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(54) Title: DOWNWARDLY CLOSABLE TOILET SYSTEM

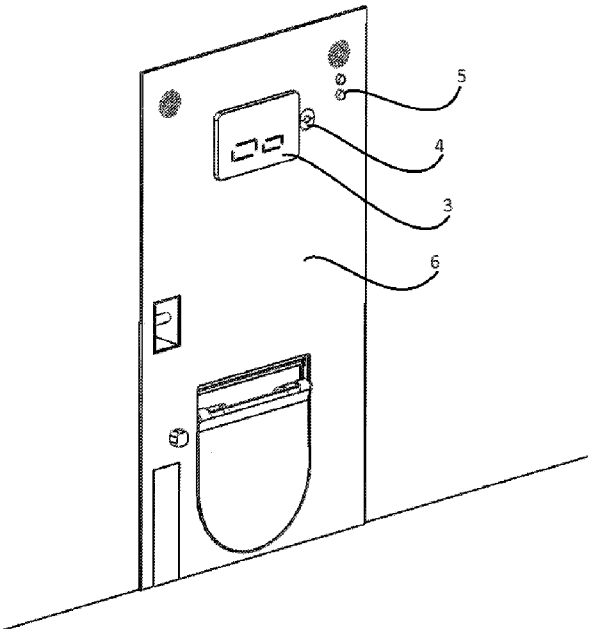

FIGURE 1

(57) Abstract: The invention relates to a toilet system having a different internal trap (u-shaped when viewed from the bottom) from the internal trap (water-containing channel) of normal toilets. The toilet is capable of closing downwards without spilling water thanks to its difference in its internal trap and provides space saving. A mechanical system has been developed which provides this downward movement.

[Continued on next page]

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DOWNWARDLY CLOSABLE TOILET SYSTEM

TECHNICAL FIELD

The invention has the novelty of having an internal trap which is different from the normal toilet traps (the water-containing channel), and about not spilling of water when it is closed downwardly owing to the difference in its internal trap. In this toilet system, the plate and the parts connected to the plate, i.e. the whole system, relate to the toilet system which provides the ability to move the toilet bowl (opening and closing), and which can be closed downwardly which is not present in the existing toilets.

PRIOR ART

Toilets are generally fixed products which are fixed to the floor or wall, which have an internal trap (water containing channel), and their waste water outlet faces directly backward or downward (towards the wall or floor of the building). Toilet bowls used in almost all over the world have similar functional properties.

From a functional point of view, the toilet bowls have similar internal trap forms and the internal trap structure is contained within the toilet bowl itself. The internal trap in the toilet bowl, in other words water containing channel, transfers the impurities in the toilet to the building's sewage system with the water coming from the water tank, some water remains in the internal trap channel in the toilet and this water prevents the bad odors coming from the sewage pipes.

BRIEF DESCRIPTION OF THE INVENTION

The invention relates to a toilet system having a toilet bowl which has an internal trap different from the internal trap (water-containing channel) of normal toilet bowls, a toilet system plate to which this toilet bowl is affixed, a valve at the outlet of the reservoir, and a swivel jointed drain connection. The toilet system subject to our invention is capable of closing downwardly without spilling water thanks to its difference in internal trap and provides space saving. A mechanical system has been developed which provides this downward movement.

LIST OF FIGURES

Equivalents of numbers given in the figures:

1- Downwardly closable toilet bowl
2- Toilet seat cover
3- Concealed cistern panel
4- Toilet on-off button
5- Radio buttons
6- Panel
7- Toilet roll holder
8- Stop valve
9- Toilet brush holder
10-Bellow
11-Swivel pipe-elbow drain connection
12-Toilet outlet elbow
13-Retractable plate support arm
14-Valve opening and closing lever
15-Piston motor
16-Reservoir outlet valve
17-Reservoir
18-Water containing channel Part 1
19-Water containing channel Part 2
20-Toilet waste water outlet

21-Waste water sewage connection

22-Downwardly closable toilet system plate

23-Downwardly closable toilet system frame

24-Water

25-Ball bearing

26-Clean water inlet pipe

27-Toilet bowl-reservoir connection hose

DETAILED DESCRIPTION OF THE INVENTION

The invention relates to a downwardly closable toilet system, which has a different internal trap (u-shaped when viewed from the bottom) compared to the internal traps (water-containing channel) in normal toilets, which makes a difference in the principle of operation with the plate it contains, and which is novel in about not spilling water. This toilet, thanks to its difference, is closed downwardly without spilling water and saves space.

