

Sept. 23, 1969

G. J. PICHA

3,469,089

REMOVABLE CIRCUIT AND UNITARY SUPPORTING MEMBER THEREFOR IN  
A LUMINAIRE HAVING ELONGATED DISCHARGE LAMPS

Filed May 24, 1966

3 Sheets-Sheet 1

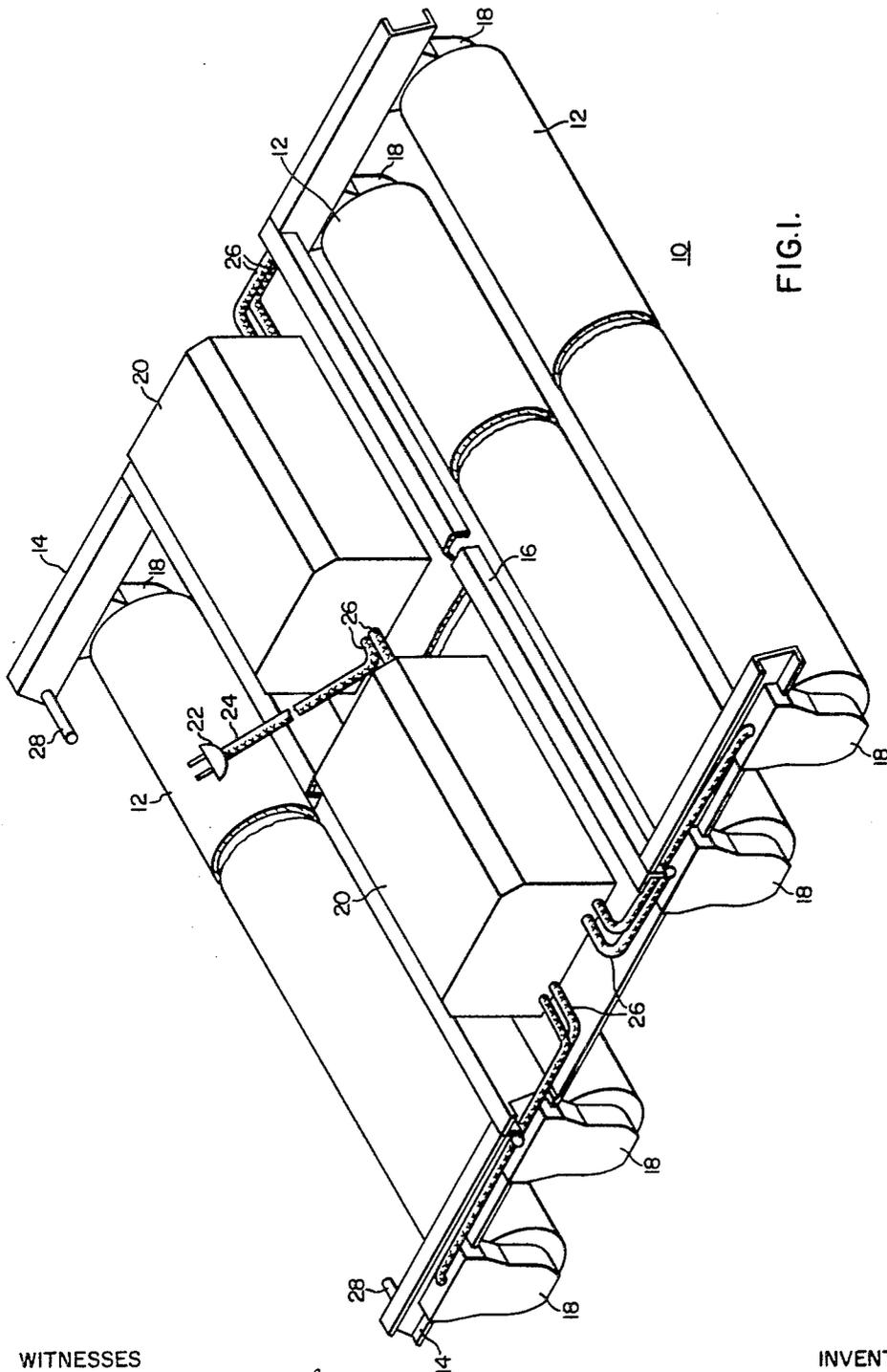


FIG. 1.

