

Nov. 11, 1941.

G. W. BEALS

2,262,157

ENCLOSED DIRECT LIGHTING LUMINAIRE

Filed Oct. 18, 1939

2 Sheets-Sheet 1

Fig. 1.

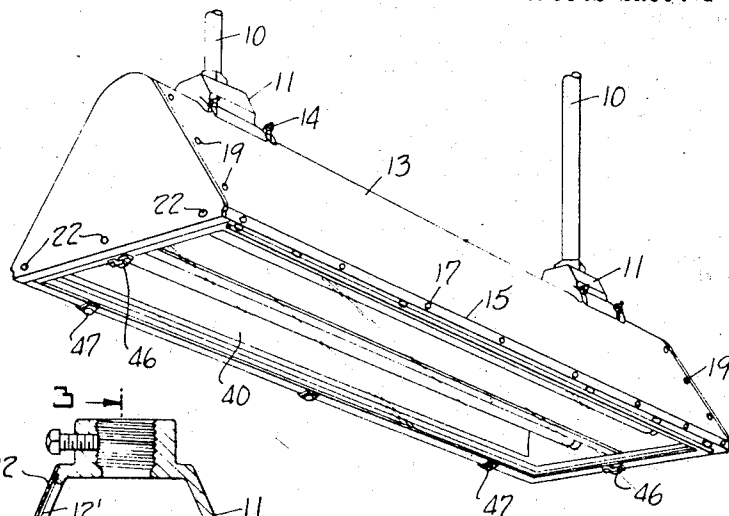


Fig. 2.

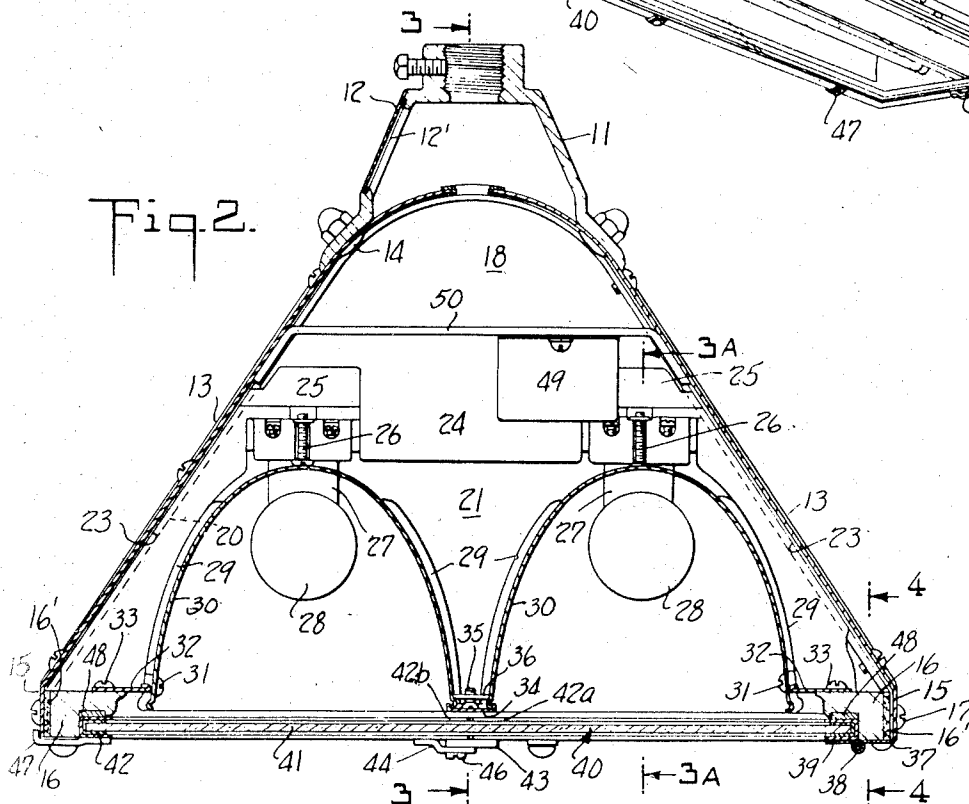


Fig. 4.

