May 19, 1942. E. E. ASHLEY ET AL 2,283,782

LIGHTING FIXTURE

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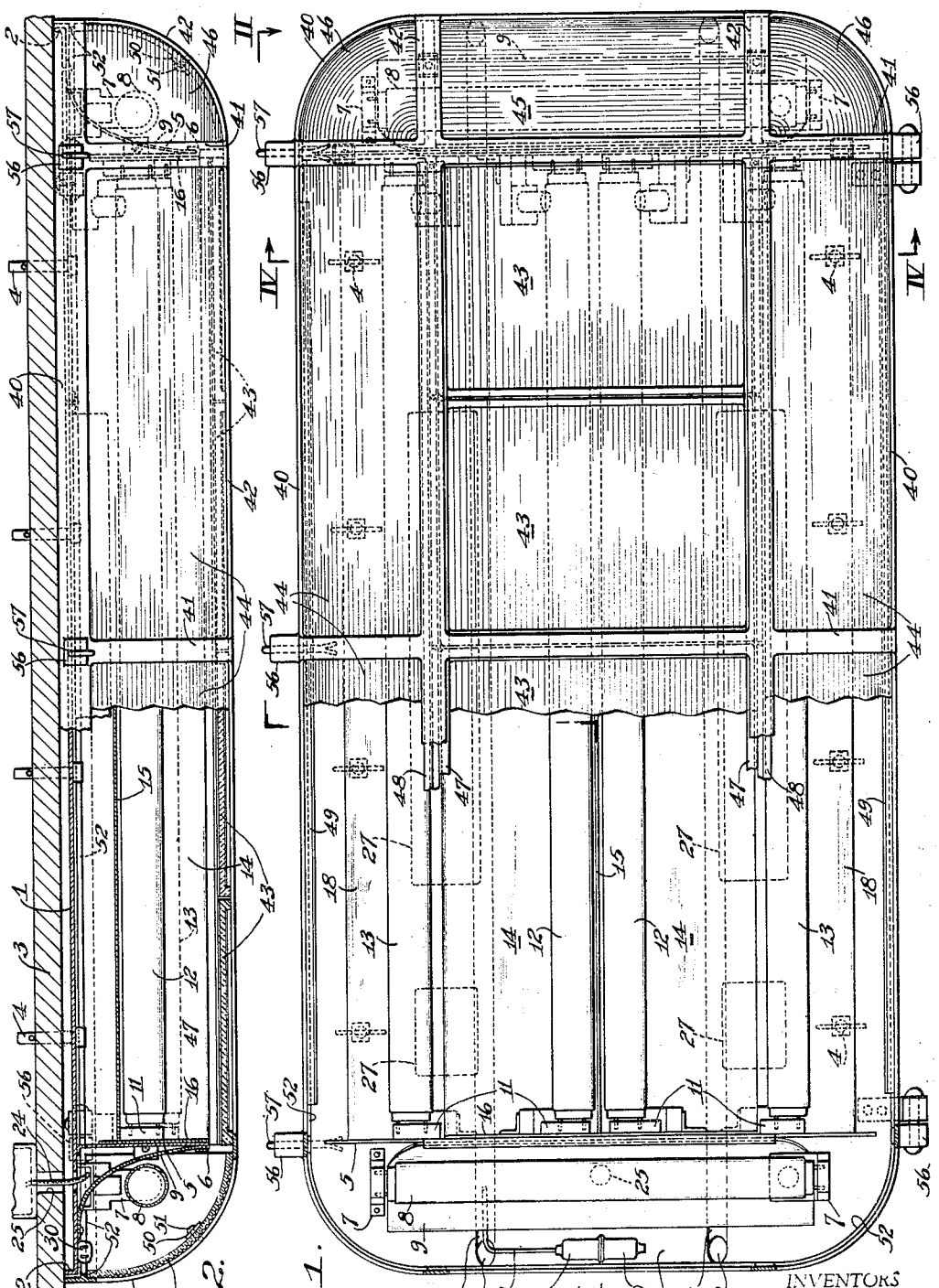


Fig. 2.