WITNESSES

*Theodore T. Nobel*  
*Paul Fontzel*

INVENTOR

George J. Picha

BY

*W.D. Palmer*  
ATTORNEY

Sept. 23, 1969

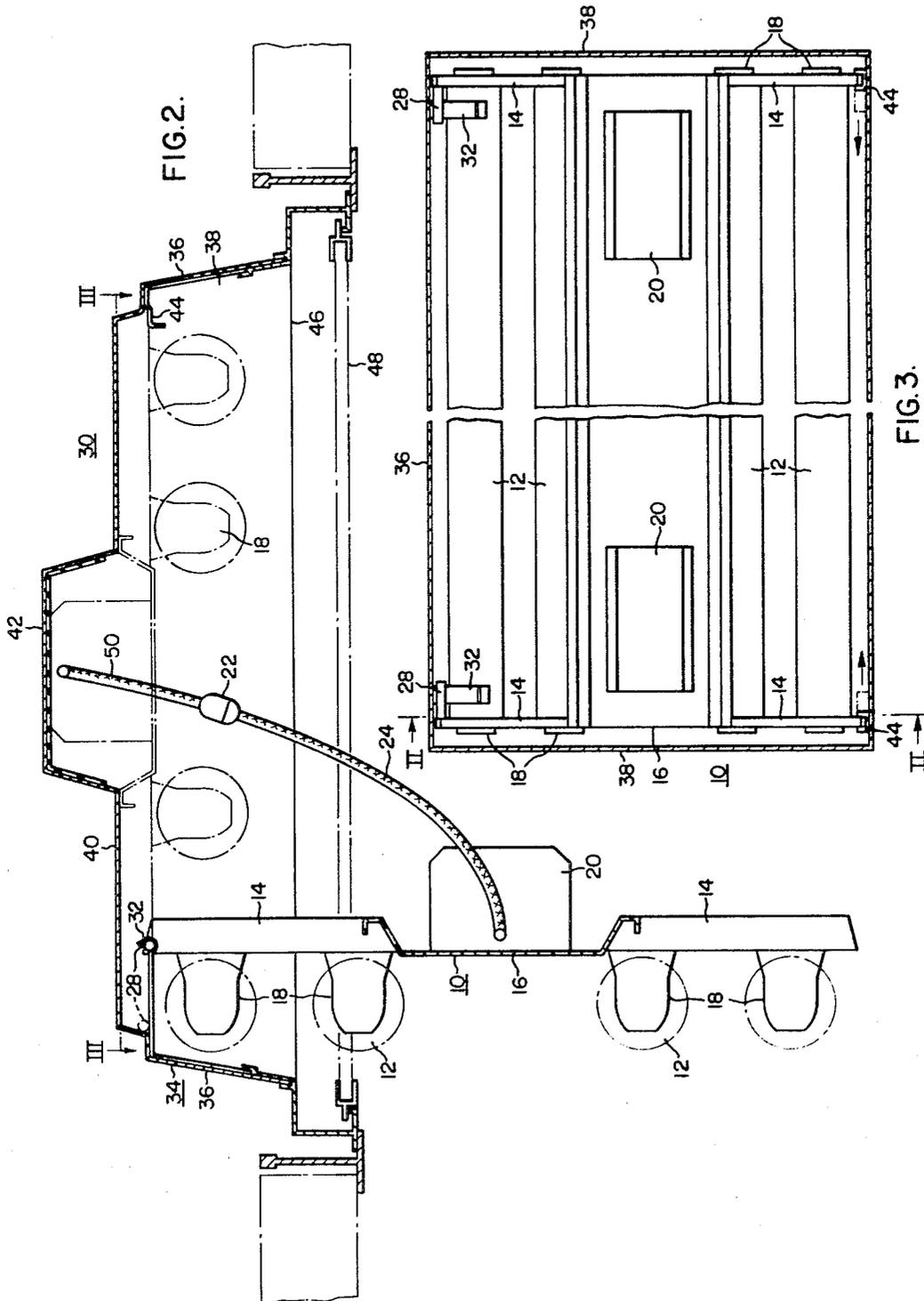
G. J. PICHA

3,469,089

REMOVABLE CIRCUIT AND UNITARY SUPPORTING MEMBER THEREFOR IN  
A LUMINAIRE HAVING ELONGATED DISCHARGE LAMPS

Filed May 24, 1966

3 Sheets-Sheet 2



Sept. 23, 1969

G. J. PICHA

3,469,089

REMOVABLE CIRCUIT AND UNITARY SUPPORTING MEMBER THEREFOR IN  
A LUMINAIRE HAVING ELONGATED DISCHARGE LAMPS

Filed May 24, 1966

3 Sheets-Sheet 3

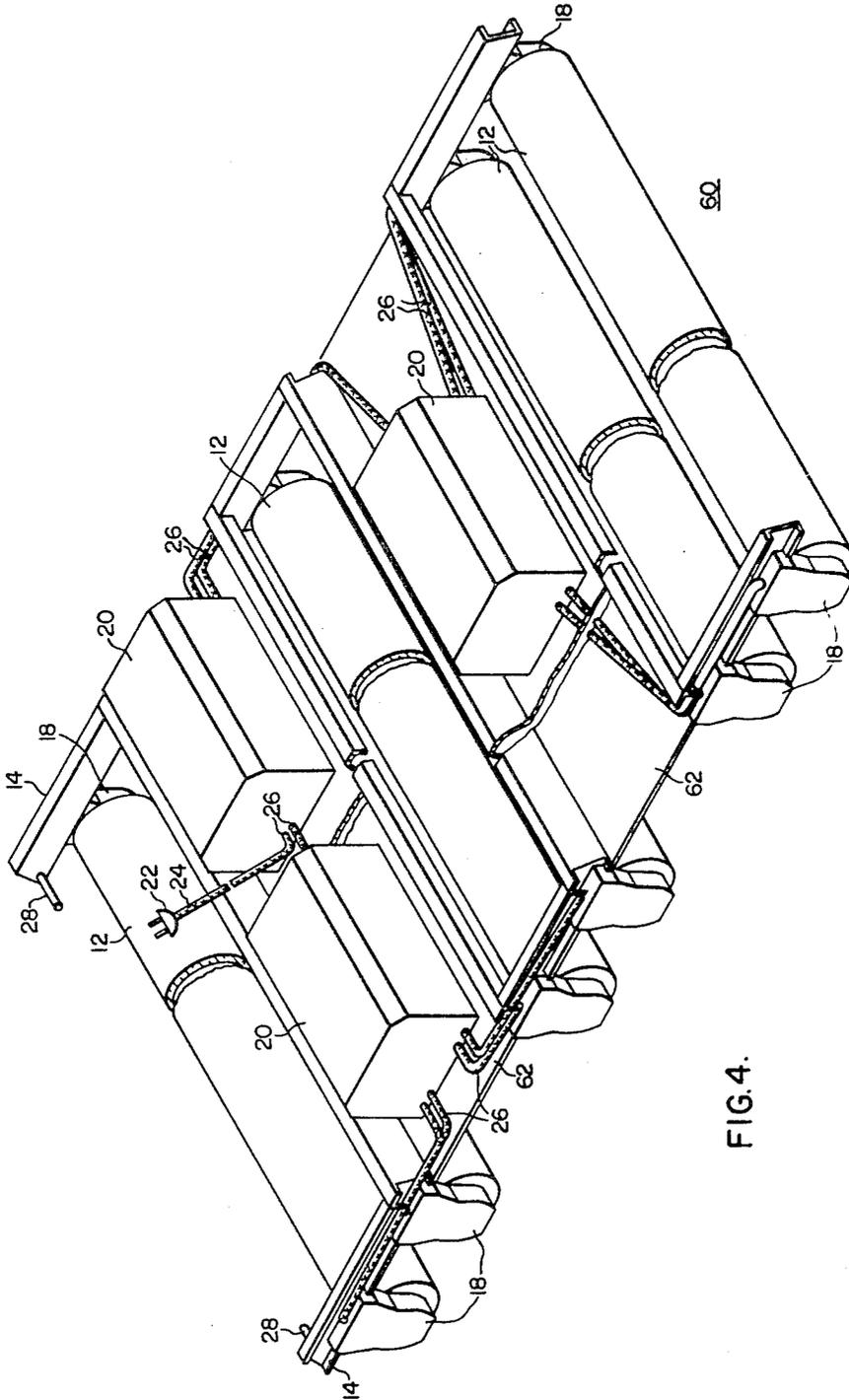


FIG. 4.

1

2

3,469,089

**REMOVABLE CIRCUIT AND UNITARY SUPPORTING MEMBER THEREFOR IN A LUMINAIRE HAVING ELONGATED DISCHARGE LAMPS**

George J. Picha, Cleveland, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa., a corporation of Pennsylvania

Filed May 24, 1966, Ser. No. 552,447

Int. Cl. F21v 3/00

U.S. Cl. 240—51.11

1 Claim 10

**ABSTRACT OF THE DISCLOSURE**

In an elongated luminaire a removable unitary support member formed by lampholder support members and an elongated trussing member which extends longitudinally of the luminaire parallel with and between the discharge lamps. The unitary member is releasably hinged at one end and latched at the other end to the luminaire housing and is swingable out of the housing to facilitate removal or