(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 3 705 649 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
30.04.2025 Bulletin 2025/18

(21) Application number: **20161647.1**

(22) Date of filing: **06.03.2020**

(51) International Patent Classification (IPC):
E03D 5/02 *(2006.01)* ***E03D 5/09*** *(2006.01)*

(52) Cooperative Patent Classification (CPC):
E03D 5/028; E03D 5/09

(54) CONTROL PLATE ASSEMBLY FOR A FLUSHING TANK

STEUERUNGSPLATTENANORDNUNG MIT EINEN ÖFFNUNGSMECHANISMUS FÜR EINEN SPÜLTANK

ENSEMBLE PLAQUE POUR LA COMMANDE D'UN RÉSERVOIR DE CHASSE D'EAU

(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

(30) Priority: **08.03.2019 IT 201900003431**

(43) Date of publication of application:
09.09.2020 Bulletin 2020/37

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Description

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This patent application claims priority from Italian patent application no. 102019000003431 filed on March 8, 2019.

TECHNICAL FIELD

[0002] This invention relates to a control plate assembly for a flushing tank and a system and method for assembling control plate assemblies for flushing tanks.

BACKGROUND ART

[0003] In general, a control plate assembly of a walled or enclosed flushing tank comprises a mounting counterplate, shaped like a frame and fixed to the wall or front wall of the tank, about an inspection opening that provides access to the inside of the tank and to the flush valve housed in it; and a cover plate, removably fixed to the counterplate and provided with one or two control buttons that cooperate with the actuating members of the flush valve.

[0004] The buttons are usually hinged to the plate, while the actuating members of the flush valve are supported by the counterplate and arranged through the inspection opening.

[0005] This type of assembly, with the buttons hinged to the plate and the actuating members supported by the counterplate, is not completely satisfactory, posing problems of effective coupling between the buttons and the actuating members.

[0006] In addition, the plate and its buttons are the visible parts of the control plate assembly and take on various forms. A multitude of different plates are produced, therefore, with different buttons, for essentially for aesthetic reasons.

[0007] In general, each plate requires a specially designed counterplate, because each plate is provided with buttons of different shapes and sizes and placed in different positions, and, consequently, the counterplate must support the actuating members in position so as to interact with the buttons borne by the plate.

[0008] Ultimately, to change the aesthetic appearance of a control plate assembly, practically all its main components (counterplate, plate, and buttons) need to be replaced.

[0009] It is, therefore, necessary to manage (produce, store, and transport, etc.) a large quantity of different pieces, with consequent manufacturing and logistics problems.

[0010] A possible solution to the problems now highlighted is provided by EP2913450A1, which describes a control plate assembly for a flushing tank comprising a mounting counterplate, a cover plate joined to the counterplate by a releasable fastening system, and at least one control button, cooperating, in use, with an actuating member of a flush valve of the flushing tank. The button is hinged to the counterplate by means of a support fixed to the counterplate. In accordance with EP2913450A1, several control plate assemblies can be assembled by producing just one type of counterplate and a plurality of cover plates, which are different from each other, interchangeable on the counterplate, and can be mounted on the counterplate by means of the releasable fastening system.

[0011] EP2045404A1 discloses a control plate assembly comprising a mounting counterplate, supporting actuating buttons, and a detachable cover plate, fastened to the counterplate and formed by several parts. The cover plate is fastened on a fastening frame and a decorative plate is fastened on the cover plate. The decorative plate is supported in a holding frame and forms a decorative element, which is detachably superimposed on the cover plate.

[0012] EP2226436A1 discloses a flushing tank operating plate/counterplate assembly formed by a mounting counterplate, a substantially flat plate, and a fastening device for fastening the plate to the counterplate. Some components of the assembly are provided in alternative embodiments to be used instead of one another, so as to provide a system for fitting a plate-counterplate assembly which allows a large variety of different solutions to be assembled.

[0013] However, specific components still need to be produced to assemble, for example, pneumatic or mechanical flushing systems, as well as to change the aesthetic appearance of the assembly.

SUBJECT OF THE INVENTION

[0014] One purpose of this invention is to provide a control plate assembly of a flushing tank that is free of the drawbacks of the prior art described above.

[0015] Another purpose of the invention is to provide a system and method for assembling a control plate assembly of a flushing tank that makes it possible to produce different control plate assemblies in a simple and economical way, with a reduced number of different components.

[0016] This invention, therefore, relates to a control plate assembly of a flushing tank as defined in essential terms in the attached claim 1.

[0017] This invention also relates to a system and method for assembling a control plate assembly of a flushing tank as defined in its essential terms in the appended claims 8 and 9, respectively.

[0018] The control plate assembly of the invention is simple and economical to produce and assemble, as well as totally efficient and reliable.

[0019] In addition, the control plate assembly of the invention is produced with a system and method for assembly that make it possible to produce a variety of different control plate assemblies (in particular having

different aesthetic appearances, but also different operations) in a simple and economical way, with a reduced number of different components.

[0020] Thus, the invention makes it possible:

- to change the design of the control plate assembly in a simple way, exchanging the cover plates and the visible parts of the corresponding buttons;
- to change the activation system from a mechanical one to a pneumatic one, just by replacing the counterplate;
- to reduce the chromium-plated parts.

[0021] The invention thus makes it possible to change the aesthetic finish of the control plate assembly (by selecting the cover plate and the visible part of the control buttons from a plurality of different models) and also to change the flush valve's activation mode (in particular, from a mechanical to a pneumatic mode).

[0022] The invention also makes it possible to reduce the chromium-plated parts, thus reducing production costs: in fact, chrome-plating can be eliminated from the base plate, which bears the button supports.

[0023] The moulds of the various components, in particular the cover plates and the counterplates, are more economical and simpler to produce and maintain.

BRIEF DESCRIPTION OF THE DRAWINGS

[0024] Further features and advantages of the present invention will be apparent from the following description of a non-limiting embodiment thereof, with reference to the figures of the accompanying drawings, wherein:

- Figure 1 is an exploded perspective view of a control plate assembly of a flushing tank in accordance with a first embodiment of the invention;
- Figure 2 is a front perspective view, on an enlarged scale, of some components of the control plate assembly in Figure 1;
- Figure 3 is a rear perspective view, on an enlarged scale, of an additional component of the control plate assembly in Figure 1;
- Figure 4 is a rear perspective view, on an enlarged scale, of an additional component of the control plate assembly in Figure 1;
- Figure 5 is a front perspective view, on an enlarged scale and partially exploded, of additional components of the control plate assembly in Figure 1;
- Figure 6 is an exploded front perspective view of a control plate assembly of a flushing tank in accordance with a second embodiment of the invention;
- Figure 7 is a front perspective view, on an enlarged scale, of some components of the control plate assembly in Figure 6.

PREFERRED EMBODIMENT OF THE INVENTION

[0025] With reference to Figure 1, a control plate assembly 1 of a flushing tank (not illustrated) comprises a mounting counterplate 2, provided with supports 3 for at least one actuating member 4 of a flush valve (not illustrated) of the flushing tank; a cover plate 5; a base plate 6 that can be fixed to the cover plate 5 by means of a coupling system 7 and to the counterplate 2 by means of a releasable fastening device 8; at least one control button 9, which cooperates, in use, with the actuating member 4.

