Feb. 2, 1943. L. SCHEPMOES 2,309,792

LIGHTING FIXTURE

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Fig. 1.

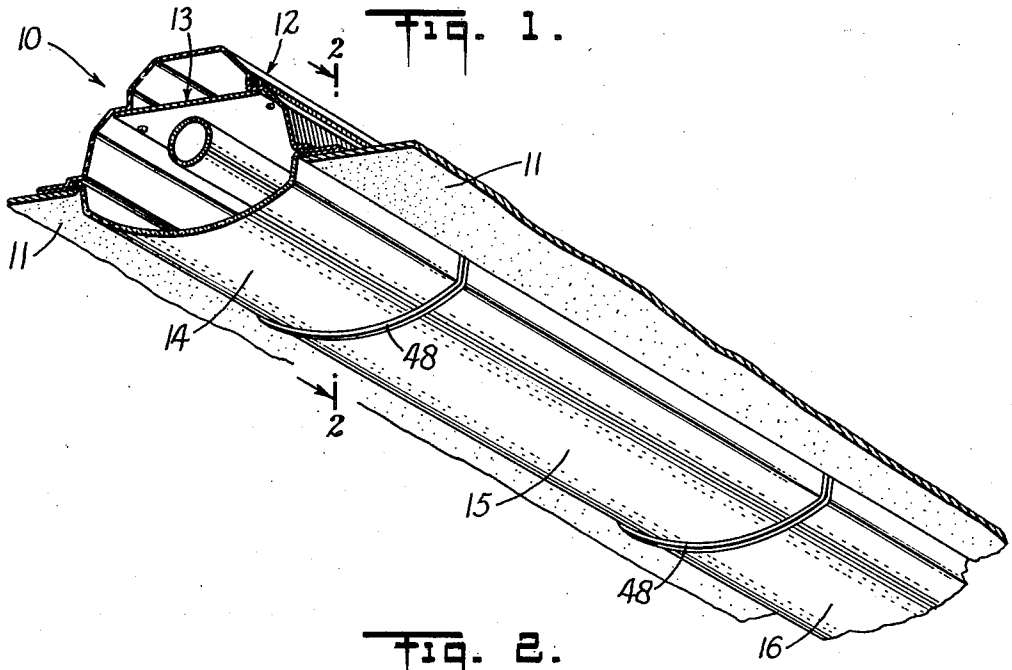
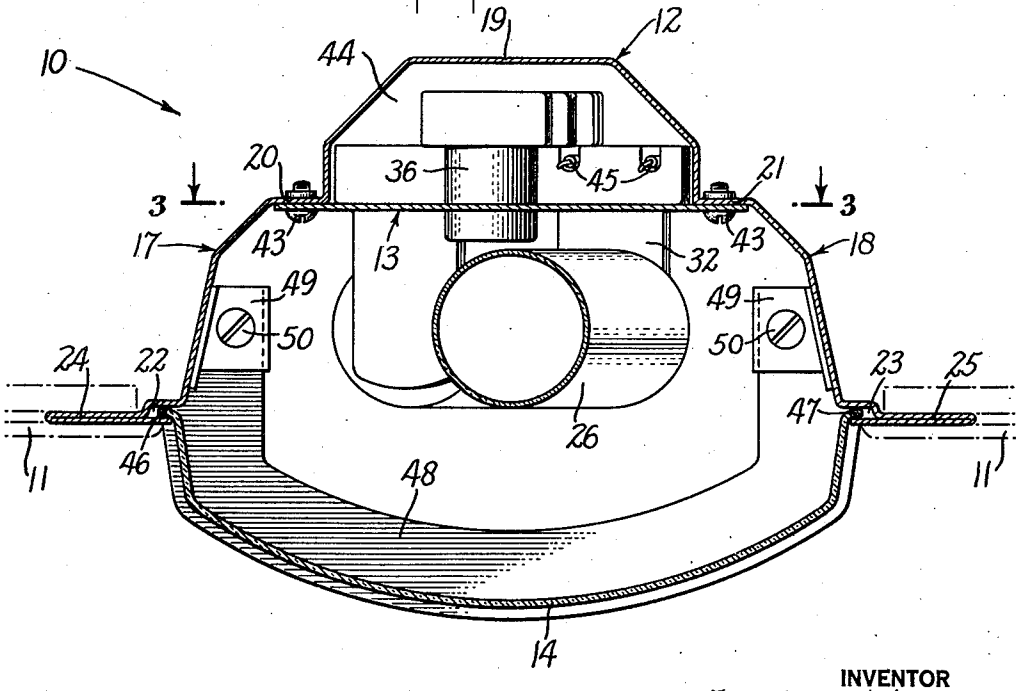



Fig. 2.




