March 1, 1955 W. L. LIPSCOMB 2,703,360

LIGHTING FIXTURE

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FIG. 1

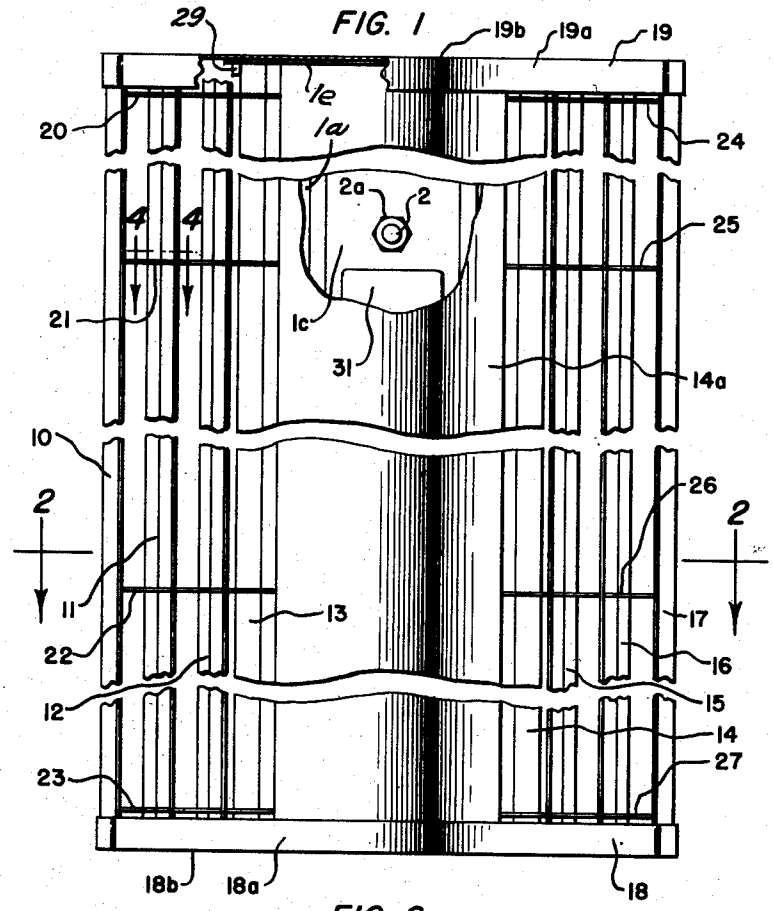


FIG. 2

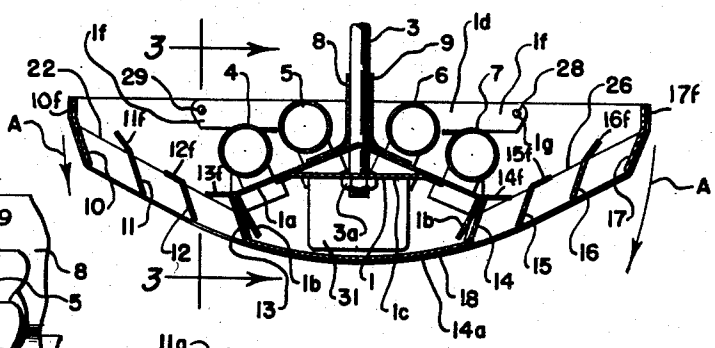


FIG. 3

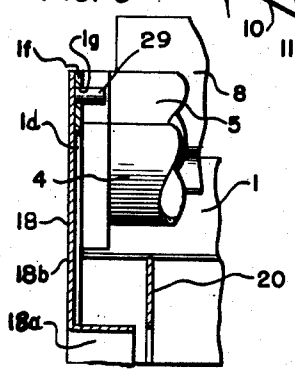
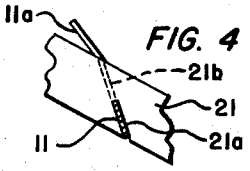


FIG. 4



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LIGHTING FIXTURE

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5 Claims. (Cl. 240—51.11)

My invention relates to a lighting fixture, more particularly to an indirect lighting fixture of the overhead suspended type, and the objects of my invention are:

First, to provide a lighting fixture of this class in which lamps may be readily replaced without removal or displacement of any of the parts of the fixture;

Second, to provide a lighting fixture of this class in which cleaning thereof is a very simple operation, most of the dust being deposited during periods when the lamps are not lighted. In this connection, it should be noted that the air, when heated by the lamp flows upwardly through the slats beside and over the lamps rather than against the lamps so that the dust in the moving air is not deposited on the lamps or any part of the fixture. The reflectors, lamps and slats stay clean;

