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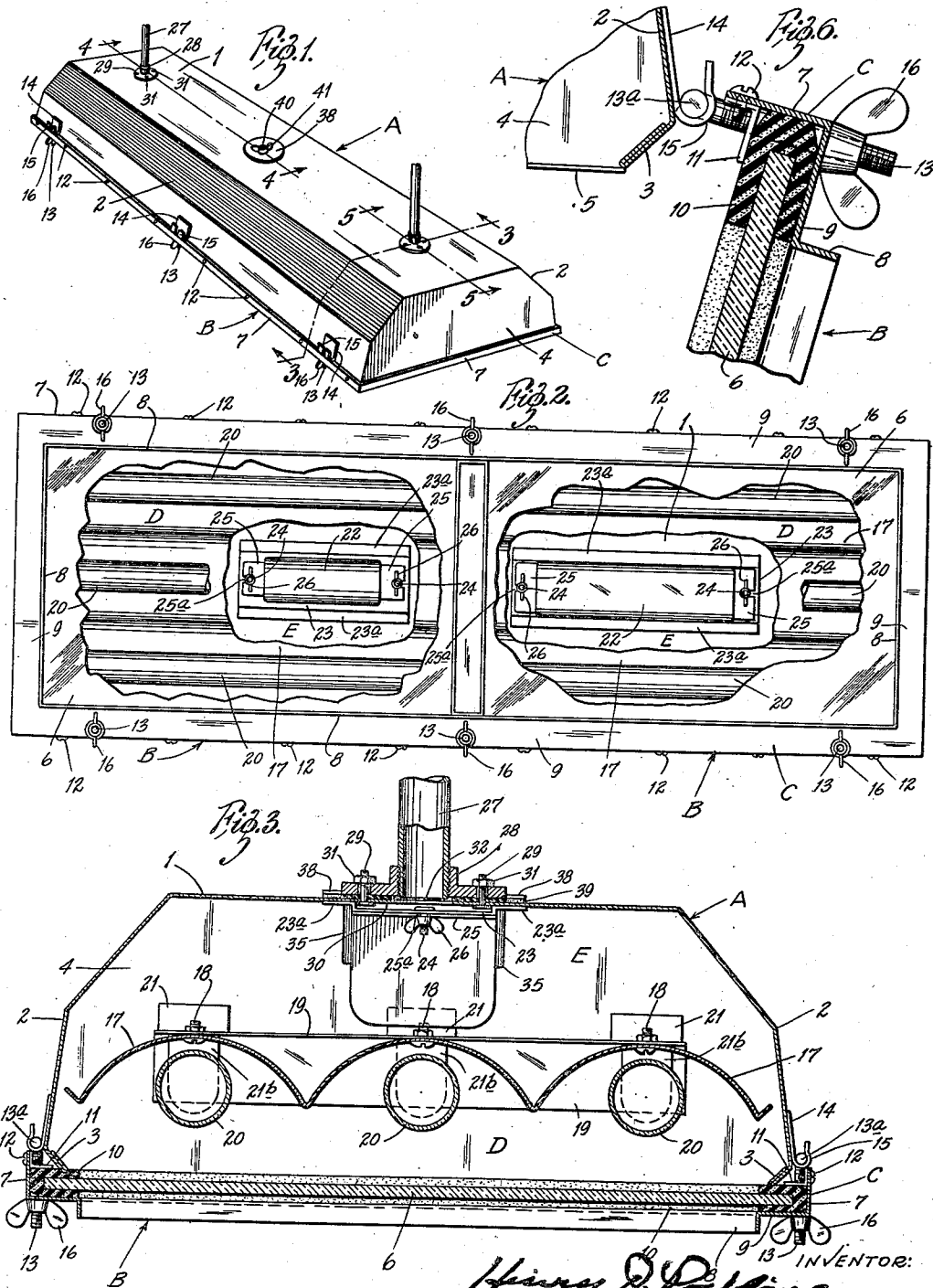
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FLUORESCENT SAFETY LIGHTING FIXTURE

