arranged within said housing between said top plate and the aperture of said housing, said reflector units having apertures arranged
50 substantially within the aperture of said housing, the adjacent walls of said reflector units being provided with oppositely presented lamp-socket openings, lamp-sockets mounted on said top plate and presented
55 toward said lamp-socket openings respectively, and lamps arranged within said reflector units and extending thru said lamp-socket openings into said lamp-sockets respectively.

21. The combination with a housing provided with a laterally-presented aperture, of adjacently-disposed reflectors mounted in said housing and having their apertures presented in a common surface adjacent the
65 aperture of said housing, said reflectors being provided with lamp-socket openings in adjacent walls thereof, lamp-sockets arranged between said reflectors and presented towards said openings respectively, and lamps
70 arranged within said reflectors respectively and mounted in said lamp-sockets.

22. The combination with a housing provided with an aperture, of two reflectors arranged within said housing and having
75 their apertures arranged in a common plane within the aperture of said housing, said reflectors being provided with lamp-socket openings in adjacent walls, said openings being arranged on a common axis parallel
80 to the common plane of the reflector apertures, twin lamp-sockets arranged between said reflectors and presented towards said openings respectively, and lamps mounted in said lamp-sockets and within said reflectors,
85 said twin lamp-sockets being wired in two circuits to permit the separate control of said lamps.

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