Sept. 26, 1950 L. MARGOLIS 2,523,581

FLUORESCENT LIGHTING FIXTURE

Filed March 17, 1945 2 Sheets-Sheet 1

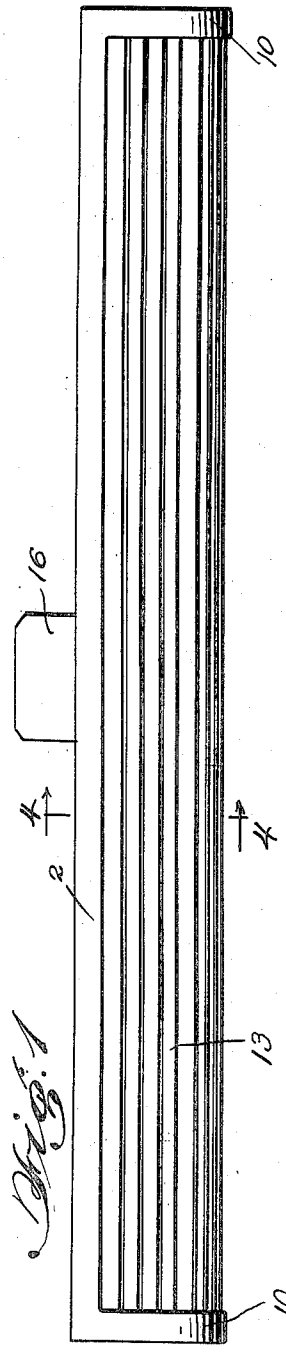

Fig. 1

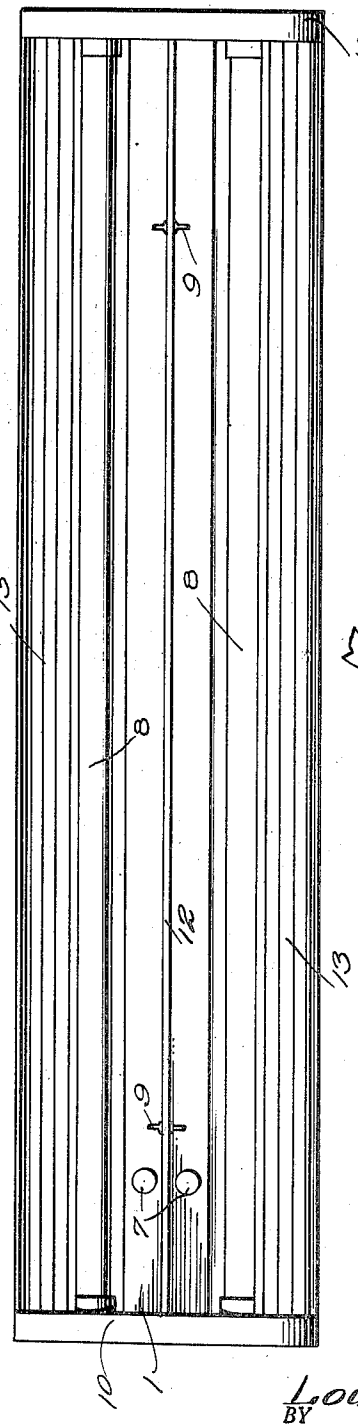

Fig. 2

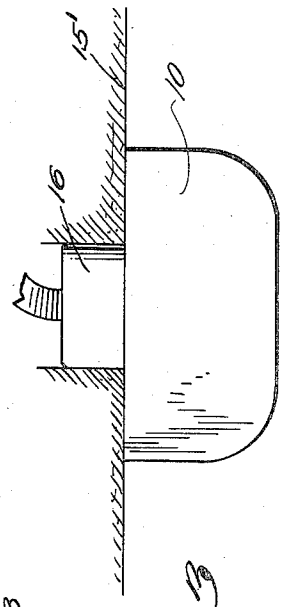

Fig. 3

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2 Sheets-Sheet 2

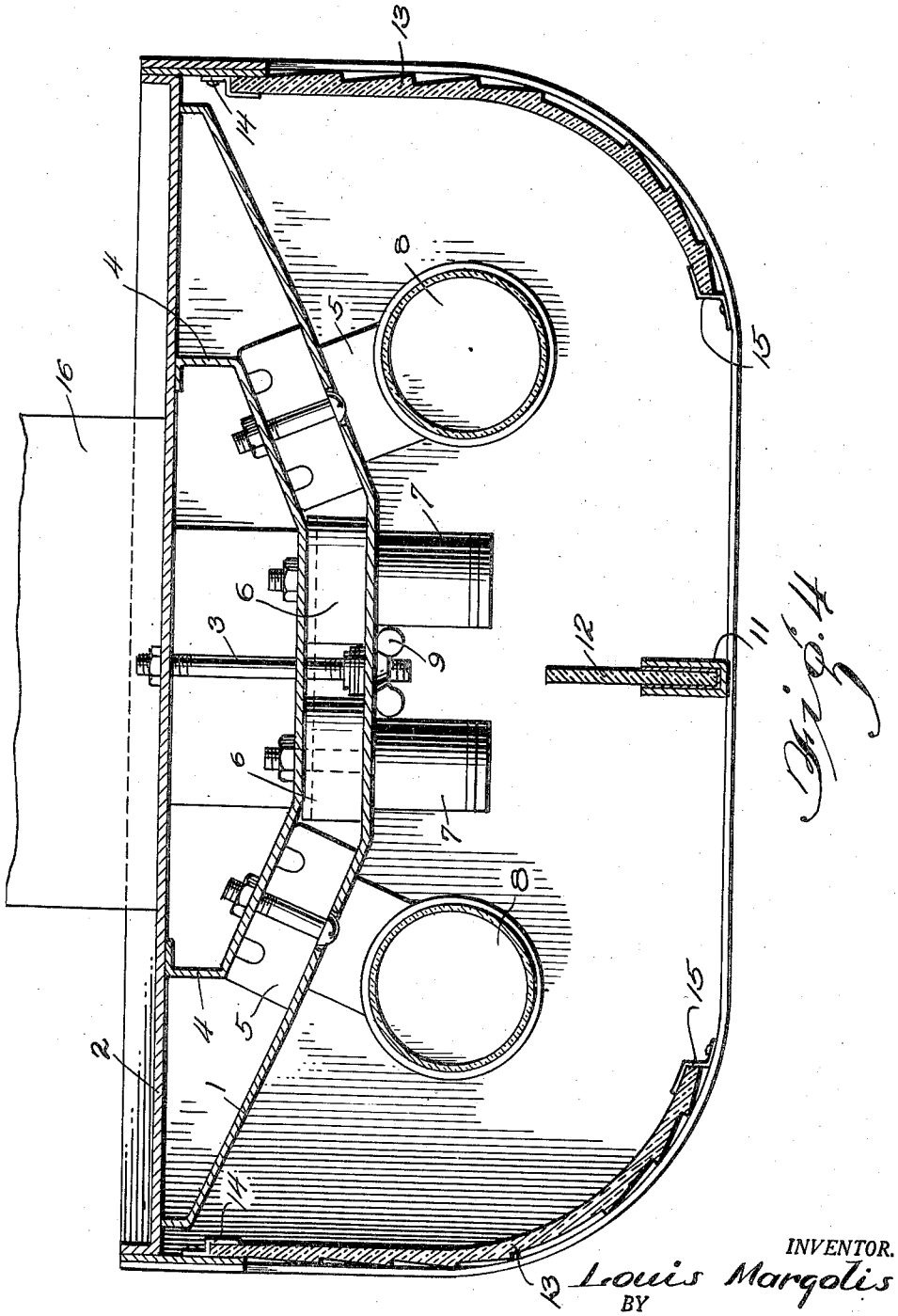

Fig. 4

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Patented Sept. 26, 1950 2,523,581

UNITED STATES PATENT OFFICE

2,523,581

FLUORESCENT LIGHTING FIXTURE

Louis Margolis, Washington, D. C.

Application March 17, 1945, Serial No. 583,283

4 Claims. (Cl. 240—51.11)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

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The invention described herein, if patented, may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

This invention relates to fluorescent lighting fixtures and more particularly, to those of the commercial or office type.

An object of this invention is to provide a high efficiency, surface-mounted fixture, particularly adaptable to low ceiling installations.

Another object is to provide a fixture in which the light is refracted in such a manner that it is directed to the working plane with a minimum loss.