Fig. 1.

WITNESSES.
A. B. Wallace.
V. A. Peckham.

INVENTORS
Edward E. Ashley
Alexander E. Blumenthal
BY
Brown, Critchlow & Flick
their ATTORNEYS.

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Fig. 3.

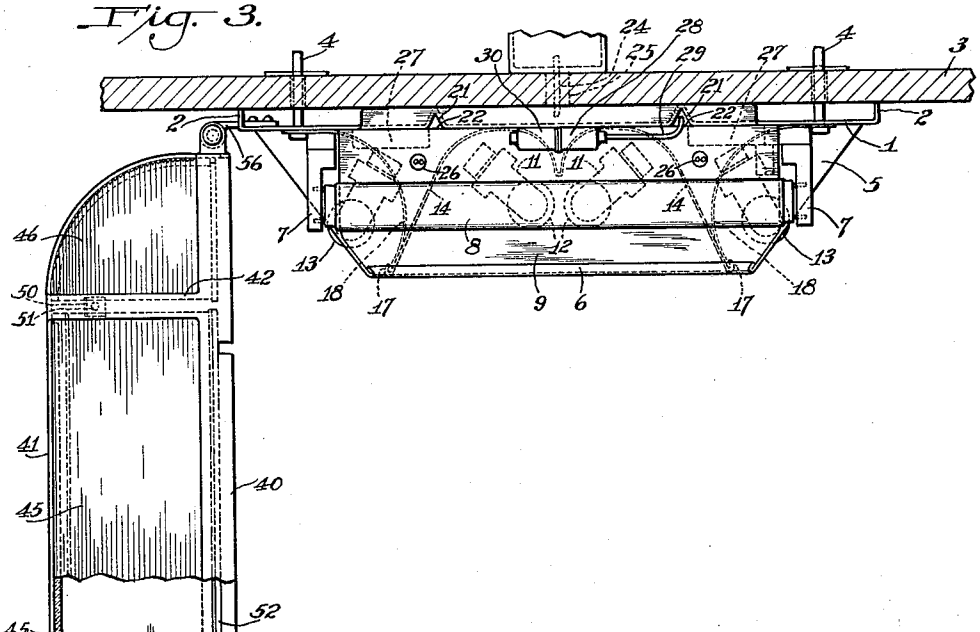
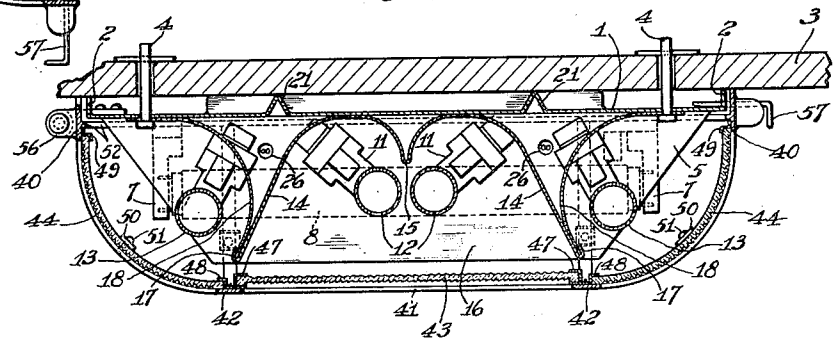


Fig. 4.



WITNESSES.
A. B. Wallace.
V. A. Beckham.

BY

INVENTORS
Edward E. Ashley
Alexander E. Blumenthal
Brown, Critchlow & Flick
their ATTORNEYS.

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UNITED STATES PATENT OFFICE

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LIGHTING FIXTURE

Edward E. Ashley, Noroton Heights, Conn., and Alexander E. Blumenthal, Pittsburgh, Pa., assignors of one-third to Kaufmann & Baer Company, a corporation of Pennsylvania, doing business as Gimbel Bros., Pittsburgh, Pa.