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Fig. 3.

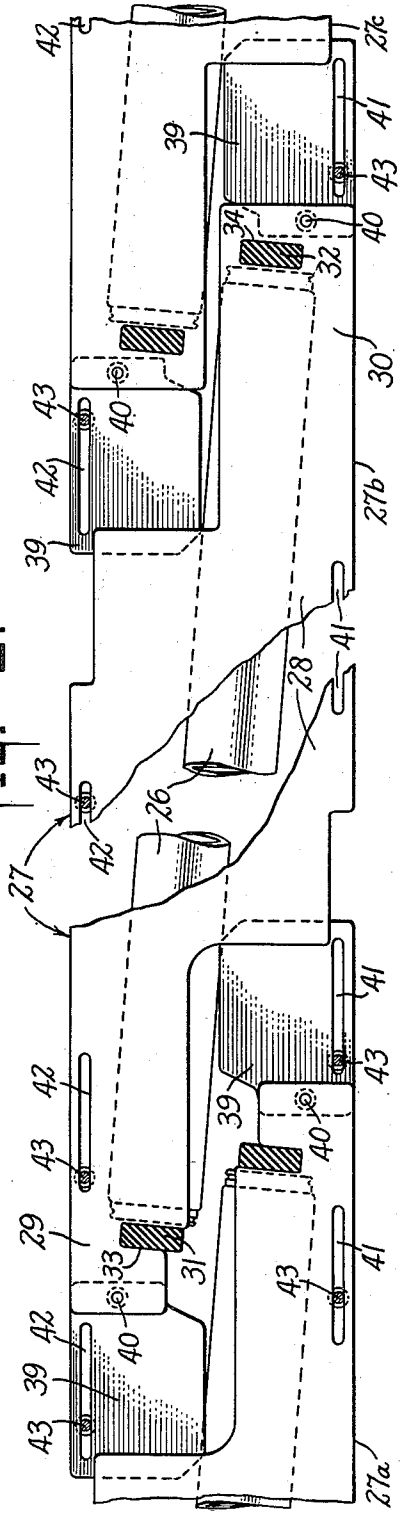
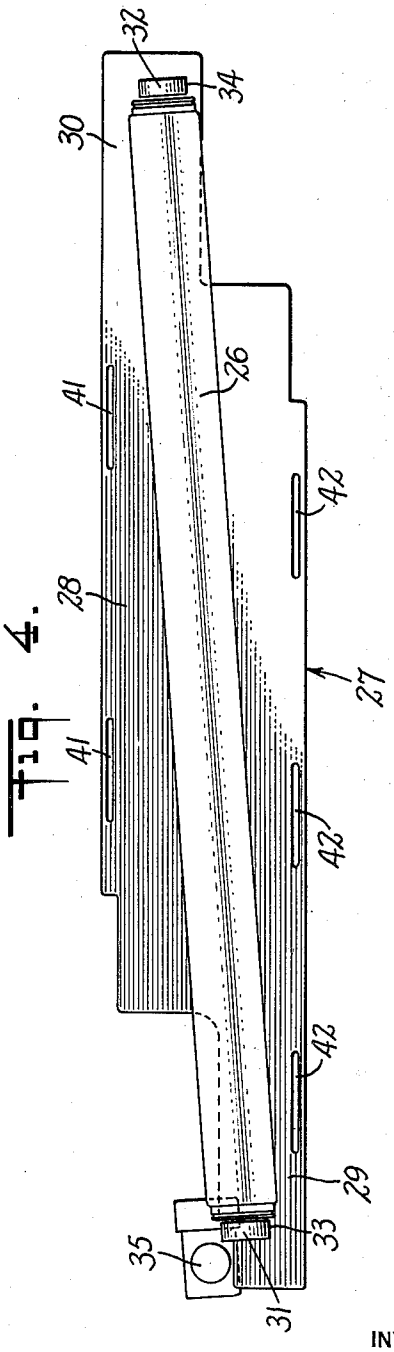



Fig. 4.