repair of lamps or the ballast components which are all carried by the trussing member. The luminaire is further equipped with a flexible electrical extension and electrical disconnect means to permit operation of the lamps in a swing down position or total removal of the unitary member.

This invention relates generally to removable circuits in luminaires and, more particularly, to such a circuit mounted on a removable unitary supporting member.

Heretofore, in order to remove the electrical circuit from a luminaire for maintenance, substantially the entire fixture had to be removed from the ceiling cavity. These fixtures tended to be heavy and unwieldy. Further, the luminaire was out-of-order during the maintenance period, unless an entire new fixture was installed in place of the removed one.

Generally, the electrical components for luminaires are mounted on the inner side of the fixture housing and are not easily accessible to the serviceman until the lamps and wireway covers have been removed from the ceiling. It is desirable that the components be readily accessible and removable while the luminaire is supported by the ceiling.

In order to change the number of lamps in a luminaire, the fixture must be completely removed and reworked, or replaced by another fixture having the desired number of lamps. It is desirable that the lampholders and other electrical components be removable as a unit from the remainder of the luminaire to facilitate changing the number of lamps therein.

It is therefore an object of this invention to provide a luminaire having an improved arrangement for supporting and replacing the circuit therein.

It is a further object of this invention to provide a luminaire in which all of the electrical components may be easily removed and replaced as a single unit.

It is another object of this invention to provide a luminaire having a removable unitary member which is relatively small and relatively light for supporting the electrical components of the luminaire.

It is still another object of this invention to provide a luminaire having a minimum out-of-order period during maintenance and repair.

It is an additional object of this invention to provide a luminaire in which the electrical components are accessible without taking the luminaire down from the ceiling.

It is still a further object of this invention to provide a luminaire in which the electrical components are accessible and operable during servicing while the luminaire is supported by the ceiling.

It is still another object of this invention to provide a luminaire in which the number of lamps may be readily changed.