Application May 22, 1941, Serial No. 394,602

5 Claims. (Cl. 240—78)

This invention relates to electric lighting fixtures, and more particularly to fixtures using tubular lights, such as fluorescent tubes.

It is among the object of this invention to provide an electric lighting fixture which presents an attractive appearance, which uniformly and efficiently diffuses and distributes light, which can be quickly assembled from relatively inexpensive parts. which is strong and durable, and in which the wiring is concealed.

In accordance with this invention a plurality of tubular lights, such as fluorescent tubes, are detachably mounted below a supporting plate adapted to be attached to a wall or ceiling. Preferably, four parallel tubes extend lengthwise of the plate, and at each end of the center group there is a transversely extending lighting tube. A long concave reflector is secured to the plate behind each tube, the side and end reflectors reflecting light laterally from the fixture. Surrounding the edges of the supporting plate and enclosing the tubes and reflectors is a glass bowl including a metal frame hinged to one side edge of the plate. The sides and ends of the bowl are formed from transversely curved panes of glass mounted in the frame, the corner panes are rounded, and the bottom of the bowl is formed from flat panes of glass.

The preferred embodiment of the invention is illustrated in the accompanying drawings in which Fig. 1 is a bottom plan view of a lighting fixture with the bowl broken away at one end; Fig. 2 is a side view and section taken on the line II—II of Fig. 1; Fig. 3 is an end view with the bowl hanging down in its open position and broken away at its lower corner; and Fig. 4 is a vertical transverse section taken on the line IV—IV of Fig. 1.

Referring to the drawings, a generally rectangular metal back plate 1 with rounded corners and of considerably greater length than width is provided along its opposite sides and ends with turned back flanges 2 in order to strengthen it and to space it from a wall or ceiling 3 to which it is adapted to be fastened by toggle bolts 4 extending through holes in the plate. Secured to the back plate a short distance from each end is a transversely extending upright end plate 5 the outer edge of which is turned outwardly and back toward the back plate to form a narrow flange 6. Rigidly mounted on the back plate between each of its ends and the adjacent end plate is a pair of electric light sockets 7 which support a lighting tube 8 parallel to the end plate. A transversely concave reflector 9, desirably productive of specular reflection, made of polished aluminum, enameled metal or other suitable material, extends longitudinally of each end tube with its outer edge screwed to the back plate and with its inner edge inserted in the channel formed between the adjacent end plate and its flange 6, as shown in Fig. 2. The positions of these end reflectors are therefore such that they reflect light from the end tubes laterally from each end of the fixture. Although end tubes 8 and the others about to be referred to may be incandescent lamps in tubular form, this lighting fixture is especially suitable for fluorescent lighting.

Mounted on the inner surface of each end plate 5 is a plurality of light sockets 11, preferably four, disposed in longitudinally spaced relation across the end plate (Fig. 4). These sockets support four parallel lighting tubes 12 and 13 extending from one end plate to the other and at right angles to end tubes 8. Reflectors for the two center tubes 12 are formed preferably by bending a sheet of polished or enameled metal capable of specular reflection to form two transversely concave reflecting surfaces 14 extending side by side lengthwise of the tubes with their ends substantially in engagement with the end plates. As shown in Figs. 3 and 4 the outer longitudinal edges of these two reflecting surfaces lie in a plane substantially coinciding with the common plane of the outer longitudinal edges of the end plates, but the longitudinal junction line 15 of these two surfaces is spaced only a short distance from the back plate to which the reflector is screwed. A flat reflector plate 16 is clamped against the inner surface of each end plate by the two center sockets 11 attached thereto (Figs. 2 and 4).

