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(54) **Control panel with push buttons for controlling electric plants**

Bedienfeld mit Druckschaltern zur Steuerung elektrischer Anlagen

Panneau de commande avec boutons poussoirs pour commander des installations électriques

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Description

Field of the invention

[0001] The present invention generally finds application in the field of electric devices for controlling people and/or material transportation and handling plants and particularly relates to a control push-button station for plants, particularly for controlling and handling elevators during maintenance and inspection of the hoistway.

Background art

[0002] Multi-control push-button stations for controlling and handling civil or industrial plants, such as elevators, hoists, cranes, bridge cranes, and the like, comprise a box-like enclosure containing a plurality of electric contacts for connecting the push-button station to the power and service circuits of the plant.

[0003] The push-button station is also equipped with a plurality of switches or controls connected to as many electric contacts for controlling the movements of the plant or switching from one operating state thereof to another.

[0004] Certain particular push-button stations, one of which is disclosed, for instance, in US 2003/0010576 A1, are equipped with an emergency button, generally of the mushroom or push-pull type, for immediately cutting off power to the plant or a part thereof, to set it to a safe state.

[0005] Other prior art types of push-button stations have an electrical outlet integrated therein for connecting and supplying power to portable devices, such as lamps or tools that might be useful to operators, during inspection or maintenance procedures.

[0006] A first drawback of these prior art push-button stations is that they have no adequate protection from the weather or the dirt that is typically found in their operating environments, such as building sites and hoistways.

[0007] Accordingly, before each use, operators must often clean the push-buttons to make sure of their functions and ensure proper operation.

[0008] It shall be also apparent that a lack of adequate protection may also cause malfunctioning of the push-button station, due to infiltrations of water and dirt.

[0009] Therefore, these push-button stations cannot be even used when the rooms in which they have to be located are subject to flooding, and when the push-button station is required to be resistant to immersion, to allow emergency handling of the plant being served even in the presence of water or in flooding conditions.

[0010] One example of this application is a push-button station located at the bottom of a hoistway, which has to be hermetically sealed.

[0011] For this purpose, elevator plants are known, for instance from JP 2006-036405, in which the control panel can slide in the hoistway and be inserted into a hermetically sealed outer enclosure.

[0012] In addition to their complexity in manufacturing and operation, these solutions do not allow immediate access to the push-button station and particularly do not always allow access to the emergency button, as required by certain regulations about management of these plants.

[0013] An additional drawback of prior art solutions is that common push-button stations do not have adequate protection against careless use by inspection or maintenance operators in the plants being served.

[0014] For instance, the push-button stations that are used for hoistway inspection or car maintenance, which are generally mounted to the car itself or at the bottom of the pit are often inappropriately used by operators as footboards to reach higher positions or are inadvertently trampled during normal maintenance.

[0015] As a result, they are often subject to excessive stress and shocks that can easily cause failure. Furthermore, such careless behavior may lead to unintentional toggling of the emergency button or other control devices, with consequent risks for the operators.

[0016] For this purpose, certain solutions have been developed for providing push-button stations with adequate protection against negligent use. For example, JP 2003-238053 and US 7568557 B2 disclose elevator cars having a normally closed compartment in the roof, which can be opened from the outside during maintenance, and with the push-button station and the control panel held therein.

[0017] While these solutions provide the push-button station with adequate protection both against dirt and against inappropriate use, they are still complex and expensive as they require a special car design, with a heavier construction. Furthermore, use and replacement of a push-button station located in the compartment are difficult and unpractical.

[0018] Also importantly, commonly available push-button stations have an unattractive appearance, which prevents them from being exposed to the view when technical function has to be combined with aesthetics, such as in hoistways with glass walls that make their interior visible.

[0019] EP 1 967 477 A1 discloses a control push button station according to the preamble of claim 1.

Disclosure of the invention

[0020] The object of the present invention is to overcome the above drawbacks, by providing a control push-button station for plants, particularly elevators or the like, that can be manufactured in a simple and relatively inexpensive manner.

[0021] A particular object is to provide a control push-button station for plants that ensures protection of the push-buttons and other control elements, both against the weather and dirt and against careless use by an operator.

[0022] A further particular object is to provide a her-

metically sealed push-button station, that allows operation on the plant even in the presence of water.

[0023] Yet another object of the present invention is to provide a control push-button station for plants that has a particular pleasant appearance for applications designed to be exposed to the view.

[0024] These and other objects, as more clearly explained below, are fulfilled by a control push-button station for plants as defined in claim 1, which comprises a box-like body adapted to be associated with a fixed or movable part of a plant to be controlled and houses thereinside a plurality of fixed and/or movable electric contacts for one or more power and/or service circuits of the plant, said box-like body having a side wall upperly closed by an upper wall, an emergency button located on said upper wall and electrically connected to at least one first pair of said electric contacts for at least partially opening/closing the power circuit of the plant, at least one electric device located on said upper wall of said box-like body and electrically connected to at least one second pair of said electric contacts for its connection with a corresponding power and/or service circuit and control thereof.

[0025] The push-button station is characterized by comprising a protection cover, which is adapted to be movably associated with said box-like body for moving between an open position in which said at least one electric device is accessible to an operator and a closed position wherein said at least one electric device is not accessible to the operator.

[0026] The cover is also configured to allow said emergency button to be always accessible both in said open position and in said closed position.

[0027] Due to these particular features of the invention, when the push button is not operating, the one or more electric devices therein, such as switches, circuit breakers, electric controls or power outlets, will be constantly protected from the weather and dirt.

[0028] Therefore, the push-button station has increased efficiency and reliability, is readily usable and has lower maintenance requirements.

[0029] Furthermore, constant accessibility of the emergency button will provide compliance with applicable regulations, while ensuring constant protection of the emergency button from careless behavior. The push-button station of the invention is also safer than prior art solutions.

[0030] Conveniently, the cover may be hinged to the box-like body about an axis of rotation that is either substantially parallel and transversely offset to a longitudinal direction of extension of the box-like body, or substantially orthogonal to said longitudinal direction.

[0031] Thus, the configuration of the push-button station may be selected according to each particular application and the environment it is designed for, while always ensuring all the above advantages.

[0032] Advantageously, hermetically sealing means are provided, which are associated with the box-like body and/or the cover to protect the electric devices from con-

tact with liquids, when the cover is in said closed position.

[0033] Due to this peculiar feature of the invention, the push-button station may be used in particularly moist places, and in flooding conditions, with the same function being preserved.

[0034] The hermetically sealing means may be also designed to configure a push-button station with IP67 protection according to the UNI EN 60529 standard, to comply with the requirements of standards EN81/72 and EN81/74 for firefighters' and high passenger traffic elevators.