[0026] In the example illustrated in Figure 1, the control plate assembly 1 comprises two control buttons 9, which cooperate, in use, with corresponding actuating members 4 of the flush valve, to activate different flush modes and precisely to selectively activate a complete flushing or a partial flushing of the water contained in the flushing tank.

[0027] The control plate assembly 1 illustrated in Figure 1 is also intended for the mechanical activation of the flush valve, so that the actuating members 4 cooperate, in use (i.e. they can be connected), with a mechanical actuating system (known in itself and not illustrated) of the flush valve, activated by means of the buttons 9 and the corresponding actuating members 4.

[0028] The counterplate 2 comprises a frame 12, e.g. basically rectangular, with a pair of basically flat opposite faces 13 and, for example, basically level and parallel; an internal perimeter edge 14 that protrudes orthogonally from the frame 12 and delimits a central opening 15; and an external perimeter edge 16.

[0029] With reference also to Figure 2, the counterplate 2 is provided with fastening seats 17 formed on the counterplate 2, e.g. on the frame 12 and/or appendages 18 that project from the frame 12 into the opening 15, to fix the counterplate 2 to the flushing tank; the fastening seats 17 are shaped so as to receive coupling members 19, which engage the fastening seats 17 and their corresponding additional fastening seats on the tank (or on a component fixed to the tank).

[0030] The supports 3 for the actuating members 4 are defined by their corresponding portions 23 of the counterplate 2, which project, for example, into the opening 15 from the edge 14; each support 3 has a support seat 24, defined by a through hole formed in the portion 23 and that houses an actuating member 4.

[0031] In the example illustrated in Figures 1 and 2, each actuating member 4 comprises a stem 25, which is housed smoothly in the seat 24. The stem 25 has a head 26 that protrudes from the seat 24 towards the cover plate 5 to cooperate with a button 9, and engages, at one end opposite the head 26, an element of the mechanical actuating system of the flush valve (known and not illustrated for simplicity) .

[0032] With reference also to Figure 3, the cover plate 5 can have various shapes and aesthetic finishes. In general, the plate 3 comprises a front wall 27 and a peripheral

edge 28 folded orthogonally to the wall 27.

[0033] The cover plate 5 has at least one window 29, formed through the wall 27 to receive the buttons 9.

[0034] With reference to Figure 4 as well, the base plate 6 comprises a basically flat back wall 31 and a perimeter edge 32 folded orthogonally to the wall 31.

[0035] The wall 31 of the base plate 6 preferably has two basically level and parallel opposite faces 33a, 33b and the edge 32 is perpendicular to the faces 33a, 33b.

[0036] The edge 32 of the base plate 6 is housed inside the edge 28 of the cover plate 5 and the edge 28 of the cover plate 5 externally surrounds the edge 32 of the base plate 6.

[0037] The base plate 6 has an auxiliary window 34 formed through the wall 31 between the faces 33a, 33b. The auxiliary window 34 faces and is aligned with the window 29 of the cover plate 5 and is (slightly) larger than the window 29.

[0038] The base plate 6 is provided with a plurality of rotation supports 35 configured to support the buttons 9 in a rotary manner.

[0039] In particular, the supports 35 project from a rear face 33b, opposite a face 33a turned towards the cover plate 5, of the base plate 6.

[0040] Each support 35 has, for example, a pair of side brackets 36 that project from the face 33b, on opposite sides of a slot 37 formed through the wall 31, and a transverse pin 38 that extends between the brackets 36 opposite the slot 37.

[0041] The base plate 6 is defined by a separate piece from the cover plate 5 and is joined to the cover plate 5 by means of the coupling system 7, which is, for example, a snap-on coupling system.

[0042] The cover plate 5 and the base plate 6 consist of corresponding monolithic pieces.

[0043] In particular, the cover plate 5 consists of a monolithic piece that is fixed directly to the base plate 6 by means of the coupling system 7 and, precisely, by means of the coupling members 41 formed directly on the cover plate 5 (i.e. on the monolithic piece that constitutes the cover plate 5).

[0044] In the example illustrated, the coupling system 7 comprises snap-on coupling members 41, defined, for example, by a plurality of teeth 42 (Figure 3) that project from the edge 28 of the cover plate 5 and engage corresponding seats 43 (Figure 4) on the edge 32 of the base plate 6 (or vice versa).

[0045] The teeth 42 are spaced along the edge 28 and the corresponding seats 43 are correspondingly spaced along the edge 32.

[0046] Advantageously, each tooth 42 has a front chamfer that cooperates when guided by a seat 43 to facilitate the coupling of the teeth 42 in the seats 43.

[0047] Optionally, additional teeth 42b project from an inner face 44, turned towards the base plate 6, of the wall 27 of the cover plate 5 and engage corresponding seats 43b formed through the wall 31 of the base plate 6, e.g. near the window 34.

[0048] The buttons 9 are hinged to the base plate 6 by means of supports 35 and are housed through the windows 29, 34.

[0049] As illustrated in more detail in Figure 5, each button 9 has a base body 45 extending between a root end 46, hinged to a pair of supports 35, and a free end 47, opposite the root end 46 and provided with a driving portion 48, inserted in the windows 29, 34 so as they can be operated by a user.

[0050] The root end 46 is provided with a pair of coupling seats 49 shaped to couple the corresponding pins 38 of the supports 35 in a rotary manner, defining a rotation axis of the button 9 in relation to the supports 35. The pins 38 can preferably be snapped into the coupling seats 49.

[0051] Each button 9 is advantageously provided with a cover element 50 that covers the driving portion 48 and is releasably fixed to, e.g. by means of (snap-on or mechanically interfering) coupling teeth that project from an inner face of the cover element 50, turned towards the base body 45, and couple the corresponding seats formed in the driving portion 48 of the base body 45 (or vice versa).

[0052] The cover element 50 is housed in the windows 29, 34 and defines the visible part of the button 9, having a finish and appearance coordinated with the cover plate 5.

[0053] The base plate 6 is removably fixed to the counterplate 2 by means of the fastening device 8.

[0054] For example, the fastening device 8 comprises coupling teeth 53a (Figure 2) that engage the corresponding seats 54a (Figure 4), borne by the counterplate 2 and base plate 6 respectively, or vice versa, at one first end 55 of the control plate assembly 1; and a releasable locking element 56 (Figure 2), loaded by a spring 57 and mounted on the counterplate 2 and provided with additional coupling teeth 53b that engage corresponding seats 54b (Figure 4) formed on the base plate 6 (or vice versa) at a second end 58, opposite to the first end 55, of the control plate assembly 1.

[0055] In accordance with the invention, as described above, the counterplate 2 (which supports the actuating members 4 connected to the flush valve) is not fixed directly to the cover plate 5, but to the base plate 6, which is provided with supports 35 for the buttons 9.

[0056] The base plate 6 is placed between the cover plate 6 and the counterplate 2.

[0057] In this way, it is possible to use just one base plate 6 with different counterplates 2 and/or different cover plates 5.

[0058] It should be noted that the base plate 6 with its corresponding supports 35 for the buttons 9 is the most complicated component to build, so having only one type of it is certainly advantageous from the point of view of the manufacturing process.