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# UNITED STATES PATENT OFFICE

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## LIGHTING FIXTURE

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Application September 24, 1940, Serial No. 358,052

4 Claims. (Cl. 240—78)

This invention relates to lighting fixtures and more particularly to ceiling fixtures for the interior of railroad vehicles and the like.

One of the objects of this invention is to provide a lighting fixture which is light and inexpensive in construction, yet pleasing in appearance, and particularly well adapted for use in railroad cars or the like. Another object is to provide a construction of the above character which is simple in construction, thoroughly practical, and reliable in operation. Another object is to provide a construction of the above character which will illuminate evenly and efficiently the interior of railroad cars or the like. Another object is to provide a construction of the above character which may be readily and inexpensively manufactured. Another object is to provide a construction of the above character which may be installed with a minimum amount of labor and upon which repairs may be made with the greatest ease. Another object is to provide a construction of the above character which can be readily installed in cars of standard construction in units of varying lengths without necessitating material changes in the construction of the lighting fixture. Another object is to provide a construction of the above character which precludes the necessity of wiring the car. Another object is to provide a lighting fixture of the above character which is so constructed that an even amount of light is given off at all points throughout the length of the lighting fixture. Other objects will be in part obvious and in part pointed out hereinafter.

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

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

Figure 1 is a perspective view of the lighting fixture as mounted on the ceiling of a railroad car or the like;

Figure 2 is a cross section on an enlarged scale, taken along the line 2—2 of Figure 1;

Figure 3 is a top plan view of portions of the fixture shown in Figure 1 and taken on the line 3—3 of Figure 2 with certain of the parts thereof broken away; and

Figure 4 is a bottom plan view of certain of the parts shown in Figure 3.

As conducive to a clearer understanding of certain features of this invention, it might here be pointed out that the installation of lighting fixtures which extend throughout the length of a railroad car along the ceiling thereof presents many difficulties. One of these difficulties lies in the fact that the spaces within which the fixtures are to be installed vary in length, depending upon the design of a car, and thus, to obtain a continuous fixture throughout the length of a given space, it is necessary to especially design the fixtures to fit the particular space involved. This increases the cost of design and construction. A still further difficulty lies in the fact that the light emitted by continuous fixtures of the above type comes from a series of light-emitting members. As these members are mounted on sockets, and as the light given off at the ends of a tube lamp is less than the amount given off in the middle, the diffusing members of the fixture are unevenly illuminated. This detracts from the appearance of the fixture. It is, accordingly, another object of this invention to provide a lighting fixture of the above type which overcomes the above-mentioned difficulties, as well as many others.

Referring first to Figure 1, the lighting fixture generally indicated at 10, is preferably mounted on a ceiling member, such as the clerestory of a railroad car. Generally speaking, this fixture preferably runs throughout the entire length of the clerestory and is characterized by elongated tubular illuminators suspended in alignment therealong to form preferably a continuous light-emitting band throughout the length of the railroad car. In general, the fixture comprises an elongated metal trough, generally indicated at 12, which is mounted over and secured to the edges of a longitudinal opening in the clerestory 11 (Figure 2). Trough 12 carries a series of plates, one of which is generally indicated at 13 in Figures 1 and 2, which both support the fluorescent tubes of the fixture and serve as reflectors. This trough also carries a series of globes 14, 15, and 16, which may be detached therefrom by flexing, all as will be fully described hereinafter.

As shown in Figure 2, metal trough 12 may be made in any suitable lengths and may be continuous for the length of the clerestory in which the fixture is to be installed. It includes a pair of sidewalls, generally indicated at 17 and 18, which extend downwardly from top wall 19, flange outwardly to form a pair of shoulders 20 and 21, and thence extend downwardly again. The lower edges of the trough flange outwardly,

downwardly, thence outwardly again, and then they are bent back upon themselves to form flanges **24** and **25** and grooves **22** and **23**. Flanges **24** and **25** serve to mount the fixture in the opening formed in the clerestory **11** of the railroad car and may be secured to the edges of this opening in any suitable manner, as diagrammatically indicated in Figure 2.