[0035] Advantageous embodiments of the push-button station are defined by the dependent claims.

Brief description of the drawings

[0036] Further characteristics and advantages of the invention will be more apparent upon reading the detailed description of a preferred, non-exclusive embodiment of a push-button station of the present invention, which is described as a non-limiting example with the help of the accompanying drawings, in which:

FIG. 1 is a view of a particular application of a pair of push-button stations of the invention in a first preferred configuration, which are held in a hoistway; FIGS. 1A and 1B are details of Fig. 1, showing enlarged perspective views of the push-button stations mounted to the elevator car C and the hoistway H of Fig. 1;

FIG. 2 is a perspective view of one of the push-button stations of Fig. 1 with the cover 12 in the open position;

FIG. 3 is a perspective view of the push-button station of Fig. 2 with the cover 12 in the closed position; FIG. 4 is a front view of the push-button station of Fig. 3 with the emergency button 6 off;

FIG. 5 is a front view of the push-button station of Fig. 3 with the emergency button 6 on;

FIG. 6 is a top view of the push-button station of Fig. 3;

FIG. 7 is a perspective view of one of a push-button station of the invention in a second preferred configuration, with the cover 12 in the open position;

FIG. 8 is a perspective view of the push-button station of Fig. 7 with the cover 12 in the closed position.

Detailed description of a preferred embodiment

[0037] As shown in Fig. 1, the push-button station of the invention, generally designated by numeral 1, may be mounted to the car C of an elevator plant, preferably to its exterior, for control and handling thereof, during inspection or maintenance of the car C and/or the hoistway H.

[0038] The push-button station 1 may be also located at the bottom of the pit P of the hoistway H for usual inspection and/or maintenance of the hoistway H itself.

[0039] Obviously, the push-button 1 may be used in combination with any kind of handling or transport plant such as, without limitation, hoists, escalators or corridors, cranes, bridge cranes and the like, in a manner that is known to the skilled person and will not be described in further detail herein.

[0040] A push button station 1 of the invention comprises a box-like body 2 adapted to be attached to a fixed or movable part of the plant to be served, and housing therein a plurality of fixed and/or movable electric contacts, not shown and known per se.

[0041] The types and numbers of electric contacts may be selected according to the configuration of the plant to be served, as is obvious to the skilled person.

[0042] The box-like body 2 has a substantially prismatic side wall 3, upperly closed by a substantially flat upper wall 4.

[0043] The side wall 3 may have one or more removable portions 5 to allow connection of the electric contacts to one or more power and/or service circuits of the plant, also not shown.

[0044] An emergency button 6 is located on the upper wall 4 of the box-like body 2 and is electrically connected to at least one first pair of electric contacts, which are adapted to connect it to the power circuit of the plant for cutting off/turning on the latter or a part thereof.

[0045] The emergency button 6 in the figure is of the mushroom type, with a fixed cylindrical lower portion 6' and a movable upper portion 6". The button 6 can be triggered and/or reset either by pushing and pulling the movable portion 6" or through a rotational and translational motion thereof.

[0046] It shall be understood that the emergency button 6, which is shown by way of example and without limitation, may be replaced by any other type of emergency button compatible with the application for which the push-button station 1 is designed.

[0047] For instance, as the emergency button 6 is triggered, it can cause cutoff of either the entire plant or a part thereof, such as the elevator car C, with one or more emergency and/or service circuits being left on.

[0048] Further electric devices may be also located on the upper wall 4 of the box-like body 2, and be electrically connected in a known manner to corresponding pairs of electric contacts, for connection to corresponding power and/or service circuits of the plant for control or monitoring thereof.

[0049] The configurations of the figures show a selector 7, which is designed to switch the plant between normal operation and inspection operation, a pair of buttons 8, 9 for controlling the up and down movement of the car C and a multipurpose button 10, having two or three purposes, for managing the signaling circuits.

[0050] An outlet 11 is also provided for possible connection and power supply to an additional external electric device, not shown, such as a service lamp or an electrical tool, to provide the plant maintenance or inspection operator with a voltage source near the operating area.

[0051] Obviously, the configuration and arrangement of electric devices are suggested merely by way of example and without limitation, a greater or smaller number of such devices, or devices of different types, shapes and/or functions being possibly provided, according to each particular application.

[0052] The box-like body 2 is also equipped with a protective cover 12, which is adapted to be associated in a fixed or removable manner to its side wall 3, and is anyway movable between an open position, as shown in Fig. 2, in which the electric devices 7, 8, 9, 10, 11 are accessible from the outside, and a closed position, as shown in Figs. 3 to 6, in which the electric devices 7, 8, 9, 10, 11 are protected and inaccessible from the outside.

[0053] The cover 12 is also configured to allow the emergency button 6 to be always accessible both when the cover 12 is in the open position and when it is in the closed position.

[0054] In the configuration of Figs. 2 to 6, the cover 12 is hinged to the side wall 3 along a predetermined axis of rotation R. The box-like body 2 substantially extends in a direction of longitudinal extension L to a predetermined length l.

[0055] The axis of rotation R of the cover 12 is substantially parallel and transversely offset to the longitudinal direction L of extension of the box-like body 2.

[0056] In this case, the cover 12 will preferably have a longitudinal extension e substantially coincident with the predetermined length l of the box-like body 2 or its upper wall 4.

[0057] Nevertheless, the cover 12 may be placed in other positions, for instance hinged along an axis of rotation substantially orthogonal to the longitudinal direction L of the box-like body 2, although this is not shown.

[0058] Furthermore, the box-like body 2, which is shown with a substantially rectangular shape, may also have a different shape, e.g. a square or polygonal shape, without limitation to the scope of the present invention.

[0059] Irrespective of the direction of the axis of rotation R of the cover 12, the emergency button 6 may be located at either the center or the periphery of the upper wall 4.

[0060] In the first illustrated configuration, the button 6 is in a substantially central area 13 and the cover 12 has a pair of longitudinal closure portions 14, 15, offset along the longitudinal axis of extension L. Thus, the cover defines a central opening 16 that, with the cover 12 closed, is designed to overlap the central area 13 with the emergency button 6, and to coincide therewith.

[0061] As more clearly shown in Figs. 4 and 5, at least at the central opening 16, the height h of the cover 12 is smaller than the height h', h" of the emergency button 6 in the off state of Fig. 4 and the on state of Fig. 5 respectively.

[0062] This will always allow comfortable grasp of the emergency button 6 by an operator, with the cover 12 either in the open or in the closed position.

[0063] The longitudinal portions 14, 15 of the cover 12

have corresponding mutually facing and longitudinally offset transverse walls 17, 18, which delimit the opening 16 for access to the emergency button 6 with the cover 12 in the closed position.