[0059] The same base plate 6 can, therefore, be used with different counterplates 2, in particular: with a counterplate 2 intended for the mechanical activation of the flush valve, thus provided with actuating members 4 that

cooperate with a mechanical actuating device of the flush valve (Figure 1); with a counterplate 2 intended for the pneumatic activation of the flush valve, thus provided with actuating members 4 that cooperate with a pneumatic actuating device of the flush valve (Figure 6), etc.

[0060] In the embodiment in Figure 6, for example, the control plate assembly 1 is intended for the pneumatic activation of the flush valve, so that the actuating members 4 cooperate with a pneumatic actuating system (known in itself) of the flush valve, activated by means of the buttons 9 and the corresponding actuating members 4.

[0061] The counterplate 2 is still provided with supports 22 for the actuating members 4.

[0062] As show in greater detail in Figure 7, in this case too, the supports 3 are defined, in particular, by the corresponding portions 23 of the counterplate 2, which project, for example, into the opening 15 from the edge 14; and each support 22 has a support seat 24, defined by a through hole formed in the portion 23 and that houses an actuating member 4.

[0063] Each actuating member 4 also comprises a stem 25, which is smoothly housed in the seat 24. The stem 25 has a head 26 that protrudes from the seat 24 towards the cover plate 5 to cooperate with a button 9. The stem 25 then cooperates, at one end opposite the head 26, with a pneumatic assembly 61 with an outlet 62 that can be connected to a pneumatic actuator system of the flush valve.

[0064] The other components of the control plate assembly 1 are similar or equal to those already described.

[0065] The same base plate 6 can be used not only with different counterplates 2, but also with different cover plates 5, having different aesthetic appearances and finishes and coordinated with the corresponding buttons 9, of which just the cover element 50 can be changed while maintaining the base body 45.

[0066] The invention therefore makes it possible to assemble different control plate assemblies 1 (both with different aesthetic appearances and different operating modes, in particular mechanical or pneumatic ones) with a reduced number of components.

[0067] In fact, the invention also provides a system for assembling control plate assemblies with different appearances and/or operations.

[0068] The system comprises: one base plate 6 (i.e. just one type of base plate 6); two base bodies 45 of the buttons 9; a plurality of mounting counterplates 2 (in particular, at least one counterplate 2 for mechanically activating the flush valve and at least one counterplate 2 for pneumatically activating the flush valve); a plurality of cover plates 5, which are different from one another, interchangeable on the base plate 6, and can be mounted on the base plate 6 by means of the coupling system 7; a plurality of cover elements 50 of the buttons 9, coordinated with the cover plates 5.

[0069] The base body 45 of the buttons 9 is always the same, only the cover element 50 changes, coordinated with the different cover plates 5.

[0070] Thus, it is possible to provide different control plate assemblies 1, changing both the activating mechanism of the flush (for example, from mechanical to pneumatic), by changing the counterplate 2, and changing the aesthetic appearance, by changing the cover plates 5 and the corresponding cover elements 50 of the buttons 9.

[0071] The control plate assembly 1 is, therefore, assembled with the method that comprises the following steps:

- providing a base plate 6 (i.e. just one type of base plate 6); and a pair of base bodies 45 of corresponding buttons 9, that can be connected to the base plate 6;
- providing a plurality of cover plates 5, different from one another, which are interchangeable on the base plate 6 and can be mounted on the base plate 2 by means of the coupling system 7;
- providing, for each plate 3, cover elements 50 of the buttons 9 coordinated with the cover plate 5; each cover element 50 being fixable to a base body 45 of a button 9;
- providing at least two different mounting counterplates 2, having actuating members 4 of different types configured to cooperate with different actuating devices of the flush valve, for example a mechanical actuating device and a pneumatic actuating device, and fixable to the base plate 6 by means of the releasable fastening system 8;
- selecting a cover plate 5 and the cover elements 50 of the buttons 9 coordinated with said cover plate 5;
- mounting the cover elements 50 on the buttons 9;
- mounting the buttons 9 on the base plate 6;
- mounting the cover plate 5 on the base plate 6;
- mounting the base plate 6 on the counterplate 2.

[0072] Lastly, it is clear that modifications and changes may be made to the control plate assembly and to the assembly system and method described and illustrated herein without departing from the scope of the attached claims.

Claims

1. A control plate assembly (1) for a flushing tank, comprising a mounting counterplate (2), provided with at least one actuating member (4) for cooperating, in use, with a flush valve of the flushing tank and supported by the counterplate (2) by means of at least one corresponding support (3) formed on the counterplate (2); a cover plate (5) having at least one window (29) formed through the cover plate (5) and inside which at least one control button (9), cooperating with the actuating member (4), is housed; a base plate (6) fixable to the cover plate (5) by means

of a coupling system (7) and to the counterplate (2) by means of a releasable fastening device (8) and provided with an auxiliary window (34) formed through opposite faces (33a, 33b) of the base plate (6) and facing towards and aligned with the window (29) of the cover plate (5) to house the button (9); wherein the base plate (6) is provided with rotation supports (35) configured for supporting in a rotary manner said at least one button (9) and the button (9) is hinged to the base plate (6) by means of said supports (35); and wherein the button (9) has a base body (45) extending between a root end (46), hinged to a pair of supports (35), and a free end (47), opposite to the root end (46) and provided with a driving portion (48), inserted in the window (29) and in the auxiliary window (34) so as to be operated by a user; **characterised in that** the button (9) is provided with a cover element (50) covering the driving portion (48) and fixed thereto in a releasable manner; the cover element (50) being housed in the window (29) and in the auxiliary window (34) and defining a visible part of the button (9).

2. A control plate assembly according to claim 1, wherein the base plate (6) is defined by a separate piece to the cover plate (5) and is joined to the cover plate (5) by means of the coupling system (7).

3. A control plate assembly according to claim 1 or 2, wherein the cover plate (5) consists of a monolithic piece that is fixed directly to the base plate (6) by means of coupling members (41) formed directly on the cover plate (5).

4. A control plate assembly according to one of the preceding claims, wherein the cover plate (5) has a peripheral edge (28) externally surrounding a perimeter edge (32) of the base plate (6).

5. A control plate assembly according to one of the preceding claims, wherein the coupling system (7) is a snap-on coupling system comprising snap-on coupling members (41), defined by a plurality of teeth (42) projecting from the cover plate (5) and engaging corresponding seats (43) on the base plate (6), or vice versa.

6. A control plate assembly according to one of the preceding claims, wherein said cover element (50) covering the driving portion (48) is fixed thereto in a releasable manner by means of teeth (51) projecting from an inner face of the cover element (50), facing toward the base body (45), and coupling corresponding seats (52) formed in the driving portion (48) of the base body (45), or vice versa.

7. A control plate assembly according to one of the preceding claims, wherein the fastening device (8) comprises hooking teeth (53) that engage corresponding seats (54), borne by the counterplate (2) and the base plate (6) respectively, or vice versa, at a first end (55) of the control plate assembly (1); and a releasable locking element (56), loaded by a spring (57) and mounted on the counterplate (2) to couple the base plate (6) to a second end (58), opposite to the first end (55), of the control plate assembly (1).

8. A system for assembling a control plate assembly (1) for a flushing tank according to one of the preceding claims, comprising a base plate (6); two base bodies (45) of the buttons (9); a plurality of mounting counterplates (2); a plurality of cover plates (5), which are different from one another, interchangeable on the base plate (6), and can be mounted on the base plate (6) by means of the coupling system (7); a plurality of cover elements (50) of the buttons (9), coordinated with the cover plates (5).

