



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
19.08.2020 Bulletin 2020/34

(51) Int Cl.:
B66B 5/00 (2006.01)

(21) Application number: **20156048.9**

(22) Date of filing: **07.02.2020**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

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(30) Priority: **15.02.2019 IT 201900002223**

(54) **CONTROL PUSH-BUTTON PANEL FOR MAINTAINING AN ELEVATOR, COMPLETE WITH A BUILT-IN LIGHTING MEMBER**

(57) Control push-button panel (1) suitable for being used in maintenance operations in an elevator, said control push-button panel (1) comprising a body (2) featuring a prismatic shape and including a plurality of control members (5-10) on a face (12) thereof to control the el-

evator functions. At least one member (31) is associated with said body (2), said member being suitable for generating light about the control push-button panel (2), said body (2) being overmolded on such member (31).

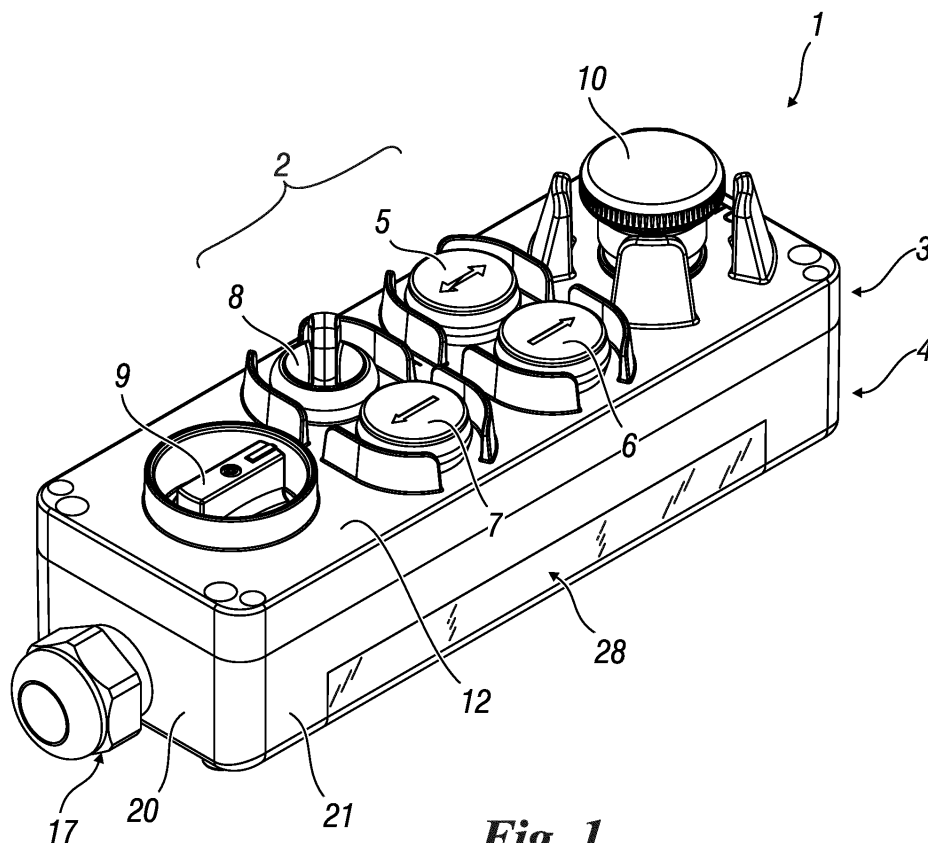


Fig. 1

Description

[0001] The present invention relates to a control push-button panel adapted to allow to perform maintenance operations on an elevator, according to the preamble of the main claim.

[0002] As known, maintenance operations are carried out on an elevator (the latter term meaning an elevator plant, comprising an elevator car, an elevator shaft wherein it moves, and means suitable for moving them) by skilled persons who place themselves above the elevator or the elevator car and/or inside a pit or lower part of the elevator shaft. These operations are carried out by also moving the elevator car within said elevator shaft, and the persons in charge of maintenance control these movements by using appropriate control members or control push-button panels usually placed above the elevator car or in the pit which an elevator shaft is usually provided with. While such maintenance operations are carried out, the operator moves the elevator within the elevator shaft by acting on the push-buttons of the control push-button panel.