Third, to provide a lighting fixture of this class in which the slats thereof may be cleaned from a position therebelow, if desired;

Fourth, to provide a lighting fixture of this class which is particularly adapted for installation in schools or other similar locations, wherein the substantially vertically open slats prevent collection of papers or other articles therein due to the open relationship of the slats, which promotes gravitation of paper wads and other materials therethrough;

Fifth, to provide a lighting fixture of this class in which the maintenance cost thereof is very low, since the free flow of air upwardly through the fixture keeps the lamps from overheating and the life of the lamps is increased spectacularly;

Sixth, to provide a lighting fixture of this class in which removed lamps may be supported while new lamps are placed therein, obviating the necessity of the installer making several trips up and down a ladder during the replacement of such lamps;

Seventh, to provide a lighting fixture of this class in which a very high standard of quality illumination may be maintained at a very low cost;

Eighth, to provide a lighting fixture of this class in which access to the transformer thereof and the wiring may be readily and easily gained by a very simple mechanical operation, requiring no special tools;

Ninth, to provide a lighting fixture of this class in which all maintenance operations may be performed thereon while the fixture remains in its suspended position;

Tenth, to provide a lighting fixture of this class in which the open relationship of parallel slats permits a certain quantity of light to be reflected downward, with resultant surface illumination thereof, thereby reducing the brightness contrast between the lighting fixture and the illuminated ceiling thereabove; and

Eleventh, to provide a lighting fixture of this class which is very simple and economical of construction, efficient in operation, and which will not readily deteriorate or get out of order.

With these and other objects in view, as will appear hereinafter, my invention consists of certain novel features of construction, combination and arrangement of parts and portions, as will be hereinafter described in detail and particularly set forth in the appended claims, reference being had to the accompanying drawings and to the characters of reference thereon, forming a part of this application, in which:

Fig. 1 is a fragmentary bottom plan view of my lighting fixture, showing portions thereof broken away to amplify the illustration; Fig. 2 is a vertical sectional view thereof, taken from the line 2—2 of Fig. 1; Fig. 3 is an enlarged fragmentary sectional view, taken from the line 3—3 of Fig. 2; and Fig. 4 is an enlarged fragmentary sectional view, taken from the line 4—4 of Fig. 1.

Similar characters of reference refer to similar parts and portions throughout the several views of the drawings.

The frame 1, suspension rods 2 and 3, lamps 4, 5, 6 and 7, reflectors 8 and 9, slats 10 to 17, inclusive, slat frames 18 and 19, slat ribs 20 to 27, inclusive, pins 28, 29, and the ballast 31, constitute the principal parts and portions of my lighting fixture.

The frame 1, shown in cross-section in Fig. 2 of the drawings, is provided with a plate member 1*a* having a cross-sectional shape of an inverted V in which the included angle is obtuse, said member 1*a* having inwardly and downwardly directed flange portions 1*b*. Bridging the inner apex portion of the member 1*a* is a horizontal plate 1*c*, which is fixed at its lateral edges to opposite downwardly diverging portions of said member 1*a*, at the lower side thereof. Projected through the apex of the member 1*a* and the cross member 1*c* are the suspension rods 2 and 3, having nuts 2*a* and 3*a* engaging the lower side of the cross member 1*c*. Thus, the frame 1 is supported below the ceiling of a room or the like.

Fixed to opposite ends of the frame member 1*a* and the cross member 1*c* are end plates 1*d* and 1*e*. These end plates 1*d* and 1*e* are provided with extending arms 1*f*, which extend laterally of the axis of the member 1*a*, as shown best in Fig. 2 of the drawings. These members 1*f* are provided with openings 1*g* therein, in which the pins 28 and 29 are positioned. It will be noted that the extended portions 1*f* of the end frame portions 1*d* and 1*e* are resilient and are adapted to be deflected laterally for removal thereof from the pins, as will be hereinafter described.

The slat frames 18 and 19 are disposed at opposite ends of my lighting fixture, and are provided with arcuate lower flange portions 18*a* and 19*a*, on which opposite ends of the slats 10 to 17, inclusive, are supported. Integral with the flanges 18*a* and 19*a* are vertical end plate portions 18*b* and 19*b*, on which the pins 28, 29 shown in Figs. 1, 2 and 3, are fixed. These pins 28, 29 as hereinbefore described, project through the openings 1*g* in the extending portions 1*f* of the end plates 1*d* and 1*e*, all as shown best in Figs. 2 and 3 of the drawings.