Briefly, these and other objects are achieved by providing a removable unitary member for supporting all of the electrical components required for proper operation of the luminaire. The unitary member and all of the luminaire circuitry may be removed and replaced as a unit through the bottom diffuser opening of the luminaire. The unitary member is interchangeable with modified unitary members to facilitate changing the number of lamps in the fixture. Further, the out-of-order period is essentially eliminated because the non-operable circuit may be immediately replaced by a trouble free stand-by circuit. The unitary member may be hingedly connected to the troffer and retained in a "swing down" position to provide access to the electrical components. An extension may be provided in the luminaire power line so that the luminaire is electrically operable in the swing down position for servicing in place.

For a better understanding of the invention, reference should be had to the accompanying detailed description and drawings, in which:

FIGURE 1 is an isometric view of a unitary support member with the electrical components mounted thereon;

FIG. 2 is a sectional end view of a luminaire taken along the line II—II in FIG. 3, but showing the swing down position of the unitary member;

FIG. 3 is a sectional top view of the luminaire taken along the line III—III in FIG. 2, but showing the unitary member in the closed position; and

FIG. 4 is an isometric view of a modified unitary member having two trussing channels.

Referring to FIG. 1, a unitary member 10 is shown which is normally mounted within a luminaire (see FIG. 2) but is shown here removed therefrom for purposes of illustration. The unitary member 10 supports elongated discharge-lamps 12 at their ends and also supports all of the electrical components required for proper operation of the lamps 12. The unitary member 10 is formed by lampholder support plates or members 14 and an elongated channel or trussing member 16 extending between and mechanically connecting the lampholder support members 14. Opposed pairs of lampholders 18 are mounted on the lampholder support members 14 for supporting the elongated lamps 12 at each end. Four lamps are shown on the unitary member 10 in FIG. 1, but other unitary members, of the same dimensions may be provided for retaining more or fewer lamps 12. Conventional lamp operating circuits or reactive ballasts 20 are mounted on the upper surface of the channel or trussing member 16. A quick electrical-disconnect plug 22 and flexible extension 24 are provided which connect to a source of electrical power (shown in FIG. 2) for operating the lamps 12. Electrical conductors or wires 26 for connecting the electrical components are supported on the channel member 16 and adjacent the lampholder support members 14. Hinge pins 28 are affixed to the inside of the lampholder support members 14 for hingedly mounting the unitary member 10 to the luminaire housing. The unitary member 10 is a lightweight frame-like affair which is readily rotated on hinge pins 28 and removed from within the luminaire.

Referring to FIG. 2, an elongated ceiling-mounted luminaire 30 is shown with a unitary member 10 hingedly or pivotally supported therefrom by hinge pin supports 32 which engage the hinge pins 28. The unitary member 10 is shown in an open or swing down position for maintenance and repair. The closed or normal position of the unitary member 10 is shown in dotted lines. The unitary member 10 and luminaire 30 may be readily modified to provide a different support structure and an axis of

pivot. The luminaire 30 has an open bottomed troffer body 34 which is formed by side walls 36, end walls 38, and a top portion 40. The inner surface of the troffer 34 and the lower surface of the channel 16 desirably are reflective. A troffer ballast channel 42 may be provided in the top portion 40 to accommodate the upper portion of the ballast 20 when the unitary member 10 is in the closed position. The unitary member 10 is retained in the closed position by means of latches 44 provided on the side of troffer 34 proximate the bottom opening 46. The latches 44 are positioned opposite the hinge pin supports 32 and slidably engage the lampholder support plates 14 as shown in FIG. 3. When in the closed position, all of the electrical components required to operate the lamps 12 are substantially hidden from view by the unitary member 10 and the troffer 34. A light diffuser 48 is normally mounted within the bottom opening 46 of the troffer 34 as shown in dotted lines in FIG. 2. When the diffuser 48 is removed and the latch 44 released, the unitary member 18 may be swung down exposing the upper surface of the channel 16 and the outer surface of the lampholder support members 14. Access to all of the electrical components and wiring therebetween is readily provided in the swing down position. Further, the swing down position allows quick and easy cleaning of troffer 34, the unitary member 10, and the lamps 12. The lamps 12 may be removed before the unitary member 10 is swung down, or the lamps 12 may remain supported by the unitary member 10. The extension 24 is provided to allow the lamps 12 to be operated while in the swing down position. The unitary member 10 may be readily disconnected from the power source 50 by means of the quick-disconnect plug 22. The unitary member 10 may be taken down from the ceiling by unplugging the plug 22 and lifting up on the unitary member 10 to disengage the hinge pins 28 from the hinge pin supports 32. The unitary member 10 may be exchanged for another unitary member which is trouble free, or which has more lamps.

