March 23, 1943. W. L. SCHUMAKER 2,314,520

LIGHTING FIXTURE

Filed June 24, 1940

Fig. 1

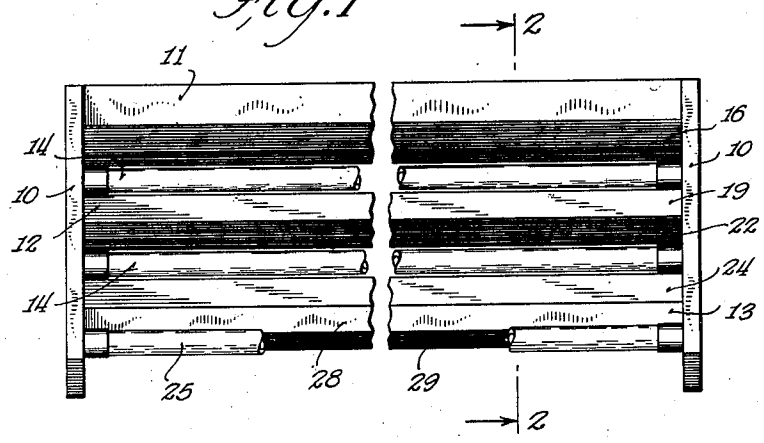


Fig. 2

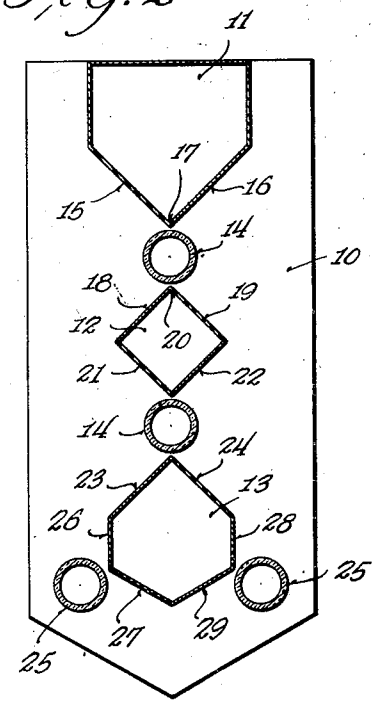
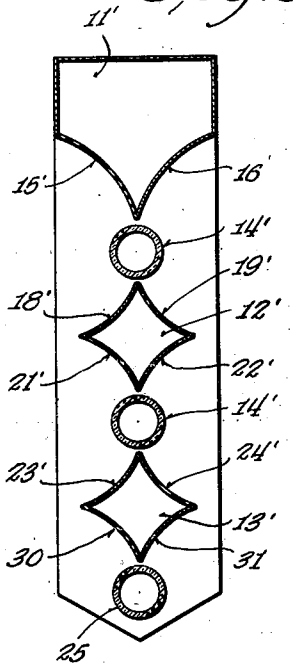


Fig. 3



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LIGHTING FIXTURE

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1 Claim. (Cl. 240—78)

This invention relates to lighting fixtures and particularly to electric fixtures of the fluorescent type.

In fluorescent lighting, a mercury vapor arc confined in a cylindrical tube of glass constitutes the source of illumination, one or more of such tubes being contained in a single fixture. These tubes are ordinarily at least an inch in diameter and sometimes as much as four feet long, the light emanating in all directions from every point in the external surfaces thereof. Because of these characteristics, it is difficult to control or direct the light rays to best advantage.

Fluorescent lighting fixtures ordinarily involve the use of reflectors which partially surround the luminous tube and direct the rays therefrom in one general direction. When thus arranged, a substantial part of the entire light rays become trapped between the tube and the reflector and are lost. Also partial absorption in the extended reflecting surfaces ordinarily employed is a further cause of reduced efficiency.

One object of the present invention is to provide in a fluorescent lighting fixture a novel combination and arrangement of parts by which the above losses may be materially reduced.

Another object is to provide in a fixture of the type mentioned a novel arrangement of reflectors by which half of the light rays emanating from each of a plurality of tubes may be directed in one general direction and the remainder in an opposite direction.

Another object is to provide a fixture having a plurality of vertically spaced parallel luminous tubes combined in such manner that half of the light rays from each of the tubes are directed laterally in one direction and the remainder laterally in the opposite direction. Such a fixture may be utilized to advantage as a central lighting fixture for stores and the like, the shelving and counters at opposite sides of the store being illuminated by the oppositely directed rays.

Other objects and advantages will appear from the following description of a fluorescent lighting fixture embodying the present invention.

In the accompanying drawing:

Figure 1 is a side elevation of a lighting fixture constructed in accordance with the present invention.

