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LIGHTING FIXTURE FOR CEILING ILLUMINATION

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FIG. 1.

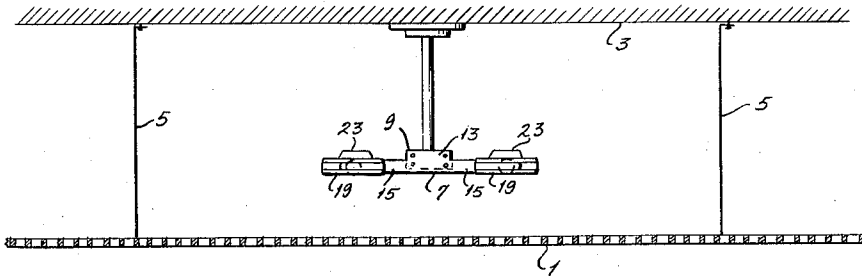


FIG. 2.

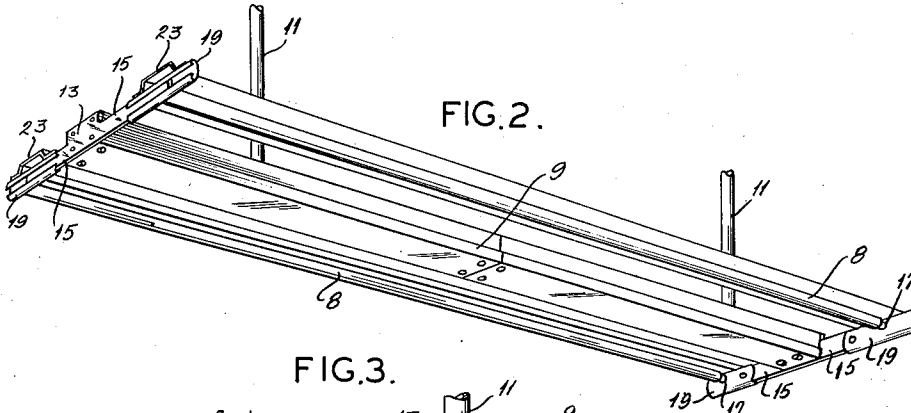


FIG. 3.

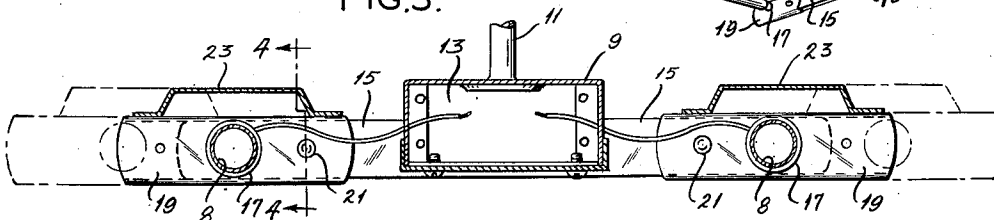


FIG. 5.

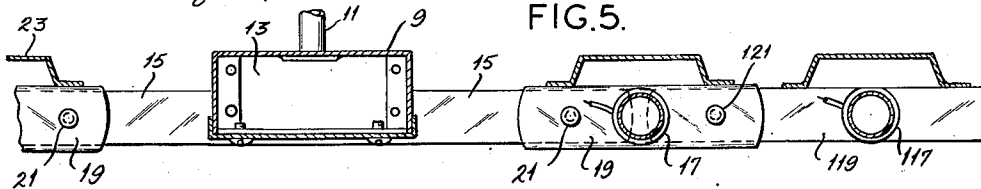


FIG. 4.

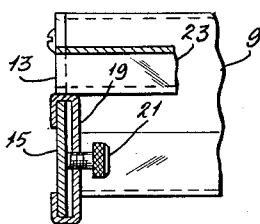
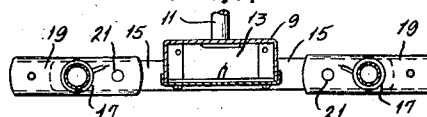


FIG. 6.



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LIGHTING FIXTURE FOR CEILING
ILLUMINATION

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4 Claims. (Cl. 240—9)

This invention relates to electric lighting fixtures, and more particularly, to fixtures for mounting several fluorescent tubes in variable transversely-spaced relationship with respect to one another.