9. A method for assembling a control plate assembly (1) for a flushing tank according to one of claims 1 to 7, comprising the steps of:

- providing a base plate (6); and a pair of base bodies (45) of respective buttons (9), that can be connected to the base plate (6);
- providing a plurality of cover plates (5), different from one another, which are interchangeable on the base plate (6) and can be mounted on the base plate (2) by means of the coupling system (7);
- providing, for each cover plate (5), cover elements (50) of the buttons (9) coordinated with the cover plate (5); each cover element (50) being fixable to a base body (45) of a button (9);
- providing at least two different mounting counterplates (2), having actuating members (4) of different types configured to cooperate with different actuating devices of the flush valve, for example a mechanical actuating device and a pneumatic actuating device, and fixable to the base plate (6) by means of the releasable fastening system (8);
- selecting a cover plate (5) and the cover elements (50) of the buttons (9) coordinated with said cover plate (5);
- mounting the cover elements (50) on the buttons (9);
- mounting the buttons (9) on the base plate (6);
- mounting the cover plate (5) on the base plate (6);
- mounting the base plate (6) on the counterplate (2).

Patentansprüche

1. Steuerplattenanordnung (1) für einen Spülkasten, umfassend eine Montagegegenplatte (2), die mit mindestens einem Betätigungselement (4) versehen ist, das im Gebrauch mit einem Spülventil des Spülkastens zusammenwirkt und von der Gegenplatte (2) mittels mindestens einer entsprechenden, an der Gegenplatte (2) ausgebildeten Stütze (3) getragen wird; eine Abdeckplatte mit mindestens einem Fenster (29), das durch die Abdeckplatte (5) hindurch ausgebildet ist und in dem mindestens ein Steuerknopf (9) untergebracht ist, der mit dem Betätigungselement (4) zusammenwirkt; eine Grundplatte (6), die an der Abdeckplatte (5) mittels eines Kupplungssystems (7) und an der Gegenplatte (2) mittels einer lösbaren Befestigungsvorrichtung (8) befestigt werden kann und mit einem Hilfsfenster (34) versehen ist, das durch gegenüberliegende Flächen (33a, 33b) der Grundplatte (6) hindurch ausgebildet ist und dem Fenster (29) der Abdeckplatte (5) zugewandt und mit diesem ausgerichtet ist, um den Knopf (9) aufzunehmen; wobei die Grundplatte (6) mit Drehstützen (35) versehen ist, die so konfiguriert sind, dass sie den mindestens einen Knopf (9) drehbar stützen, und der Knopf (9) mittels der Stützen (35) an der Grundplatte (6) angelenkt ist; und wobei der Knopf (9) einen Grundkörper (45) aufweist, der sich zwischen einem Fußende (46), das an einem Paar von Stützen (35) angelenkt ist, und einem freien Ende (47) erstreckt, das dem Fußende (46) gegenüberliegt und mit einem Antriebsabschnitt (48) versehen ist, der in das Fenster (29) und in das Hilfsfenster (34) eingesetzt ist, um von einem Benutzer betätigt zu werden; **dadurch gekennzeichnet, dass** der Knopf (9) mit einem Abdeckelement (50) versehen ist, das den Antriebsabschnitt (48) abdeckt und daran lösbar befestigt ist; wobei das Abdeckelement (50) in dem Fenster (29) und in dem Hilfsfenster (34) untergebracht ist und einen sichtbaren Teil des Knopfes (9) definiert.

2. Steuerplattenanordnung nach Anspruch 1, wobei die Grundplatte (6) durch ein von der Abdeckplatte (5) getrenntes Stück definiert ist und mit der Abdeckplatte (5) mittels des Kupplungssystems (7) verbunden ist.

3. Steuerplattenanordnung nach Anspruch 1 oder 2, wobei die Abdeckplatte (5) aus einem monolithischen Teil besteht, das mittels direkt an der Abdeckplatte (5) ausgebildeten Kupplungselementen (41) direkt an der Grundplatte (6) befestigt ist.

4. Steuerplattenanordnung nach einem der vorstehenden Ansprüche, wobei die Abdeckplatte (5) einen Umfangsrand (28) aufweist, der einen Umfangsrand (32) der Grundplatte (6) außen umgibt

5. Steuerplattenanordnung nach einem der vorstehenden Ansprüche, wobei das Kupplungssystem (7) ein Schnappkupplungssystem ist, das Schnappkupplungselemente (41) umfasst, die durch eine Vielzahl von Zähnen (42) definiert sind, die von der Abdeckplatte (5) vorstehen und in entsprechende Sitze (43) auf der Grundplatte (6) eingreifen, oder umgekehrt.

6. Steuerplattenanordnung nach einem der vorstehenden Ansprüche, wobei das Abdeckelement (50), das den Antriebsabschnitt (48) abdeckt, mittels Zähnen (51), die von einer Innenfläche des Abdeckelements (50) vorstehen und dem Grundkörper (45) zugewandt sind, und entsprechende Sitze (52) koppeln, die in dem Antriebsabschnitt (48) des Grundkörpers (45) ausgebildet sind, oder umgekehrt, lösbar daran befestigt ist.

7. Steuerplattenanordnung nach einem der vorstehenden Ansprüche, wobei die Befestigungsvorrichtung (8) Einhakzähne (53) umfasst, die an einem ersten Ende (55) der Steuerplattenanordnung (1) in entsprechende Sitze (54) eingreifen, die von der Gegenplatte (2) bzw. der Grundplatte (6) getragen werden, oder umgekehrt; und ein lösbares Verriegelungselement (56), das durch eine Feder (57) belastet wird und an der Gegenplatte (2) angebracht ist, um die Grundplatte (6) mit einem dem ersten Ende (55) gegenüberliegenden zweiten Ende (58) der Steuerplattenanordnung (1) zu verbinden.

8. System zur Montage einer Steuerplattenanordnung für einen Spülkasten nach einem der vorstehenden Ansprüche, umfassend eine Grundplatte (6); zwei Grundkörper (45) der Knöpfe (9); eine Vielzahl von Montagegegenplatten (2); eine Vielzahl von voneinander verschiedenen, auf der Grundplatte (6) austauschbaren Abdeckplatten (5), die mittels des Kupplungssystems (7) auf der Grundplatte (6) montierbar sind; eine Vielzahl von Abdeckelementen (50) der Knöpfe (9), die auf die Abdeckplatten (5) abgestimmt sind.