Filed Dec. 15, 1941

2 Sheets-Sheet 1



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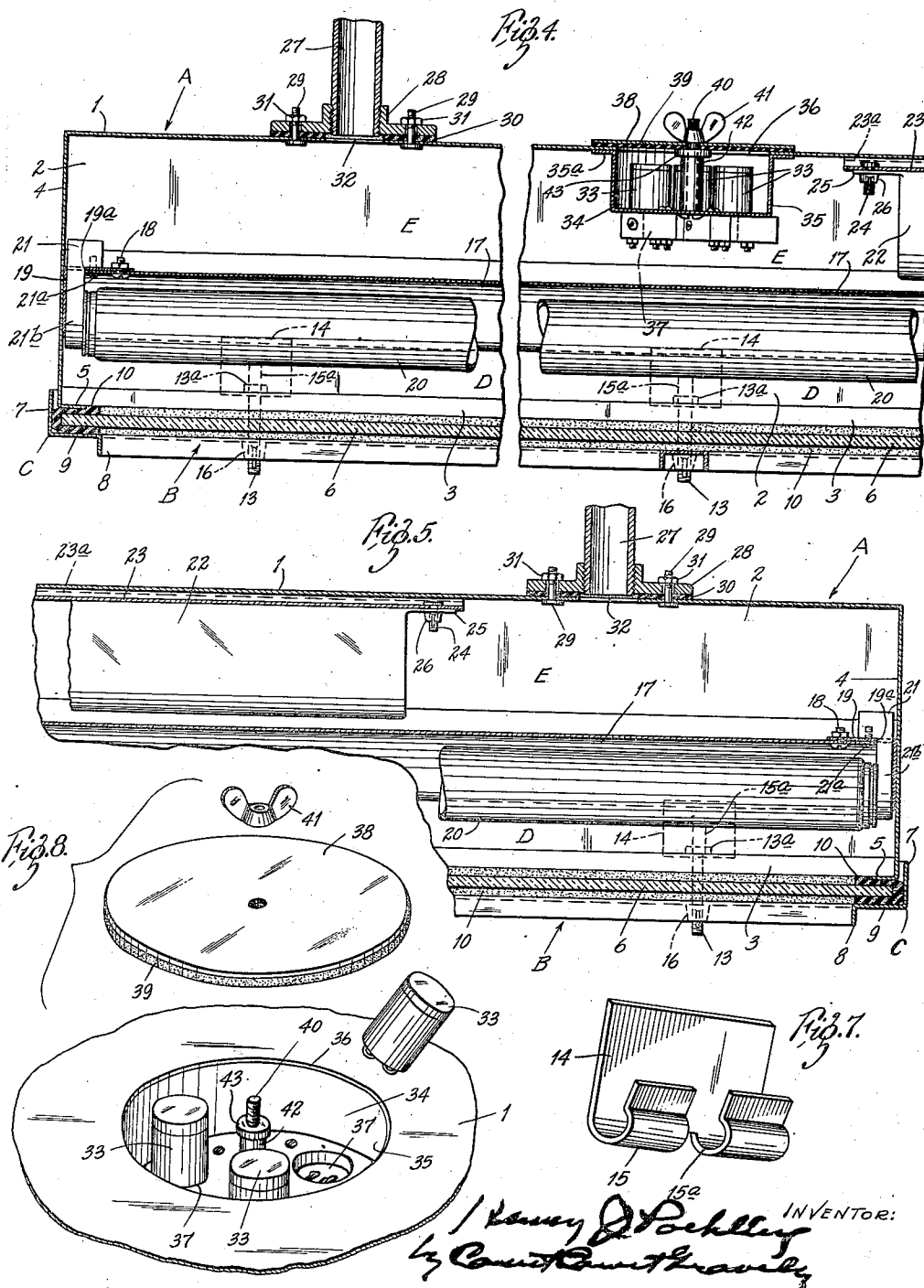
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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FLUORESCENT SAFETY LIGHTING FIXTURE

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6 Claims. (Cl. 240-78)

This invention relates to lighting fixtures, particularly fluorescent lighting fixtures of the kind having a lamp circuit embodied therein including a plurality of fluorescent lamps and replaceable starting switches for preheating the electrodes of such lamps.