[0064] In a configuration, not shown, the two longitudinal portions 14, 15 may be completely separated and independently hinged along a common axis R, to allow selective access to part of the electric devices 7, 8, 9, 10, 11.

[0065] Otherwise, as shown in the figures, the mutually facing and substantially parallel transverse walls 17, 18 are joined by at least one longitudinal lateral rib 19 to define, with the cover 12 in the closed position, a closed or open protective cage 20 for the emergency button 6.

[0066] Advantageously, the lateral rib 19 has a concave upper surface 21, for easier grasp of the emergency button 6 by an operator even with the cover 12 in the closed position.

[0067] The inner lateral surface 22 will also be substantially concave, with a radius of curvature r substantially coincident with the maximum radius r_{MAX} of the emergency button 6, to surround at least part of its periphery, e.g. half of its circumference.

[0068] The push-button station 1 is also equipped with an annular protection member 23, which is integral with the upper wall 4 of the box-like body 2 and is located at the periphery of the emergency button 6. The protection member 23 may have such a peripheral extension as to surround the emergency button 6 in its entirety or in part, like in the illustrated embodiment.

[0069] Furthermore, its maximum height h'' is preferably smaller than the maximum height of the longitudinal rib 19 and is preferably substantially equal to the minimum height thereof, i.e. its height at the lowest point of its upper concave surface 21. Thus, the annular member 23 will at least partially protect the emergency button 6, even with the cover 12 in the open position, without limiting the operation thereof.

[0070] Preferably, the cover 12 will have snap closure means for locking it to the side wall 3 or the upper wall 4 of the box-like body 2.

[0071] For instance, these means may include a pair of hook-like elements 25, 26 integral with corresponding longitudinal portions 14, 15 of the cover 12 and designed to be introduced and snap locked into corresponding slots, referenced 27 and 28 respectively, formed in the box-like body 2. This will prevent both accidental opening of the cover 12 when the push-button station 1 is not used and undesired opening thereof during use of the plant, due to normal vibrations.

[0072] Advantageously, the snap closure means may be of the reversible type to allow the cover 12 to be hinged both to the right and to the left of the emergency button 6. For this purpose, the side wall 3 may have two pairs of holes, generally designated 29, for each of its substantially parallel and transversely opposite longitudinal sides 31, 31', for receiving fastening members, not shown, such as screws or the like, for movable attachment of the

cover 12.

[0073] These sides 31, 31' also have two pairs of slots, the left-side slots 27, 28 being only visible in the figures, for selectively receiving and locking the hook-like elements 25, 26 of the cover.

[0074] Finally, the cover 12 and/or the box-like body 2 may comprise hermetic sealing means, such as a seal, not shown, which are stably or removably associated with the free edge 30 of the cover 12 that is designed to abut against the body 2, to protect the devices 7, 8, 9, 10, 11 from accidental contact with liquids, with the cover 12 in the closed position.

[0075] In a second preferred configuration, as shown in Figs. 7 and 8, the cover 12 is adapted to slide along the side wall 3 above the upper wall 4, to move from its open position, as shown in Fig. 7, to its closed position, as shown in Fig. 8, or vice versa.

[0076] Advantageously, the cover 12 may slide along a substantially longitudinal sliding direction X, but it may also slide along a direction transverse to the longitudinal direction L of the box-like body 2, although this is not shown.

[0077] According to a non-illustrated configuration, the cover 12 may consist of two independently sliding portions, e.g. in opposite senses along a longitudinal or transverse sliding direction.

[0078] The electric devices 7, 8, 9, 10, 11 may be of substantially the same type as those of the push-button station 1 of the first configuration as described above. The emergency button 6 is located in a peripheral area of the upper wall 4 and is protected by an annular member 23 that surrounds at least part of its periphery in both open and closed positions of the cover 12, while always ensuring its accessibility.

[0079] Concerning the structure of the box-like body 2, the considerations suggested for the first configuration shall apply.

[0080] The above disclosure clearly shows that the push-button station of the invention fulfills the intended objects and particularly meets the requirement of ensuring constant protection of its most sensitive components against the weather, infiltrations of liquids and negligent use.

[0081] Due to the presence of a movably attached cover 12 and its particular configuration, the most sensitive components will be always protected and the push-button station 1 will have, in its closed position, a particularly attractive appearance, which will make its use preferable in applications exposed to the view, such as in hoistways with glass walls.

[0082] The push-button station of this invention is susceptible to a number of changes and variants, within the inventive concept disclosed in the appended claims.

[0083] While the push-button station has been described with particular reference to the accompanying figures, the numerals are only used for the sake of a better intelligibility of the invention and shall not be intended to limit the claimed scope in any manner.

Claims

1. A control push button station for lifting and/or transport plants, comprising:

- a box-like body (2) adapted to be associated with a fixed or movable part of a plant to be controlled and housing therein a plurality of fixed and/or movable electric contacts for one or more power and/or service circuits of the plant, said box-like body (2) having a side wall (3) upperly closed by an upper wall (4);
 - an emergency button (6) located on said upper wall (4) of said box-like body (2) and electrically connected to at least one first pair of said electric contacts for at least partially opening/closing the power circuit of the plant;
 - at least one electric device (7, 8, 9, 10) located on said upper wall (4) of said box-like body (2) and electrically connected to at least one second pair of said electric contacts for its connection with a corresponding power and/or service circuit and the control thereof;

said control push button station further comprising a protection cover (12) adapted to be movably associated to said box-like body (2) for moving between an opening position wherein said at least one electric device (7, 8, 9, 10) is accessible from an operator and a closing position wherein said at least one electric device (7, 8, 9, 10) is not accessible from the operator, **characterised by** said emergency button (6) always being accessible both in said opening and closing positions.

2. Push button station as claimed in claim 1, **characterized in that** said cover (12) is hinged to said box-like body (2) being rotating about a predetermined axis (R).
3. Push button station as claimed in claim 2, **characterized in that** said box-like body (2) defines at least one longitudinal direction (L), said rotation axis (R) of said cover (12) being substantially parallel and transversally offset, respectively substantially orthogonal, to said longitudinal direction (L).
4. Push button station as claimed in one or more of the preceding claims, **characterized in that** said emergency button (6) is located in a central area (13) of said upper wall (4), said cover (12) having a central opening (16) centerable on said central zone (13) of said upper wall (4) in correspondence of said emergency button (6) for making this latter accessible with said cover (12) in said closing position.
5. Push button station as claimed in claim 4, **characterized in that** said emergency button (6) projects

from said upper wall (4) with a predetermined maximum height (h'), said cover (12) having, at least at said central opening (16), an height (h) less than said predetermined maximum height (h') to allow the handling of said emergency button (6) by a user with said cover (12) both in said opening position and in said closing position.