[0003] Usually, in the elevator shaft and especially in the elevator pit, emergency lights are present which are activated during maintenance operations. Other lighting members are usually associated with the lower or bottom part of the elevator car, so as to enable the persons present in the elevator pit to ascertain whether the elevator car is actually being moved while maintenance is performed. In any case, both the emergency lights and those associated with the elevator bottom feature a very poor capability of lighting the elevator shaft and in particular its pit, and often they do not enable the persons in charge of maintenance activities to actually make sure of the conditions of the elevator shaft, for instance whether there are water seepages or similar circumstances.

[0004] Control push-button panels are also known, provided with small-size (low power) lamps arranged on a face or side of the control push-button panel where the elevator control push-buttons (and a usual elevator car safety lock or fast stop push-button) are provided; however, such lighting members do not allow to light the elevator shaft, and in particular the elevator pit, in such a way as to allow an easy inspection, but just to check whether the control push-button panel has actually been activated or one of its push-buttons has actually been depressed or a control switch present on the control push-button panel (such control switch being, in general, regarded as a push-button of the control push-button panel in the present text) has been operated.

[0005] Document US 2979581 discloses a control push-button panel according to the preamble of claim 1 in the present document. This prior art document discloses a control push-button panel usable for performing maintenance operations on an elevator, featuring a prismatic body defined by two parts coupled with each other and delimiting an inner cavity. A first part includes a plurality of control elements, such as push-buttons and se-

lector switches, to control an elevator. Such first part also comprises a translucent cover placed above a lamp or pilot light mounted on the second part of said body.

[0006] Document JP2013180856 relates to a device for performing maintenance operations on an elevator which moves within its elevator shaft. Two control devices are located in the elevator and on the elevator. A transmission line is provided between a control member and the pit of the elevator shaft, where the other end of the transmission line is connected to a detachable, portable control device. Such device can be used to perform maintenance operations on the elevator and comprises a push-button used to authorize the movements of the elevator itself. The latter is not moved, unless an authorization is provided, during the maintenance activity, through said push-button.

[0007] Document EP2336071 describes a control push-button panel for electric plants and in particular an elevator during its maintenance. The control push-button panel comprises a box-like body suitable for being connected to a fixed or movable part of a device to be controlled and comprising a plurality of electric contacts for one or several circuits of the electric plant. The box-like body has a side wall and an upper part where there is located an emergency push-button electrically connected to at least one pair of electric contacts to at least partially open/close the power circuit of the elevator or a similar controlled device. Other push-buttons, selector switches, or the like are provided on said upper part. The control push-button panel also comprises a protective cover suitable for being movably associated with the box-like body in order for it to be moved between an open position, wherein the push-buttons or the like are accessible to an operator, and a closed position, wherein such push-buttons are not accessible to the operator; the emergency push-button is permanently accessible both in the open position and in the closed position of the cover.

[0008] An object of the present invention is to provide a push-button panel or control member for an elevator for its use during maintenance operations performed thereon that enables an operator to reliably inspect every part of the elevator shaft and in particular its pit.

[0009] Another object is to provide a control push-button panel having all safety and ease of use characteristics of the prior art control push-button panel.

[0010] A further object is to provide a control push-button panel whose implementation is simple and cost-effective.

[0011] Another object is to provide a control push-button panel of the mentioned type that features high resistance to water, humidity, and dust.

[0012] These objects and others are achieved by a control push-button panel according to the attached claims.

[0013] For a better understanding of the present invention, the following drawings are attached hereto for explanatory, non-limitative purposes, wherein:

figure 1 shows a perspective view, from one side, of a control push-button panel according to the present invention;

figure 2 shows a side view of the control push-button panel of figure 1;

figure 3 shows a front view of the control push-button panel of figure 1;

figure 4 shows a perspective view of a part of the control push-button panel of figure 1;

figure 5 shows a side and top, exploded perspective view of that part of the control push-button panel which is shown in figure 4; and

figure 6 shows a side and bottom view of that part of the control push-button panel which is shown in figure 4.

[0014] With reference to the above-mentioned figures, a control push-button panel according to the invention is generally referred to by the reference numeral 1. Such control push-button panel (or portable control member of an elevator car) is usually used during the normal maintenance operations which an elevator plant is submitted to.

[0015] The control push-button panel 1 can be used both inside a pit or lower part of an elevator shaft wherein an elevator moves and above the elevator car. Such use is made by a maintenance operator while performing said maintenance operations.