The present invention has for its principal objects to provide for enclosing the lamps and starting switches in the fixture and to prevent combustible gases or dust in the room in which the fixture is located from entering the fixture and being exploded, and to provide for mounting all of the starter switches for the fluorescent lamps where they are readily accessible for replacement without opening the lamp enclosing portion of the fixture. The invention consists in the parts and combinations and arrangements of parts hereinafter described and claimed.

In the accompanying drawings, which form part of this specification and wherein like symbols refer to like parts wherever they occur,

Fig. 1 is a perspective view of a fluorescent safety lighting fixture embodying my invention.

Fig. 2 is an enlarged bottom plan view of said fixture, with portions of the closure, lamps and reflector plate broken away.

Fig. 3 is an enlarged vertical cross section on the line 3-3 in Fig. 1.

Fig. 4 is an enlarged vertical longitudinal section on the line 4-4 in Fig. 1.

Fig. 5 is an enlarged vertical longitudinal section on the line 5-5 in Fig. 1.

Fig. 6 is a fragmentary vertical cross sectional view of one of the lower side portions of the fixture, with the closure member therefor shown in open position.

Fig. 7 is a perspective view of one of the supporting clips for the securing bolts for the closure member of the fixture; and

Fig. 8 is a perspective view, showing the recess for the starting switches, the cover for said recess and the wing nut for clamping said cover in place.

In the accompanying drawings, my invention is shown embodied in a three-lamp fluorescent lighting fixture comprising an elongated metal body A of inverted channel-shaped section adapted to be suspended from a ceiling and having a horizontal top wall 1, downwardly diverging side walls 2 with downwardly and inwardly inclined lower marginal flanges 3 and vertical end walls 4 with turned horizontal lower marginal flanges 5. The opening in the bottom of the body A of the fixture is closed by means of a cover or door B comprising a panel 6 of wire

glass or other light-diffusing material mounted in a metal edge frame C having an upstanding outer marginal flange 7, a depending inner marginal flange 8 and a web 9 connecting said flanges and forming a seat for a grooved rubber sealing strip or gasket 10 that embraces or straddles the margins of the glass panel. The glass panel 6 of the door B is held down on the seat 9 in the edge frame C preferably by means of angle-shaped retaining clips 11 having one flange seated on the gasket 10 and the other flange detachably secured by screws 12 to the inner face of the upstanding outer marginal flange 7 of said edge frame.

The door or closure B for the opening in the bottom of the body A of the fixture is removably and hingedly secured thereto along the sides thereof preferably by means of T-bolts 13 suspended from hanger plates 14 welded or otherwise secured to the outer faces of the side wall 2 of said body just above the downwardly and inwardly inclined lower side marginal flange 3 thereof. As shown in the drawings, each of the bolt hangers 14 has its lower end portion 15 curved outwardly and upwardly to provide a bearing for the head 13a of the T-bolt; and said lower end portion of said hanger is also notched, as at 15a, to accommodate the threaded stem portion of said bolt. The stem portions of the T-bolts 13 extend downwardly through the glass supporting web 9 of the edge frame C of the door B just inside of the upstanding outer flange 7 of said frame and are provided at their lower ends with wing or thumb nuts 16 adapted when tightened to bear against the underside of said web and force the rubber gasket 10 along the edge of the glass panel 6 of said door into sealing engagement with the lower marginal flanges 3 and 5 of the side and end walls, respectively, of the body A of the fixture.

The closed body A of the fixture is divided into a lower lamp housing or chamber D and an upper wiring housing or chamber E by means of a reflector plate 17 that extends from end to end of said body between the top wall 1 thereof and the cover B for the bottom thereof. The reflector plate 17 has its end portions removably secured by screws 18 flatwise to the under sides of the outstanding flanges of angle-shaped brackets 19 that are welded or otherwise permanently secured flatwise to the end walls 4 of the body A of the fixture. Extending longitudinally of the fixture inside the lamp chamber D thereof are three spaced parallel fluorescent lamps 20 that are supported at their ends in suitable lamphold-