9. Verfahren zur Montage einer Steuerplattenanordnung für einen Spülkasten nach einem der Ansprüche 1 bis 7, umfassend die folgenden Schritte:

   - Bereitstellen einer Grundplatte (6); und eines Paares von Grundkörpern (45) von jeweiligen Knöpfen (9), die mit der Grundplatte (6) verbunden werden können;
   - Bereitstellen einer Vielzahl von voneinander verschiedenen, auf der Grundplatte (6) austauschbaren Abdeckplatten (5), die mittels des Kupplungssystems (7) auf der Grundplatte (2) montierbar sind;
   - Bereitstellen von Abdeckelementen (50) für

jede Abdeckplatte (5) der Knöpfe (9), die auf die Abdeckplatte (5) abgestimmt sind; wobei jedes Abdeckelement (50) an einem Grundkörper (45) eines Knopfes (9) befestigbar ist;
- Bereitstellen von mindestens zwei verschiedenen Montagegegenplatten (2) ' mit Betätigungselementen (4) unterschiedlicher Art, die so konfiguriert sind, dass sie mit verschiedenen Betätigungsvorrichtungen des Spülventils zusammenwirken, beispielsweise einer mechanischen Betätigungsvorrichtung und einer pneumatischen Betätigungsvorrichtung, und die mittels des lösbaren Befestigungssystems (8) an der Grundplatte (6) befestigbar sind;
- Auswählen einer Abdeckplatte (5) und der Abdeckelemente (50) der Knöpfe (9), die auf diese Abdeckplatte (5) abgestimmt sind;
- Montieren der Abdeckelemente (50) auf den Knöpfen (9);
- Montieren der Knöpfe (9) auf der Grundplatte (6); - Montieren der Abdeckplatte (5) auf der Grundplatte (6);
- Montieren der Grundplatte (6) auf der Gegenplatte (2).

Revendications

1. Ensemble plaque de commande (1) pour un réservoir de chasse d'eau, comprenant une contre-plaque de montage (2), pourvue d'au moins un élément d'actionnement (4) coopérant, en cours d'utilisation, avec un robinet de chasse du réservoir de chasse d'eau et supporté par la contre-plaque (2) au moyen d'au moins un support correspondant (3) formé sur la contre-plaque (2) ; une plaque de recouvrement comportant au moins une fenêtre (29) formée à travers la plaque de recouvrement (5) et à l'intérieur de laquelle est logé au moins un bouton de commande (9), coopérant avec l'élément d'actionnement (4) ; une plaque de base (6) pouvant être fixée à la plaque de recouvrement (5) au moyen d'un système de couplage (7) et à la contre-plaque (2) au moyen d'un dispositif de fixation amovible (8) et pourvue d'une fenêtre auxiliaire (34) formée à travers les faces opposées (33a, 33b) de la plaque de base (6) et orientée vers la fenêtre (29) de la plaque de recouvrement (5) et alignée avec cette dernière pour loger le bouton (9); la plaque de base (6) étant pourvue de supports de rotation (35) configurés pour supporter de manière rotative ledit au moins un bouton (9) et le bouton (9) étant articulé à la plaque de base (6) au moyen desdits supports (35) ; et le bouton (9) présentant un corps de base (45) s'étendant entre une extrémité de base (46), articulée à une paire de supports (35), et une extrémité libre (47), opposée à l'extrémité de base (46) et pourvue d'une partie d'entraînement (48), insérée dans la fenêtre (29) et dans la fenêtre auxiliaire (34) de manière à être actionnée par un utilisateur ; **caractérisé en ce que** le bouton (9) est pourvu d'un élément de recouvrement (50) recouvrant la partie d'entraînement (48) et fixé à celle-ci de manière amovible ; l'élément de recouvrement (50) étant logé dans la fenêtre (29) et dans la fenêtre auxiliaire (34) et définissant une partie visible du bouton (9).

2. Ensemble plaque de commande selon la revendication 1, la plaque de base (6) étant définie par une pièce disjointe de la plaque de recouvrement (5) et étant reliée à la plaque de recouvrement (5) au moyen du système de couplage (7).

3. Ensemble plaque de commande selon la revendication 1 ou 2, la plaque de recouvrement (5) consistant en une pièce monolithique qui est fixée directement à la plaque de base (6) au moyen d'éléments de couplage (41) formés directement sur la plaque de recouvrement (5).

4. Ensemble plaque de commande selon l'une des revendications précédentes, la plaque de recouvrement (5) présentant un bord périphérique (28) entourant extérieurement un bord périphérique (32) de la plaque de base (6).

5. Ensemble plaque de commande selon l'une des revendications précédentes, le système de couplage (7) étant un système de couplage par encliquetage comprenant des éléments de couplage (41) par encliquetage, définis par une pluralité de dents (42) dépassant de la plaque de recouvrement (5) et se mettant en prise avec des sièges correspondants (43) sur la plaque de base (6), ou vice-versa.

6. Ensemble plaque de commande selon l'une des revendications précédentes, ledit élément de recouvrement (50), recouvrant la partie d'entraînement (48), est fixé à celle-ci de manière amovible au moyen de dents (51) dépassant d'une face intérieure de l'élément de recouvrement (50), orientées vers le corps de base (45), et s'accouplant à des sièges correspondants (52) formés dans la partie d'entraînement (48) du corps de base (45), ou vice-versa.

7. Ensemble plaque de commande selon l'une des revendications précédentes, le dispositif de fixation (8) comprenant des dents d'accrochage (53) qui s'engagent dans des sièges correspondants (54), portés, respectivement, par la contre-plaque (2) et la plaque de base (6) ou vice versa, à une première extrémité (55) de l'ensemble plaque de commande (1) ; et un élément de verrouillage (56) amovible, chargé par un ressort (57) et monté sur la contre-plaque (2) pour coupler la plaque de base (6) à une deuxième extrémité (58), opposée à la première

extrémité (55), de l'ensemble plaque de commande (1).

8. Système d'assemblage d'un ensemble plaque de commande pour un réservoir de chasse d'eau selon l'une des revendications précédentes, comprenant une plaque de base (6) ; deux corps de base (45) des boutons (9) ; une pluralité contreplaques de montage (2) ; une pluralité de plaques de recouvrement (5), étant différentes les unes des autres, interchangeables sur la plaque de base (6), et pouvant être montées sur la plaque de base (6) au moyen du système de couplage (7) ; une pluralité d'éléments de recouvrement (50) des boutons (9), coordonnés avec les plaques de recouvrement (5).

9. Procédé d'assemblage d'un ensemble plaque de commande pour un réservoir de chasse d'eau selon l'une des revendications 1 à 7, comprenant les étapes suivantes :

- la fourniture d'une plaque de base (6) ; et d'une paire de corps de base (45) de boutons respectifs (9), qui peuvent être reliés à la plaque de base (6) ;
- la fourniture d'une pluralité de plaques de recouvrement (5), différentes les unes des autres, qui sont interchangeables sur la plaque de base (6) et peuvent être montées sur la plaque de base (2) au moyen du système de couplage (7) ;
- la fourniture, pour chaque plaque de recouvrement (5), d'éléments de recouvrement (50) des boutons (9) coordonnés avec la plaque de recouvrement (5) ; chaque élément de recouvrement (50) pouvant être fixé au corps de base (45) d'un bouton (9) ;
- la fourniture d'au moins deux contre-plaques de montage (2) différentes comportant des éléments d'actionnement (4) de types différents configurés pour coopérer avec différents dispositifs d'actionnement du robinet de chasse, par exemple un dispositif d'actionnement mécanique et un dispositif d'actionnement pneumatique, et pouvant être fixés à la plaque de base (6) au moyen du système de fixation amovible (8) ;
- la sélection d'une plaque de recouvrement (5) et des éléments de recouvrement (50) des boutons (9) coordonnés avec ladite plaque de recouvrement (5) ;
- le montage les éléments de recouvrement (50) sur les boutons (9) ;
- le montage des boutons (9) sur la plaque de base (6) ;
- le montage de la plaque de recouvrement (5) sur la plaque de base (6) ;
- le montage de la plaque de base (6) sur la contre-plaque (2).