[0016] The control push-button panel 1 comprises a prismatic body 2 featuring two portions 3 and 4 secured to each other in a manner that is known by itself, by using screws (not shown). A first portion or upper portion 3 (as referred to the way of use of the control push-button panel) comprises a plurality of push-buttons 5-7, selector switches 8 and 9, and a safety push-button (or "mushroom push-button") 10, said push-buttons and selector switches defining control members used to control the elevator car and the functions of the control push-button panel 1, being they present on a surface or face 12 of the first portion 3.

[0017] The second portion 4 is hollow in 13 and is adapted to accommodate the electric and/or electronic components (not shown) suitable for enabling the use of the control push-button panel, such components receiving electric power from and being connected to a control switchboard (not shown) of the elevator via an electric cable (neither shown) passing through a hole 16 usually equipped with a watertight element 17 used to close the hole itself. Such portions 3 and 4 are usually made from a molded plastic material.

[0018] The second portion 4 comprises a flat surface 19 from which walls 20, 21, 22 and 23 rise, parallel two by two, everything delimiting an inner cavity 13 of the portion 4. A hole 16 is provided in the wall (or rear wall) 20 for the passage of the electrical cables. A second hole 24, whose function will be described below, is provided in the opposite wall or front wall 22.

[0019] Slots 25 are provided in the side walls 21 and

23 and are suitable for accommodating an at least partially transparent or translucent insert 28 having a body 29 featuring a U-shaped cross section and delimiting a seat 30 suitable for accommodating a member capable of generating light (or lighting member) 31, such as one or several LEDs, for instance a LED strip, as shown in the figures.

[0020] In particular, the insert 28 is also a molded component, and a LED member or LED strip (or simply LED) 31 is inserted therein after its construction. This assembly is subsequently put in the mold of the second portion 4, which is thus overmolded onto the insert 28. It follows that the whole (insert or portion 4) forms one body, the insert or member suitable for generating light 31 being hermetically incorporated within such portion 4.

[0021] This operation having been carried out, it is obviously possible to supply electric power to every LED member or LED strip 31 by acting on any of the selector switches (for example, that identified by the reference number 8 in the figures) of the control push-button panel.

[0022] Activating the members or LEDs 31 makes it possible to generate a great luminosity about the control push-button panel, which can thus also operate as an electric torch. This makes it possible for a person who is carrying out maintenance to take advantage of a high visibility while he/she is moving inside the elevator shaft and within the pit of such elevator shaft, irrespective of any fixed lamps present therein. Such person can thus perform his/her activities in inspecting the component parts of the elevator and of the elevator shaft and its pit at the best, being he/she in a position to move the light source (associated with the portable control push-button panel) closer to such parts or to the walls of the elevator shaft and pit.

[0023] All of this can be made in a very easy and safe manner, every lighting member or LED being insulated inside the control push-button panel.

[0024] Also, thanks to said insulation, the operativeness of such lighting members 31 is provided also in the case that the control push-button panel is placed in a humid or even flooded environment, which is likely to occur in a pit of an elevator shaft.

[0025] A further lighting member, protected by a transparent cover 40, can be associated with the front wall 22. This allows, for instance, to arrange such other lighting member to focus the light on a detail of the elevator plant or its elevator shaft or the elevator car. Alternatively, such further (front) lighting member might be used as a visual indicator inside the elevator shaft between different operators or persons who are performing maintenance operations, in the same moment, being placed at certain distances from each other, for example in the pit of the elevator shaft and on the elevator car.

[0026] It goes without saying that the members used to generate light about the portable control push-button panel might assume configurations different from that shown in the figures, and their number might be lower or greater than that present in the figures. Also, such lighting

members or members suitable for generating light might also be different from LED devices and be associated with the part 3 of the control push-button panel (rather than the part 4 or in addition to one or several lighting members associated with such part 4). Finally, every lighting member might be bound to each respective part of the control push-button panel in a way different from that described above, provided every lighting member is protected from humidity or water and/or from dust which might be already present or occur in an elevator shaft. These variants are also to be considered to fall within the scope of the invention as set forth in the following claims.