The system shown in Figure 1 is the closed state of the toilet that can be closed downwardly. Such a system may be completely embedded in the wall, some protruding a bit from the wall, or completely out of the wall. Figure 2 shows the open state of the toilet system. The reservoir panel (3) of the toilet can be both manual and photocelled with two different liter option. The toilet panel (6) holds the reservoir panel (3), the toilet on-off switch (4), the radio buttons (5) and the stop valve (8). The toilet roll holder (7) and the brush holder (9) are stored in the system.

The toilet seat cover (2) can be fixed to at least one of the downwardly closable toilet bowl (1) and the downwardly closable toilet system plate (22). Figure 3 shows the dismantled version of the downwardly closable toilet bowl (1). The toilet bowl can be dismantled from the plate when the toilet system is open.

The downwardly closable toilet system plate (22) is connected to the downwardly closable toilet system frame (23) from both sides by ball bearings (25) and from rear with the retractable plate support arm (13), and is the part to which the downwardly closable toilet bowl (1) is fixed to the system. Thus, the downwardly closable toilet system plate (22) enables the downwardly closable toilet (1) to be opened and closed (Figure. 6b). The downwardly closable toilet system plate (22) has holes of different dimensions so that the clean water inlet pipe (26) and the toilet waste water outlet elbow (12) can be attached to the downwardly closable toilet bowl(1). The

downwardly closable toilet system plate (22) moves from horizontal position to vertical position relative to the ground by the opening of the retractable plate support arm (13) (steered by piston motor (15)) which its one side hinged to the downwardly closable toilet system plate (22) and its other side hinged to the downwardly closable toilet system frame (23), and when the piston motor (15) is closed (or when the retractable plate support arm (13) retracted), the downwardly closable toilet system plate (22) moves from vertical position to horizontal position relative to the ground. The downwardly closable toilet system plate (22) is supported by the retractable plate support arm (13) which is brought to the linear position by the piston motor (15) and so the load of the occupant and the downwardly closable toilet bowl (1) are transferred directly to the toilet system frame (23). (Figure 6a). The piston motor (15) can be at least one of a variety of electrically powered, hydraulic powered, pneumatic and manual. The downwardly closable toilet system plate (22) provides support to fix the downwardly closable toilet bowl (1) to the system, to the opening and closing of the reservoir outlet valve (16), and to fix the toilet water outlet elbow (12) and the clean water inlet pipe (26) to the downwardly closable toilet bowl(1). The toilet outlet elbow (12), swivel pipe-elbow drain connection (11) and bellow (10) shown in Figure 4, are components of the connection between the waste water outlet (20) of the toilet and the waste water sewage connection (21) that move when the toilet system is opened and closed. Swivel pipe-elbow drain connection (11) connecting the toilet outlet elbow (12) and the bellow (10), is used to connect the toilet to the sewage pipe between two connections which its one side moving with downwardly closable toilet bowl (1) and downwardly closeble toilet system plate (22), and its other side not-moving / fixed to the waste water sewage connection (21) with elbow (10). Swivel pipe-elbow drain connection (11) has at least one sealing gasket and has at least one of the ball-bearing, non-ball bearing, metal, non-metal, bearing and non-bearing structure and rotates easily. Swivel pipe-elbow drain connection (11) can be unified with a 90 degree elbow on at least one side or can be unified with a straight pipe on at least its one side. When the toilet system is closed, the elbowed bellow (10) connected to the sewage connection (21) flexes as shown in Figure 9.

The reservoir outlet valve (16) fixed to the outlet of the reservoir (17) closes when the downwardly closable toilet bowl (1) is closed (Fig. 6b), interrupting the flow of water to the downwardly closable toilet (1). The valve opening and closing lever (14) hinged to the downwardly closable toilet system plate (22) with an arm ensures the

reservoir outlet valve (16) to be closed by the closing movement of downwardly closable toilet system plate (22), and ensures the reservoir outlet valve (16) to be opened by the opening movement of downwardly closable toilet system plate (22), and thus, prevents the flow of water from the reservoir (17) when the downwardly closable toilet bowl (1) is closed to avoid overflow.