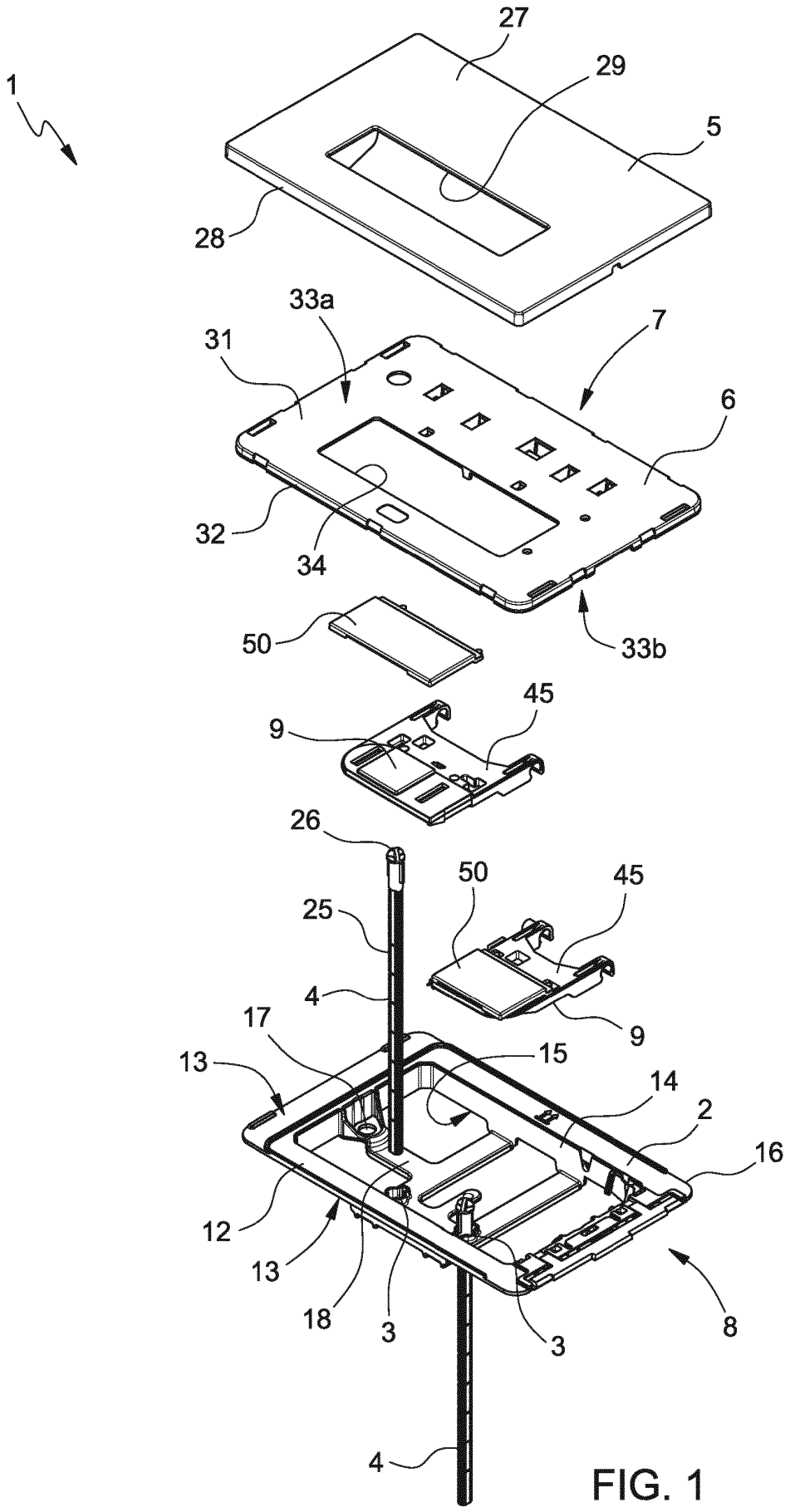

1
27
29
5
28
33a
31
7
6
32
34
50
33b
45
9
26
50
45
25
4
9
17
15
13
14
2
16
12
13
18
3
3
8
4

FIG. 1

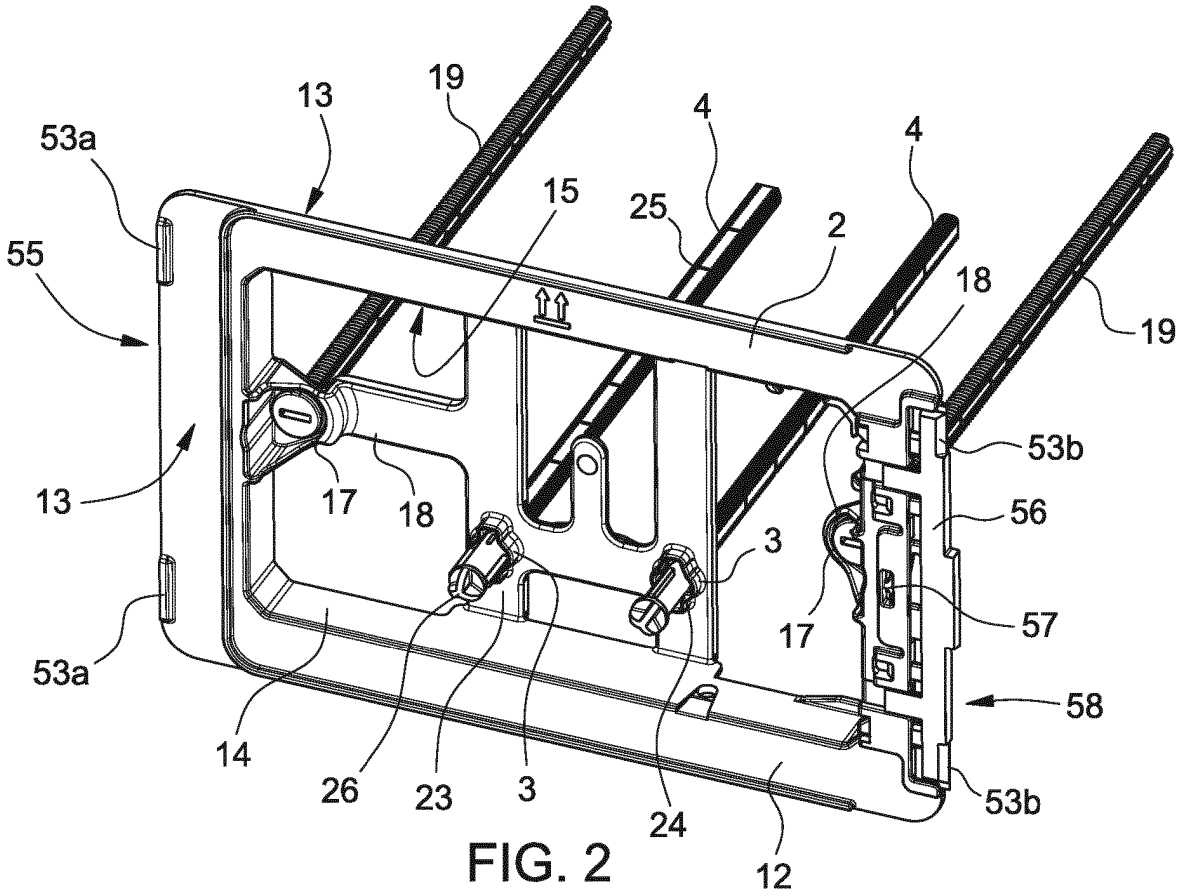

13
19
53a
4
4
15
25
2
55
18
19
53b
13
17
18
3
56
17
57
53a
58
14
26
23
3
24
53b
12