Referring now to Figures 3 and 4, the light-emitting members are preferably fluorescent tube lamps and each lamp **26** (Figure 4) is mounted upon an individual supporting plate, generally indicated at **27**, extending diagonally thereacross. Each plate, such as plate **27**, is flat and includes a center portion **28** and a pair of tongue portions **29** and **30** extending outwardly from opposite sides of the ends thereof. The tube lamps, such as lamp **26**, are mounted diagonally across the plates on sockets **31** and **32**, which are secured to plate **27** near the ends of tongues **29** and **30**, respectively. The main portion of these sockets and the wiring for them is positioned above the plates (Figure 2) and the lamp is supported below the plates by the lower portions of the sockets which extend through openings **33** and **34** (Figure 4). One of each pair of sockets carries a starter switch **35** which is utilized in the usual manner to place the lamp to which it is connected in operation and which extends downwardly into the space between the tongue portions of adjoining plates, such as switch **36** (Figure 2).

When the plates are in assembled relationship (Figure 3), the tongues at the adjoining ends of the plates extend alongside one another. Thus, the tongues on each plate overlap the adjoining tongues on the adjoining plates. As the lamp sockets and thus the ends of the lamp on each plate are positioned adjacent the ends of the tongues thereof, the ends of the tube lamps are positioned in overlapping relationship with respect to each other (Figure 3). Furthermore, because of the length of the tongues, the supporting plates **27** (Figure 3) may be moved longitudinally with respect to each other to increase or decrease the amount of overlap of the tongues and thus of the lamps. Accordingly, the total length of a series of supporting plates may be varied by moving them toward or away from each other, and thus, a series may be adjusted so that it fits in a given space or length of clerestory without requiring time-consuming and expensive alterations for different lengths encountered in installation.

As best shown in Figure 3, when a series of plates, generally indicated at **27*a***, **27*b***, and **27*c***, are positioned in assembled relationship, spaces remain between the ends of the tongues of each plate and adjoining plates, the size of these openings depending on the length adjustment a particular installation requires. As these plates together with the sidewalls **17** and **18** (Figure 2) of the trough form the reflector of the fixture, these open spaces are preferably covered by plates **39** (Figure 3). These plates are secured to the ends of each tongue by screws **40** and are of sufficient length to blanket the spaces regardless of the lengthwise adjustment of the plates with respect to each other. Thus, these open spaces are at all times covered regardless of the adjustment of the plates and a full reflecting surface is provided for the lamps.

To secure the lamp supporting plates **27** to metal trough **12**, two series of slots **41** and **42** are provided in the outer edges of the plates and cover members. A series of holes (not shown) are tapped in shoulders **20** and **21** (Figure 2) of trough **12**, the distance between the holes being less than the length of the slots **41** and **42**. Thus, when the plates are located in the trough with their edges resting against shoulders **20** and **21**, a hole is always available for every slot. Screws **43** (Figure 2) pass through these slots and are threaded into the holes in shoulders **20** and **21**. When the plates are thus secured, they form a passageway **44** (Figure 2) in the trough for the reception of the upper portions of the sockets and the wiring **45**.

Globes **14**, **15**, and **16** are preferably trough-shaped and are made of translucent material able to withstand considerable flexing, such as a resilient, translucent plastic. As best seen in Figure 2, a pair of flanges **46** and **47** extend outwardly from the upper edges of the globes. The width of each globe between these flanges is greater than the distance between grooves **22** and **23**, which, as described hereinabove, extend along the lower edges of trough **12**. Thus, to mount a globe on the fixture, one of the globe flanges is inserted in one of the grooves, and pressure is applied to the opposite side of the globe. This flexes the upper edges of the globe toward each other, and when the globe is properly positioned, the pressure is released, and the other flange is resiliently urged into the other groove. Thus, the globes are securely mounted upon the trough. However, they may be easily and quickly removed therefrom for cleaning or repairs.