The slats 10 to 17, inclusive, are parallel slats arranged in substantially vertically stepped relationship to each other, and laterally spaced, as shown in Fig. 2 of the drawings. These slats are slightly inclined to the vertical and are so arranged that they have considerable open spaces between them. The slats 10 and 17 have vertical flanges 10*f* and 17*f*, and the slats 11, 12, 15 and 16 have flanges 11*f*, 12*f*, 15*f*, and 16*f*, while slats 13 and 14 have flanges 13*f* and 14*f*. The flanges 11*f*—16*f* extend toward more outwardly disposed adjacent slats and thus partially close the spaces between the corresponding slats. It will be noted that, disregarding said flanges, these slats 10 to 17 are disposed substantially at right angles to the upper inclined surfaces of the downwardly diverging portions of the frame member 1*a*. These slats 10 to 17, inclusive, are supported intermediate their ends in fixed relationship to each other by the slat ribs 20 to 27, inclusive, which are provided with interlocking slots, shown in detail in Figs. 3 and 4 of the drawings.

The slat rib 21 is representative and is provided with an angularly transverse slotted portion 21*a*, which receives a portion of the slat 11, while the slat 11 is provided with a slotted portion 11*a* which receives the upper remaining cross-sectional portion 21*b* of the slat rib 21. It will be noted that the slats 13 and 14 are provided with an integral arcuate interconnecting plate 14*a*, which extends longitudinally of the lighting fixture and engages the flanges 18*a* and 19*a* at opposite ends of the lighting fixture, providing a bottom cover for the ballast 31 and the electrical wiring and equipment within and below portions of the frame 1, as hereinbefore described.

Thus, the plate 14*a* is fixed to the unitary structure of

all of the slats **10** to **17**, inclusive, and the slat frames **18** and **19**.

The tubular lamps **4** to **7**, inclusive, are supported on the downwardly diverging portions of the frame member **1***a*, and the bases thereof are extended inwardly of said frame member **1***a*, as shown in Fig. 2 of the drawings, and the wiring in connection therewith is enclosed between the plate **14***a* and the lower side of the plate **1***c*, which forms the cross member hereinbefore described. These lamps are arranged in pairs and, as shown in Fig. 2 of the drawings, the pair of lamps **4** and **5**, and the lamps **6** and **7**, are disposed on opposite sides of the middle portion of the fixture, and are supported in inclined relationship to each other, so that each pair of lamps is parallel to each other on an inclined plane nearly at right angles to the sides of the slats **10** to **17**, inclusive.

The reflectors **8** and **9** are fixed at their lower ends to the upper inclined surfaces of the frame member **1***a*, at opposite sides of the middle thereof, and serve as light reflectors for the lamps **4** and **5**, and **6** and **7**, respectively, and are directed toward the slats on each opposite side of the middle of the fixture. As shown in Fig. 2 of the drawings, the reflector **8** is directed toward the slats **10**, **11** and **12**, while the reflector **9** is directed toward the slats **14** to **17**, inclusive.

The operation of my lighting fixture is substantially as follows:

When the fixture, as shown in Figs. 1 and 2, is suspended by the suspension rods **2** and **3**, and the lamps **4**, **5**, **6** and **7** are energized, indirect lighting is accomplished by illumination of the ceiling and the slats **10** to **17**, this being particularly true in respect to the flanges **13***f*, **14***f* and the corresponding flanges on the other slats. These flanges reinforce the slats against bending and also decrease the number of slats required. The slightly inclined disposition of the slats **10** to **17** prevents a direct view of the lamps **4**, **5**, **6** and **7**, from a position below the lighting fixture, and also permits a certain amount of downward reflection intermediate the slats, resulting in a reduction of the brightness contrast between the fixture and the illuminated ceiling. It will now be evident how the lamps **4**—**7** are constantly cooled by air currents flowing upwardly through the slats, beside and over the lamps. This is a free flowing current and the life of the lamps is greatly increased as compared with lamps in other indirect lighting fixtures. Furthermore, deposition of dust is minimized since the free flowing air carries the dust away.

The reflectors **8** and **9** provide for lateral reflection from the lamps **4**, **5**, **6** and **7** at an acute angle to the horizontal.

During continued use of the lighting fixture, various articles, such as papers, paper wads, and other materials which may be projected above the fixture and which may fall thereinto, readily gravitate between the slats and clear themselves thereof. Thus, the lighting fixture does not require a considerable amount of cleaning maintenance, and continues to operate at maximum efficiency. It is to be noted that all of the slats may be cleaned from a position below the fixture by use of a vacuum cleaner nozzle, or may be mopped, as desired, without requiring the cleaning maintenance man to climb a ladder.