FIG. 2

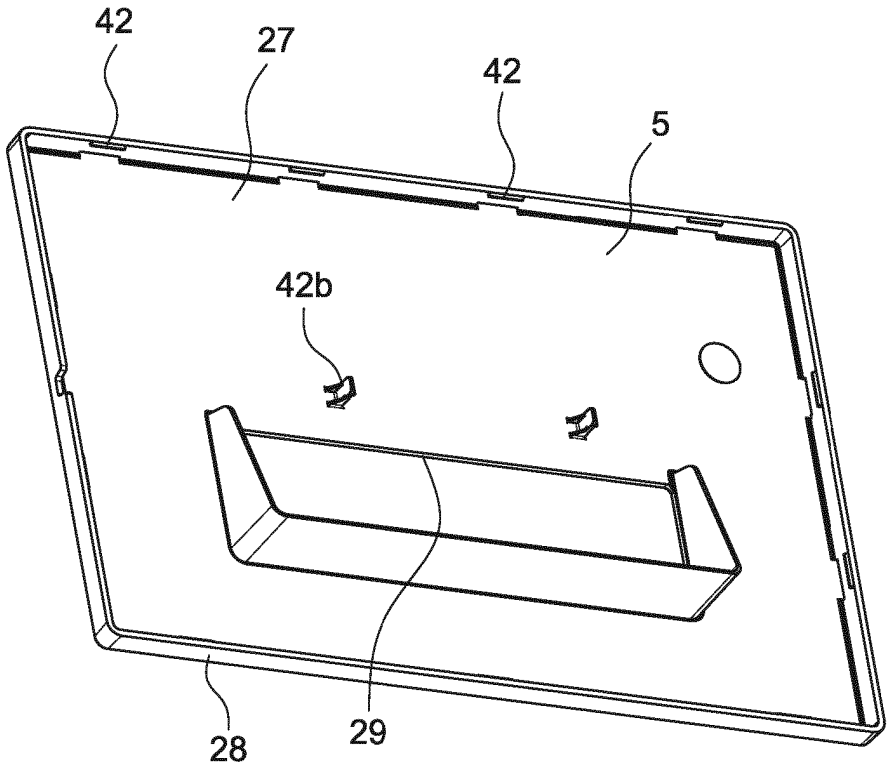

42
27
42
5
42b
28
29

FIG. 3

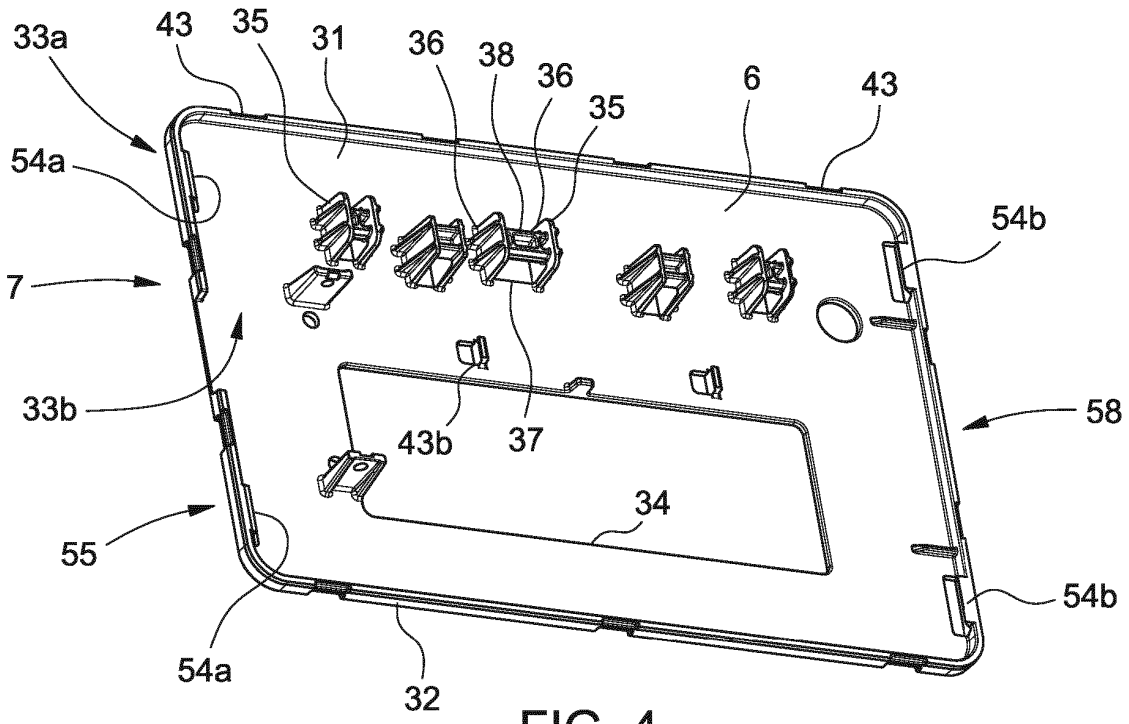

33a
43
35
31
36
38
36
35
6
43
54a
54b
7
33b
58
43b
37
34
55
54b
54a
32

FIG. 4

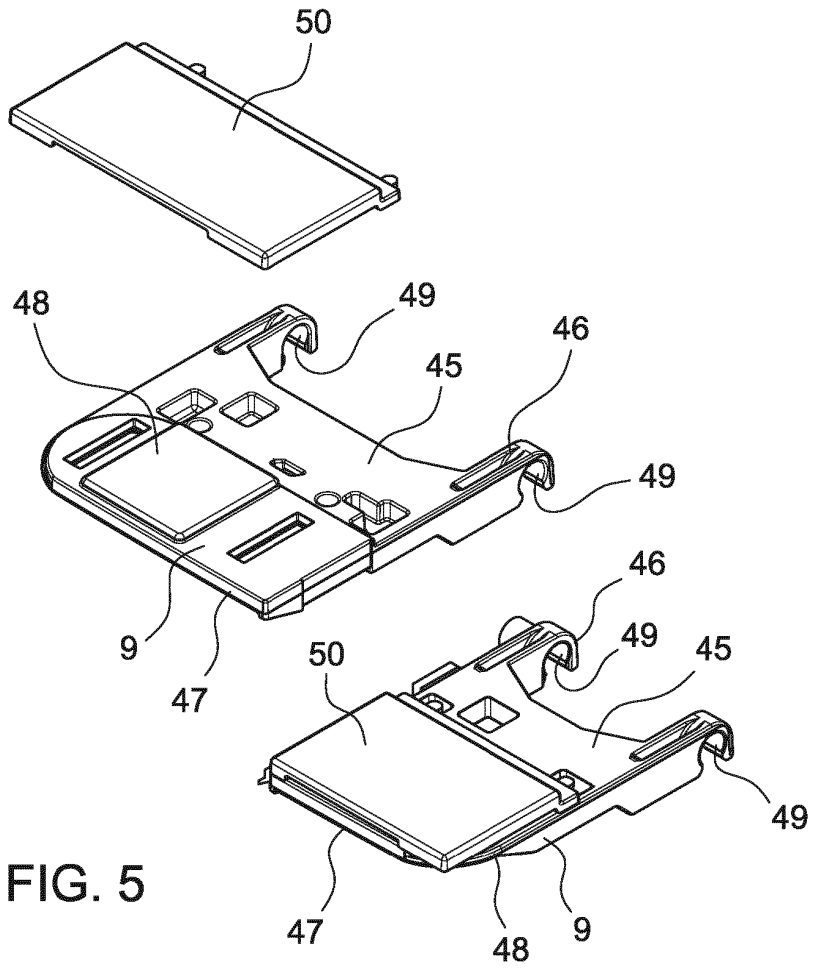