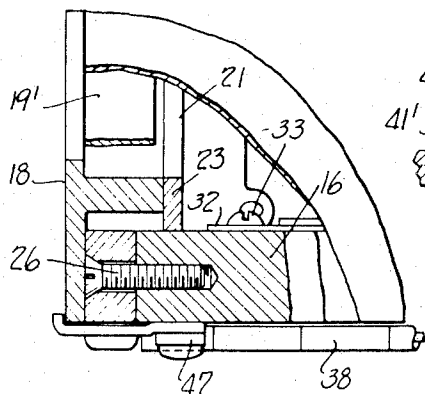
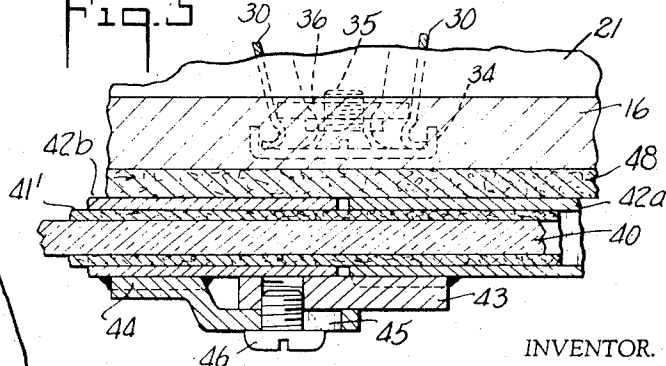


Fig. 5.



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Fig. 3.