6. Push button station as claimed in claim 4 or 5, **characterized in that** said cover (12) comprises two longitudinal portions (14, 15) longitudinally offset having respective faced transverse walls (17, 18) joined by a lateral web (19) to define a protection cage (20) for said emergency button (6) with said cover (12) in said closing position.
7. Push button station as claimed in claim 6, **characterized in that** said lateral web (19) has a concave upper surface (21) for facilitating the handling of said emergency button (6) by a user with said cover (12) in said closing position.
8. Push button station as claimed in claim 1, **characterized in that** said box-like body (2) defines at least one longitudinal direction (L), said cover (12) being slidable on said upper wall (4) along a direction (X) substantially parallel or orthogonal to said at least one longitudinal direction (L).
9. Push button station as claimed in one or more of the preceding claims, **characterized by** comprising an annular protection element (23) integral with said upper wall (4) and peripherally placed to said emergency button (6), for at least partially protecting this latter with said cover (12) in said opening position.
10. Push button station as claimed in one or more of the preceding claims, **characterized in that** said cover (12) has means (25, 26, 27, 28) for its snap locking on said box-like body (2).
11. Push button station as claimed in claim 10, **characterized in that** said locking means comprise at least one hook member (25) associated to said cover (12) and engageable in at least one slot (27) formed on each of opposite longitudinal edges (31, 31') of said side wall (3), said opposite edges (31, 31') being provided for the selectively and reversibly anchoring of said rotation axis (R) to said side wall (3).
12. Push button station as claimed in one or more of the preceding claims, **characterized by** comprising tight sealing means associated to said box-like body (2) and/or to said cover (12) to protect said at least one electric device (7, 8, 9, 10) from liquids when said cover (12) is in said closing position.

Patentansprüche

1. Steuerdruckknopfstation für Hub- und/oder Transporteinrichtungen, die Folgendes aufweist:

einen kastenartigen Körper (2), der geeignet ist, um mit einem festen oder einem bewegbaren Teil einer Einrichtung verbunden zu werden, die gesteuert werden soll, welcher in seinen Inneren eine Vielzahl von festen und/oder bewegbaren elektrischen Kontakten für einen oder mehrere Leistungs- und/oder Serviceschaltkreise der Einrichtung aufnimmt, wobei der kastenartige Körper (2) eine Seitenwand (3) besitzt, die nach oben hin durch eine obere Wand (4) geschlossen wird;

einen Notknopf (6), der an der oberen Wand (4) des kastenartigen Körpers (2) gelegen ist und elektrisch mit mindestens einem Paar der elektrischen Kontakte verbunden ist, um zumindest teilweise den Leistungsschaltkreis der Einrichtung zu öffnen/zu schließen;

zumindest eine elektrische Vorrichtung (7, 8, 9, 10) die an der oberen Wand (4) des kastenartigen Körpers (2) gelegen ist und elektrisch mit zumindest einem zweiten Paar der elektrischen Kontakte für eine Verbindung mit einem entsprechenden Leistungs- und/oder Serviceschaltkreis und der Steuerung davon verbunden ist;

wobei die Steuerdruckknopfstation weiter eine Schutzabdeckung (12) aufweist, die geeignet ist, um bewegbar mit dem kastenartigen Körper (2) assoziiert zu werden, um sich zwischen einer offenen Position, in der die zumindest eine elektrische Vorrichtung (7, 8, 9, 10) für einen Bediener zugänglich ist, und einer geschlossenen Position zu bewegen, in der die mindestens eine elektrische Vorrichtung (7, 8, 9, 10) nicht für den Bediener zugänglich ist,

dadurch gekennzeichnet, dass

der Notknopf (6) immer in sowohl der offenen Position als auch in der geschlossenen Position zugänglich ist.

2. Druckknopfstation nach Anspruch 1, **dadurch gekennzeichnet, dass** die Abdeckung (12) mit Scharnieren an dem kastenartigen Körper (2) befestigt ist, um sich um eine vorbestimmte Achse (R) zu drehen.
3. Druckknopfstation nach Anspruch 2, **dadurch gekennzeichnet, dass** der kastenartige Körper (2) zumindest eine Längsrichtung (L) definiert, wobei die Drehachse (R) der Abdeckung (12) im Wesentlichen parallel und quer versetzt, jeweils im Wesentlichen orthogonal, zur Längsrichtung (L) ist.

4. Druckknopfstation nach einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der Notknopf (6) in einem mittleren Bereich (13) der oberen Wand (4) gelegen ist, wobei die Abdeckung (12) eine mittlere Öffnung (16) hat, die in der mittleren Zone (13) der oberen Wand (4) bezüglich des Notknopfes (6) zentrierbar ist, um diesen mit der Abdeckung (12) in der geschlossenen Position zugänglich zu machen.

5. Druckknopfstation nach Anspruch 4, **dadurch gekennzeichnet, dass** der Notknopf (6) von der oberen Wand (4) mit einer vorbestimmten maximalen Höhe (h') vorsteht, wobei die Abdeckung (12) zumindest bei der mittleren Öffnung (16) eine Höhe (h) von weniger als der vorbestimmten maximalen Höhe (h') hat, um das Handhaben des Notknopfes (6) durch einen Anwender sowohl dann zu gestatten, wenn die Abdeckung (12) in der offenen Position ist, als auch dann, wenn sie in der geschlossenen Position ist.

6. Druckknopfstation nach Anspruch 4 oder 5, **dadurch gekennzeichnet, dass** die Abdeckung (12) zwei Längsteile (14, 15) aufweist, die in Längsrichtung versetzt sind, die jeweilige zueinander weisende Querwände (17, 18) besitzen, die durch ein seitliches Gerüst (19) verbunden sind, um einen Schutzkäfig (20) für den Notknopf (6) zu definieren, wenn die Abdeckung (12) in der geschlossenen Position ist.

7. Druckknopfstation nach Anspruch 6, **dadurch gekennzeichnet, dass** das seitliche Gerüst (19) eine konkave Oberseite (21) hat, um die Handhabung des Notknopfes (6) durch einen Anwender zu ermöglichen, wenn die Abdeckung (12) in der geschlossenen Position ist.

8. Druckknopfstation nach Anspruch 1, **dadurch gekennzeichnet, dass** der kastenartige Körper (2) zumindest eine Längsrichtung (L) definiert, wobei die Abdeckung (12) auf der oberen Wand (4) entlang einer Richtung (X) im Wesentlichen parallel oder senkrecht zu der mindestens einen Längsrichtung (L) verschiebbar ist.