Fig. 7, Fig. 8, Fig. 9 and Fig. 10 show the downwardly closable toilet bowl (1) and the lower part of the toilet bowl. Fig. 8, Fig. 9 and Fig. 10 show the water-containing sections of the downwardly closable toilet bowl (1) forming the internal trap. In this toilet, the waste water outlet (20) of the toilet bowl is not directly backward as in the normal toilet bowls. In normal toilets, there is a single water containing chamber (internal trap, s pipe, water channel) before the toilet waste water outlet; in the downwardly closable toilet bowl (1) described in the present invention, the water containment chamber is u-shaped and consists of 2 parts, which allows water to be contained when the toilet bowl is closed downwardly too. The internal trap of the downwardly closable toilet (1) consists of the u-shaped trap, defined as the water-containing channel Part 1 (18) and the water-containing channel Part 2 (19), respectively, and is unified with the downwardly closable toilet bowl (1). The internal trap consisting of the water- containing channel part 1 (18) and the following water-containing channel 2 (19) is first turned towards the front side and then turned 180 degrees backwards from the right or left side, in other words, the toilet trap is in the u-shaped form when viewed from the bottom. When the toilet system on open position the water (24) shown in the Figure 10 remains completely in the water-containing channel part 1 (18), when the downwardly closable toilet (1) is tilted upside down, ie when the toilet system is closed, the water (24) continues to remain in both the (internal trap) toilet water containing channel part (1) (18) and the (internal trap) toilet water containing channel part (2) (19). In this way, there is water (24) in the downwardly closable toilet bowl (1) when the toilet system is both open (Figure 10) and closed (Figure 9), and in both cases the bad odors that may come from the drain of the building are prevented.

The altitudes of the water containing channels (height from the bottom of the toilet) forming the internal trap in the lower part of the downwardly closable toilet bowl (1) are different from each other. When the toilet system is open and after being flushed, the height of the water containing channel part 2 (19) (which provides water containing) from the bottom of the downwardly closable toilet bowl (1) is more than the

height of water containing channel part 1 (18) from the bottom of the downwardly closable toilet bowl(1). Figure 10 shows this height difference. Due to this height difference, water (24) continues to be present in the water containing channel 1 (18) in the downwardly closable toilet (1) while the toilet system is open (Figure 2, Figure 4, Figure 7, Figure 10). The level of water (24) shown in Figure 7 is determined according to this height difference and the water level remains the same after flushing as in normal toilet bowls. When the toilet system is closed, the water which is shared in the water containing channel Part 1 (18) and in the water containing channel Part 2 (19) is completely filled again in the water containing channel Part 1 (18) after opening of the toilet system. The downwardly closable toilet (1) consumes the same amount of water as a normal toilet, and when flushed, the downwardly closable toilet (1) and the toilet internal trap are cleaned well.

The downwardly closable toilet (1), together with the internal trap in the lower part, is produced as it can be released from a single casting mold without making an opposite angle. This demoulding method enables the downwardly closable toilet bowl (1) to be produced faster with low labor and energy costs. The toilet water containing compartment is produced in one piece together with water containing channel Part 1 (18) and water containing channel part 2 (19). The toilet bowl may be produced from ceramic or other material.

CLAIMS

1- A downwardly closable toilet system, comprising:

- A downwardly closable toilet bowl (1) where a toilet seat cover (2) can be fixed,
- A downwardly closable toilet system plate (22), which a downwardly closable toilet bowl (1) and a toilet seat cover (2) can be fixed; which is connected to a downwardly closable toilet system frame (23) from both sides (right-left) by ball bearings (25) and from rear with a retractable plate support arm (13); which moves from horizontal position to vertical position relative to the ground by the opening of a piston motor (15) which driving a retractable plate support arm (13), which its one side hinged to said downwardly closable toilet system frame (23) and other side hinged to said retractable plate support arm (13), and which moves from vertical position to horizontal position relative to the ground by the closing of said piston motor (15); which ensures a reservoir outlet valve (16) to be closed and opened with a valve opening and closing lever (14) which its one side hinged to a reservoir outlet valve (16) and other side hinged to said downwardly closable toilet system plate (22); which provides support to fix the downwardly closable toilet bowl (1) to a toilet water outlet elbow (12) which is connected to a swivel pipe-elbow drain connection (11) and to a clean water inlet pipe (26); which has holes of different dimensions to be able to attach said downwardly closable toilet bowl (1) to a clean water inlet pipe (26) and to said toilet waste water outlet elbow (12); when said downwardly closable toilet bowl (1) is opened (in use state), which transfers the load of the occupant and said downwardly closable toilet bowl (1) directly to said toilet system frame (23) by said retractable plate support arm (13) which is brought to the linear position by said piston motor (15);
- A swivel pipe-elbow drain connection (11) which at least one side of it can be unified with 90 degree elbow or at least one side of it can be unified with a straight pipe,
- A reservoir outlet valve (16) fixed to the outlet of a reservoir (17),
- A downwardly closable toilet bowl (1) comprising (as in one piece) a water containing channel Part 1 (18) and following to it a water containing channel Part 2 (19) which provides said downwardly closable toilet bowl (1) to present

water when the toilet system is open and which its height from the bottom of said downwardly closable toilet bowl (1) is more than the height of said water containing channel part 1 (18) from the bottom of said downwardly closable toilet bowl(1), and is reverse to a normal toilet internal trap, so that it is first heading towards the front side and then turning 180 degrees to backwards from the right or left side so that the sewage outlet of toilet faces to rear, in other words, the toilet trap is in the u-shaped form when viewed from the bottom.

