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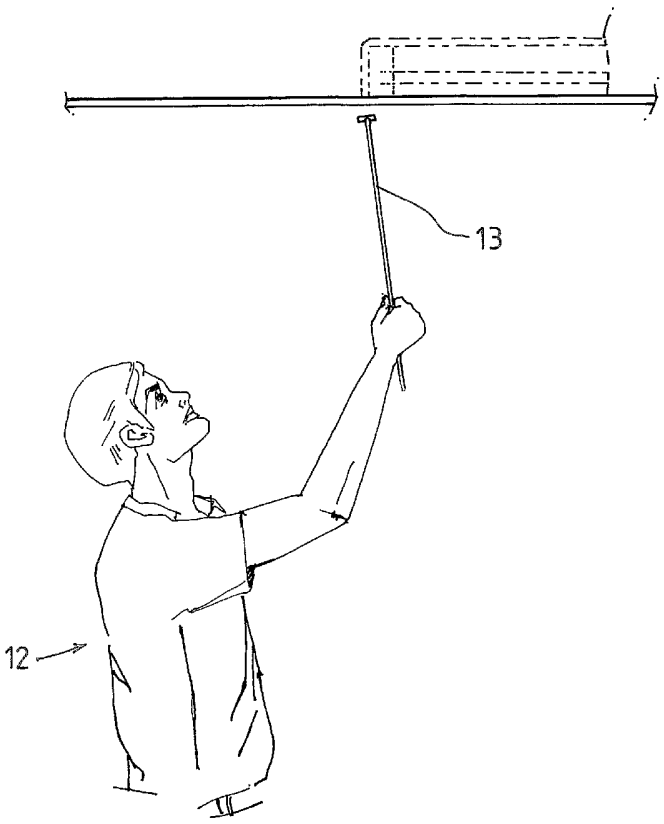
(54) Title: LIGHT FITTINGS AND ASSOCIATED ASSEMBLIES



(57) Abstract: A light assembly comprising a mounting (10) and a cooperating light fitting (11) where a user (12) employs a tool (13) inserted into the fitting to release the fitting from the mounting. The fitting 11 is hinged to the mounting (10) by stubs (14) on opposite sides of the fitting (11) which locate in slots (15) on opposite side rails (16) of the mounting (10). Consequently, the light fitting (11) may be swivelled as shown in Figure (3) and completely removed from the mounting.

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LIGHT FITTINGS AND ASSOCIATED ASSEMBLIES

FIELD OF THE INVENTION

THIS INVENTION relates to light fittings and light assemblies and particularly but not limited to light fittings and light assemblies especially pleasing dust free environments.

BACKGROUND TO THE INVENTION

Present fluorescent light fittings used in office buildings must be serviced by a skilled technician. In dust free environments including hospital operating theatres is often inconvenient for a technician to interrupt the operating theatre and where dust has accumulated in the light fitting then it may be necessary to clean the operating theatre and as a result there is further down time and expense.

It would be desirable to provide a light fitting and light assembly where the light fitting may be removed from the assembly without the need for a skilled technician in a clean an effective manner.

It would be further desirable to provide a light fitting which may be removed from the light assembly and taken away for repair.

OUTLINE OF THE INVENTION

In one aspect therefore, the present invention resides in light assembly having comprising a mounting and there being a removable light fitting carrying at least one light, the mounting being adapted to fit to a ceiling and the fitting being adapted to fit the mounting when the mounting is in operative position, the mounting having a power fitting supplying a power source for the light fitting, the light fitting having a power fitting adapted for coupling to the mounting power

fitting, the respective power fittings being engageable when the fitting is in operative position in the mounting for transmission of power to the light fitting from the mounting, means retaining the fitting in the mounting, the means retaining the fitting the mounting being separate from the respective power fittings and enabling the fitting to be released from the mounting for service and maintenance purposes, upon release of the means retaining the fitting in the mounting and the mounting being moved from its operative position the respective power fittings are disconnected and power is disconnected from the light fitting.

Preferably, the light fitting is secured to the mounting by a mechanical release means moveable between a locked position where the fitting is secured to the mounting and the power fitting are connected and an unlocked position where the power fittings are disconnected independent of any associated light switch position, the release means having a tool entry whereby a manually operable tool may pass through the tool entry and the tool is held captive until the release means is moved to the locked position. Typically, the release means includes a projecting tongue biassed to locked position projecting from the fitting to block entry of the fitting into the mounting unless the tool remains in operative position. Thus the fitting can not be inadvertently electrically connected to the mounting without being properly secured.

Preferably, the mounting carries the fitting for the power source and all other electrical components of the light assembly are carried by the light fitting.

The mounting is typically an open topped container inverted so that it is open top is projecting downwardly to provide a downwardly projecting cavity into

which the fitting is operatively positioned to close and seal the cavity. The removable light fitting effectively functions as a door to the cavity being removably hinged at one end so that it may be swung down from the mounting was remaining hinged thereto, the power fittings being at the opposite end of the mounting and light fitting respectively so that as the light fitting is being swung back into its operative position the power fittings are automatically engaged to deliver power to the light fitting. This embodiment is flush mounted diffuser arrangements where diffuser or surrounding frame is flush with the ceiling.

In another embodiment the mounting may comprise a bracket where the light fitting is not flush mounted but is retained in the bracket so that the light fitting pivots relative to the bracket.

The means retaining the fitting in the mounting is preferably a releasable latch and a user preferably employs a special tool to release the latch whereupon the light fitting may be swung down into a service position or ultimately removed completely from the mounting and taken away for service or interchanged with a replacement light fitting.

BRIEF DESCRIPTION OF THE DRAWINGS

In order that the present invention may be more readily understood and be put into practical effect reference will now be made to the accompanying drawings which illustrate preferred embodiments of the invention and wherein:-

Figure 1 is a schematic drawing illustrating a person inserting a tool into a light assembly according to the present invention to activate the release so that the light fitting may be removed from the mounting;

Figure 2 is a schematic drawing illustrating the same person swinging the light fitting down to its service or maintenance position wanted has been released from the mounting;

Figure 3 is a schematic drawing illustrating the same person swivelling the light fitting to detach it from its hinged connection to the mounting so that the light fitting may be completely removed from the mounting and taken away for service;

Figure 4 is a schematic drawing illustrating same person carrying the light fitting away for service and exposing the open cavity of the mounting in the ceiling;

Figure 5 is a typical view from below of a light assembly according to the present invention;

Figure 6 is a typical view from the side of a light assembly according to the present invention, also illustrating a tool and catch suitable for use with the present invention;

Figure 7 is a typical view from above of a light assembly according to the present invention;

Figure 8 is a perspective drawing illustrating a mounting suitable for use with a light assembly according to the present invention;

Figure 9 is a side view illustrating an outer rim and support frame which forms part of the mounting illustrated in Figure 9;

Figure 10 is an enlarged view illustrating the right side portion of Figure 6 showing the power fittings, catch and released tool;

Figure 11 is a view from below of the end depicted in Figure 10 showing aperture for entrance of the tool into light fitting to operate the release by moving the catch away from the latched position illustrated in a Figure 10;

Figure 12 is in end view of a typical light fitting body;

Figure 13 is a section illustrating a light assembly according to the present invention;

Figure 14 is a part section illustrating a diffuser located in a channel in a light fitting according to the present invention and document;

Figure 15 is in end view of a typical light fitting;

Figure 16 is a part side view illustrating a diffuser position by which it may be accessed and slid to one side as illustrated in Figure 16A so that the interior of the light fitting may be accessed to replace light bulbs;

Figure 17, 18 and 19 illustrate components of a surface mount light fitting according to a preferred embodiment of the present invention;

Figures 20 and 21 illustrate the pivot and latch arrangement suitable for the embodiment of Figures 17-19;

Figure 22 is a cross-section though the assembled fitting;

Figure 23 is a part section showing a typical latch; and

Figure 24 is a drawing showing an adapter so that a light fitting may be reconfigured for shorter tubes.

METHOD OF PERFORMANCE

Referring to the drawings and initially to Figures 1 to 4 there is illustrated a light assembly comprising a mounting 10 and a cooperating light fitting 11 where a user 12 employs a tool 13 inserted into the fitting to release the fitting

from the mounting. The fitting 11 is hinged to the mounting 10 by stubs 14 on opposite sides of the fitting 11 which locate in slots 15 on opposite side rails 16 of the mounting 10. Consequently, the light fitting 11 may be swivelled as shown in Figure 3 and completely removed from the mounting.

It will be appreciated that release of the light fitting using the tool 13 automatically disconnect power between the light fitting and mounting so that the light fitting is not live as it is being swung down as shown in Figure 2.

This is accomplished using a plug and socket assembly 17 which is made and connected when the light fitting 11 is in place. This will be described in great detail later with reference to Figure 10 and Figure 11.

Referring now to Figure 8 and Figure 9 those portions making up the mounting will now be described. The mounting includes a container 18 made from a closed plastic material so that when the fitting is in place the mounting is completely closed and sealed to prevent ingress of dust into the mounting or into the light fitting. A peripheral metal frame 19 supports the container and provides a cover flange 20 which overlaps an edge of a matching hole in the ceiling as well as carrying side rails 16 and a U-shaped frame member 21 upon which the mounting power fitting is mounted through hole 22. The power fitting for the mounting is clearly illustrated at 23 in Figure 10.