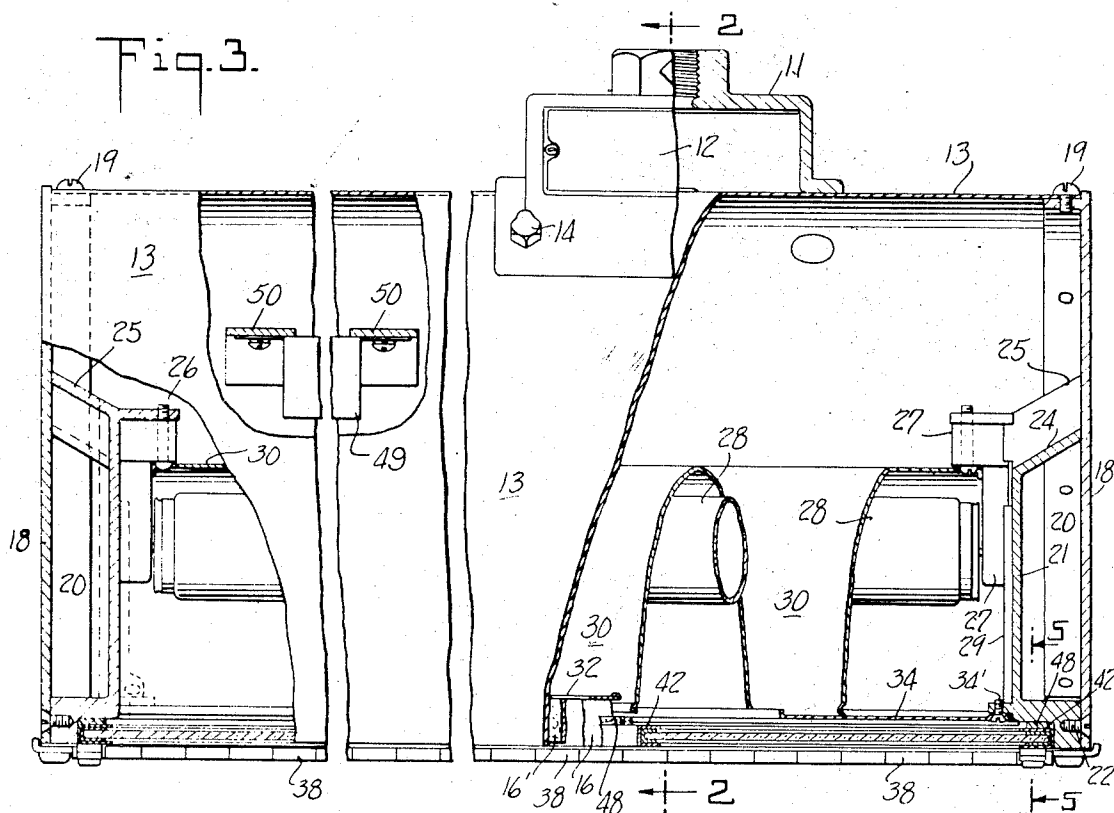
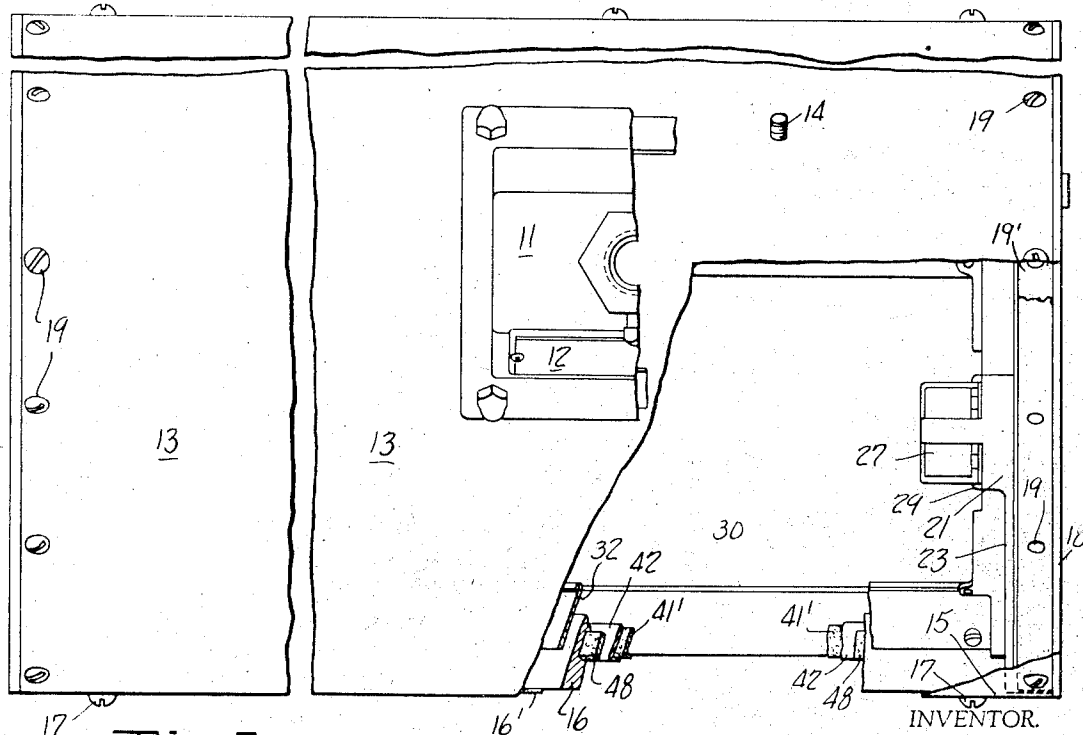


Fig. 6.



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ENCLOSED DIRECT LIGHTING LUMINAIRE

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Application October 18, 1939, Serial No. 299,941

9 Claims. (Cl. 240—78)

This invention relates to enclosed direct lighting luminaires, and is more particularly directed toward luminaires designed to employ fluorescent light sources and to be used in dust laden atmosphere.

The present invention contemplates luminaires particularly suitable for use in locations where explosive powder is being manufactured and handled. The luminaires are designed so as to present practically no exposed horizontal surfaces on which the powder or other dust could accumulate, and are arranged to have large extensive radiating surfaces so that the fixture has an inconsequential temperature rise after long use.

A further object of the invention is to provide the fixture with a door which is effectively sealed against the introduction of dust.