The outer longitudinal edges of the center reflector are turned outwardly and back toward the back plate to form narrow flanges 17 between which and the body of the reflector the inner edges of transversely concave side reflectors 18 are inserted as shown in Fig. 4. These side reflectors extend from one end plate to the other behind the side tubes 13, and their outer edges are screwed to the back plate. The positions of these side reflectors are therefore such that they reflect light laterally from both sides of the fixture. This method of connecting the outer edges of the center reflector to the side reflectors permits the reflectors to be quickly mounted in place in a simple and inexpensive manner with a minimum of fastening members, and further permits ready dismounting of the

reflectors for maintenance access to the wiring and other elements behind the reflectors. The same thing is true of the end reflectors.

To prevent extreme heat from being transmitted from this fixture to the ceiling the fixture back plate is provided with a pair of longitudinally extending grooves or channels 21 to create an air-insulating barrier. The channels terminate in openings 22 in the ends of the back plate so that the formation of the channels does not crimp the back plate's end flanges 2. The ridges or corrugations of metal that are formed on the back of the back plate when these channels are formed serve as spacers that prevent the plate from buckling when it is pulled up tightly against the ceiling by bolts 4.

The wires 24 of this fixture enter it through an opening 25 in one end of the back plate and pass through other openings 26 in the end plates, and the wires are concealed from view in the passage-like spaces behind the side and end reflectors where the auxiliaries 27 required by fluorescent lighting circuits are also mounted. To permit any desired electrical element to be plugged into the fixture circuit in case a person wishes to do so, a socket 28 is mounted on one end of the back plate and is connected by a wire 29 to the wiring behind the adjacent end reflector. Wire 29 passes around the edge of the reflector through one of the channels 21. An electric plug 30 preferably is furnished with the socket.

The tubes, reflectors and back plate are normally entirely covered and concealed by a glass bowl of pleasing appearance by which the light from the tubes is diffused and directed. This bowl consists of a metal frame in which glass panels are mounted. The rim 40 of the frame is of substantially the same shape as the back plate and entirely surrounds and encloses its flanges 2. The opposite sides of the rim are connected near each end and at their centers by downwardly curved cross bars 41 having straight central portions, and the ends of the rim are similarly connected by a pair of similar cross bars 42. A flat central area is thus provided for the reception of flat panes 43 of glass, surrounded by areas in which transversely curved side, end and corner panes 44, 45 and 46, respectively, are mounted.

To hold the flat center panes in position metal channel members 47 are spot welded and screwed to the inner surfaces of the two long cross bars 42 with the outer flanges of the channels projecting beyond the sides of the cross bars, as shown in Figs. 1 and 4. Deep channels are thus provided for safely holding the glass without making the cross bars so wide as to detract from the appearance of the bowl. The projecting channel flanges are not noticeable from below. Each of these channel members is provided opposite its base with an angle member 48 that forms with the adjacent cross bar another channel in which the lower edges of the curved side panes 44 are retained. The upper edges of these side panes are held in similar channels formed by angle members 49 attached to the rim of the frame. The end and corner panes 45 and 46 are held in position by overlapping washer-like retaining plates 50 attached to the underlying cross bars of the frame by screws 51 passing between the edges of the panes. Also, the inner surfaces of the rim ends are provided with integral ribs 52 extending across the tops of the end and corner panes.

One side of the bowl frame is hinged to brackets 56 attached to the back of the back plate and extending out through slots in its side flange. The other side of the frame is provided with horizontal openings in which rods 57 are slidable. The outer end of each of these rods is bent to form a handle, and the inner end is split and spread slightly to prevent it from being withdrawn from the frame. To hold the bowl in position up against the ceiling, as shown in Fig. 4, these rods are pushed inwardly through slots in the back plate flange 2 whereby the rods slide inwardly on the rear or upper surface of the back plate and prevent the bowl from swinging downwardly away from it.

