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Europäisches Patentamt
European Patent Office
Office européen des brevets



11 Publication number:

0 241 402 B1

12

EUROPEAN PATENT SPECIFICATION

45 Date of publication of patent specification: **10.02.93** 51 Int. Cl.⁵: **F21S 3/00, F21S 3/14**

21 Application number: **87500014.3**

22 Date of filing: **07.04.87**

54 **Lighting installation with a plurality of lighting units.**

30 Priority: **09.04.86 ES 293470**

43 Date of publication of application:
14.10.87 Bulletin 87/42

45 Publication of the grant of the patent:
10.02.93 Bulletin 93/06

84 Designated Contracting States:
AT BE CH DE FR GB GR IT LI LU NL SE

56 References cited:
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FR-A- 2 335 720
GB-A- 561 090
US-A- 4 096 379

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Description

The present invention relates to a lighting installation with a plurality of lighting units, with the use of which it is possible to implement installations that can be suited to the specific requirements of every case of application, starting from some components allowing several combinations to be performed.

With some of the lighting means hitherto known, laying down of lighting apparatus that must assume a modular and compact structure becomes intricate and costly. In fact, such installations must be performed starting from components specially manufactured for every application, and this complicates the installation and puts the price of this latter up. Otherwise, one must resort to the use of commercially available components, but this has the drawback that these available components usually do not afford the ensemble image that can be attained with the equipment making the subject of the invention.

It is known from DE-A-3.014.241 a lighting installation comprising a plurality of modular units, which can be assembled in a number of different ways due to special end pieces of each unit and special interconnecting components between adjacent units.

French Patent FR-A-2.335.720 discloses a similar modular lighting installation, with similar end pieces and special interconnecting components, where each unit can furthermore consist of complementary members which together form a hollow body.

Both these known modular lighting installations allow the formation of a desired layout, but the electrical interconnection between units has to be made through fixed wire conductors, and this prevents the lighting installation and its layout from being easily and readily assembled and changed if desired.

The lighting installation according to the invention comprises a plurality of lighting units, which can be assembled in a number of different ways due to special end lids of each unit and special intermediate distribution junctions, each unit comprising two complementary channel profile members with means for engagement with each other to form a box-like hollow body, said lids and said intermediate distribution junctions being provided with means for mechanical interconnection of two or more units in a plurality of desired layouts, and is characterised in that the end lids and the intermediate distribution junctions further comprise means for electrical interconnection of two or more adjacent units, said means for mechanical interconnection comprising, on the outer faces of the end lids and the intermediate distribution junctions, mu-

tually complementary and outwardly protruding half-sleeves, surrounding two sets of protruding tubular housings for said electrical interconnection means, in the form of connection sockets and pins, the socket and pins of one end lid or intermediate distribution junction engaging with those of an adjacent lid or junction, and at the same time the half-sleeves and the two sets of protruding tubular housing of adjacent lids or junctions being coupled with each other for their assembly.

In a preferred embodiment, said box-like hollow bodies comprise means for fastening within them electrical components for holding and feeding lamps.

It is foreseen that one of the half-sleeves of the lids has mating semicircular cutouts at diametrically opposite points, so that, when the lid of a box is coupled with the lid of an adjacent one with all of the half-sleeves coaxial, the cutouts of one lid match with those of the other lid and define openings through which removable locking pins are threaded to ensure the lid engagement.

To advantage the locking pins are of a tubular structure to form a passageway for supporting struts.

The terminal lid itself shows a protruding, closed extension having an outline similar to that of the half-sleeves of the connection and assembling lids, with opposite circular holes for engagement of a tubular locking pin intended to receive a supporting strut.

The connection and engagement lids as well as the terminal lids have projections on their internal face in order to facilitate centering of the lid as regards the end of the box where they are fixed to, as well as holes for securing screws, the said holes being faced to housings formed in the profiled members making up the box and arranged for threaded engagement of the above screws.

It is foreseen that some lids for assembling between two boxes have the sets of pins and sockets offset 90° as regards the sets of the other boxes, in order to locate said boxes in a position offset to an angle as well. The boxes may, likewise, be rotationally movable for directing the light as desired.

For a better understanding of this specification, the enclosed drawings show, only by way of example, one case of practical embodiment of the lighting installation.

In said drawings, figure 1 is a perspective view of the channeled profiled members making up the luminous boxes or container boxes for the electrical components of the equipment, the lids for assembly or engagement of the boxes and a terminal lid, in dismantled showing; figure 2 is a perspective view of one of the boxes with neither lids nor electrical components inside them; figure 3 is an

elevation view of the outer face of one of the assembly and connection lids, the figure showing as well, in dotted lines, the position of one lid with the same half-sleeves and connection, though in a position which is offset 90° as regards the position shown in solid lines; figure 4 is a view in longitudinal section of two assembly and connection lids shown in separated relation; figure 5 is a similar view of the two lids assembled with one another; figure 6 is a perspective view showing a mounted set of equipment components; figure 7 is an elevation view of several components in assembled condition, and figure 8 is a diagrammatic plan view of the equipment as installed according to an optional layout.