9. Druckknopfstation nach einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** sie ein ringförmiges Schutzelement (23) aufweist, welches integral mit der oberen Wand (4) ist und umlaufend um den Notknopf (6) angeordnet ist, um zumindest teilweise diesen letzteren zu schützen, wenn die Abdeckung (12) in der offenen Position ist.

10. Druckknopfstation nach einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet,**

zeichnet, dass die Abdeckung (12) Mittel (25, 26, 27, 28) hat, die durch Einschnappen an dem kastenartigen Körper (2) verriegeln.

11. Druckknopfstation nach Anspruch 10, **dadurch gekennzeichnet, dass** die Verriegelungsmittel zumindest ein Hakenglied (25) aufweisen, welches mit der Abdeckung (12) assoziiert ist und in mindestens einen Schlitz (27) in Eingriff zu bringen ist, der an jeder der gegenüberliegenden Längskanten (31, 31') der Seitenwand (3) ausgeformt ist, wobei die gegenüberliegenden Kanten (31, 31') zum selektiven und reversiblen Verankern der Drehachse (R) an der Seitenwand (3) vorgesehen sind.
12. Druckknopfstation nach einem oder mehreren der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** sie enge Dichtungsmittel aufweist, die mit dem kastenartigen Körper (2) und/oder mit der Abdeckung (12) assoziiert sind, um die zumindest eine elektrische Vorrichtung (7, 8, 9, 10) vor Flüssigkeiten zu schützen, wenn die Abdeckung (12) in der geschlossenen Position ist.

Revendications

1. Poste de commande à boutons-poussoirs pour installations de levage et/ou de transport, comprenant :
 - un corps en forme de boîte (2) apte à être associé à une partie fixe ou mobile d'une installation à commander, et renfermant intérieurement une pluralité de contacts électriques fixes et/ou mobiles prévus pour un ou plusieurs circuits d'alimentation et/ou de maintenance de l'installation, ledit corps en forme de boîte (2) ayant une paroi latérale (3) fermée dans sa partie haute par une paroi supérieure (4) ;
 - un bouton d'urgence (6) situé sur ladite paroi supérieure (4) dudit corps en forme de boîte (2) et connecté électriquement à au moins une première paire desdits contacts électriques pour ouvrir/fermer au moins partiellement le circuit d'alimentation de l'installation ;
 - au moins un dispositif électrique (7, 8, 9, 10) situé sur ladite paroi supérieure (4) dudit corps en forme de boîte (2) et connecté électriquement à au moins une deuxième paire desdits contacts électrique pour assurer leur connexion à un circuit d'alimentation et/ou de maintenance et assurer la commande de ce dernier ;

ledit poste de commande à boutons-poussoirs comprenant en outre un couvercle de protection (12) apte à être associé de façon mobile audit corps en forme de boîte (2) pour se déplacer entre une position d'ouverture, dans laquelle ledit au moins un dispositif

électrique (7, 8, 9, 10) est accessible à un opérateur et une position de fermeture dans laquelle ledit au moins un dispositif électrique (7, 8, 9, 10) n'est pas accessible à l'opérateur, **caractérisé en ce que** ledit bouton d'urgence (6) est toujours accessible, aussi bien dans la position d'ouverture que dans la position de fermeture.

2. Poste à boutons-poussoirs selon la revendication 1, **caractérisé en ce que** ledit couvercle (12) est articulé sur ledit corps en forme de boîte (2), et peut tourner autour d'un axe prédéterminé (R).
3. Poste à boutons-poussoirs selon la revendication 2, **caractérisé en ce que** ledit corps en forme de boîte (2) définit au moins une direction longitudinale (L), ledit axe de rotation (R) dudit couvercle (12) étant sensiblement parallèle à ladite direction longitudinale (L) et déporté transversalement, respectivement sensiblement perpendiculairement, à cette direction.
4. Poste à boutons-poussoirs selon une ou plusieurs des revendications précédentes, **caractérisé en ce que** ledit bouton d'urgence (6) est situé dans une région centrale (13) de ladite paroi supérieure (4), ledit couvercle (12) présentant une ouverture centrale (16) qui peut être centrée sur ladite zone centrale (13) de ladite paroi supérieure (4) et qui correspond audit bouton d'urgence (6) pour rendre ce dernier accessible lorsque ledit couvercle (12) est dans ladite position de fermeture.
5. Poste à boutons-poussoirs selon la revendication 4, **caractérisé en ce que** ledit bouton d'urgence (6) fait saillie sur ladite paroi supérieure (4) d'une hauteur maximum prédéterminée (h'), ledit couvercle (12) ayant, au moins au droit de ladite ouverture centrale (16), une hauteur (h) inférieure à ladite hauteur maximum prédéterminée (h') pour permettre à un utilisateur de manoeuvrer ledit bouton d'urgence (6) lorsque ledit couvercle (12) est dans ladite position d'ouverture aussi bien que dans ladite position de fermeture.
6. Poste à boutons-poussoirs selon la revendication 4 ou 5, **caractérisé en ce que** ledit couvercle (12) comprend deux parties longitudinales (14, 15) décalées longitudinalement, ayant des parois transversales respectives (17, 18) disposées face à face, réunies par une nervure latérale (19) pour définir une cage de protection (20) pour ledit bouton d'urgence (6) lorsque ledit couvercle (12) est dans ladite position de fermeture.
7. Poste à boutons-poussoirs selon la revendication 6, **caractérisé en ce que** ladite nervure latérale (19) présente une surface supérieure concave (21) pour

faciliter la manoeuvre dudit bouton d'urgence (6) par un utilisateur lorsque le couvercle (12) est dans ladite position de fermeture.

8. Poste à boulons-poussoirs selon la revendication 1, **caractérisé en ce que** ledit corps en forme de boîte (2) définit au moins une direction longitudinale (L), ledit couvercle (12) pouvant coulisser sur ladite paroi supérieure (4) dans une direction (X) sensiblement parallèle ou perpendiculaire à ladite au moins une direction longitudinale (L). 5
10
9. Poste à boutons-poussoirs selon une ou plusieurs des revendications précédentes, **caractérisé en ce qu'il** comprend un élément de protection annulaire (23) d'un seul tenant avec ladite paroi supérieure (4) et placé en position périphérique par rapport audit bouton d'urgence (6) pour protéger au moins partiellement ce dernier lorsque ledit couvercle (12) est dans ladite position d'ouverture. 15
20
10. Poste à boutons-poussoirs selon une ou plusieurs des revendications précédentes, **caractérisé en ce que** ledit couvercle (12) possède des moyens (25, 26, 27, 28) pour se verrouiller par encliquetage sur ledit corps en forme de boîte (2). 25
11. Poste à boutons-poussoirs selon la revendication 10, **caractérisé en ce que** lesdits moyens de verrouillage comprennent au moins un élément formant crochet (25) associé audit couvercle (12) et qui peut s'engager dans au moins une fente (27) formée sur chacun de bords longitudinaux opposés (31, 31') de ladite paroi latérale (3), lesdits bords opposés (31, 31') étant prévus pour l'ancrage sélectif et réversible dudit axe de rotation (R) à ladite paroi latérale (3). 30
35
12. Poste à boutons-poussoirs selon une ou plusieurs des revendications précédentes, **caractérisé en ce qu'il** comprend des moyens de fermeture étanche associés audit corps en forme de boîte (2) et/ou audit couvercle (12) pour protéger ledit au moins un dispositif électrique (7, 8, 9, 10) des liquides lorsque ledit couvercle (12) est dans ladite position de fermeture. 40
45