Claims

1. A portable control push-button panel (1) suitable for being used in maintenance operations in an elevator plant, said control push-button panel comprising a body (2) featuring a prismatic shape and defined by first and second parts (3, 4) coupled with each other, the first part (3) including a plurality of control members (5-10), controlling the elevator functions, on one face (12), the second part including walls (20-23) rising from a flat surface (19) so as to define a cavity (13), at least one member (31) being associated with said body (2), said member (31) being suitable for generating light about the control push-button panel (1), said member suitable for generating light (31) being incorporated in a corresponding wall (20-23) of its respective part (3, 4) of the body (2) of the push-button panel, **characterized in that** said part (3, 4) of the body (2) is overmolded on the member suitable for generating light (31) .
2. The control push-button panel according to claim 1, **characterized in that** the second part (4) of said body (2) includes at least one seat (25) suitable for accommodating a transparent or translucent insert (28), said insert having a body (29) featuring a U-shaped cross section and delimiting a seat (30) suitable for accommodating said member suitable for generating light (31).
3. The control push-button panel according to claim 2, **characterized in that** the seat (25) for the insert (28) is provided within a side wall (21, 23) of the second part (4) of the body (2) of the control push-button panel.
4. The control push-button panel according to claim 3, **characterized in that** said second part (4) includes a further lighting member associated with a front wall (22) thereof.
5. The control push-button panel according to claim 1, **characterized in that** said member suitable for generating light (31) is at least one LED.