ers 21 which seat on and are secured by bolts 21a to the inwardly extending flanges of the reflector supporting brackets 19 and have depending lamp supporting portions 21b that extend downwardly into said lamp chamber through notches 19a in said flanges. Located in the wiring space or chamber E of the fixture are suitable current limiting devices or so-called "ballast units" 22 that are electrically connected by wiring (not shown) to a current supply circuit and to the respective lampholders 21. Each of the ballast units 22 is suspended from the top wall 1 of the fixture by means of a mounting plate 23 having upwardly offset side marginal flanges 23a that are welded or otherwise secured flatwise to the underside of said wall. Each ballast unit 22 seats flatwise against the underside of its mounting plate 23 between the upwardly offset side flanges thereof and is clamped to said plate by means of bolts 24 that are welded to and depend from said plate at each end thereof. These bolts extend downwardly through notches 25a provided therefor in outstanding flanges 25 at the ends of the ballast units and are provided with wing or thumb nuts 26 adapted when tightened to clamp said units to their mounting plates 23.

The fixture is adapted to be suspended from the ceiling by means of hangers preferably in the form of pipes or conduits 27 whose lower ends have flanges 28 threaded thereon that are secured to the upper surface of the top wall 1 of the fixture near the ends thereof by means of upstanding bolts 29 that are welded to said wall. Rubber gaskets 30 are interposed between the flanges 28 and the top wall of the fixture; and the bolts 29 extend through registering holes in said flanges and top wall and are provided at their upper ends with nuts 31 that seat against the tops of said flanges. The conduits or pipes 27 open at their lower ends into the wiring chamber E of the fixture through openings 32 in the top wall 1 of the latter. One of the tubular hangers 27 is adapted to serve as a conduit for the lead-in wires (not shown) that extend into the wiring chamber E of the fixture and are connected to the ballast units 22 in said chamber; and the other tubular hanger serves as a conduit through which air from a suitable air pump (not shown) is supplied to the interior of said fixture.

The lamp circuit for the above fixture also includes the usual starting switches 33 for preheating the electrodes (not shown) of the fluorescent lamps 20. In the present construction, these lamp-starting switches 33 are all located in a pit or pocket 34 that opens through the top wall 1 of the fixture midway between the tubular hangers 27 therefor. As shown in the drawings, the bottom and side walls of the starting switch pit or pocket 34 are formed by a cup-shaped metal box 35 that registers with an opening 36 in the top wall 1 of the fixture and has an outstanding top flange 35a that is welded or otherwise permanently secured flatwise to the underside of said wall around said opening. The box 35 has sockets 37 in the bottom thereof for the starting switches 33. The opening 36, through which access is had to the starter switch box 35, is closed by a closure plate 38 having a sponge rubber gasket 39 on the underside thereof which is clamped down on the top of the fixture around said opening by means of a bolt 40 and a wing or thumb nut 41 threaded thereon. The bolt extends upwardly through openings in the bottom of the box 35 and the cover plate 38 and is held against vertical movement relative thereto by

means of a spacing tube 42, which is sleeved on the bolt and seats on the bottom of said box, and a washer 43 that is threaded on said bolt in abutting relation to the upper end of said tube. The wing nut 41 is threaded on the projecting upper end of the bolt 40 and bears against the top of the cover plate 38.

The above fixture is intended for use in powder factories or other places where combustible dust or gases are liable to find their way into the fixture and be exploded. The fixture is closed, but is not completely air tight, and air under pressure is supplied to the fixture through the combined air supply conduit and hanger pipe therefor faster than it can escape therefrom. Thus, the air supplied to the fixture slowly leaks or escapes therefrom through the joints or openings therein, thereby preventing combustible dust or gases or powder from entering the fixture through said joints and being exploded and also serving to ventilate and cool the fixture. The ballast units are also kept cool by the flow of air through the space between the downwardly offset ballast supporting portions of the ballast mounting plates and the underside of the top wall of the fixture. With the above type of fluorescent fixture, it is necessary to replace defective or worn out starting switches. With the present construction, these starting switches may be quickly and easily replaced without opening the relatively large glass door at the bottom of the fixture or disturbing the lampholders, lamps, reflector or ballast units, merely by removing the closure plate for the starting switch box located entirely above the reflector and which is accessible through the top wall of the fixture. When it is desired to remove and replace a defective lamp, lampholder or ballast, the glass closure for the fixture may be readily opened merely by removing the wing nuts from the T-bolts along one side of the fixture, thereby permitting the cover to swing downwardly clear of the opening, the T-bolts on the other side of the fixture constituting supporting hinges for the closure. The glass closure may be detached from the fixture by removing the wing nuts from all of the T-bolt hangers.