Referring now to Figure 10 and Figure 11 the operation of the release means will now be described. In illustrated embodiment the tool 13 has a T-shaped head 24 which may be inserted through opening 25 in the light fitting and upon rotation cause the latch 26 to slide away from the catch 27 and thereby release the light fitting 11 from the mounting 10 automatically disconnecting the

power fitting 23 from the power fitting 28 of the light fitting 11. It will be appreciated that due to the head of the tool 13 being T-shaped the tool will be held captive in the fitting until the latch is moved back into the latched position illustrated in Figure 10.

It will be appreciated that the light fitting11 may be any suitable light fitting or arrangement and typically includes a reflector 29 various normal electric fittings including a bulb fitting of the usual kind and a diffuser 30 which slide sideways in a channel 31 to gain access to the interior 32 of the light fitting 11.

Figures 17-22 illustrate a further embodiment. Figure 17 illustrates a reflector 33 within a fitting 34, the fitting 34 having opposite side pivot pins 35 one of which may be seen in Figures 17 and 19. A mounting bracket 36 is initially secured to a ceiling (not shown) through screw holes 37 and 38. The bracket has hinge pin 35 retainers 39 depending outward from the bracket on opposite sides so that the fitting 34 may swing down as shown in Figure 20. A diffuser 41 slides in to the fitting through a slot 42 in the end of fitting 34. It will be appreciated that when the fitting has been swung down the bulb 40 may be replaced. As in the previous embodiment the whole light fitting may be replaced.

As shown in phantom in Figure 21 the fitting 34 has a plug or socket at 43 and the mounting bracket 36 has a corresponding plug or socket at 44 for delivery of power to the light fitting. The bracket 36 has a catch at 45 and the fitting has a rotary latch 46 which may be manually turned with a suitable tool to lock or release the fitting 34 from the bracket 36.

Figure 23 illustrates another aspect of a tongue 47 of a typical latch 46 shown in Figure 23 in its locked position, it can be seen that a leaf spring 48

biasses the tongue to the locked position. Thus the tool must remain in operative position so that the fitting may be installed in the mounting.

Figure 24 illustrates an adapter 49 so that a shorter tube may be used with a typical fitting, the adapter49 comprises a bracket 50 which may be screwed to an inside wall of a fitting and the tube end socket 51 simply moved and clipped into the bracket at holes 52 and 53.

Whilst the above has been given by way of illustrative example, many variations and modifications will be apparent to those skilled in the art without departing from abroad ambit and scope of the invention as herein set forth. For example, the light fitting of may be hermetically sealed and include a valve or other means so that the interior may be pumped to a pressure less than atmospheric to provide implosion protection in the event a bulb explodes the reduced interior pressure will cause an implosion effect rather than an explosive effect. In another variation a hole may be provided in the drop down end to cater for entry of longer bulbs into the fitting in view of the end flanges, thus a bulb that would normally not fit into the fitting may have one end slid through the hole sufficient distance to allow the opposite end to enter and then be retracted from the hole and secured to the electrical contacts. The hole may then be sealed with a grommet.

CLAIMS

1. A light assembly having a mounting and there being a removable light fitting carrying at least one light, the mounting being adapted to fit to a ceiling and the fitting being adapted to fit the mounting when the mounting is in operative position, the mounting having a power fitting supplying a power source for the light fitting, the light fitting having a power fitting adapted for coupling to the mounting power fitting, the respective power fittings being engageable when the fitting is in operative position in the mounting for transmission of power to the light fitting from the mounting, means retaining the fitting in the mounting, the means retaining the fitting in the mounting being separate from the respective power fittings and enabling the fitting to be released from the mounting for service and maintenance purposes, upon release of the means retaining the fitting in the mounting and the mounting being moved from its operative position the respective power fittings are disconnected and power is disconnected from the light fitting.

2. A light assembly according to claim 1 wherein the light fitting is secured to the mounting by a mechanical release means moveable between a locked position where the fitting is secured to the mounting and the power fitting are connected and an unlocked position where the power fittings are disconnected independent of any associated light switch position, the release means having a tool entry whereby a manually operable tool may pass through the tool entry and the tool is held captive until the release means is moved to the locked position. Typically, the release means includes a projecting tongue biased to

locked position projecting from the fitting to block entry of the fitting into the mounting unless the tool remains in operative position.

3. A light assembly according to claim 1 wherein the mounting carries the fitting for the power source and all other electrical components of the light assembly are carried by the removable light fitting.

4. A light assembly according to claim 1 wherein the mounting is an open topped container inverted so that its open top is projecting downwardly to provide a downwardly projecting cavity into which the fitting is operatively positioned to close and seal the cavity.

5. A light assembly according to claim 1 wherein the mounting is an open topped container inverted so that its open top is projecting downwardly to provide a downwardly projecting cavity into which the fitting is operatively positioned to close and seal the cavity, hinge means at one end coupling the light fitting to the mounting so that the removable light fitting effectively functions as a door to the cavity being removably hinged at said one end so that it may be swung down from the mounting while remaining hinged thereto, the power fittings being at the opposite end from the hinge means of the mounting and light fitting respectively so that as the light fitting is being swung back into its operative position the power fittings are automatically aligned and engaged to deliver power to the light fitting.

6. A light assembly according to claim 1 wherein the mounting is an open topped container inverted so that its open top is projecting downwardly to provide a downwardly projecting cavity into which the fitting is operatively positioned to close and seal the cavity, the light assembly being a flush mounted diffuser

arrangement where a diffuser or surrounding frame is flush with an adjacent ceiling and the mounting projects upward above the ceiling.

7. A light assembly according to claim 1 wherein the mounting comprises a bracket where the light fitting is not flush mounted but is retained in the bracket so that the light fitting pivots relative to the bracket.

8. A light assembly according to claim 1 wherein the means retaining the fitting in the mounting is a releasable latch and a user employs a special tool to release the latch whereupon the light fitting may be swung down into a service position or ultimately removed completely from the mounting and taken away for service or interchanged with a replacement light fitting.