50

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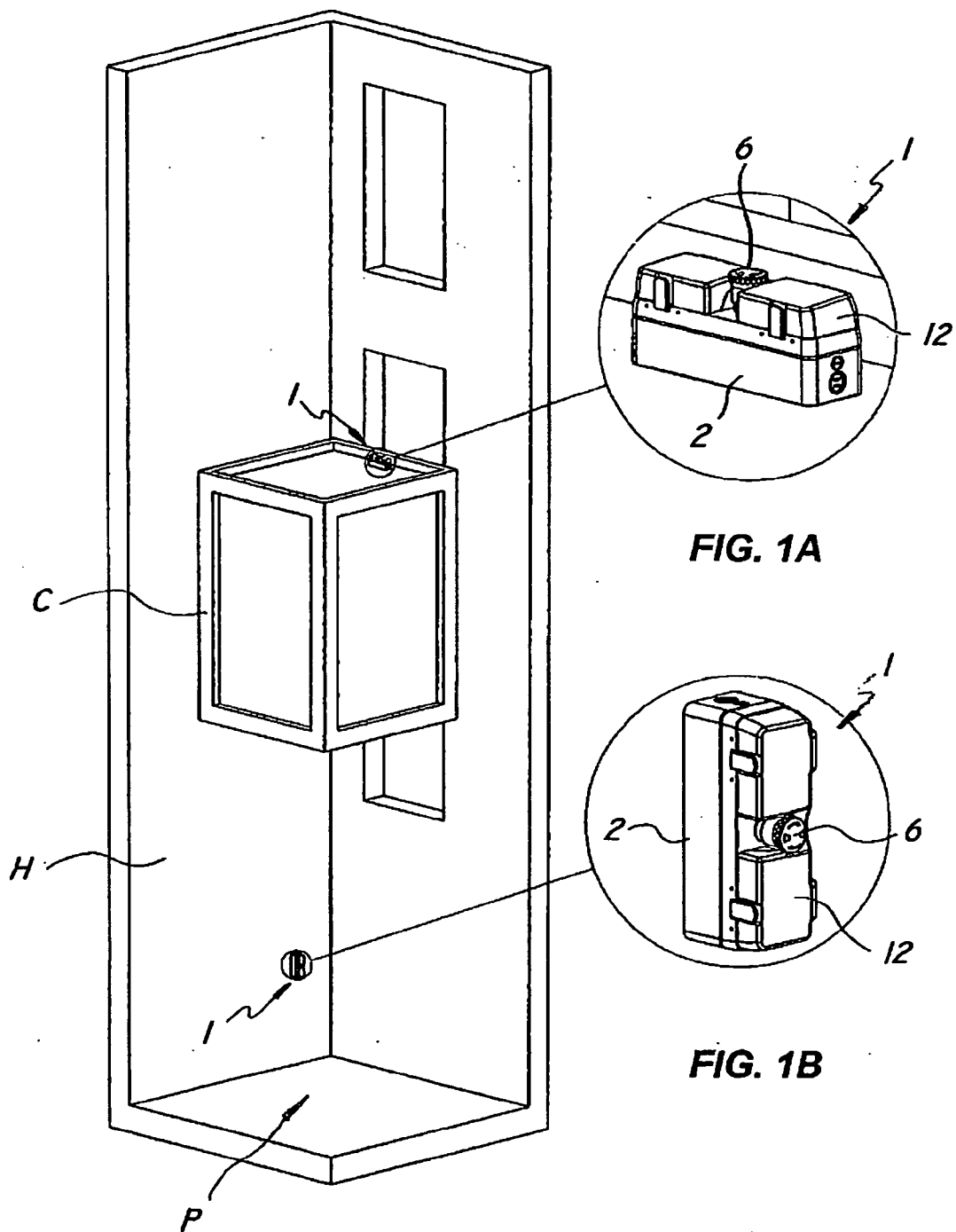