Obviously, the hereinbefore described fluorescent safety lighting fixture admits of considerable modification without departing from the invention. Therefore, I do not wish to be limited to the precise construction shown and described.

What I claim is:

1. A lighting fixture comprising a lamp containing housing having an opening in the bottom thereof and upwardly opening exterior grooves along two opposite sides thereof, a closure for said opening, said closure comprising a metal edge frame having bolt receiving openings therein and a light transmitting panel mounted in said edge frame, and grooved gaskets straddling the marginal portions of said panel and seating in said edge frame, T-bolts having their head portions pivotally supported in said grooves and vertically removable therefrom, said T-bolts extending downwardly through the openings provided therefor in said edge frame, and nuts threaded on said T-bolts in abutting relation to the underside of said edge frame for pressing said gaskets upwardly into direct sealing engagement with said housing around the opening therein and for holding said head portions of said bolts down in said grooves when

said gaskets are in engagement with said housing.

2. A lighting fixture comprising a lamp containing housing having an opening in the bottom thereof and upwardly opening exterior horizontal grooves along two opposite sides thereof, a closure for said opening, T-bolts having their head portions rockably supported in said grooves, said T-bolts extending downwardly through notches in said grooves, said closure comprising an edge frame having an upstanding outer flange, a depending inner flange and a web connecting said flanges and having vertical openings through which said bolts extend, a light transmitting panel mounted in said edge frame, grooved gaskets straddling the marginal portions of said panel and seating on the web of said edge frame inside the upstanding outer flanges thereof, and nuts threaded on said T-bolts in abutting relation to the underside of said closure for pressing said gaskets into direct sealing engagement with said housing around said opening therein and for holding the head portions of said bolts down in said grooves when said gaskets are in engagement with said housing.

3. A fluorescent lighting fixture comprising a housing having a lamp circuit therein including a lamp, lampholders and a lamp starting switch, said housing having an opening through the top wall thereof, a cup-shaped receptacle for said starting switch located inside said housing below said opening and secured to underside of said top wall around the opening therethrough, a cover for said opening, and means for clamping said cover down on said top wall of said housing.

4. A fluorescent lighting fixture comprising a housing having a lamp circuit therein including lamps, lampholders and a lamp starting switch, said housing having an opening in the top wall thereof, a cup-shaped receptacle for said starting switch located in said housing and secured to the top wall thereof around the opening therein, a cover for said opening, and means for removably securing said cover to said housing, said means comprising a screw extending up-

wardly through openings provided therefor in said receptacle and cover, a nut threaded on said screw in abutting relation to the upper surface of said cover, a nut threaded on said screw beneath said cover and a tube sleeved on said screw with its lower end seated on the bottom of said receptacle and with its upper end in abutting relation to said last mentioned nut.

5. A fluorescent lighting fixture comprising a housing having openings in the top and bottom thereof and a lamp circuit in said housing including lamps, lampholders and current limiting devices, all insertable in and removable from said housing through said bottom opening, a cover for said top opening, a cup-shaped receptacle located in said housing below said top opening and having an outstanding top flange secured to said housing around said top opening, and a lamp starting switch insertable in and removable from said receptacle through said top opening.

6. A fluorescent lighting fixture comprising a closed housing having an opening in the bottom thereof, a light transmitting closure for said opening, lamps, lampholders, a reflector and a current limiting device all insertable in and removable from said housing through said opening, said reflector dividing said housing into an upper chamber for said current limiting device and a lower chamber for said lamps, a cup-shaped box located in said upper chamber and secured to the top wall of said housing, said top wall having an opening therethrough communicating with said box, a cover for said last mentioned opening, lamp starting switches mounted in said box and insertable in and removable therefrom through said last mentioned opening, and means for mounting said current limiting device in said upper chamber comprising a plate having its ends secured flatwise to the under surface of the top wall of said housing and the portion intermediate between said ends spaced from said top wall, and means for removably securing said current limiting device to the underside of said intermediate portion of said plate.

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