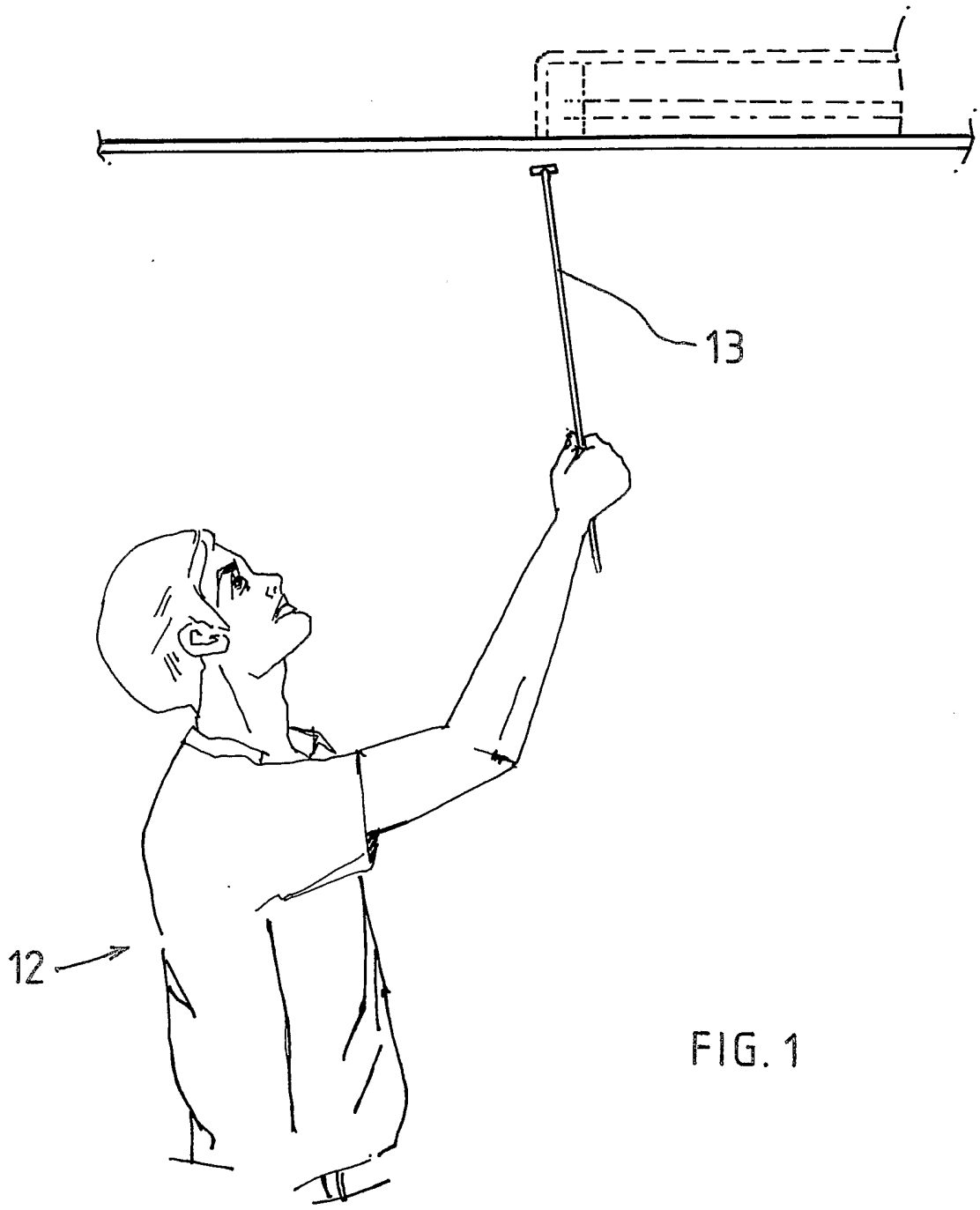

FIG. 1

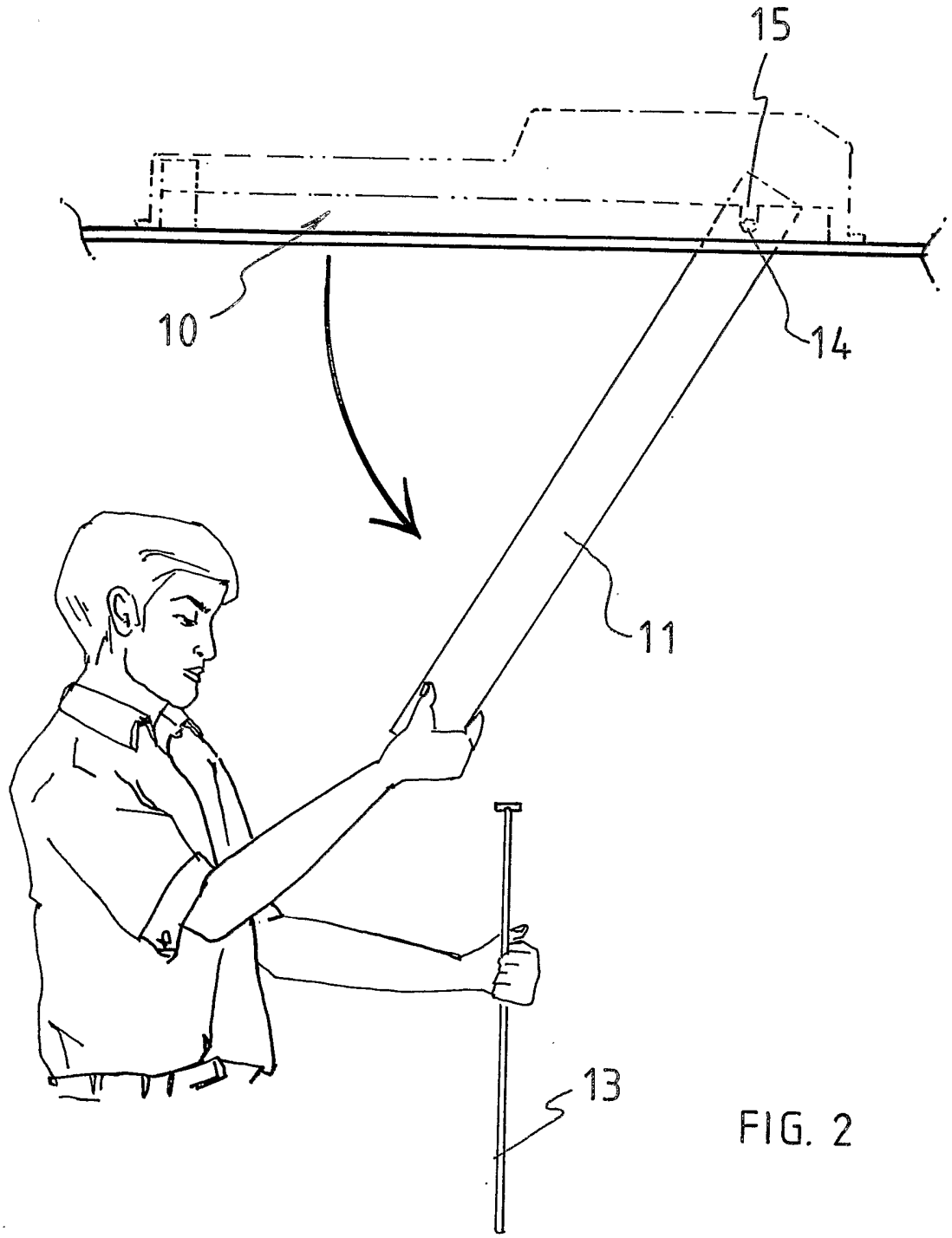

FIG. 2

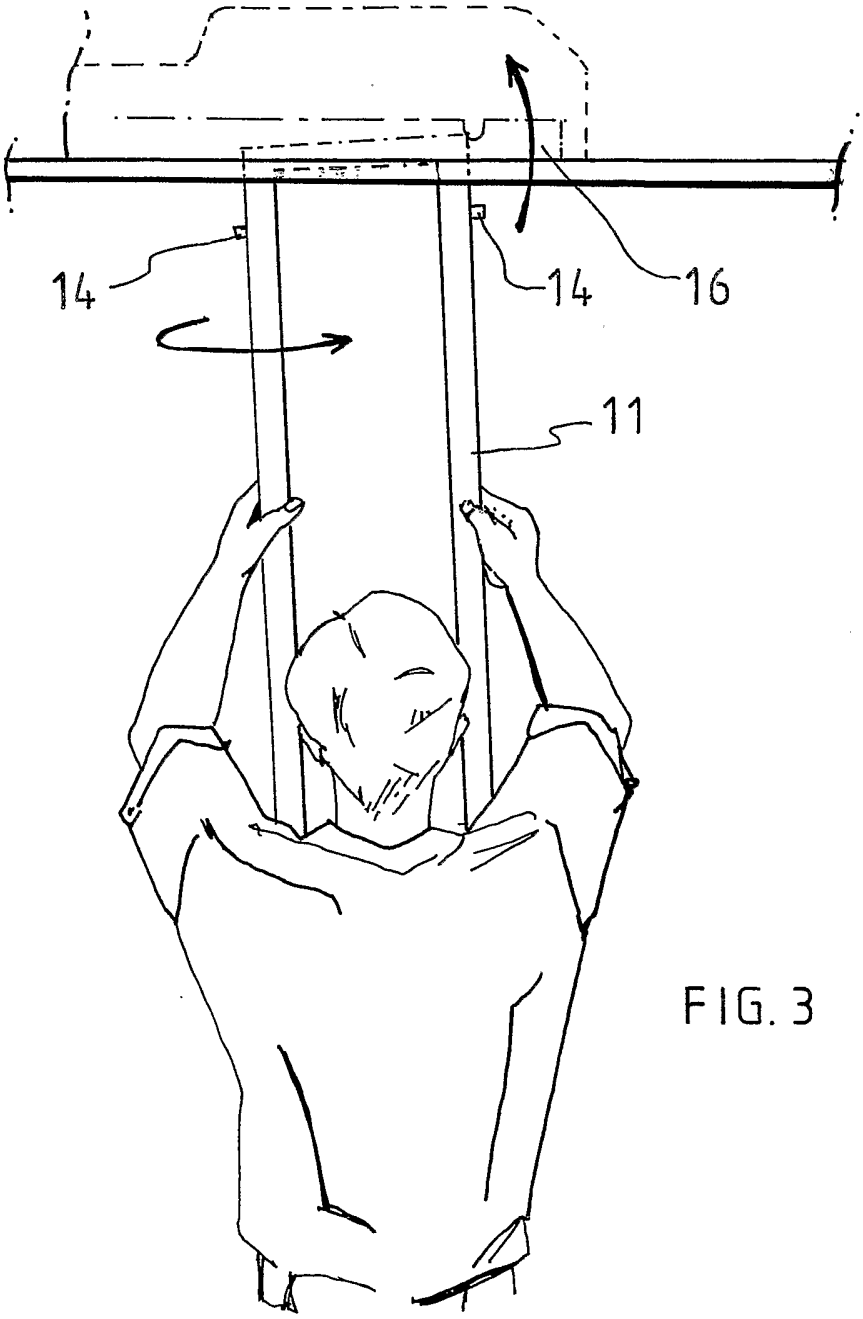

FIG. 3

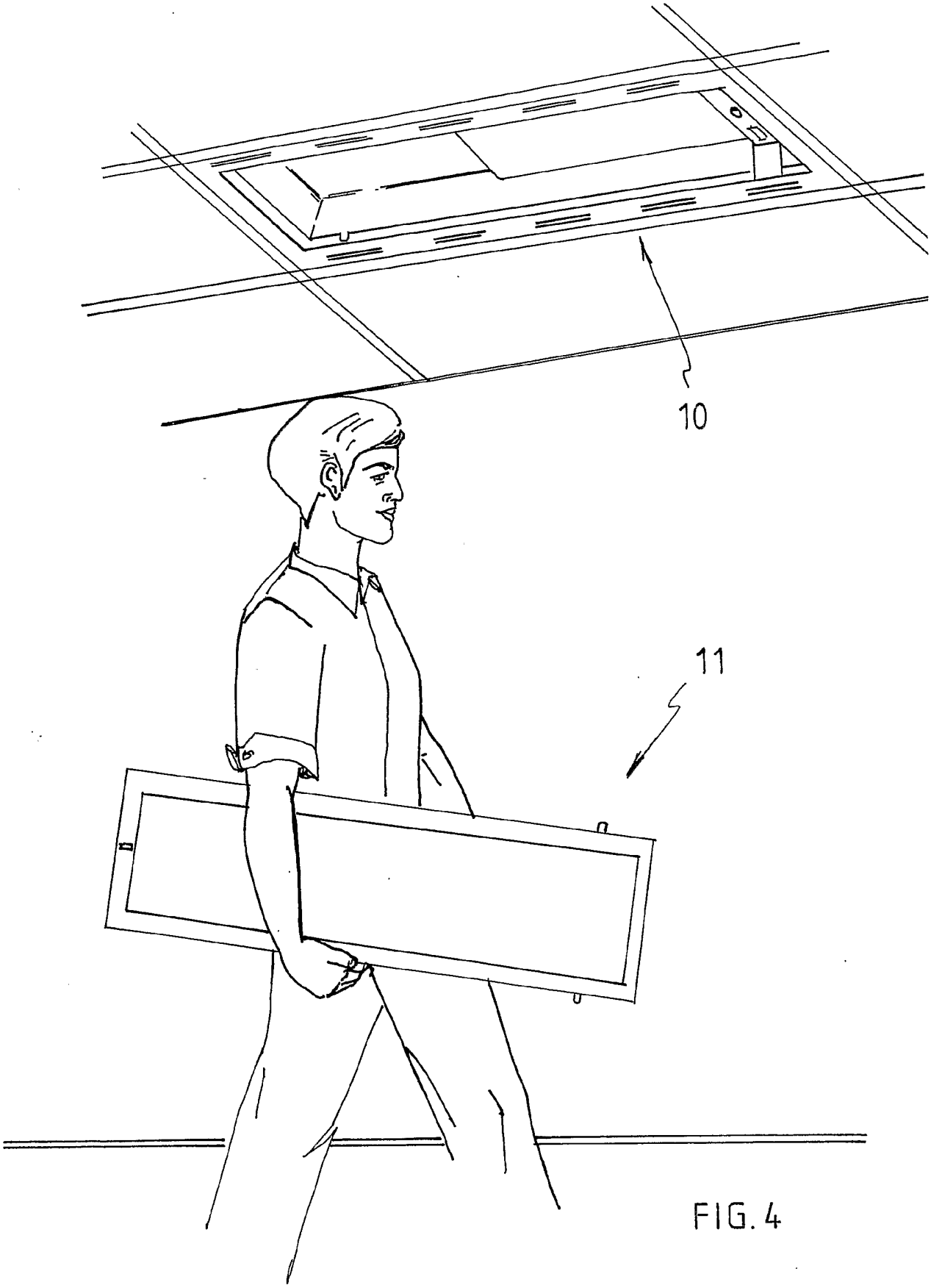

FIG. 4