In the event it is necessary to replace lamps, the burned out lamp may be placed on the slats while the new lamp is secured in position, greatly reducing the number of trips up and down a ladder normally made in the replacement of such lamps. In the event it is desired to replace ballast or wiring above the plate **14***a*, one of the clips **1***f*, as shown in Fig. 2 of the drawings, on either end of the lamp, may be resiliently deflected beyond the end of one of the pins **28** or **29**, so that the plate **14***a* and the slats **10** to **17**, together with the end slat frames **18** and **19**, may be pivoted downwardly about the axis of the opposite pin **28** or **29**, as indicated by the arrows A in Fig. 2 of the drawings.

Thus, the slats **10** to **17**, inclusive, may be supported on one set of pins **28** or **29**, at one side of the middle of the fixture, and in this position, the ballast **31** and adjacent wiring is exposed, while the plate **14***a* is suspended in substantially a vertical plane at one side thereof, permitting all electrical maintenance work to be accomplished while the lamp is in its suspended position supported by the suspension rods **2** and **3**, hereinbefore described.

If desired, the entire assembly of the slats **10** to **17**, together with the slat frames **18** and **19**, may be removed by deflecting the portions **1***f* of the end frame plates **1***d* beyond the ends of the pins **28** and **29**, as shown in Fig. 2 of the drawings, permitting said assembly of slats to be cleaned or serviced on a bench or the like.

Though I have shown and described a particular construction, combination and arrangement of parts and portions, I do not wish to be limited to this particular construction, combination and arrangement, but desire to include in the scope of my invention the construction, combination and arrangement substantially as set forth in the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a lighting fixture, a central frame, suspension rods connected to said frame for suspending the same, cylindrical lamps on opposite sides of the middle of said frame and opposite sides of said rods, a plurality of parallel spaced slats outwardly of each of said cylindrical lamps and substantially parallel thereto, said slats being slightly inclined to the vertical and having considerable horizontal space therebetween, said slats being arranged in vertically stepped adjacent relationship to each other at opposite sides of the middle of said fixture, said frame having a substantially obtuse V-shaped downwardly diverging portion, above and on which said lamps are supported, and a cover plate below said frame member interconnecting the pair of said slats closest to the middle of said fixture.

2. In a lighting fixture, a central frame, suspension rods connected to said frame for suspending the same, cylindrical lamps on opposite sides of the middle of said frame and opposite sides of said rods, a plurality of parallel spaced slats outwardly of each of said cylindrical lamps and substantially parallel thereto, said slats being slightly inclined to the vertical and having considerable horizontal space therebetween, said slats being arranged in vertically stepped adjacent relationship to each other at opposite sides of the middle of said fixture, said frame having a substantially obtuse V-shaped downwardly diverging portion, above and on which said lamps are supported, a cover plate below said frame member interconnecting the pair of said slats closest to the middle of said fixture, and slat frames at each end of said fixture, supporting opposite ends of said slats and said plate, said frame having means detachably supporting said slat frames and said slats.

3. In a lighting fixture, a central frame, suspension rods connected to said frame for suspending the same, cylindrical lamps on opposite sides of the middle of said frame and opposite sides of said rods, a plurality of parallel spaced slats outwardly of each of said cylindrical lamps and substantially parallel thereto, said slats being slightly inclined to the vertical and having considerable horizontal space therebetween, said slats being arranged in vertically stepped adjacent relationship to each other at opposite sides of the middle of said fixture, said frame having a substantially obtuse V-shaped downwardly diverging portion, above and on which said lamps are supported, a cover plate below said frame member interconnecting the pair of said slots closest to the middle of said fixture, and slat frames at each end of said fixture, supporting opposite ends of said slats and said plate, said frame having means detachably supporting said slat frames and said slats, said means for detachably supporting said slat frames comprising pins projecting inwardly from the ends of said frames, and resilient clip portions adapted to engage said pins and secured to said frame.

4. In a lighting fixture, a central frame, suspension rods connected to said frame for suspending the same, cylindrical lamps on opposite sides of the middle of said frame and opposite sides of said rods, a plurality of parallel spaced slats outwardly of each of said cylindrical lamps and substantially parallel thereto, a pair of reflectors in opposed relationship to each other near the middle of said fixture and directed outwardly toward said lamps and said slats, said reflectors extending above said lamps, an obtuse V-shaped in cross-section frame member portion having downwardly diverging portions at opposite sides of the middle of said fixture, and a pair of said lamps supported on and above each opposite side of said downwardly diverging portions, the planes of said downwardly diverging portions being nearly at right angles to the surfaces of said slats.

5. Structure according to claim 1 and wherein said slats have longitudinal flanges on upper portions thereof, certain of said flanges extending toward adjacent slats and partially closing the spaces between the corresponding slats.

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