A further object is to provide such a fixture with translucent side panels which will control and spread the light over a wide area and result in low brightness levels.

A further object is to provide a fixture, the construction of which lends itself to easy maintenance, especially with reference to the auxiliary equipment.

Further objects, advantages, and features will be apparent from the following specification and the accompanying drawings in which:

Figure 1 is a side elevational view.

Figure 2 is a bottom plan view.

Figure 3 is an end elevational view.

Figure 4 is a cross-section along the lines 4—4 in Figure 1.

The fixture of my invention has been designed on the principle of controlling the light, refracting it in such a manner that it is delivered to the working plane with a minimum loss yet sufficiently dispersed to produce low brightness levels when viewed directly. This is accomplished by providing translucent side panels which curve inwardly to partially inclose the bottom of the fixture.

These panels may be made of translucent glass or some translucent plastic material. If translucent glass is used, it may be of the continuous prismatic construction to spread the light over a wide area, or it may be designed on the Fresnel principle to direct the light out from the fixture approximately 60° from nadir along the longitudinal axis of the fixture. Brightness may be reduced by slightly diffusing the panels.

A translucent louvre may be mounted vertically in the bottom of the fixture to prevent direct vision of the fluorescent lamps when the fixture is viewed at an angle less than approximately 75° from nadir.

In addition to the above advantages, the fixture is constructed so that it lends itself to easy maintenance. In the fixture of my invention, it is not necessary to remove the end plates or the side panels in order to remove the lamps. The auxiliary electrical equipment may be reached for replacement or repair by removal of the lamps and the two wing nuts which hold the wireway in position.

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Referring to the accompanying drawings and more particularly to Figures 2 and 4 thereof, the fixture of my invention is provided with a removably wireway 1 which possesses a high degree of reflectivity and serves as the reflector element as well as the element for inclosing the fixture's auxiliary electrical equipment which is connected through an aperture in the ceiling 15' to an outlet box 16 (Fig. 3). It is joined to a base plate 2 by two bolts 3 intermediate the ends thereof. Lamp sockets 5 and starter sockets 6 are mounted on support brackets 4. There are two of these support brackets 4 both of which are permanently attached to the base plate 2 intermediate the ends thereof. Apertures are provided in the wireway through which the lamp sockets 5 extend and through which starters 7 may be inserted to position them in their sockets 6. Thus, in the fixture of my invention, all that is necessary to make the auxiliary equipment accessible is to remove lamps 8, and wing nuts 9 on the bolts 3.

End plates 10 are attached to the ends of the base plate 2. They may be separate elements attached to the base plate or they may be an integral part of a chassis comprising the base plate and the end plates. These end plates 10 are sufficiently shallow to permit removal of the lamps 8 without the necessity for first removing the end plates. A pair of brackets 11 in the end plates 10 support a louvre 12 which runs along the longitudinal axis of the fixture midway between the two lamps.

Two curved glass panels 13 are supported at their ends by the end plates 10 and are held in position by retainers 14 and locking clips 15 on the end plates 10. The locking clips 15 are pivotally mounted on the end plates to permit the insertion and withdrawal of the curved glass panels 13. A glass panel 13 may be installed by positioning it within the end plates 10 so that the top edge of the panel is inside the retainers 14, and the bottom edge of the panel rests within the locking clips 15. These pivotally mounted clips 15 should be in the unlocked position when the panel is being positioned. After the panel has been positioned, the clips are turned to the locked position.

The opening between the bottom edges of glass panels 13 is of sufficient width to afford manual access to the lamps 8, and to the starters 7 which in the preferred embodiment illustrated are positioned directly above the opening and laterally of lamps 8 and of louvre 12.

In the preferred embodiment of my invention, the curved glass panels 13 are of the Fresnel type to direct the light out from the fixture approximately 60° from nadir. Greater control over the distribution of the light is thereby obtained. With this controlled lighting, the spacing of these fixtures may be varied to meet the particular requirements of each installation.