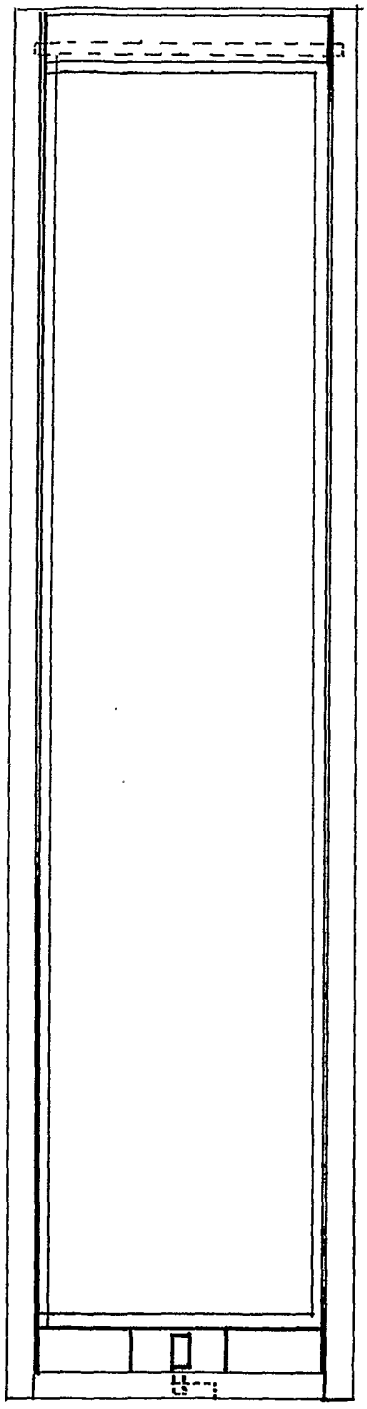

FIG. 5

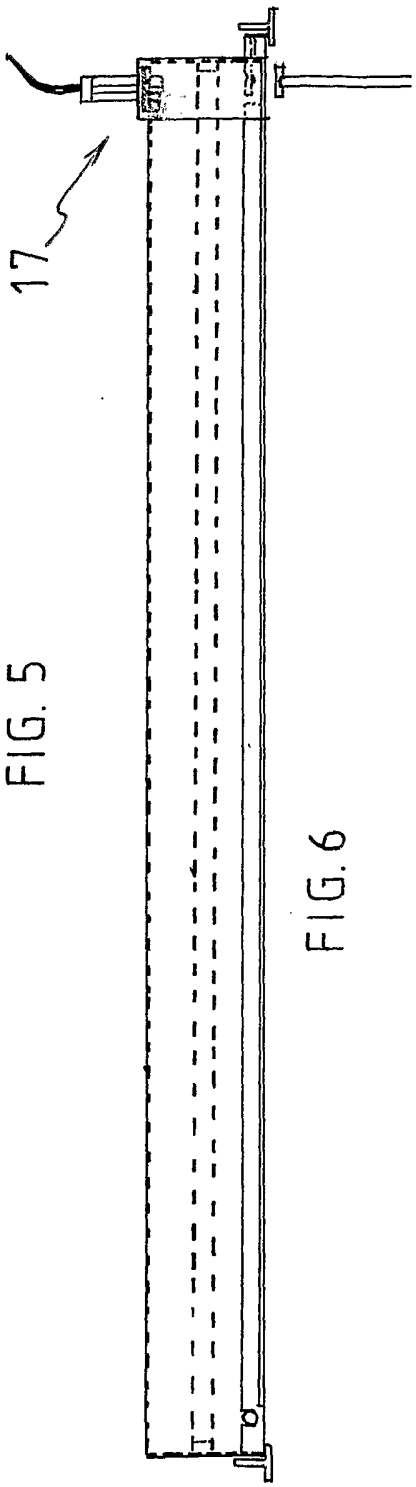

FIG. 6

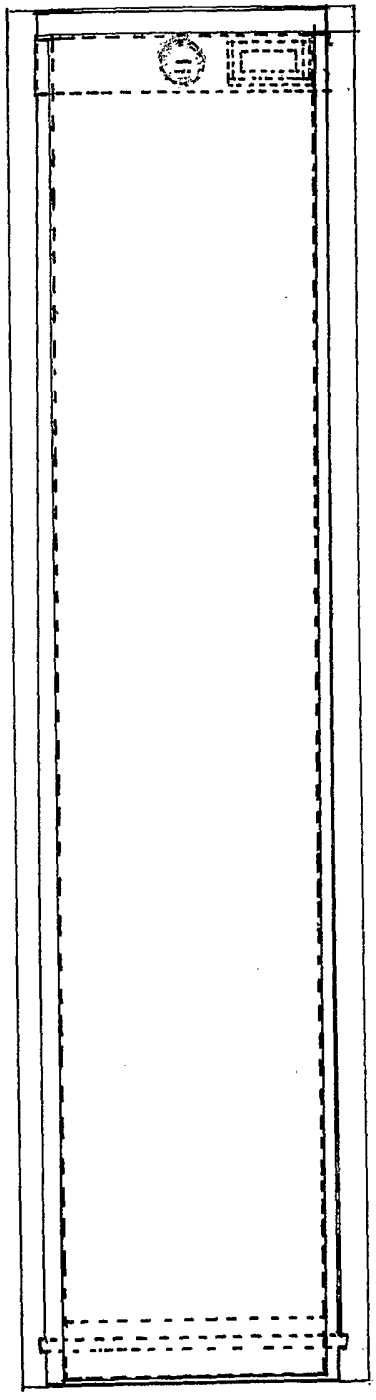

FIG. 7

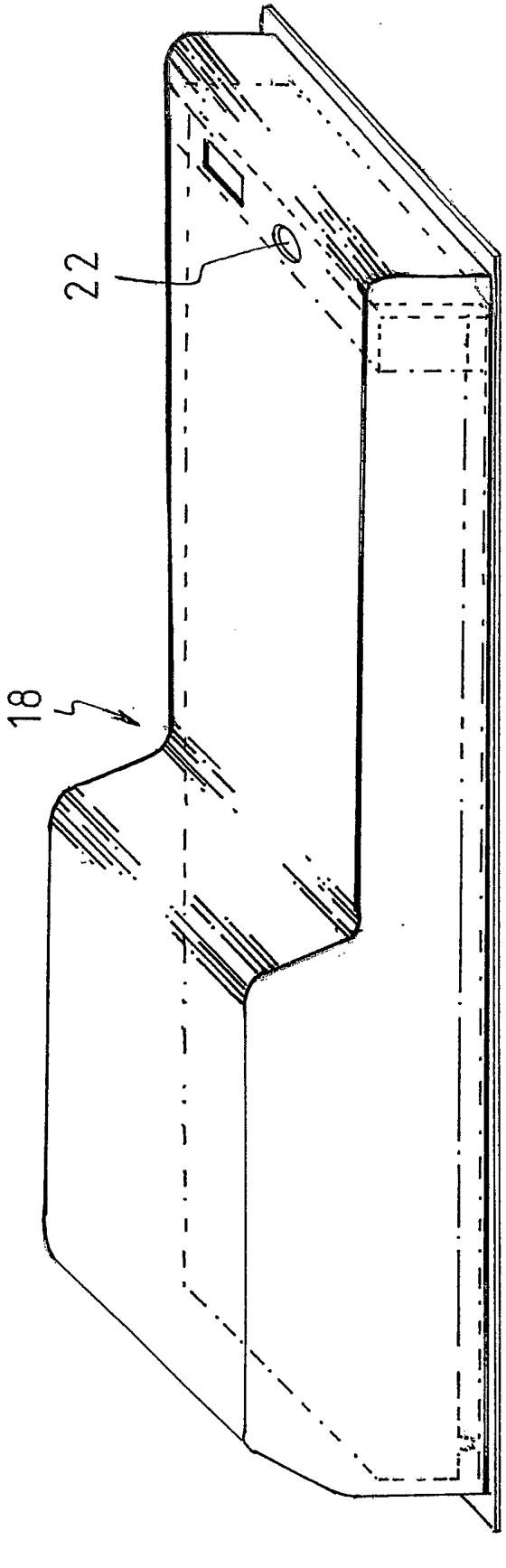

FIG. 8

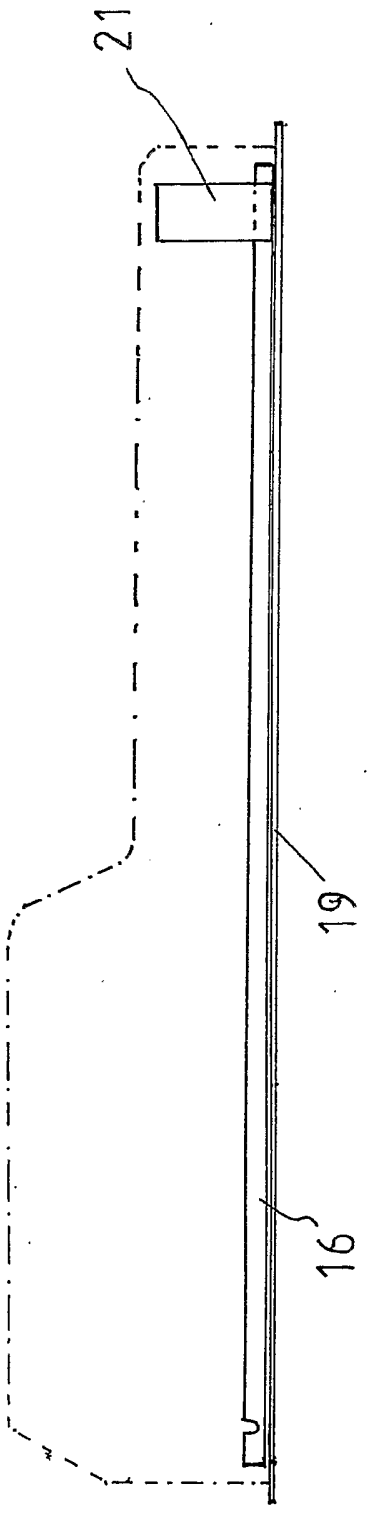