A further object of the invention is to arrange the interior of the fixture so that when the door is opened to give access to the lamps there is a minimum possibility of dust filtering into the interior of the fixture.

A further object of the invention is to provide a fixture designed for the use of long light sources, such as fluorescent lamps, with a door opening long enough to accommodate the lamps and reflectors.

The accompanying drawings show, for purposes of illustrating the present invention, one of the many embodiments in which the invention may take form, it being understood that the drawings are illustrative of the invention rather than limiting the same.

In these drawings:

Figure 1 is a perspective view of an enclosed direct lighting luminaire;

Figure 2 is a transverse section through the same taken on the line 2—2 of Figure 3;

Figure 3 is a longitudinal sectional view taken on the line 3—3 of Figure 2 with parts in elevation, and parts at the left hand section on the line 3a—3a of Figure 2;

Figure 4 is a fragmentary sectional view on the line 4—4 of Figure 2;

Figure 5 is a fragmentary sectional view on the line 5—5 of Figure 3; and

Figure 6 is a top plan view of the fixture with parts broken away to show interior construction.

As shown in Figure 1 the fixture is supported by two pipes or conduits 10, 10 which thread into junction boxes 11, 11. These junction boxes are provided with removable plates 12 and gaskets 12' adapted to give access to the wiring.

The junction boxes are secured to a sheet metal cover or housing 13 by welding bolts indicated at

14. It has straight sloping sides and a rounded apex portion, as will be clear from Figure 2, so that a minimum horizontal area is presented for the accumulation of dust. The lower edges 15, 15 of the cover member 13 are secured to longitudinally extending frame members 16, 16 by screws 17, a gasket 16' being interposed to seal the joint. The ends of the cover member 13 are secured to end plates 18 by screws indicated at 19, these screws passing through gaskets 19' and into flanges 20.

Inner end members 21 are secured to the end plates 18 by screws indicated at 22. The end plates 21 have sloping side edges 23 which overlie the flanges 20 on the end plates 18 and have upwardly and rearwardly sloping elements indicated at 24 and 25 which extend out to the inner face of the adjacent end plate 18.

The end members 21 are secured to the ends of the side frame members 16 by screws 26, as indicated in Figure 4. The inner end members 21 support pairs of fluorescent lamp-holders 27, 27 adapted to receive fluorescent lamps 28, 28. The end members 21 are also provided with flanges 29 of the proper shape to fit the ends of sheet metal reflectors 30. The reflectors are secured to the end members 21 by screws indicated at 31. Closure plates 32 are secured to the side frame members 16 by screws 33 and bear on the outer edges of the reflectors 30, 30. A longitudinally extending closure strip 34 is secured at its ends to the end members 21 by screws indicated at 34'. The strip 34 is of channel shaped cross section and is secured to the adjacent edges of the reflectors 30, 30 by means of screws 35 and short straps 36, the latter being adapted to bear on the beads at the edges of the reflectors.

The side frame member 16 at the right of Figure 2 supports one leaf 37 of a hinge 38, while the other leaf 39 supports a window 40. This window is made up of a large rectangular panel of glass or other light transmitting material, as indicated at 41, and has a frame 42 of channel shaped cross section as indicated in the drawings. The edges of the glass are received in gaskets 41'. This frame is made of two parts 42a and 42b, as indicated more clearly in Figure 5. One of these parts is welded to a lug 43, while the other part is welded to a strap 44 arranged to overlie the lug 43. The strap 44 is provided with a slot 45 to receive a screw 46 which may be threaded into a tapped hole in the lug 43. This arrangement of securing the ends of the parts 42a and 42b together is duplicated at the other end of the fixture.

The edge of the window opposite the hinge is secured to the opposite frame member by latches 47. It will be noted from the drawings that the end members 21 and side members 16 are cut back to receive the window frame so that the window frame can be brought against gaskets indicated at 48 to make a tight joint. Furthermore, as will be apparent from Figure 3, the window frame is set back from the inner faces of the end members 21 so as not to interfere with the escape of light longitudinally of the fixture. This arrangement also makes it possible to avoid projections or other elements which would interfere with insertion or removal of lamps. The lamps 28 are connected to fluorescent lamp auxiliary units 49 only one of which appears in the drawings. These units are supported by cross straps 50 welded to the cover member 13.