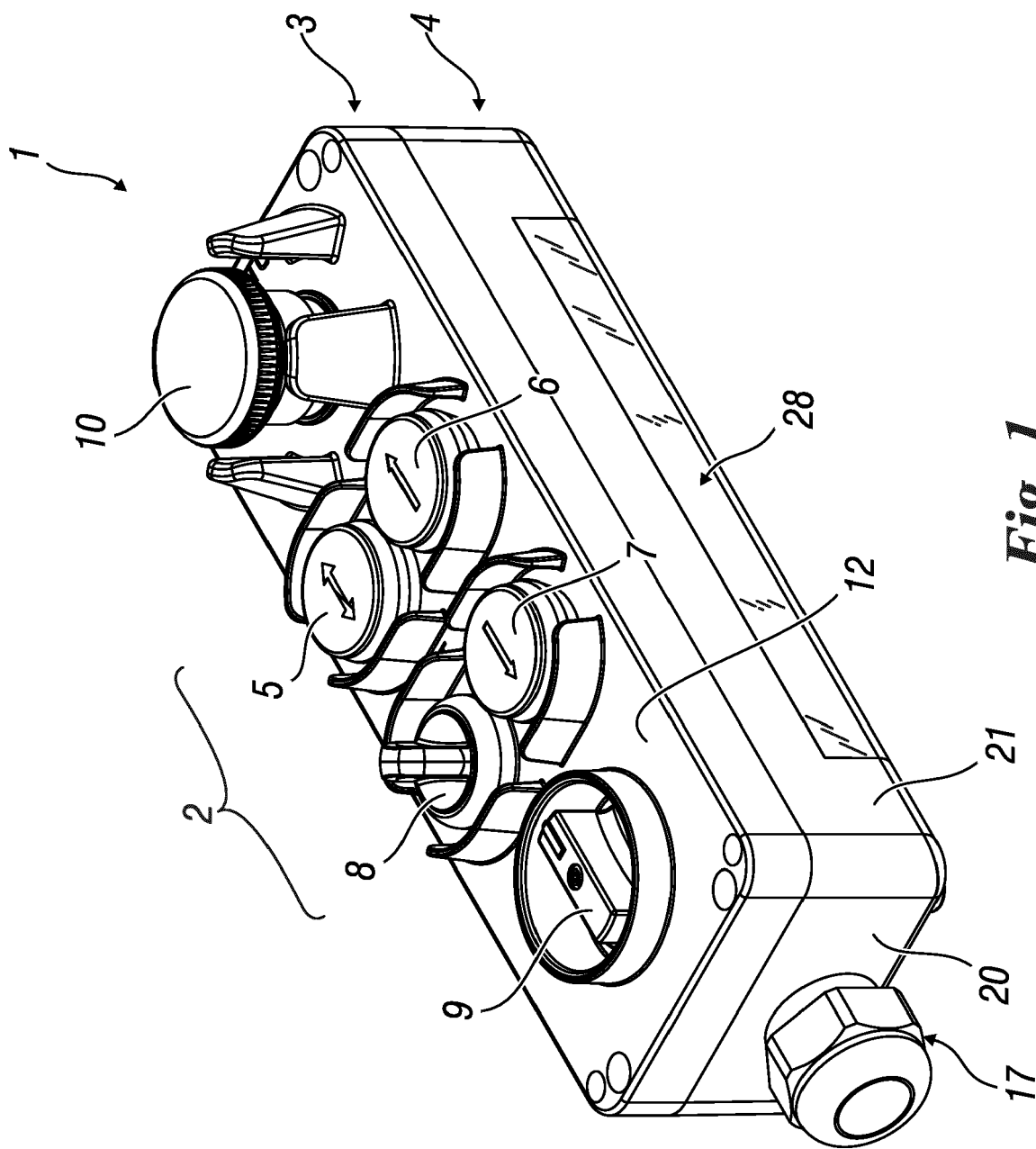


Fig. 1

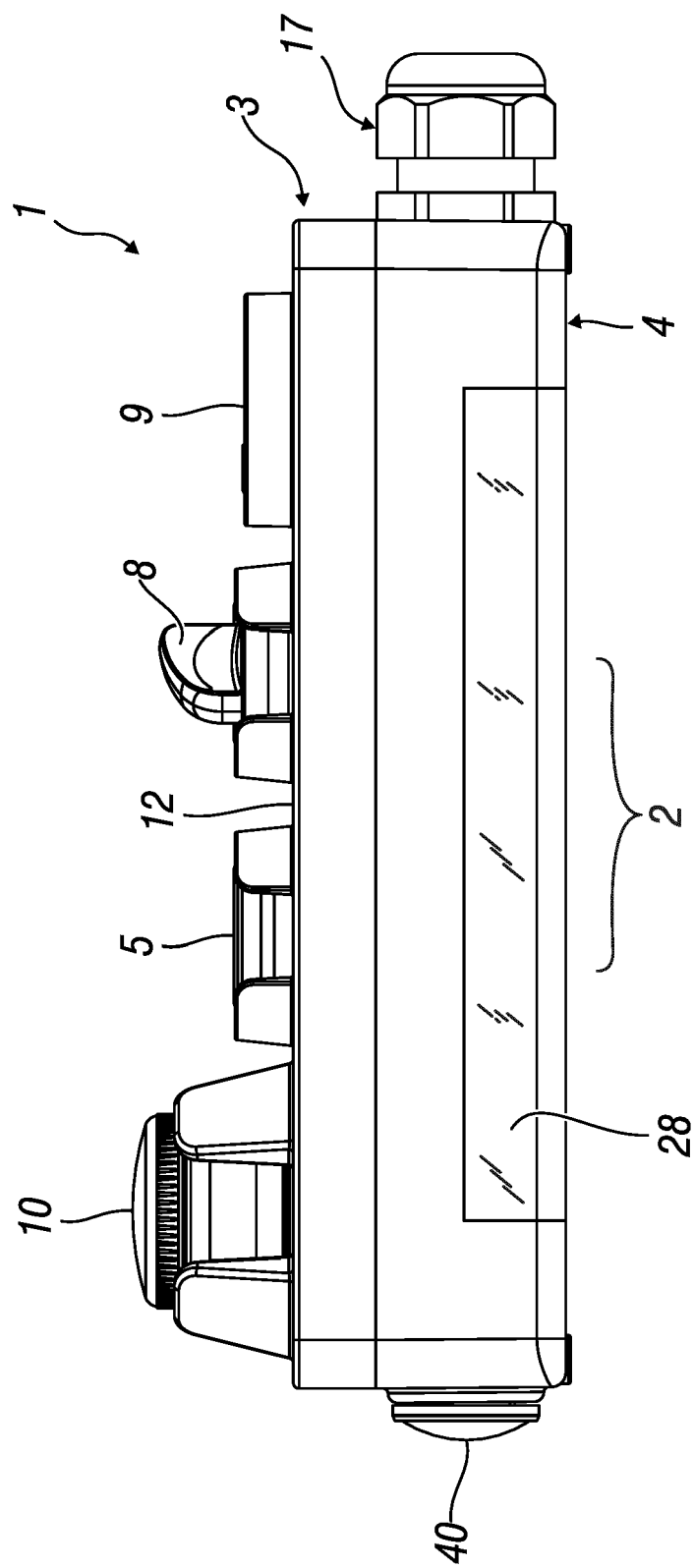


Fig. 2

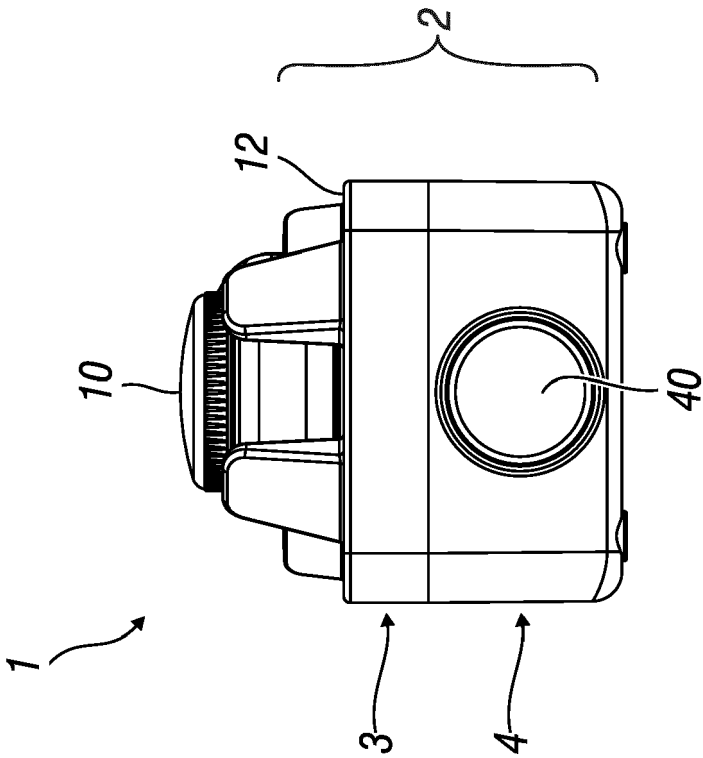


Fig. 3

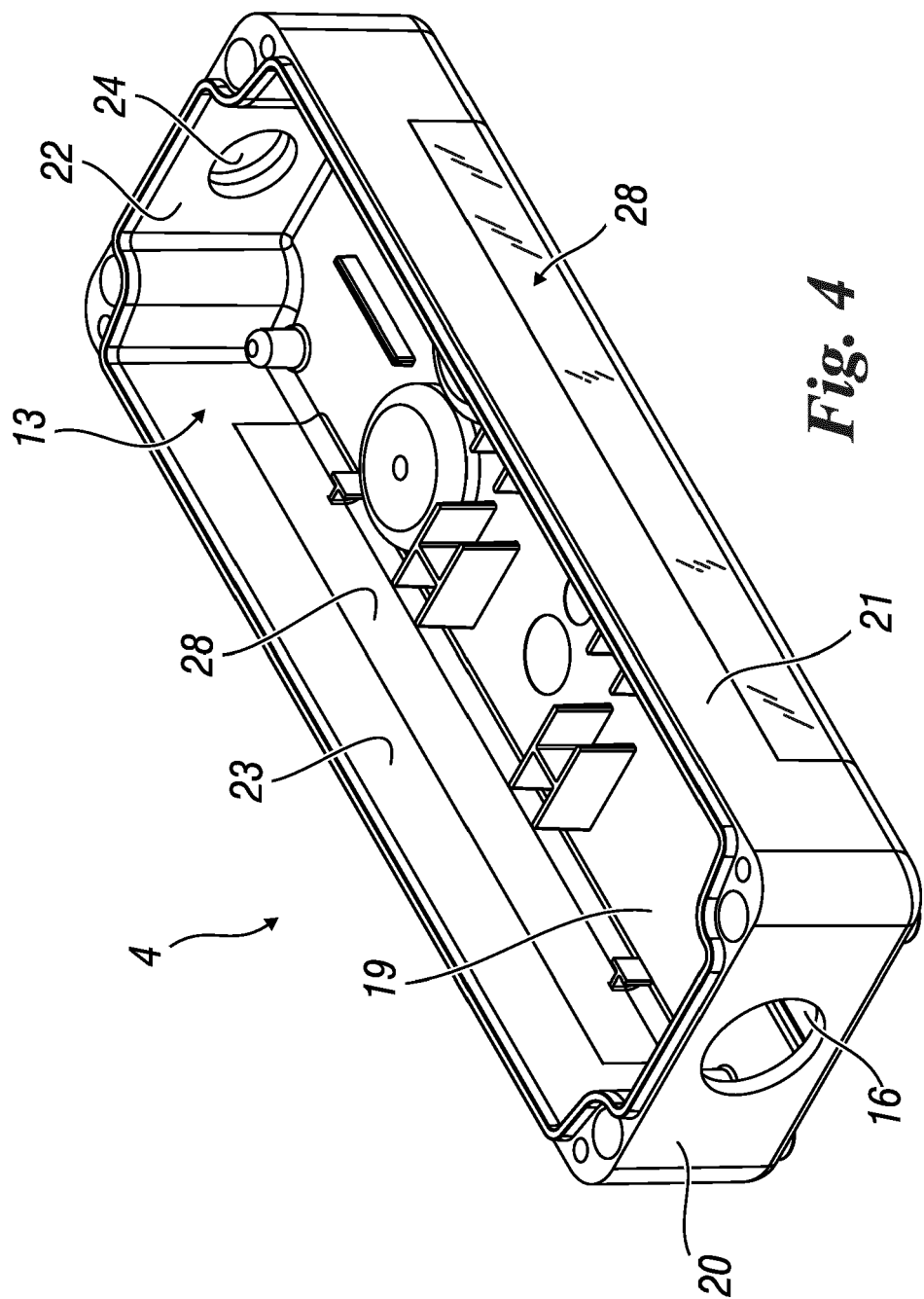


Fig. 4

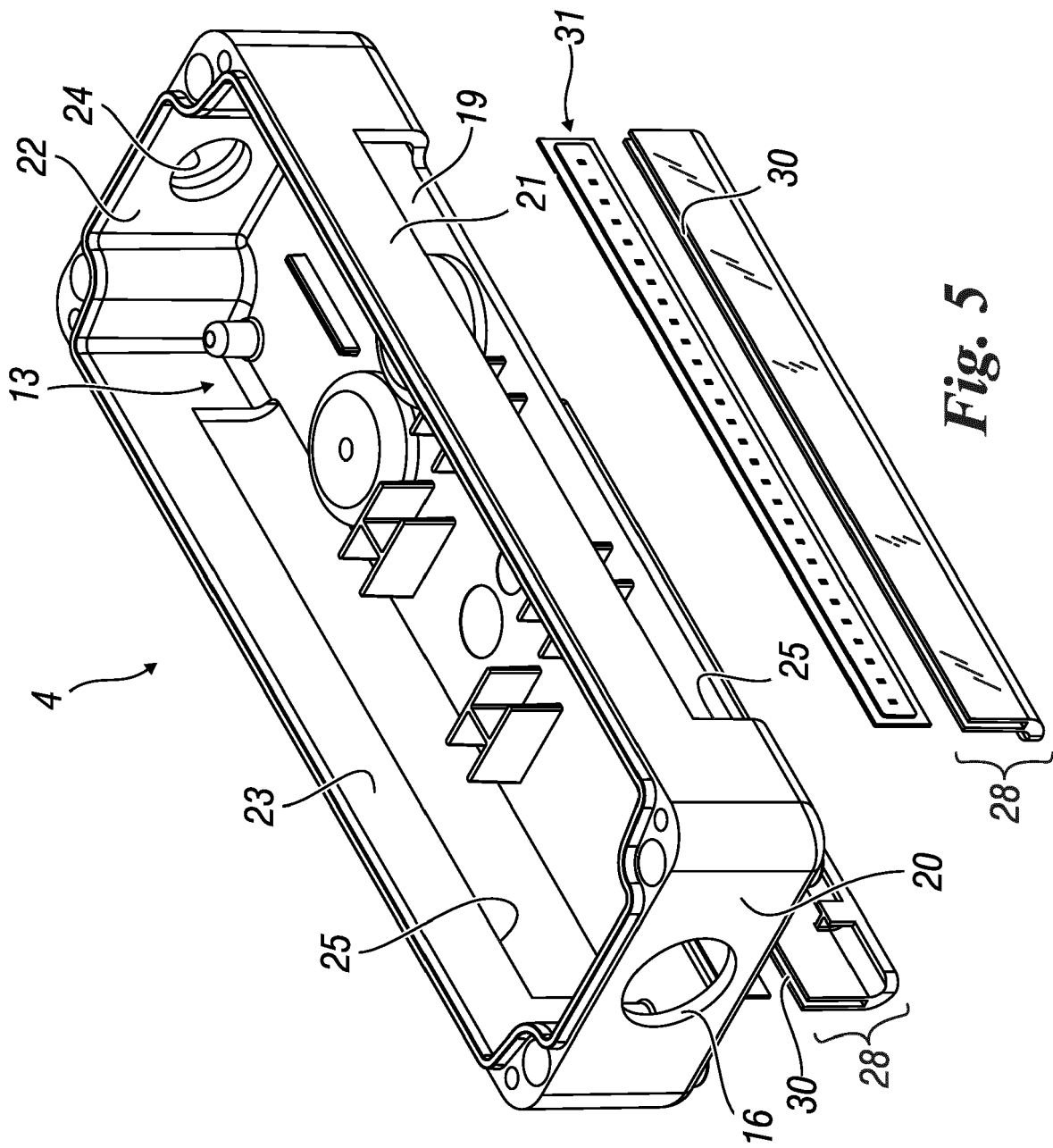