FIG. 9

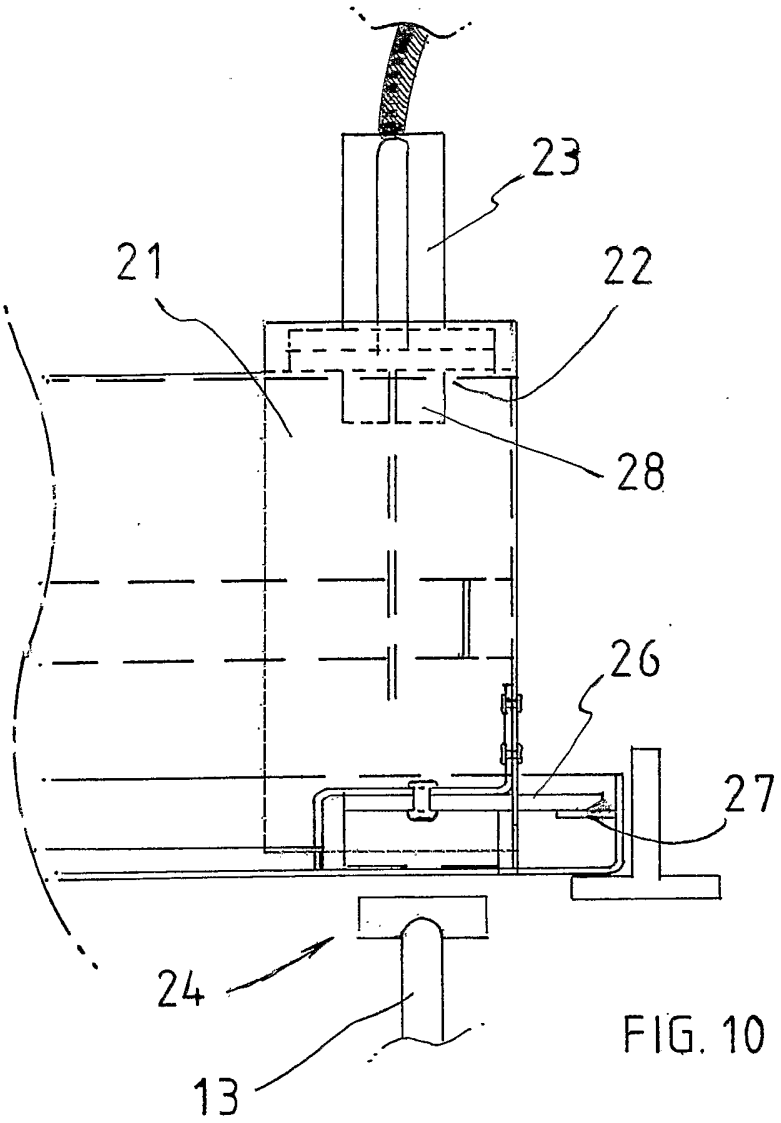

FIG. 10

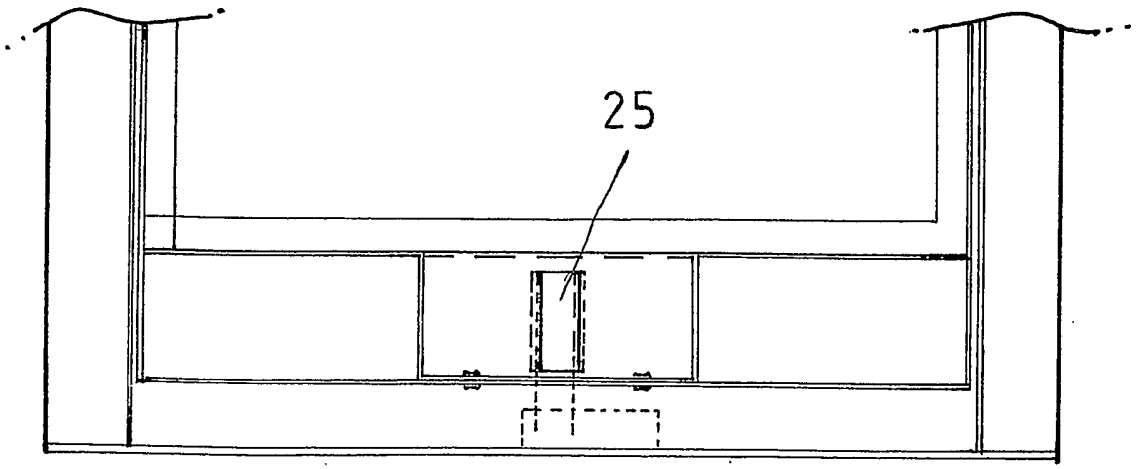

FIG. 11

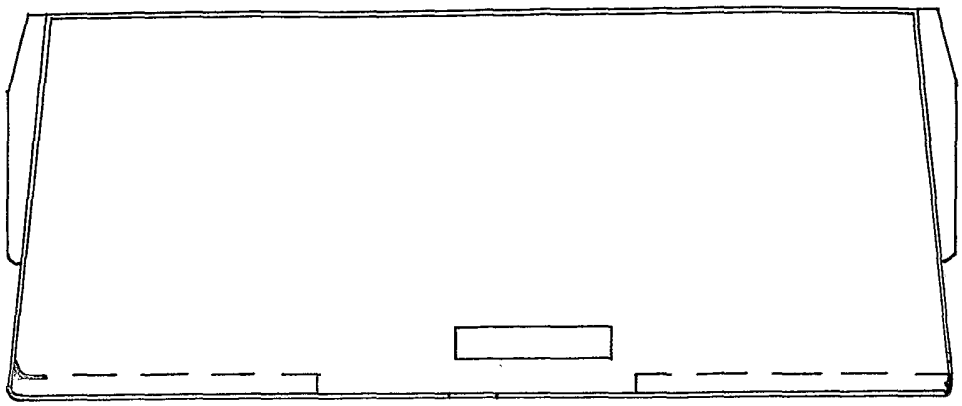

FIG. 12

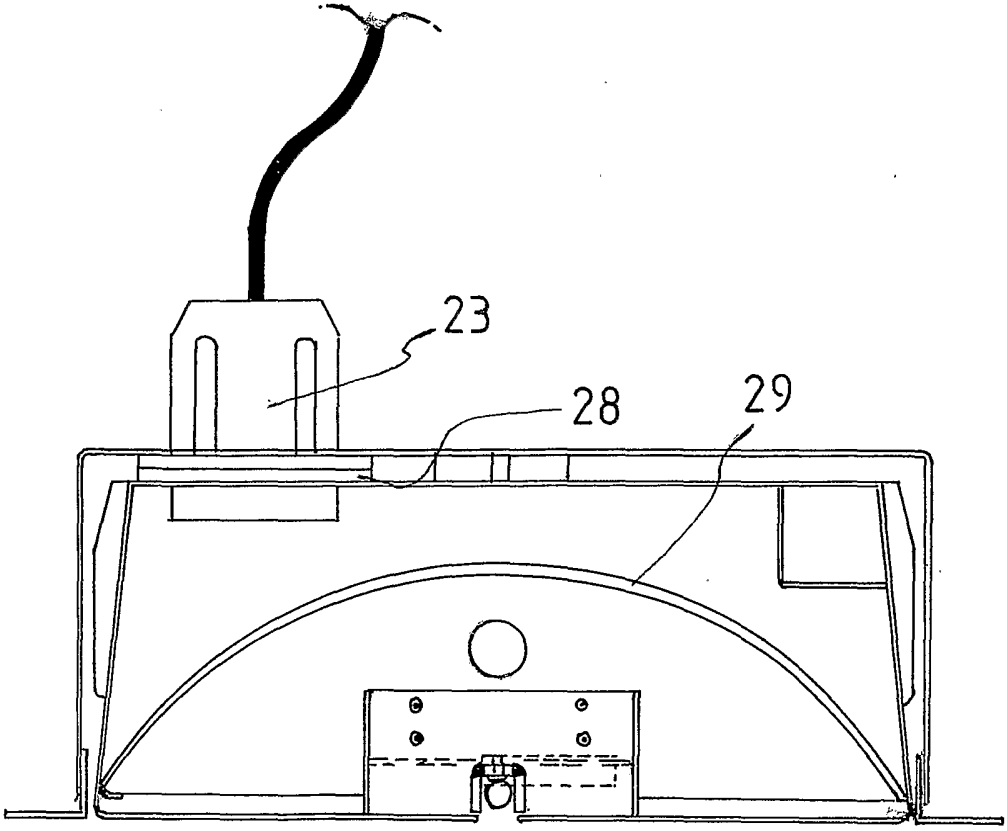