Owing to the use of the closure plates 32 and 24 and to the closeness with which the reflectors are fitted to the end plates, there is very little opportunity for dust to enter into the interior of the fixture when the door is open.

It is obvious that the invention may be embodied in many forms and constructions within the scope of the claims and I wish it to be understood that the particular form shown is but one of the many forms. Various modifications and changes being possible, I do not otherwise limit myself in any way with respect thereto.

What is claimed is:

1. A totally enclosed direct lighting luminaire for use in dust laden atmosphere, comprising a horizontal frame having two sides and two end members to form a rectangular opening, a light transmitting dust tight closure fitted into the opening, the end members of the frame extending upwardly and supporting pairs of fluorescent lamp-holders, fluorescent lamps in the holders, inverted trough shaped reflectors secured to the end members and disposed about the lamps to reflect light out through the closure, outer end plates secured to the end members of the frame and extending above the reflectors and lamp-holders, and a trough like cover of inverted V-shaped cross section to provide substantially no horizontal surface for accumulation of dust, the edges of the cover being secured to the sides of the frame and the ends of the cover being secured to the outer end plates.

2. A luminaire such as claimed in claim 1, wherein the end members of the frame have inwardly extending flanges conforming to the contour of the reflector walls.

3. A luminaire such as claimed in claim 1, having strips extending inwardly from the sides of the frame to engage the outer walls of the reflectors.

4. A luminaire such as claimed in claim 1, having strips extending inwardly from the side members of the frame to engage the outer walls of the reflectors, a filler strip secured to the adjacent walls of the reflectors, and wherein the end

members of the frame have inwardly extending flanges conforming to the contour of the reflector walls.

5. A luminaire such as claimed in claim 1, having transverse reinforcing straps carried by the cover above the reflectors and fluorescent lamp auxiliary units carried by the straps.

6. A totally enclosed direct lighting luminaire for use in dust laden atmosphere, comprising an elongated, inverted, trough like housing of V-shaped cross section to provide substantially no horizontal surface for accumulation of dust, vertical end plates, end members secured to the inner face of an end plate and having a vertical wall spaced from the end plate, fluorescent lamp-holders secured to the end members, fluorescent lamps in the holders, reflectors about the lamps and extending from one end member to the other, side members secured to the end members and to the lower edges of the housing, a rectangular frame removably secured in the opening formed by the end and side members, the end members being recessed so that the end members of the frame are accommodated therein, and a dust tight light transmitting plate carried in the frame.

7. A direct lighting fixture for long light sources, comprising a downwardly opening trough shaped cover, end plates secured to the ends of the cover, longitudinally extending frame members secured to the end plates and to the edges of the cover to form a rectangular opening, a dust tight, light transmitting closure in said opening, two downwardly opening reflectors above the closure, means interconnecting the lower outer edges of the reflectors with the adjacent lower edges of the cover to prevent passage of dust therebetween, a dust tight closure strip between adjacent edges of the reflectors, fluorescent lamps disposed in the reflectors and fluorescent lamp auxiliary units carried in the cover above the reflectors.

8. In a direct lighting unit, two vertical end members carrying fluorescent lamp-holders arranged in pairs, side members secured to the end members to form a rectangular opening and of a length to space them so that the lamp-holders may support fluorescent lamps of predetermined length, reflectors about the lamps and extending from one end member to the other, a rectangular window having a frame hinged to one side member and occupying the opening, vertical end plates secured outside the end members, and an inverted V-shaped cover secured to the end plates and side members.

9. A lighting unit such as claimed in claim 8, having dust tight strips extending from the side members to the edges of the reflectors adjacent thereto and a dust tight closure strip interconnecting the edges of the reflectors adjacent one another.

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