FIG. 1

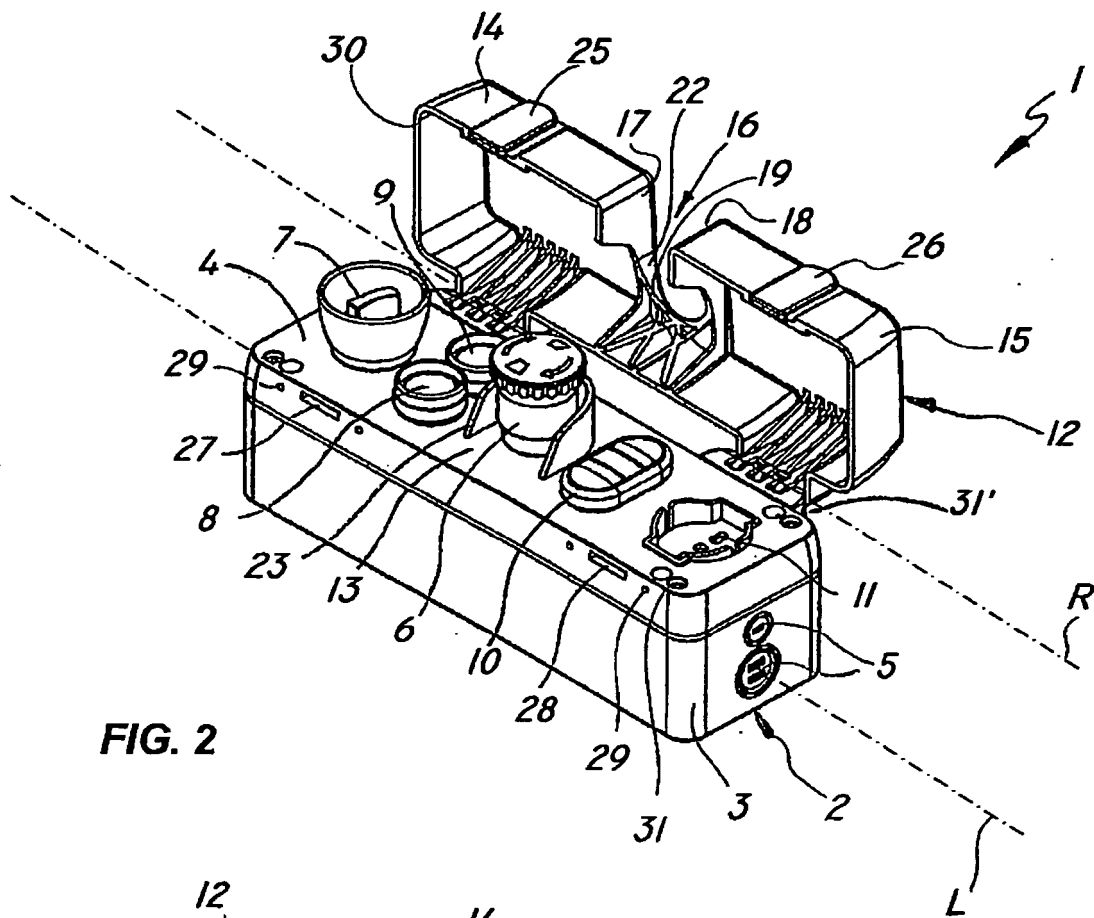


FIG. 2

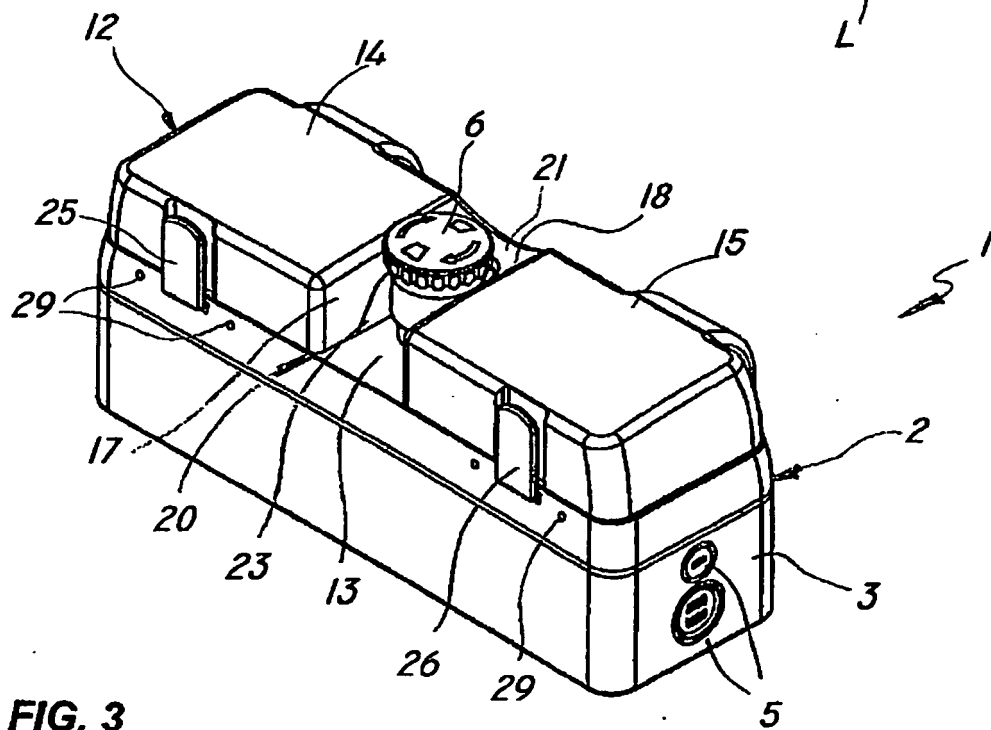


FIG. 3

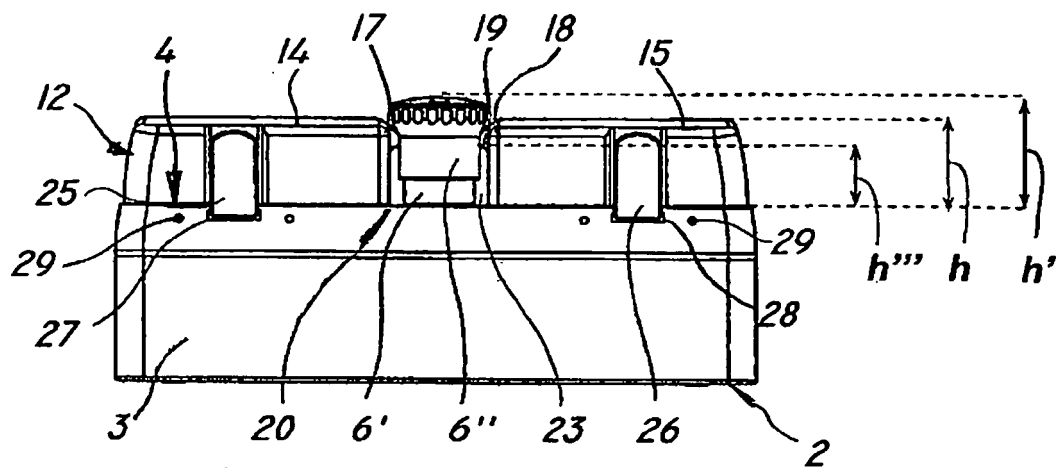


FIG. 4

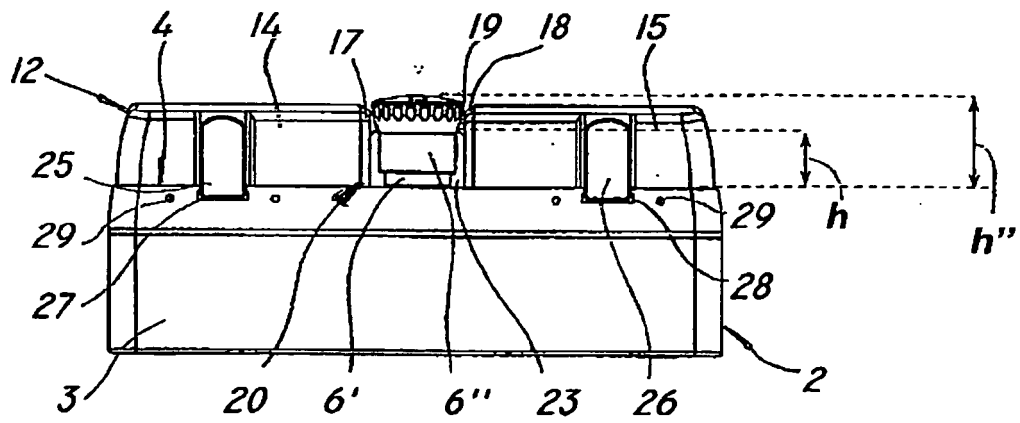


FIG. 5