The lighting installation shown in the drawings is made up of boxes generally referred to with 1 and formed of two profiled members 2 and 3, of generally channeled shape and mutually complementary, the edges of the said members having sets of ribs and grooves 4 for their mutual pressure fitting (Fig. 2). The profiled member 3 may be translucent in the case that a luminous tube is housed therein.

The inside of the profiled members 2 and 3 is formed with longitudinal grooves 5 in ribs or wings 6 where the screws for securing the electrical components such as lamp carriers, ballasts, primers and other, are fastened to. The profiled members have, as well, lips 6a for housing the electrical cables.

A lid 7 is engaged at each end of the boxes 1 and is formed with ribs 8 for guiding their position, as well as holes 9 through which screws 10 are passed for screw threaded engagement with the ends 5a of the grooves 5, in order to secure the lids.

The outer face of the lids 7 has two mutually complementary, diametrically opposite half-sleeves 11 and 12 of different radius, which surround sets of mutually complementary sleeves or tubular housings 13 and 14 which receive, respectively, connection sockets 15 and pins 16 provided with tongues 17 directed towards the center of a central opening 18 of the respective lid for connecting to the electric installation cables.

The half-sleeves 11 have pairs of semicircular, complementary and opposite cutouts 19 and 20 which mate with one another when the half-sleeves of one lid are fitted or assembled with those of a like lid (Fig. 5). The openings formed by the mated cutouts 19 and 20 serve to form a passageway for locking pins 21 and 22 having axial holes through which supporting cables or struts 23 can be inserted. The locking pins 21,22 play the role of a linkage between two contiguous lids and ensure the stillness of these later.

The equipment comprises as well terminal lids

25 having an outline which is analogous to that of the lids 7, and a small closed outer box 26 of a shape similar to that of the half-sleeves 11 and 12, and formed with openings 27 which are similar to the openings 19 and 20 to provide for the insertion of locking pins 21 and 22 in order to secure the ends of suspending struts 23.

It may be foreseen that the half-sleeves 11 and 12 are located offset 90° as regards their usual position, for example as indicated with dotted lines in figure 3, to place a box 1a in a position which is offset 90° as regards the other boxes (Fig. 6 and 7).

The equipment comprises as well distribution or junction bodies 28 provided with connection sleeves 29 having a shape which is complementary to that of the half-sleeves 11 and 12 of the assembly lids 7, and provided with electric connection sockets and pins. The connection sleeves 29 have a tail 30 shaped so that it can be removably trapped in the junction body 28 and allow the sleeve 29 to be placed in the suitable position. The body 28 can trap two or more tails 30 of respective sleeves 29, according to the needs of the installation (Fig. 8).

The above junction body 28 comprises means for securing a suspending strut 23, as well as for mounting a swinging spotlight 31 of a conventional shape (Fig. 6).

As appears from the above description and looking to the drawings, the lighting installation allows multiple combinations to be effected in order to attain an illumination layout which is distributed in a manner suitable to the features of the site to be lighted, starting from a small series of invariable components featuring an ability for being assembled in different ways.

This equipment can be completed with an articulation device joined to the profiled members so that these latter can be directed in whatever direction. It is foreseen as well a flexible articulation that can be assembled to the profiled members in order to place the luminous tubes in a vertical plane.

Claims

1. Lighting installation, comprising a plurality of lighting units (1), which can be assembled in a number of different ways due to special end lids (7) of each unit (1) and special intermediate distribution junctions (28,29), each unit (1) comprising two complementary channel profile members (2,3) with means for engagement (4) with each other to form a box-like hollow body, said lids (7) and said intermediate distribution junctions (28,29) being provided with means for mechanical interconnection of two or more units (1) in a plurality of desired layouts,

characterised in that the end lids (7) and the intermediate distribution junctions (28,29) further comprise means for electrical interconnection (15,16) of two or more adjacent units, said means for mechanical inter-connection comprising, on the outer faces of the end lids (7) and the intermediate distribution junctions (28,29), mutually complementary and outwardly protruding half-sleeves (11,12), surrounding two sets of protruding tubular housings (13,14) for said electrical interconnection means (15,16), in the form of connection sockets (15) and pins (16), the socket and pins of one end lid (7) or intermediate distribution junction (28,29) engaging with those of an adjacent lid or junction, and at the same time the half-sleeves (11,12) and the two sets of protruding tubular housing (13,14) of adjacent lids or junctions being coupled with each other for their assembly.

2. Lighting installation as claimed in claim 1, characterized in that said box-like hollow bodies (1) comprise means (5,6) for fastening within them electrical components for holding and feeding lamps.

3. Lighting installation as in claim 1, characterized in that at least one of the channel profiled members (2,3) forming the box-like hollow bodies (1) is translucent.

4. Lighting installation as in claims 1 and 2, characterized in that the complementary profiled members (2,3) constituting the box-like bodies (1), have inner grooves (5) which the electrical components of the equipment are fastened to by means of screws, and the ends (5a) of such grooves receive in threaded engagement the lid securing screws (10).