In the over-all type of ceiling, it is customary to suspend an over-all louver or diffuser beneath the main ceiling structure and to mount fluorescent lamps between the ceiling and the suspended louvers. Often, it is necessary to suspend the lamps also and to vary the transverse spacing of the lamps, depending upon their elevation over the louver and illumination intensities desired. For example, a relatively tight transverse spacing is desired when the fluorescent tubes are close to the louver, whereas a comparatively wider spacing is permitted as the lamps are moved upwardly away from the louver.

Heretofore, such fixtures have been made from a simple channel-like section with sockets mounted at the ends thereof to support one or possibly more fluorescent tubes at predetermined fixed spacing. This procedure is relatively expensive, both in the number of fixtures required, the manufacturing costs for a variety of set-spaced lamp positions, and especially in the labor required in securing the fixtures to the main ceiling.

Accordingly, it is an object of this invention to provide an improved system whereby a plurality of fluorescent lamps are carried in a single fixture, which fixture permits variable spacing between the tubes in accordance with the particular ceiling installation. For example, where there is sufficient overhead space to permit the fixture to be spaced substantially from the louver, the fixture is adjusted to provide a corresponding wide spacing of the attached fluorescent lamps. On the other hand, where the building construction does not provide sufficient overhead space for the lamps, the fixture is adjusted to move the tubes into relatively closely-spaced relationship.

Another object is to provide a fixture wherein the lamps are disposed in the same horizontal plane as the ballast and main supporting frame member of the fixture, thus saving precious height for installations where overhead space is limited.

Briefly, this objective is achieved in a fixture having a main longitudinal section, which may be a channel carrying the ballast and lamp starting devices. This section has cross members or laterally projecting arms at its ends for supporting the lamp sockets, and the lamp sockets are mounted on and movable relative to the arms. Preferably, the sockets are fastened to sleeves which have a telescoping cooperation with the arms.

Other features of the invention will be in part apparent from and in part pointed out in the following detail description taken in connection with the accompanying drawings, in which:

Fig. 1 is a diagrammatic view illustrating an over-all luminous or louver-all ceiling and associated luminaire;

Fig. 2 is a diagrammatic view of a lamp fixture such

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as might be used in an over-all ceiling, but embodying features of this invention;

Fig. 3 is a relatively enlarged cross section looking toward one end of the fixture;

Fig. 4 is a detail section taken on the line 4—4 of Fig. 3;

Fig. 5 is a view similar to that of Fig. 3, but showing an alternative embodiment of the invention; and

Fig. 6 is a view like Fig. 3, but of a fixture without reflectors.

Referring to Fig. 1 of the drawings, there is shown a ceiling wherein an over-all ceiling of louvers 1 or diffusers is suspended from the main ceiling structure 3, as by means of hangers 5. The over-all ceiling portion 1 is normally made up of a series of grid-like panels or closed translucent panels, so as to produce an over-all lighting effect. The luminaire 7 is mounted in the overhead space or plenum and is separately suspended from the load-sustaining ceiling structure 3. Fluorescent lamps 8 are customarily employed for this purpose, but the spacing between the lamps is somewhat critical. If the available overhead space for the lamps is relatively small, for example six inches, the lamps should be closely spaced (for example, six inches between tubes) so that the brightness of the diffuser is relatively uniform across its area. Ideally, there should be a substantial amount of overhead space, in which event the spacing between the fixture may be relatively large. A twelve inch spacing is suggested when the mounting height is twelve inches over the louvers and up to forty-eight inch spacing is permissible when the mounting height is twenty-four inches. The amount of light desired also affects the spacing of the tubes 8.

In order to provide the necessary flexibility in bulb spacing, it has been the practice in the past to mount each bulb on an independent fixture, the fixtures being secured in the pattern dictated by the particular job. Although multiple-bulb fixtures have been used, the spacing is pre-set at the factory and there is little flexibility. Where the plenum chamber is shallow, the fixtures are usually attached directly to the ceiling; but where there is ample overhead space, they may also be suspended. It will be apparent that considerable savings can be achieved when the fixtures are designed to carry two or more bulbs in variable spaced relationship.