According to the provisions of the patent statutes we have explained the principle and construction of our invention and have illustrated and described what we now consider to represent its best embodiment. However, we desire to have it understood that, within the scope of the appended claims, the invention may be practiced otherwise than as specifically illustrated and described.

We claim:

1. A lighting fixture comprising a back plate adapted to be fastened to a ceiling, an upright end plate secured thereto transversely adjacent each end and projecting downwardly therefrom, electric light sockets mounted on the inner surfaces of the end plates for receiving a plurality of parallel lighting tubes disposed at right angles to the end plates, a pair of light sockets mounted in fixed position between each end plate and the adjacent end of the back plate for receiving a lighting tube disposed parallel to the end plate, transversely concave reflectors extending longitudinally of said parallel tubes from one end plate to the other, a transversely concave reflector extending longitudinally of each end tube and lying against the adjacent end plate, and a glass bowl for covering said tubes and back plate.

2. A lighting fixture comprising a back plate adapted to be fastened to a ceiling, an upright end plate secured thereto transversely adjacent each end and projecting downwardly therefrom, electric light sockets mounted on the inner surfaces of the end plates for receiving four parallel lighting tubes disposed at right angles to the end plates, a pair of light sockets mounted on the back plate between each end and the adjacent end plate for receiving a lighting tube disposed parallel to the end plate, transversely concave reflectors extending longitudinally of the two intermediate parallel tubes, transversely concave reflectors extending longitudinally of the two outer parallel tubes for reflecting light laterally from the back plate, the ends of said reflectors substantially engaging the end plates, and a transversely concave reflector extending longitudinally of each end tube with one edge engaging the adjacent end plate for reflecting light laterally from the end of the back plate, and a glass bowl for covering said tubes and back plate.

3. A lighting fixture comprising a back plate adapted to be fastened to a ceiling, an upright end plate secured thereto transversely adjacent each end and having its outer edge turned back toward the back plate, electric light sockets mounted on the inner surfaces of the end plates for receiving a plurality of parallel lighting tubes disposed at right angles to the end plates, a pair

of light sockets mounted in fixed position between each end plate and the adjacent end of the back plate for receiving a lighting tube disposed parallel to the end plate, transversely concave reflectors extending longitudinally of said parallel tubes from one end plate to the other and having their outer side edges turned back toward the back plate to form channels, side reflectors secured to the back plate with their inner edges projecting into said channels, a reflector secured to the back plate behind each end tube with one edge overlapped by the turned back outer edge of the adjacent end plate, and a glass bowl for covering said tubes and back plate.

4. A lighting fixture comprising a back plate adapted to be fastened to a ceiling, an upright end plate secured thereto transversely adjacent each end and projecting downwardly therefrom, electric light sockets mounted in fixed position above the lower edge of said plates for receiving between the end plates a plurality of parallel lighting tubes disposed at right angles to the end plates, a pair of light sockets mounted in fixed position between each end plate and the adjacent end of the back plate for receiving a lighting tube disposed parallel to the end plate, reflectors behind all of said tubes, a glass bowl for covering said tubes and back plate, means hinging said bowl to one side of the back plate, and locking rods slidably mounted in the opposite edge of the bowl and adapted to be slid behind the back plate.

5. A lighting fixture comprising a back plate adapted to be fastened to a ceiling, an upright end plate secured thereto transversely adjacent each end and projecting downwardly therefrom, electric light sockets mounted in fixed position above the lower edge of said plates for receiving between the end plates a plurality of parallel lighting tubes disposed at right angles to the end plates, a pair of light sockets mounted in fixed position between each end plate and the adjacent end of the back plate for receiving a lighting tube disposed parallel to the end plate, reflectors behind all of said tubes, a metal frame connected to said back plate and including a plurality of cross bars, channel members secured to the inner surfaces of some of said bars with their outer flanges projecting beyond the edges of the bars, and panes of glass projecting into and supported by said channel members.

EDWARD E. ASHLEY.
ALEXANDER E. BLUMENTHAL.