5. Lighting installation as in claims 1 and 2, characterized in that at least one of the profiled members (2,3) has longitudinal internal lips (6a) for housing electrical cables.

6. Lighting installation as in claim 1, characterized in that, according to a specific embodiment, each assembling lid (7) and body related to the distribution junction (28,29) has two opposite half-sleeves (11,12) of different diameter and adjustable, the ends of the half-sleeve of greater diameter (11) being provided with semi-circular cutouts (19,20) mating with the cutouts (19,20) of the greater half-sleeve (11) of another assembly lid (7) or body (28,29) when both half-sleeves (11) engage with one another, said cutouts (19,20) forming together

passageways for a removable locking pin (21,22) ensuring connection of the two assembled bodies.

5 7. Lighting installation as in claim 1, characterized
in that the terminal lids (25) have an outer,
box-shaped protrusion (26) with diametrically
opposite openings (27) in which a removable
locking pin (21,22), advantageously tubular,
may be fitted.

8. Lighting installation as in claims 1 and 7, characterized in that the removable locking pins (21,22) are of tubular construction.

9. Lighting installation as in claims 1, 7 and 8, characterized in that the tubular locking pins (21,22) have means for fastening suspension struts (23).

10. Lighting installation as in claim 1, characterized in that some of the lids (7) which are engageable to the ends of the profiled members (2,3) have assembly and connection means (11,12) offset to an angle as regards the position that such means have in the remainder of the lids.

Patentansprüche

1. Beleuchtungsvorrichtung, bestehend aus zahlreichen Beleuchtungseinheiten (1), die aufgrund von speziellen Enddeckeln (7) jeder Einheit (1) und speziellen Zwischenverteilungsanschlüssen (28, 29) in verschiedener Weise zusammensetzbar sind, wobei jede Einheit (1) zwei komplementäre Kanalprofilelemente (2, 3) mit einer Einrichtung zum gegenseitigen Eingriff (4) zwecks Bildung eines kastenähnlichen hohlen Gehäuses besitzt, wobei die Deckel (7) und die Zwischenverteilungsanschlüsse mit einer Einrichtung zur mechanischen Verbindung von zwei oder mehreren Einheiten (1) in zahlreichen gewünschten Ausbildungsformen versehen sind,

dadurch gekennzeichnet,

daß die Enddeckel (7) und die Zwischenverteilungsanschlüsse (28, 29) weiterhin eine Einrichtung zur elektrischen Verbindung (15, 16) zweier oder mehrerer benachbarter Einheiten aufweisen, wobei die Einrichtung zur mechanischen Verbindung an den Außenseiten der Enddeckel (7) und der Zwischenverteilungsanschlüsse (28, 29) wechselseitig komplementäre und nach außen vorstehende Halbhülsen (11, 12) aufweisen, die zwei Gruppen von vorstehenden rohrförmigen Gehäuse (13, 14) für die elektrische Verbindungseinrichtung (15, 16) in