FIG. 13

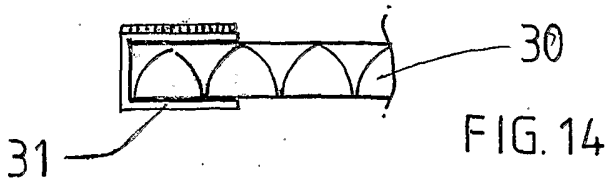

FIG. 14

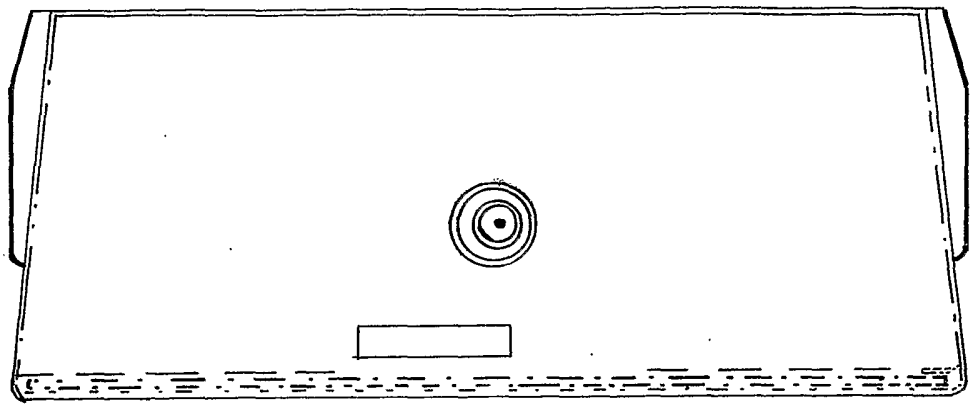

FIG. 15

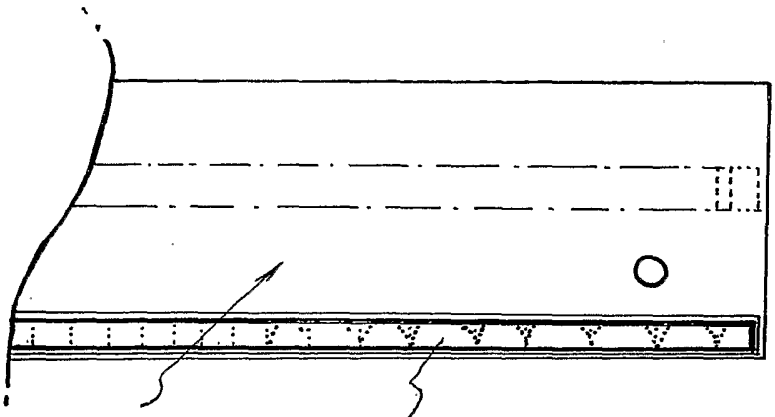

FIG. 16

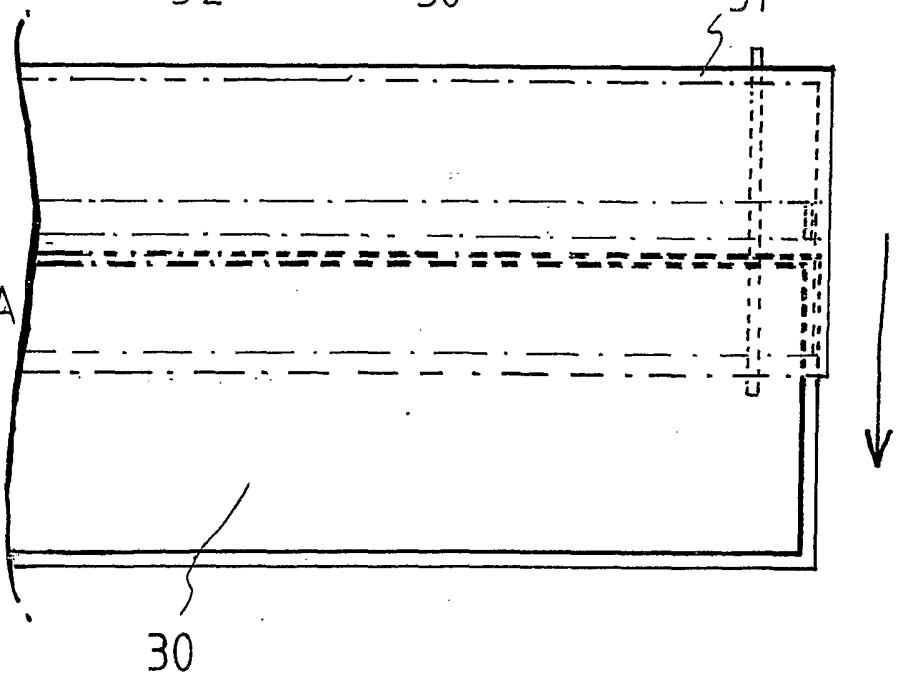