Fig. 2 is a transverse sectional view on a larger scale taken substantially along the line 2—2 of Fig. 1.

Fig. 3 is a transverse sectional view of a lighting fixture embodying the present invention but of somewhat different form.

The fixture shown in Figs. 1 and 2 comprises an elongated frame having a pair of vertical end heads 10 rigidly connected by a plurality of elongated hollow sheet metal structures 11, 12 and 13 vertically spaced to admit the fluorescent tubes 14 therebetween. The connector structures 11, 12 and 13 and the tubes 14 extend horizontally and are substantially parallel. The tubes 14 are supported at opposite ends in conventional terminal sockets carried by the end heads 10.

The upper connector structure 11 is fashioned to provide two horizontally extended reflecting surfaces 15 and 16 which converge downwardly toward the upper tube 14 and intersect in a horizontally extended edge 17 adjacent the tube. The intermediate connector structure 12 is also fashioned to provide two horizontally extended reflecting surfaces 18 and 19 which converge upwardly and intersect in a horizontally extended edge 20 adjacent the upper tube 14. The edges 17 and 20 lie in a common plane passing through the center of the upper tube 14 so that the reflecting surfaces 15 and 18 cooperate to direct toward the left all of the light rays emanating from one half of that tube, and the reflecting surfaces 16 and 19 cooperate to direct toward the right all of the light rays emanating from the other half of that tube.

The intermediate connector structure 12 is also provided with horizontally extended downwardly convergent reflecting surfaces 21 and 22 which cooperate in a similar manner with the lower tube 14 and with similar upwardly convergent reflecting surfaces 23 and 24 on the lower structure 13 to direct all of the light rays from one half of the lower tube 14 in one direction and all of the light rays from the other half of that tube in the opposite direction.

It will be noted that a very large portion of the light emanating from the tubes 14 proceeds directly, without reflection, from the tubes, and that the remaining small portions which proceed upwardly and downwardly from those tubes are reflected outwardly by the relatively narrow surfaces 15—16, 18—19, 21—22, and 23—24, with the result that none of the light rays are trapped and the loss due to absorption in the reflecting surfaces is rendered to a minimum.

In this instance two additional horizontally spaced fluorescent tubes 25 are arranged adjacent the bottom of the lower connector structure 13, that structure being fashioned to provide a pair of horizontally extended reflecting surfaces 26 and 27 which converge toward one of the tubes 25 and a similar pair of horizontally extended

reflecting surfaces **28** and **29** which converge toward the other of the tubes **25**, so that light is directed downwardly and laterally from the bottom of the fixture.

The several reflecting surfaces may be flat, as indicated in Fig. 2, or may be variously curved, the reflecting surfaces of the fixture shown in Fig. 3 being curved concavely.

The fixture shown in Fig. 3 is otherwise somewhat similar to that of Fig. 2 except that only a single fluorescent tube **25'** is provided at the bottom of the fixture and that tube is disposed directly below the two vertically spaced tubes **14'**. As in the fixture shown in Fig. 2, the upper of the tubes **14'** is symmetrically disposed between a pair of downwardly convergent reflecting surfaces **15'** and **16'** formed on the upper connector structure **11'** and a pair of upwardly convergent reflecting surfaces **18'** and **19'** on the intermediate structure **12'**; and the lower of the tubes **14'** is likewise symmetrically disposed between a pair of downwardly convergent reflecting surfaces **21'** and **22'** on the intermediate structure **12'** and a pair of upwardly convergent reflecting surfaces **23'** and **24'** on the lower structure **13'**; so that all of the light from the left half of both tubes **14'** is directed toward the left and all of the light from the right half of both of those tubes is directed toward the right and no light rays are trapped or lost.

It will be noted that downwardly convergent reflecting surfaces **30** and **31** provided on the lower connector **13'** cooperate with the additional lower tube **25'** to direct all of the light rays therefrom downwardly and laterally in both directions.

Various changes may be made in either embodiment of the invention hereinabove specifically described without departing from or sacrificing the advantages of the invention as defined in the appended claim.

I claim:

In a lighting fixture the combination of a plurality of spaced substantially parallel fluorescent tubes so disposed that their longitudinal axes lie substantially within a common plane, two pairs of light reflecting surfaces extending lengthwise of each of said tubes, each of said pairs of surfaces converging toward an adjacent tube and intersecting in a line disposed substantially within said plane, additional substantially parallel fluorescent tubes disposed at opposite sides of said plane, and a pair of light reflecting surfaces extending lengthwise of and adjacent each of said additional tubes, each of said last named pair of surfaces converging toward the adjacent one of said additional tubes.

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