- Form von Anschlußdosen (15) und Steckern (16) umgeben, wobei die Dose und die Stecker eines Enddeckels (7) bzw. Zwischenverteilungsanschlusses (28, 29) mit denen eines benachbarten Deckels bzw. Anschlusses in Eingriff sind und wobei gleichzeitig die Halbhülsen (11, 12) und die beiden Gruppen vorstehender rohrförmiger Gehäuse (13, 14) benachbarter Deckel bzw. Anschlüsse miteinander zu ihrer Montage gekoppelt sind. 5
2. Beleuchtungsrichtung nach Anspruch 1, dadurch gekennzeichnet, daß die kastenähnlichen hohlen Gehäuse (1) eine Einrichtung (5, 6) aufweisen, durch die innerhalb derselben elektrische Komponenten zum Halten und Speisen von Lampen befestigbar sind. 10
3. Beleuchtungsrichtung nach Anspruch 1, dadurch gekennzeichnet, daß wenigstens eines der Kanalprofilelemente (2, 3), das das kastenähnliche hohle Gehäuse (1) bildet, lichtdurchlässig ist. 15
4. Beleuchtungsrichtung nach Anspruch 1 und 2, dadurch gekennzeichnet, daß die komplementären Profilelemente (2, 3), die die kastenähnlichen Gehäuse (1) bilden, innere Nuten (5) besitzen, in denen elektrische Ausrüstungskomponenten mittels Schrauben befestigt sind, und daß die Enden (5a) dieser Nuten die Deckelbefestigungsschrauben (10) in schraubenden Eingriff nehmen. 20
5. Beleuchtungsrichtung nach Anspruch 1 und 2, dadurch gekennzeichnet, daß wenigstens eines der profilierten Elemente (2, 3) in Längsrichtung verlaufende Innenlippen (6a) zur Unterbringung elektrischer Kabel aufweist. 25
6. Beleuchtungsrichtung nach Anspruch 1, dadurch gekennzeichnet, daß gemäß einem speziellen Ausführungsbeispiel jeder Montagedeckel (7) und jedes Gehäuse, das Bezug zu dem Verteilungsanschluß (28, 29) besitzt, zwei gegenüberliegende Halbhülsen (11, 12) unterschiedlicher Durchmesser und in einstellbarer Form aufweist, wobei die Enden der Halbhülsen mit größerem Durchmesser (11) mit halbkreisförmigen Ausschnitten (19, 20) versehen sind, die zu den Ausschnitten (19, 20) der größeren Halbhülsen (11) des anderen Montagedeckels (7) bzw. Gehäuses (28, 29) passen, wenn die beiden Halbhülsen (11) miteinander im Eingriff sind, wobei die Ausschnitte (19, 20) zusammen Durchgangswege für einen entfernbaren Verriegelungsbolzen (21, 22) bilden, der die Verbindung der beiden zusammengesetzten Gehäuse gewährleistet. 30
7. Beleuchtungsrichtung nach Anspruch 1, dadurch gekennzeichnet, daß die beiden Enddeckel (25) eine äußere kastenförmige vorstehende Anformung (26) mit diametral gegenüberliegenden Öffnungen (27) besitzen, in denen ein entferntbarer Verriegelungsbolzen (21, 22), vorteilhaft rohrförmig, befestigbar ist. 35
8. Beleuchtungsrichtung nach Anspruch 1 und 7, dadurch gekennzeichnet, daß die entfernbaren Verriegelungsbolzen (21, 22) einen rohrförmigen Aufbau besitzen. 40
9. Beleuchtungsrichtung nach Anspruch 1, 7 und 8, dadurch gekennzeichnet, daß die rohrförmigen Verriegelungsbolzen (21, 22) eine Einrichtung zur Befestigung von Aufhängungselementen (23) aufweist. 45
10. Beleuchtungsrichtung nach Anspruch 1, dadurch gekennzeichnet, daß einige der Deckel (7), die mit den Enden der profilierten Elemente (2, 3) in Eingriff bringbar sind, Montage- und Verbindungseinrichtungen (11, 12) besitzen, die in einem Winkel bezüglich der Stellung versetzt sind, die diese Einrichtungen bei den verbleibenden Deckeln besitzen. 50
- Revendications**
1. Installation d'éclairage, comprenant plusieurs unités d'éclairage (1), qui peuvent être assemblées selon un certain nombre de manières grâce à des couvercles d'extrémités spéciaux (7) pour chaque unité (1) et des jonctions de répartition intermédiaires spéciales (28, 29), chaque unité (1) comprenant deux éléments complémentaires profilés en canal (2, 3) avec des moyens (4) d'engagement les uns avec les autres afin de former un corps creux en forme de boîte, lesdits couvercles (7) et lesdites jonctions de répartition intermédiaires (28, 29) comportant des moyens pour la liaison mécanique mutuelle de des unités (1) ou davantage selon plusieurs configurations souhaitées, caractérisée en ce que les couvercles d'extrémités (7) et les jonctions (28, 29) de 55