FIG. 16A

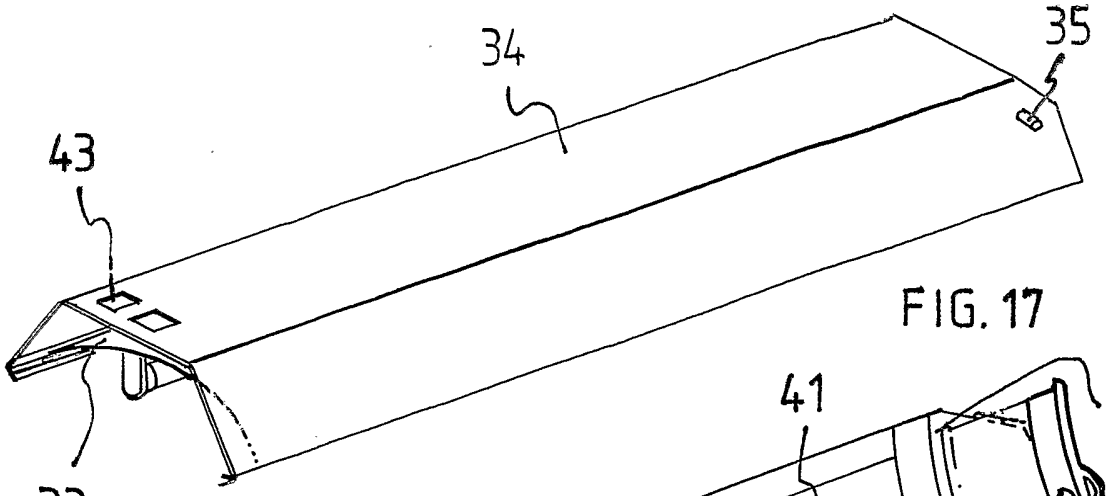

FIG. 17

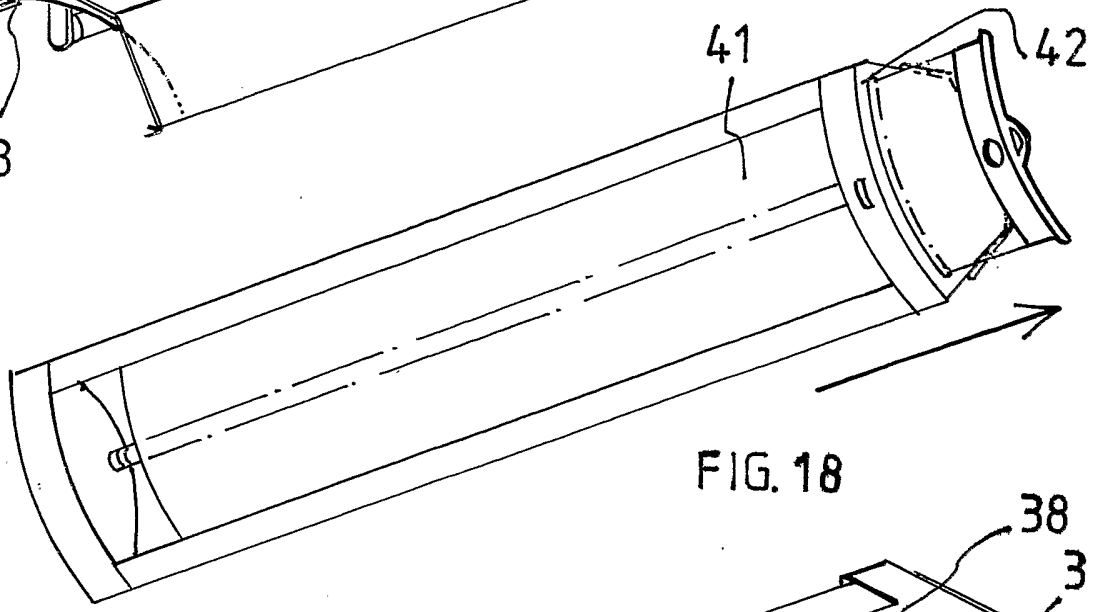

FIG. 18

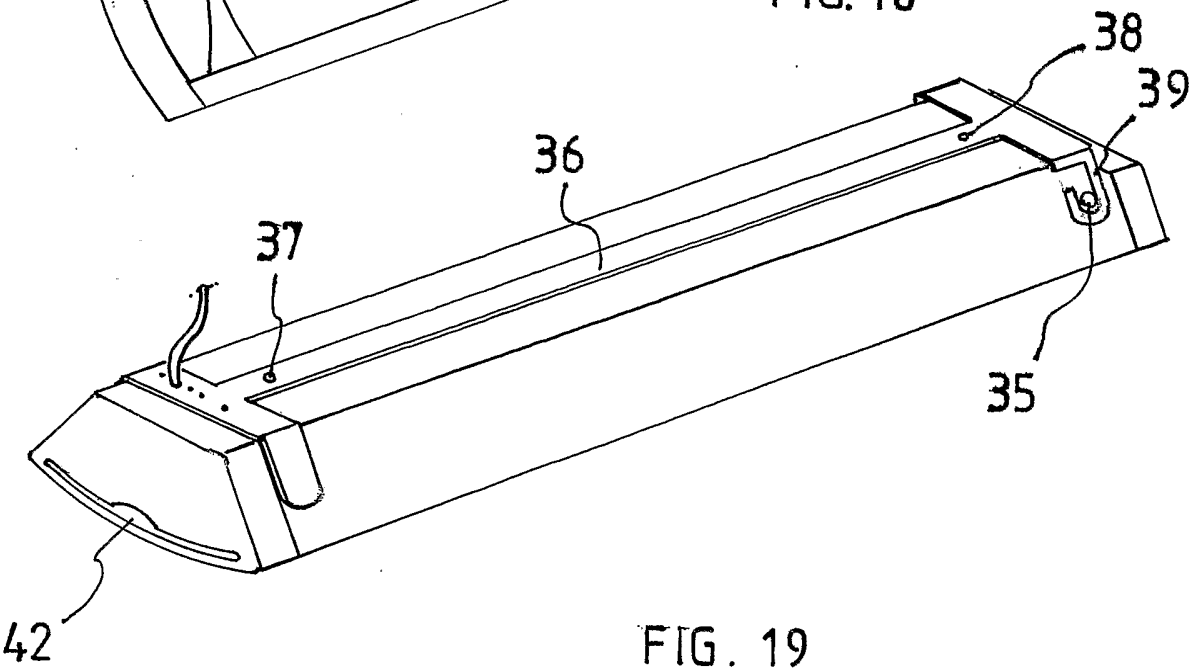

FIG. 19

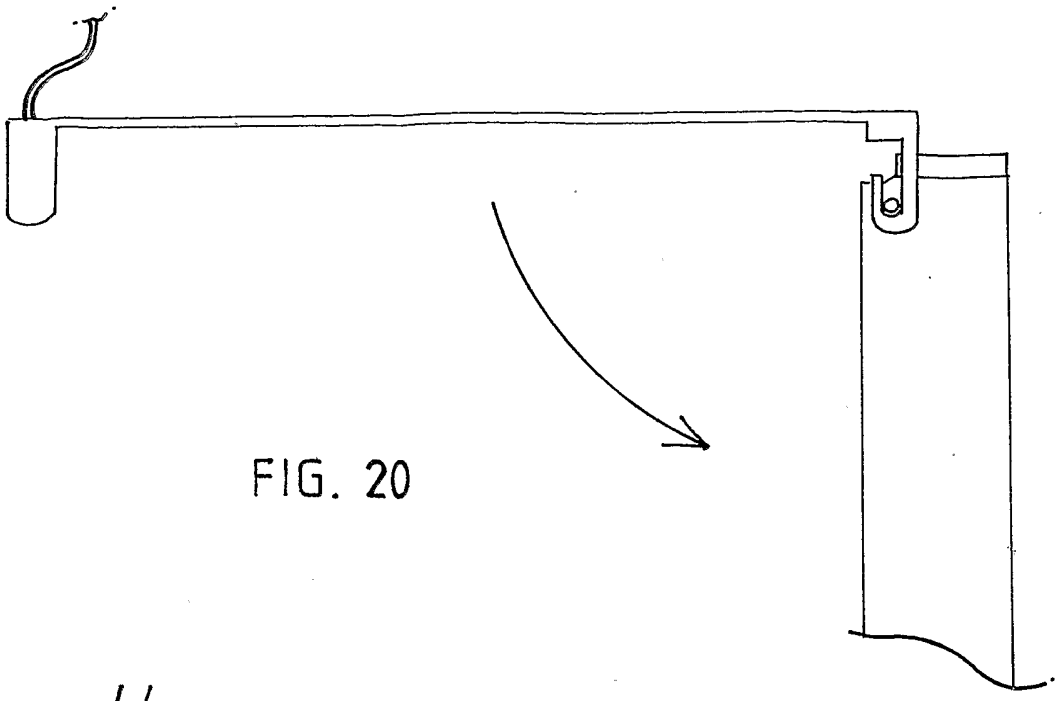