The above-mentioned characteristics make this fixture particularly suitable for surface-mounted, low ceiling installations. By "low ceiling installation," as the expression is used in the specification and claims, is meant a ceiling of a height of between about seven foot six inches to about eight foot six inches. The light is refracted in such a manner that it is delivered to the working plane with a minimum loss and maximum dispersion to produce low brightness levels when viewed directly. The glass louvre mounted vertically in the bottom of the fixture and extending longitudinally thereof prevents glare from direct observation of the lamp when the fixture is viewed at an angle of less than 75° from nadir.

What I claim is:

1. A fluorescent lighting fixture comprising: a base plate; brackets mounted on said base plate and extending downwardly; two pairs of electric sockets mounted in said brackets in spaced relation substantially equidistant from the longitudinal axis of said fixture for supporting a parallel pair of spaced elongated cylindrical fluorescent lamps; a wireway reflector mounted on said base and extending beneath said brackets and having apertures in alignment with said sockets; end plates fixed on said base plate; a pair of translucent side plates mounted between said end plates and having their bottom edges widely spaced apart to provide an opening therebetween beneath said lamps for passage of direct rays from said lamps to a surface to be illuminated, each of said side plates being curved about a straight axis parallel to said lamps and having a plurality of elongated Fresnel prisms below said lamps with their longitudinal axes parallel to said first-named axis for directing light from said fixture in a plane at a predetermined acute angle from nadir; a single vertically arranged translucent louvre extending between said end plates across said opening in a plane substantially equidistant from said sockets to prevent direct viewing of said lamps from certain angles; and a pair of brackets on said end plates to support said louvre across said opening; said louvre being spaced from the side plates to permit manual access to said lamps without removing said louvre or a side plate.

2. A fluorescent lighting fixture adapted for low-ceiling installation, comprising: a base plate; a reflector mounted on said base plate and constituting a wireway; a parallel pair of spaced elongated cylindrical fluorescent lamps supported from said base plate and positioned beneath said reflector; end plates fixed on said base plate; a pair of translucent side plates mounted between said end plates and having their bottom edges spaced apart to provide an opening therebetween and beneath said lamps, said opening affording manual access to said lamps and passage of direct rays from said lamps to a surface to be illuminated, each of said side plates being curved about a straight axis parallel to said lamps and having a plurality of elongated Fresnel prisms below said lamps with their longitudinal axes parallel to said first-named axis for directing light from said fixture in a plane of about 60° from nadir; said wireway being apertured directly above said opening and in a vertical plane lateral of said lamps for the reception of a starter, whereby manual access to said starter is afforded through said opening without removing said lamps.

3. A fluorescent lighting fixture adapted for low-ceiling installation, comprising: a base plate; a reflector mounted on said base plate and constituting a wireway; a pair of spaced fluorescent lamps supported from said base plate and positioned beneath said reflector; end plates fixed on said base plate; a pair of translucent side plates mounted between said end plates and having their bottom edges spaced apart to provide an opening therebetween and beneath said lamps, said opening affording manual access to said lamps and passage of direct rays from said lamps to a surface to be illuminated; and means on said end plates to support a single vertically arranged translucent louvre extending between said end plates across said opening in a plane substantially equidistant from said lamps to prevent direct view of said lamps from certain angles; said wireway being apertured directly above said opening in two vertical planes on either side of said louvre-supporting means and intermediate the free edges of said curved side plates for the reception of a pair of starters on either side of the longitudinal center plane of said fixture, whereby manual access to said starters is afforded through said opening without removing said lamps and said louvre.

4. A fluorescent lighting fixture adapted for low-ceiling installation, comprising: a base plate; a reflector mounted on said base plate and constituting a wireway; a parallel pair of spaced elongated cylindrical fluorescent lamps supported from said base plate and positioned beneath said reflector; end plates fixed on said base plate; a pair of translucent side plates mounted between said end plates and having their bottom edges spaced apart to provide an opening therebetween and beneath said lamps, said opening affording manual access to said lamps and passage of direct rays from said lamps to a surface to be illuminated, each of said side plates being curved about a straight axis parallel to said lamps and having a plurality of elongated Fresnel prisms below said lamps with their elongated axes parallel to said first-named axis for directing light from said fixture in a plane at a predetermined acute angle from nadir; said wireway being apertured directly above said opening and in a vertical plane lateral of said lamps for the reception of a starter, whereby manual access to said starter is afforded through said opening without removing said lamps.

LOUIS MARGOLIS.

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