- répartition intermédiaires comportent en outre des moyens pour l'interconnexion électrique (15,16) de deux unités adjacentes ou davantage, lesdits moyens de liaison mécanique mutuelle comprenant, sur les faces extérieures des couvercles d'extrémités (7) et des jonctions (28, 29) de répartition intermédiaires, des demi-manchons (11, 12) complémentaires et faisant saillie extérieurement, entourant deux séries de boîtiers tubulaires faisant saillie (13, 14) pour lesdits moyens d'interconnexion électrique (15, 16), sous la forme de douilles (15) et de broches (16) de connexion, les douille et broches d'un couvercle d'extrémité (7) ou d'une jonction de répartition intermédiaire (28, 29) s'engageant avec celles d'un couvercle ou d'une jonction adjacents, et simultanément les demi-manchons (11, 12) et les deux séries de boîtiers tubulaires faisant saillie (13, 14) de couvercles ou de jonctions adjacents étant couplées les unes avec les autres pour leur assemblage.
2. Installation d'éclairage selon la revendication 1, caractérisée en ce que les corps creux en forme de boîte (1) comportent des moyens (5, 6) pour fixer à l'intérieur de ceux-ci des composants électriques pour le support et l'alimentation de lampes.
3. Installation d'éclairage selon la revendication 1, caractérisée en ce que au moins l'un des éléments profilés en forme de canal (2, 3) formant les corps creux en forme de boîte (1) est translucide.
4. Installation d'éclairage selon les revendications 1 et 2, caractérisée en ce que les éléments profilés complémentaires (2, 3) constituant les corps en forme de boîte (1), comportent des gorges internes (5) pour leur fixation à des composants électriques de l'équipement au moyen de vis, et les extrémités (5a) de ces gorges permettent un engagement par filetage avec les vis (10) de fixation des couvercles.
5. Installation d'éclairage selon les revendications 1 et 2, caractérisée en ce que au moins l'un des éléments profilés (2, 3) comporte des rebords internes longitudinaux (6a) pour loger des câbles électriques.
6. Installation d'éclairage selon la revendication 1, caractérisée en ce que, selon un mode de réalisation spécifique, chaque couvercle d'assemblage (7) et le corps correspondant à la jonction de répartition (28, 29) comportent deux demi-manchons opposés (11, 12) de diamètres différents et réglables, les extrémités du demi-manchon de plus grand diamètre (11) comportant des découpes semi-circulaires (19, 20) correspondant aux découpes (19, 20) du demi-manchon (11) le plus grand d'un autre couvercle (7) ou corps (28, 29) d'assemblage lorsque les deux demi-manchons (11) s'engagent l'un avec l'autre, lesdites découpes (19, 20) formant ensemble un passage pour une broche de blocage amovible (21, 22) assurant la liaison des deux corps assemblés.
7. Installation d'éclairage selon la revendication 1, caractérisée en ce que les couvercles d'extrémité (25) comportent un prolongement (26) extérieur, en forme de boîte, avec des ouvertures (27) diamétralement opposées, dans lesquelles une broche de blocage amovible (21, 22), avantageusement tubulaire, peut s'adapter.
8. Installation d'éclairage selon les revendications 1 et 7, caractérisée en ce que les broches de blocage amovibles (21, 22) ont une configuration tubulaire.
9. Installation d'éclairage selon les revendications 1, 7 et 8, caractérisée en ce que les broches de blocage tubulaires (21, 22) comportent des moyens pour la fixation d'entretoises de suspension (23).
10. Installation d'éclairage selon la revendication 1, caractérisée en ce que quelques-uns des couvercles (7) qui peuvent s'engager aux extrémités des éléments profilés (2, 3) comprennent des moyens d'assemblage et de connexion (11, 12) décalés d'un certain angle par rapport à la position qu'occupent de tels moyens pour les autres couvercles.