Referring to FIG. 3, a luminaire 30 is shown with the unitary member 10 in the normal or closed position. In order to swing down the unitary member, the latches 44 are slid in the direction of the arrow into the position shown in dotted lines, thereby disengaging the lampholder support plates 14.

Referring to FIG. 4, a modified unitary member 60 is shown having additional lamps, and having two channel or trussing members 62. A modified troffer with a double troffer ballast channel is required to contain the ballasts when using the modified unitary member 60.

It will be apparent to those skilled in the art that the objects of this invention have been achieved by providing a removable unitary member upon which is mounted all of the electric components required for proper operation of the discharge-lamps. If the circuitry fails, it may be conveniently replaced by a stand-by unitary member and circuit. Thus, the out-of-order period of the luminaire is substantially eliminated. Unitary members having different numbers of lamps, but having standard dimensions may readily be exchanged to change the illumination produced by the luminaire. The unitary member is hingedly affixed to the luminaire, and may be retained in a swing down position to provide access to the electrical components. An electrical extension is provided to allow the lamps to operate in the swing down position to facilitate maintenance and troubleshooting.

Since numerous changes may be made in the above described apparatus, and different embodiments of the

invention may be made without departing from the spirit thereof, it is intended that all matter contained in the foregoing description or shown in the accompanying drawings, shall be interpreted as illustrative, and not in a limiting sense.

I claim as my invention:

1. In combination with an elongated luminaire housing adapted to be mounted in a ceiling and adapted to contain elongated discharge-lamp means which require support at both ends thereof, and wherein said luminaire comprises an elongated open-bottomed troffer having side wall portions, end wall portions, and a reflective top wall portion, and a light diffuser which is removably mounted within the open-bottom of said troffer, the improved arrangement for supporting and replacing all electrical components required for proper operation of the discharge-lamp means, said arrangement comprising:

a removable unitary member which supports all of said electrical components, said unitary member formed by lampholder support members disposed within said troffer proximate each of said end wall portions, opposed pairs of lampholders mounted on said lampholder support members for supporting the discharge-lamp means at each end thereof, at least one elongated trussing member extending longitudinally along said troffer parallel with and between said discharge lamp means for mechanically connecting said lampholder support members, said removable unitary member being releasably hingedly proximate one side wall portion of said troffer and releasably latched proximate the other side wall portion of said troffer for allowing said unitary member to be retained in a closed position or a swing down position to provide access to said electrical components, said releasably hingedly affixed end of said unitary member being releasably from said one side wall portion of the open-bottom of said troffer to permit said unitary member to be completely removed from within said troffer;

lamp operating and ballasting means supported by said elongated trussing member;

electrical disconnect means connected to said lamp operating and ballasting means and adapted to be connected to a source of electrical power for operating said discharge-lamp means, said electrical disconnect means including a flexible extension associated therewith which provides electrical power to said electrical components when said unitary member is in said swing down position as well as in said closed position for allowing said discharge lamp to be operable in the swing down position;

and electrical conducting means supported by said unitary member for electrically connecting said ballasting means and said lampholders.

#### References Cited

##### UNITED STATES PATENTS

2,615,123	10/1952	Guth	240—51.11
2,684,498	7/1954	Zingone	240—51.11 XR
3,018,363	1/1962	Gibson et al.	240—9 XR

##### FOREIGN PATENTS

686,591 1/1953 Great Britain.

NORTON ANSHER, Primary Examiner

ROBERT P. GREINER, Assistant Examiner