Referring now more particularly to Figs. 2-4, the invention contemplates a fixture which avoids the above-mentioned problems. This fixture comprises an elongate central section 9, to which the fixture hangers 11 could be attached, if desired, although the hangers are not essential. This section 9, which may be a channel or box, should be relatively rigid and of a strength sufficient to support the several bulbs and sockets. Also, it may enclose the ballasts and the wiring. The sockets are carried by means of plates 13 affixed to the ends of the channel section 9, each plate having a pair of laterally projecting arms 15. Sockets 17 are carried indirectly by means of horizontal slidable sleeves 19, which telescope over the arms 15. For example, the sleeves may be formed of folded sheet metal to be of a length about equal to that of the arms, as illustrated, and they have set screws 21 cooperable with the inner arms 15. In use, the sleeves are adjusted outwardly on the arms 15 so that the bulbs are positioned as desired, and the set screws 21 are tightened to hold this adjustment. Although it is not always essential, an elongate reflector 23 may be secured between the two sleeves on each side of the main longitudinal section, such a reflector being desirable when the overhead ceiling structure lacks reflecting qualities. Fig. 6 illustrates the fixture without reflectors.

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With this arrangement, a standard fixture may be used in a variety of installations demanding different dispositions of the bulbs. The telescoping sleeves 19 could be supplied in varying length, such a procedure being desirable for jobs where the bulb spacing is to be exceptionally large, for example forty-eight inches. Conversely, there may be provision of attachment of extensions (not shown) to the ends of the arms for such widely spaced patterns, but the sleeves would telescope over the extensions in order to permit the proper spacing for the particular installation.

Although the above description relates to a two-bulb fixture, it will be apparent that the invention is applicable to fixtures having more bulbs. Fig. 5 illustrates a four-bulb fixture having a second outer set of telescoping arms 119 with additional set screws 121 and sockets 117. Although a somewhat heavier fixture construction necessarily would be required, the savings in installation labor would justify the additional initial fixture cost. In each instance, it is only necessary to secure the fixture at the central section 9. Also, the disposition of the bulb sockets is such that the bulbs lie in the same horizontal plane as the main support 9, hence the fixture requires little vertical space, this being desirable in many situations.

From the foregoing description, it is apparent that those skilled in the art will understand the structure, function and mode of operation of the invention herein disclosed, and appreciate the advantages thereof. Although several embodiments have been disclosed in detail, it is to be understood that the invention is not limited thereto, but the drawings and description thereof are to be understood as being merely illustrative. It is realized that many modifications and variations will present themselves to those skilled in the art without departing from the spirit of the invention or the scope thereof as set forth in the appended claims.

I claim:

1. A lighting fixture to be mounted on a ceiling, said fixture comprising a relatively rigid elongate section, transversely-projecting arms secured at the ends of said elongate section, members slidably carried by said arms in outwardly spaced relationship from said elongate section, and lamp sockets carried by said slidable members, said

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sockets being disposed to lie substantially between the upper and lower surfaces of said elongate section.

2. An over-all luminous ceiling comprising a load-sustaining ceiling structure, light-diffusing means suspended below said ceiling structure and a lighting fixture for fluorescent bulbs mounted in the space between the ceiling structure and the light diffusing means, said fixture having an elongate section of a length corresponding to the length of the fluorescent bulbs to be used in the fixture, arms projecting transversely at the ends of said elongate section, lamp sockets mounted on and transversely movable relative to said arms toward and away from said elongate section, and a reflector mounted on and transversely movable relative to said arms and with said lamp sockets toward and away from said elongate section, said reflector extending parallel to the elongate section the length thereof.

3. An over-all luminous ceiling comprising a load-sustaining ceiling structure, light-diffusing means suspended below said ceiling structure and a lighting fixture for fluorescent bulbs mounted in the space between the ceiling structure and the light diffusing means, said fixture having an elongate section of a length corresponding to the length of the fluorescent bulbs to be used in the fixture, arms projecting transversely at the ends of said elongate section, sleeves having a telescoping cooperation with said arms, lamp sockets mounted on said sleeves and adjustable means for securing the sleeves in varying positions with respect to said arms.

4. Apparatus as set forth in claim 3, further including a second set of telescoping elements each of which has a telescoping cooperation with said telescoping sleeves, and additional lamp sockets secured to said second set of telescoping elements.

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