50
48
49
46
45
49
46
9
49
45
47
50
49
47
48
9

FIG. 5

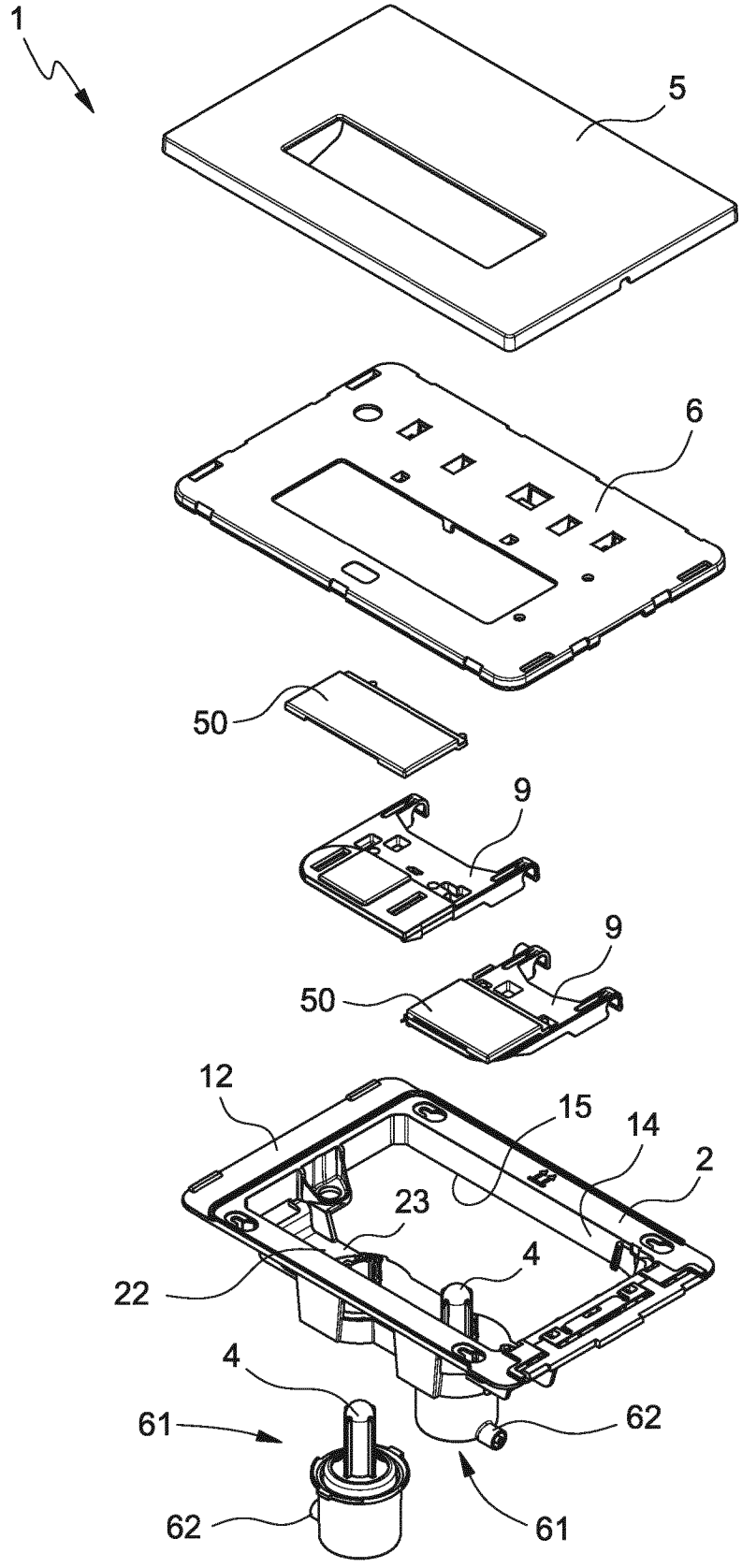


FIG. 6

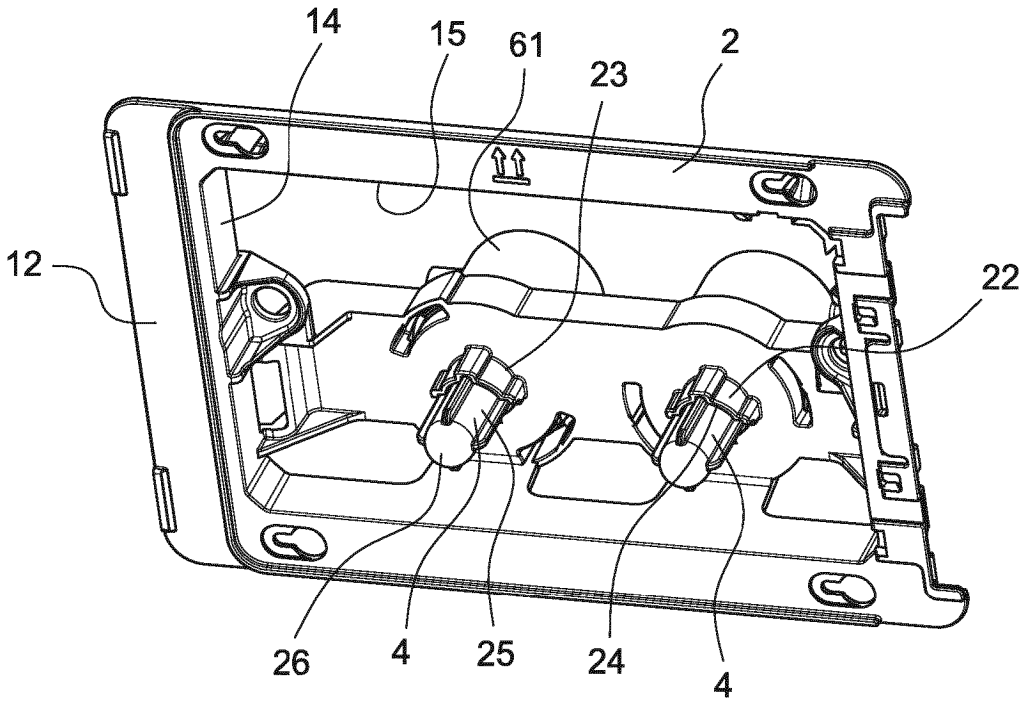


FIG. 7

REFERENCES CITED IN THE DESCRIPTION

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