Fig. 5

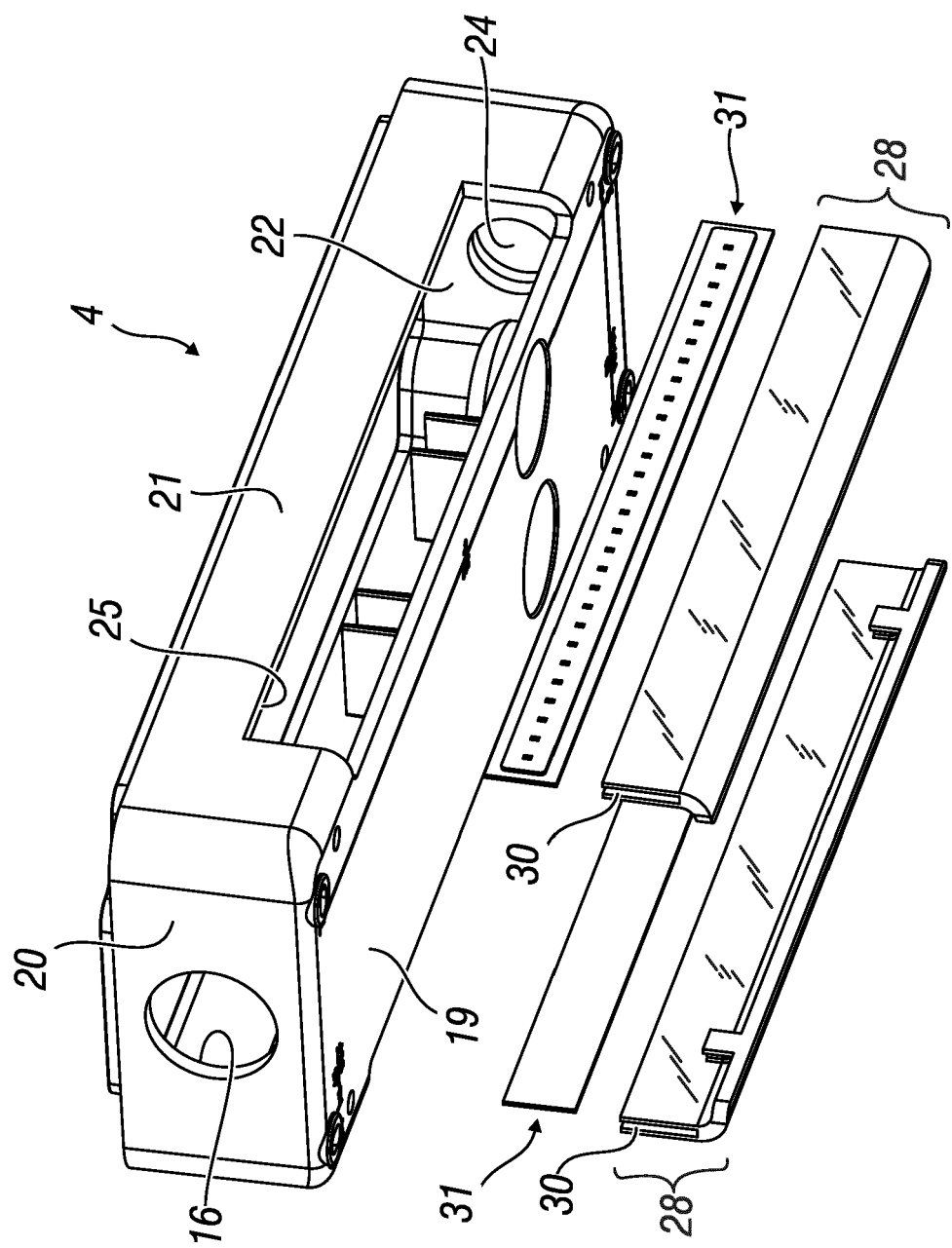


Fig. 6



EUROPEAN SEARCH REPORT

Application Number
EP 20 15 6048

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Y	US 2 979 581 A (BALLOU RICHARD P) 11 April 1961 (1961-04-11) * column 2, line 67 - column 3, line 30 * * figures 1-5 *	1-5	INV. B66B5/00
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			TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 9 July 2020	Examiner Szován, Levente
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03/02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 20 15 6048

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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