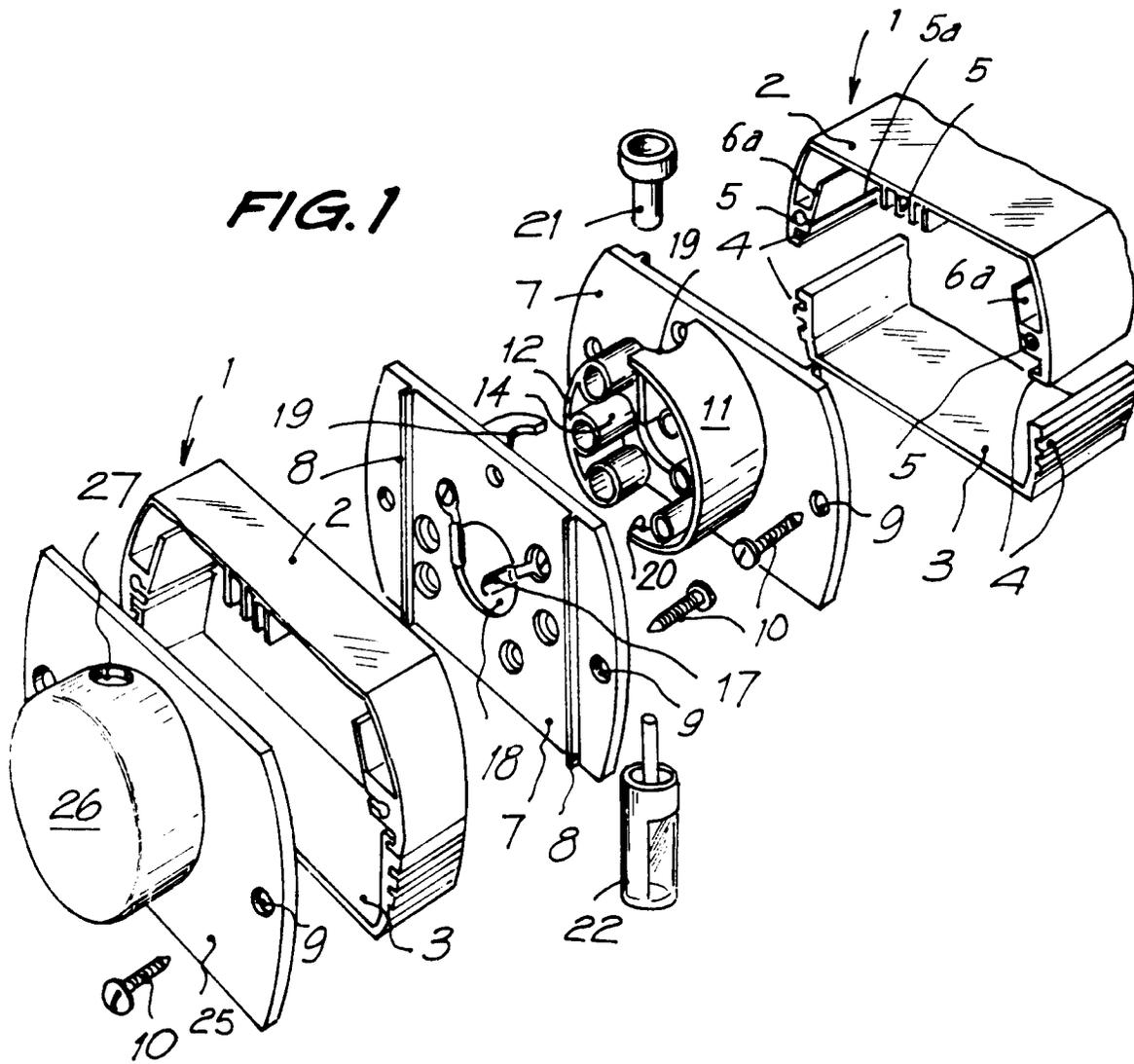


FIG. 2

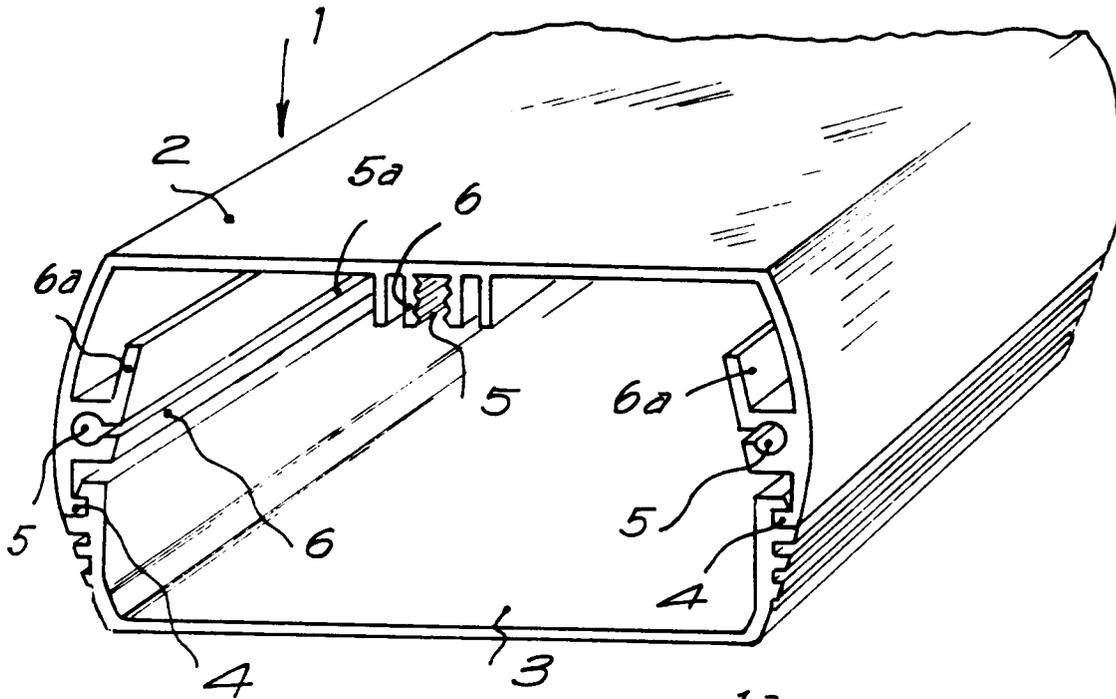


FIG. 3