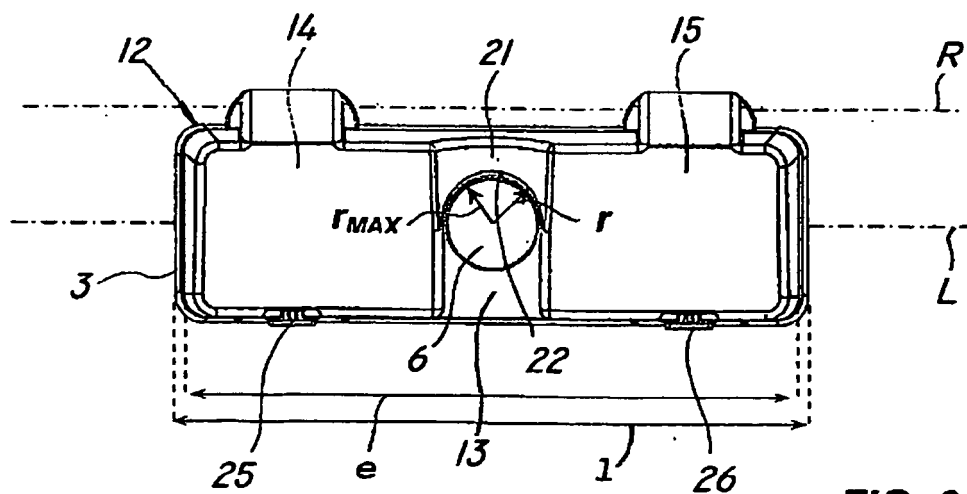
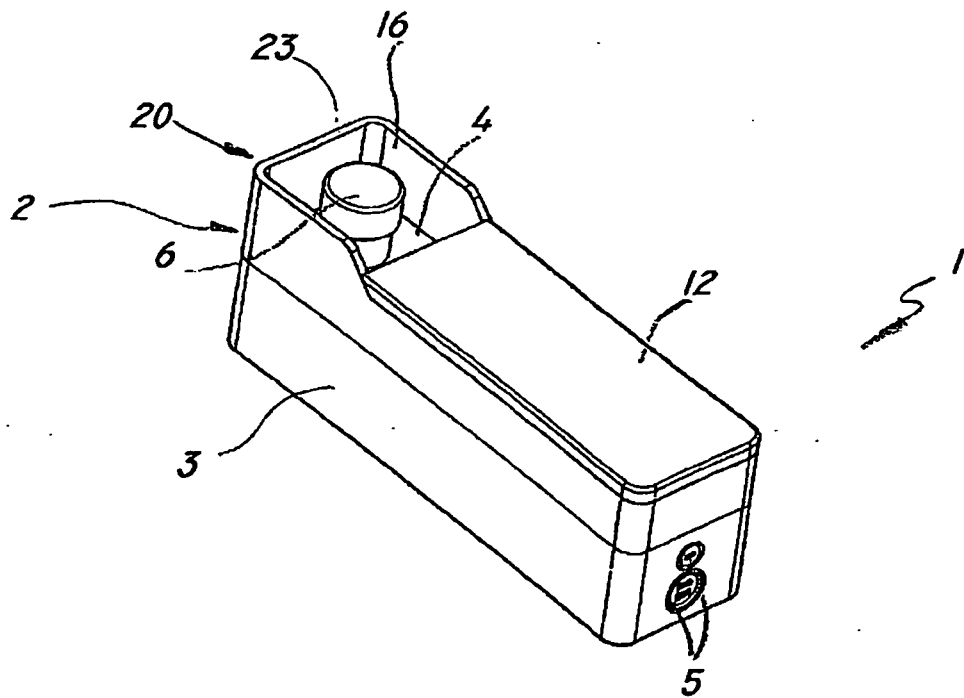
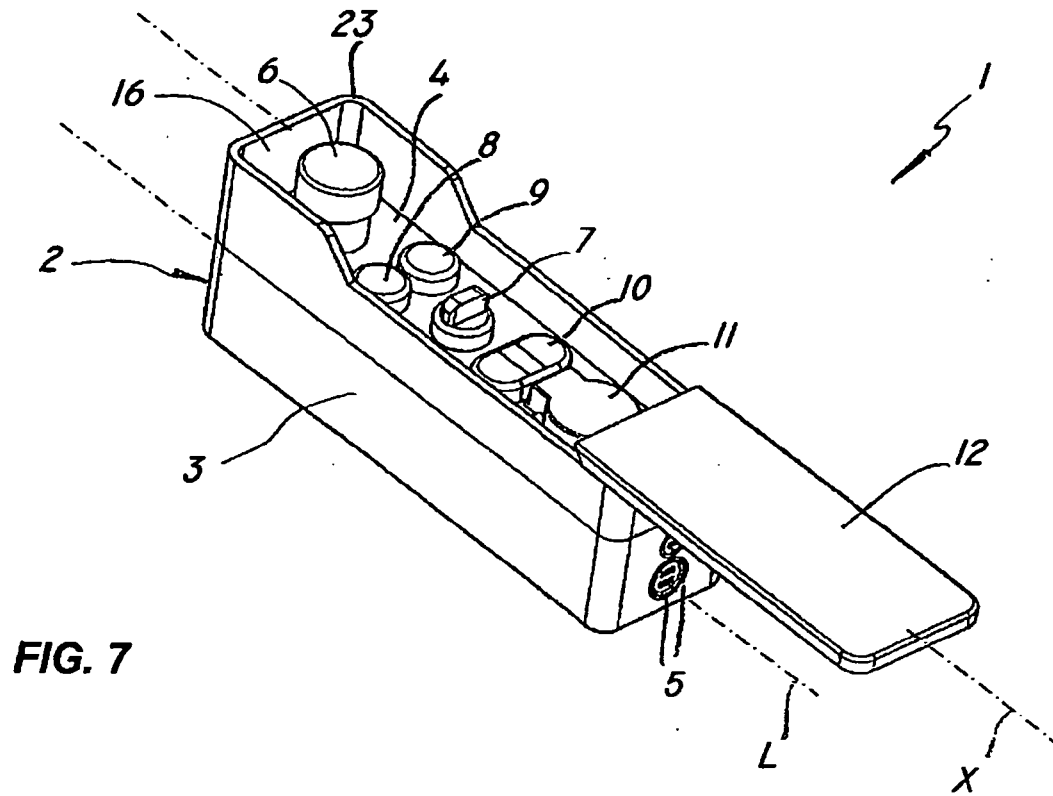


FIG. 6



REFERENCES CITED IN THE DESCRIPTION

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