FIG. 20

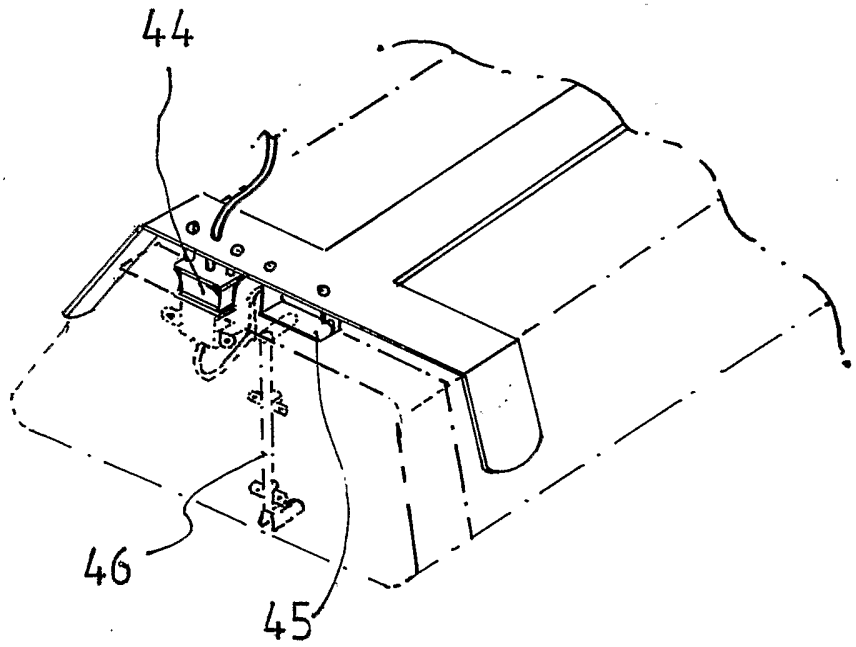

FIG. 21

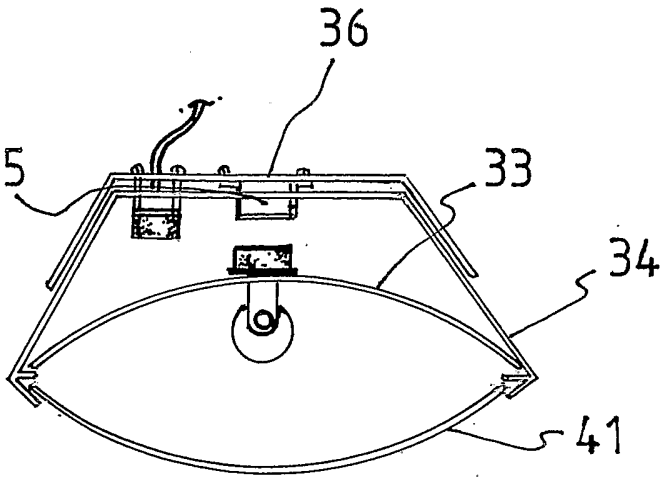

FIG. 22

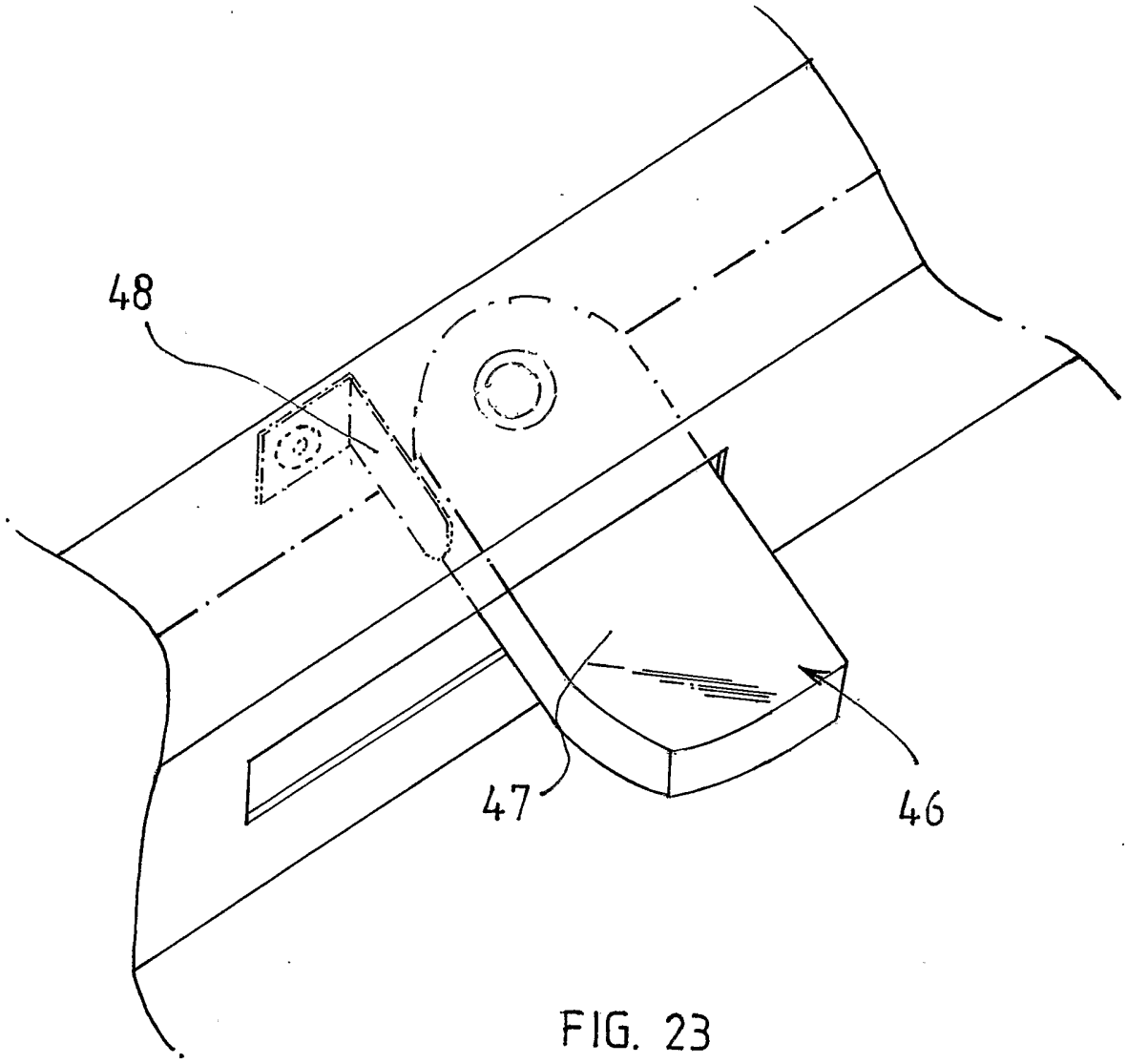

FIG. 23

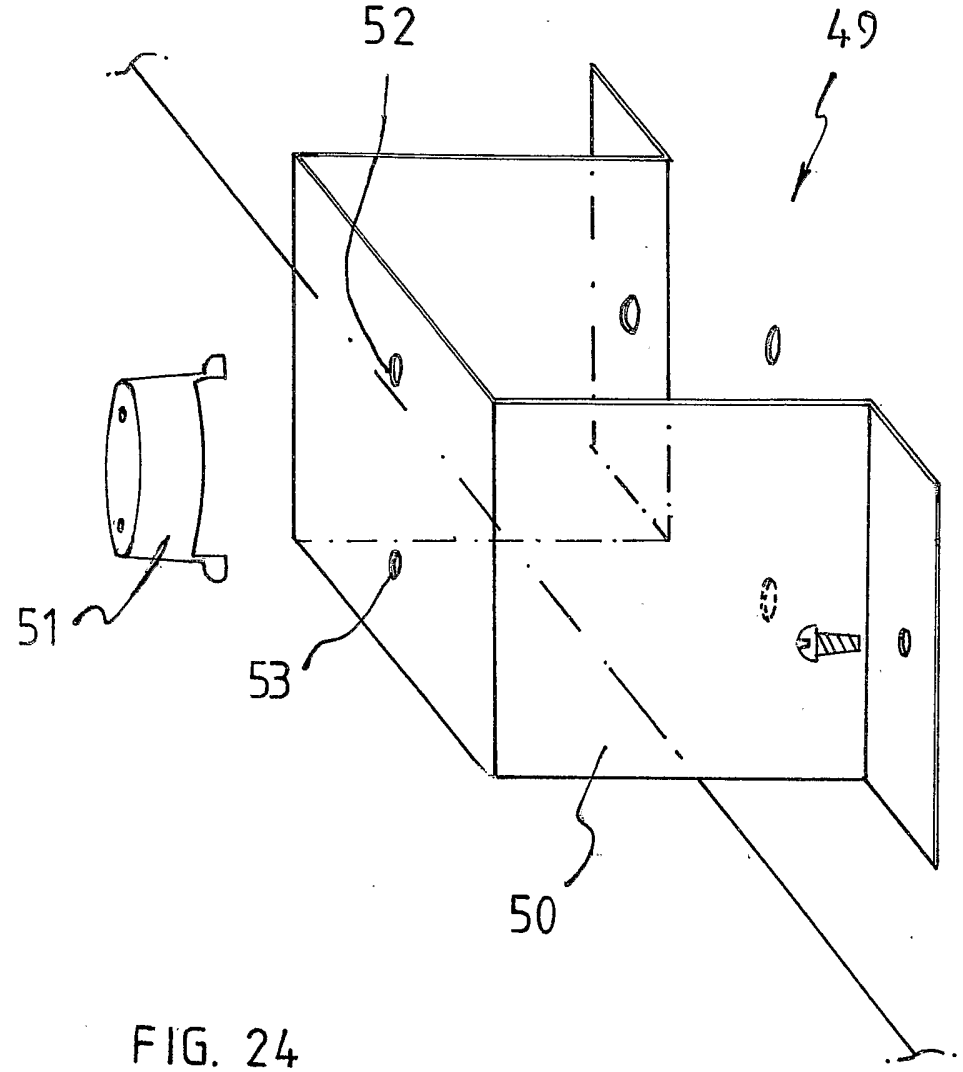

FIG. 24