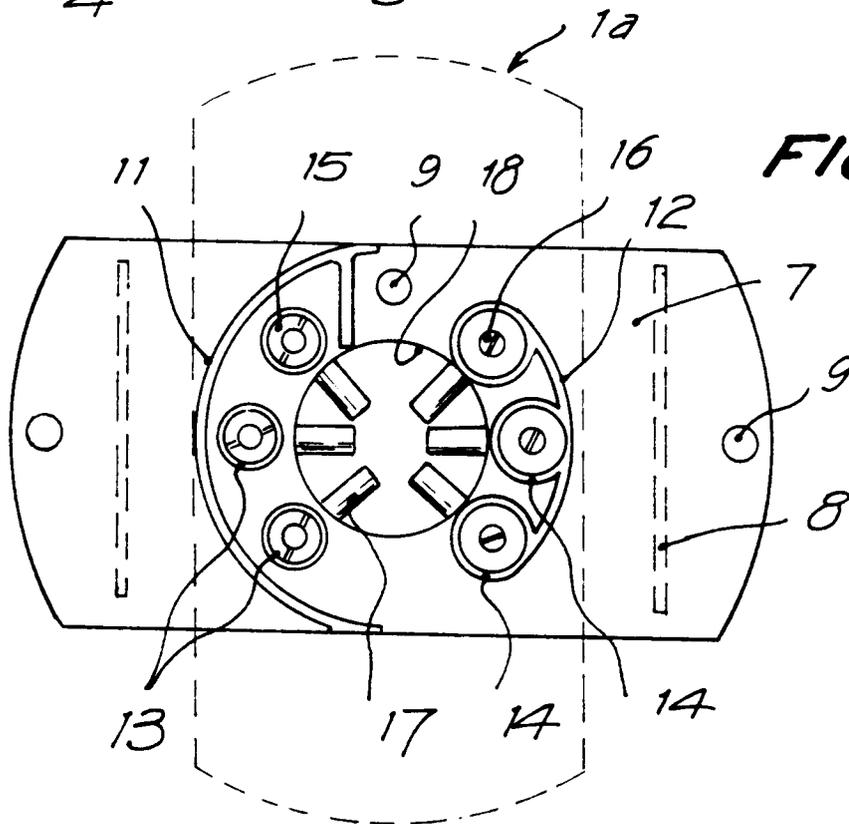


FIG. 4

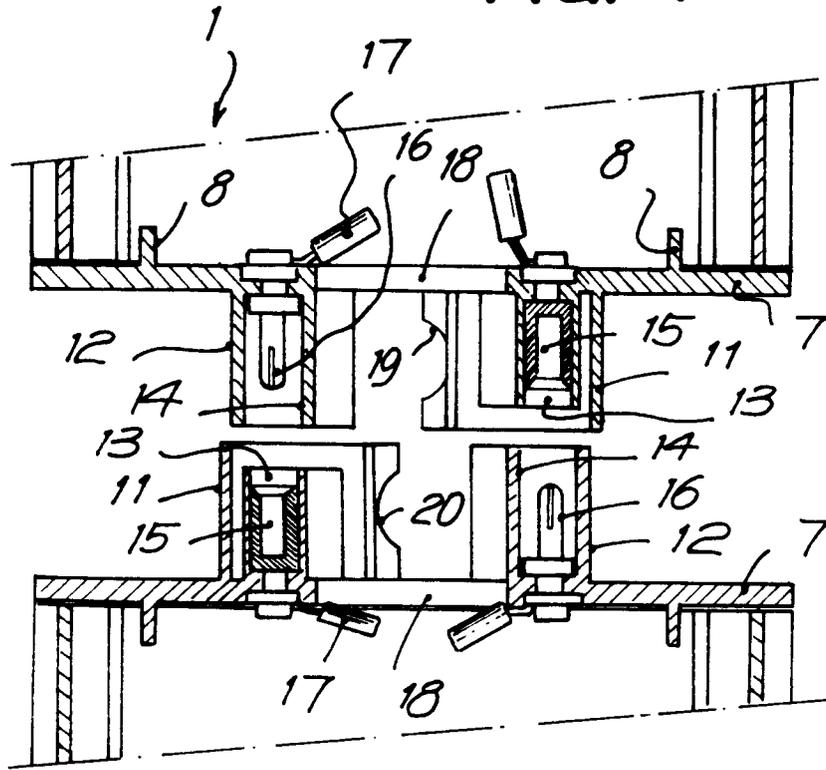
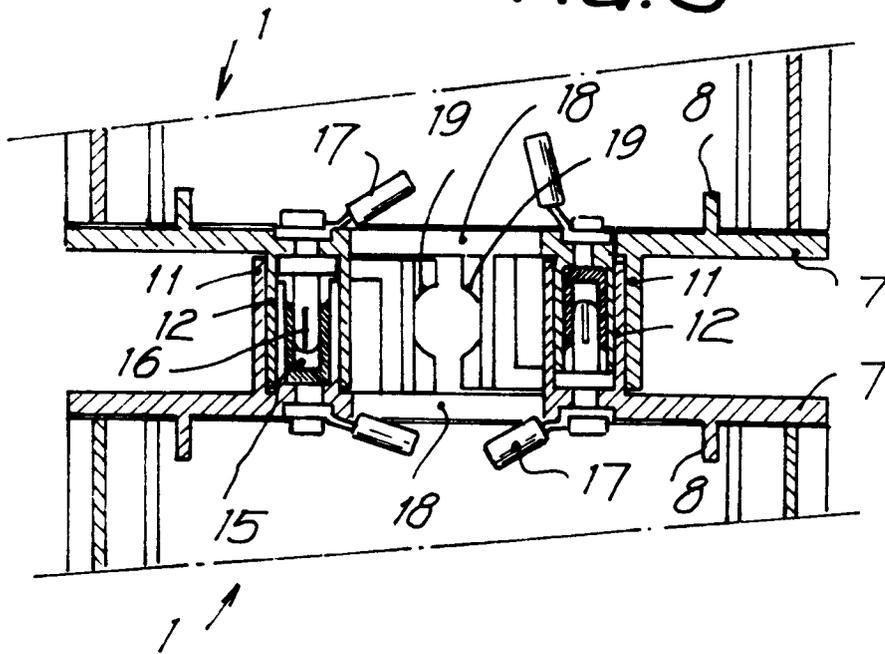