Between each pair of globes a spacer member **48** (Figures 1 and 2) is vertically positioned. These members are preferably flat, are made of a plastic, and are secured to trough **12** in any suitable manner such as by brackets **49** and bolts **50**. These spacer members separate the globes so that, when a globe is flexed as it is being mounted on or removed from the fixture, its ends move freely over the flat surfaces of the spacer members. Thus, these spacer members prevent interference with the flexing action of a globe by the ends of its adjoining globes.

Thus, a fixture is provided which may be easily and quickly installed in a clerestory of any length without requiring alteration of any of its lamp-supporting parts. Furthermore, it is so constructed that it evenly illuminates all portions of the railroad car, for the globes provide a continuous band of light throughout its length. Another advantage, which materially aids the attractiveness of the fixture, is achieved by so constructing the fixture that the globes thereof are evenly illuminated throughout the length of the fixture. A still further advantage lies in the fact that the globes are so constructed and mounted that they may be readily removed from or mounted upon a lighting fixture, and thus repairs and cleaning may be easily and quickly accomplished. Thus a practical and efficient lighting fixture is provided which overcomes the above-mentioned difficulties as well as many others.

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

I claim:

1. In lighting apparatus, in combination, a

trough member, a series of supporting plates mounted on said trough member, tongues formed on and extending outwardly from opposite sides of the ends of each of said supporting plates, sockets mounted on each of said tongues, and a tube lamp mounted on each pair of sockets, whereby said tube lamps extend diagonally across each of said supporting plates, each of said tube-lamp supporting plates being positioned in said series with its tongues positioned alongside of the tongues of its adjoining plates, whereby said plates may be moved longitudinally with respect to each other while maintaining the ends of said tube lamps in overlapping relationship.

2. In lighting apparatus, in combination, a trough member, a series of lamp-supporting plates mounted in said trough member and dividing said trough member into upper and lower sections, said upper section providing a passageway for wiring and lamp sockets, a tube lamp mounted on each of said supporting plates extending diagonally thereacross, said supporting plates being longitudinally adjustable within said trough member, the ends of each of said lamps being positioned in overlapping relationship with respect to the ends of its adjoining lamps, and globe means mounted on said trough member.

3. In lighting apparatus, in combination, a trough member, a series of lamp supporting plates mounted in said trough member and dividing said trough member into upper and lower sections, said upper section providing a passageway for wiring and lamp sockets, the lower section of said trough and the lower surfaces of said supporting plates forming a reflector, a pair of tongues formed on each of said supporting plates and extending outwardly from the ends thereof, a tube lamp mounted on each of said plates and having its ends extending along said tongues, said plates when in assembled relationship being positioned with their tongues lying in overlapping relationship with respect to each other and being adapted to be moved longitudinally with respect to each other, whereby the light emitting portions of the tube lamp on each of said plates overlap light emitting portions of the tube lamps upon adjoining plates, and translucent globe means mounted on said trough member to cover the open side thereof.

4. In an elongated relatively narrow lighting fixture adapted to support a plurality of elongated fluorescent lamps, the combination of, an elongated support adapted to be secured in a stationary position to a ceiling, said support including a plurality of longitudinally adjustable plates, a plurality of groups of lamp receiving sockets secured to said plates, each group comprising a pair of adjacent sockets spaced transversely of the support and the groups being longitudinally spaced from one another along said plates, the longitudinal distance between the sockets of each group being considerably less than the longitudinal distance between successive groups of sockets and the sockets of each group lying respectively on opposite sides of the longitudinal center line of the fixture, the sockets of each of said groups also being spaced from one another longitudinally of said support, elongated fluorescent lamps disposed respectively between successive groups of sockets, each lamp having one end connected to a socket of one group and having its other end connected to one socket of an adjacent group, whereby the opposite ends of each lamp are spaced from the center line of said fixture and the end of each lamp overlaps the adjacent end of the adjoining lamp by an amount substantially equal to the longitudinal spacing between the sockets of one group so that light emitting portions of one lamp overlap light emitting portions of each adjoining lamp to provide illumination in the areas of the fixture adjacent the non-emissive portions of said tubes, and means for selectively securing said plates in adjusted position for varying the distance between the sockets of each group to control the amount of overlap between the adjacent ends of adjoining lamps.

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