FIG. 5



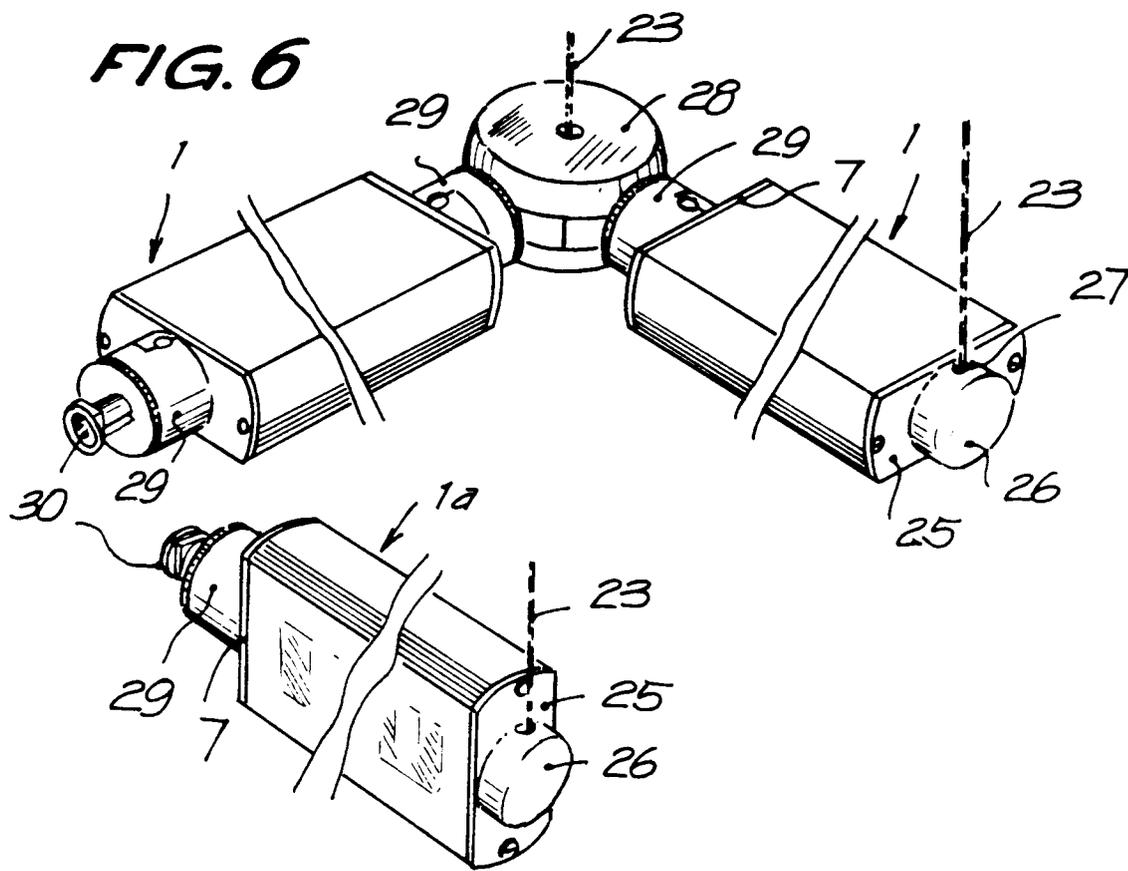


FIG. 7

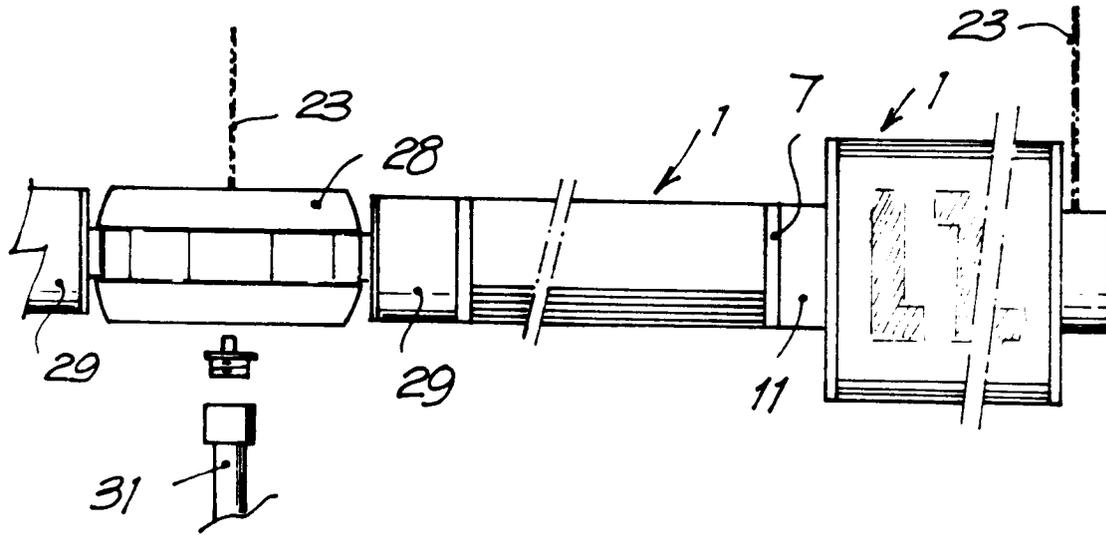


FIG. 8