2- The piston motor (15) of claim 1 characterized in that can be at least one of the options of electrical, hydraulic, pneumatic and manual.

3- The swivel pipe-elbow drain connection (11) of claim 1 characterized in that can rotate 90 degree and is used to connect the toilet to the sewage pipe between two connections which its one side is moving with downwardly closable toilet bowl (1) and with downwardly-closable toilet system plate (22), and its other side is not-moving / fixed to a waste water sewage connection (21) with a bellow (10).

4- The swivel pipe-elbow drain connection (11) of claim 1 characterized in that has at least one sealing gasket and has at least one of the ball-bearing, non-ball bearing, metal, non-metal, bearing and non-bearing structures.

5- The reservoir outlet valve (16) of claim 1 characterized in that to prevent the over flow of water from said reservoir (17) when said downwardly closable toilet bowl (1) is closed, comprising a valve opening and closing lever (14) hinged to said downwardly closable toilet system plate (22), which is closed when said downwardly closable toilet (1) is closed, and which is opened when said downwardly closable toilet bowl (1) is open to ensure the water flow.

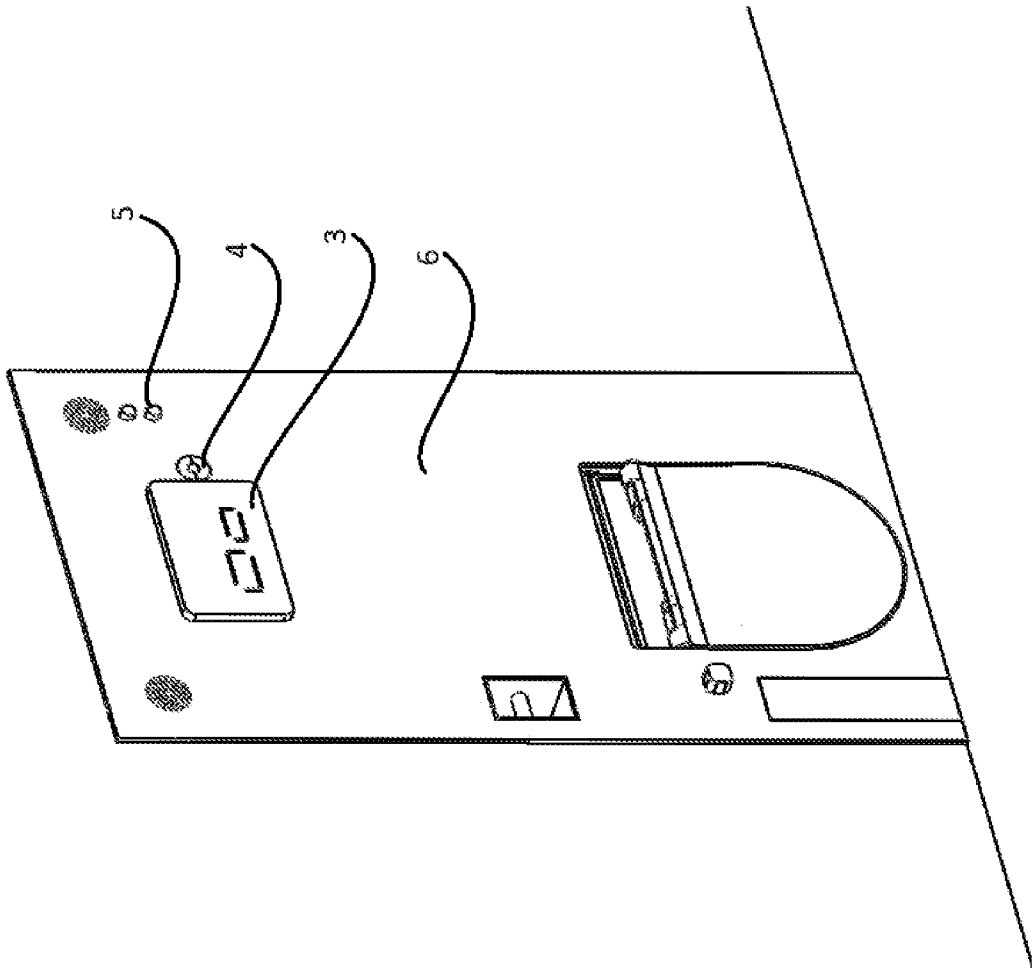

FIGURE 1

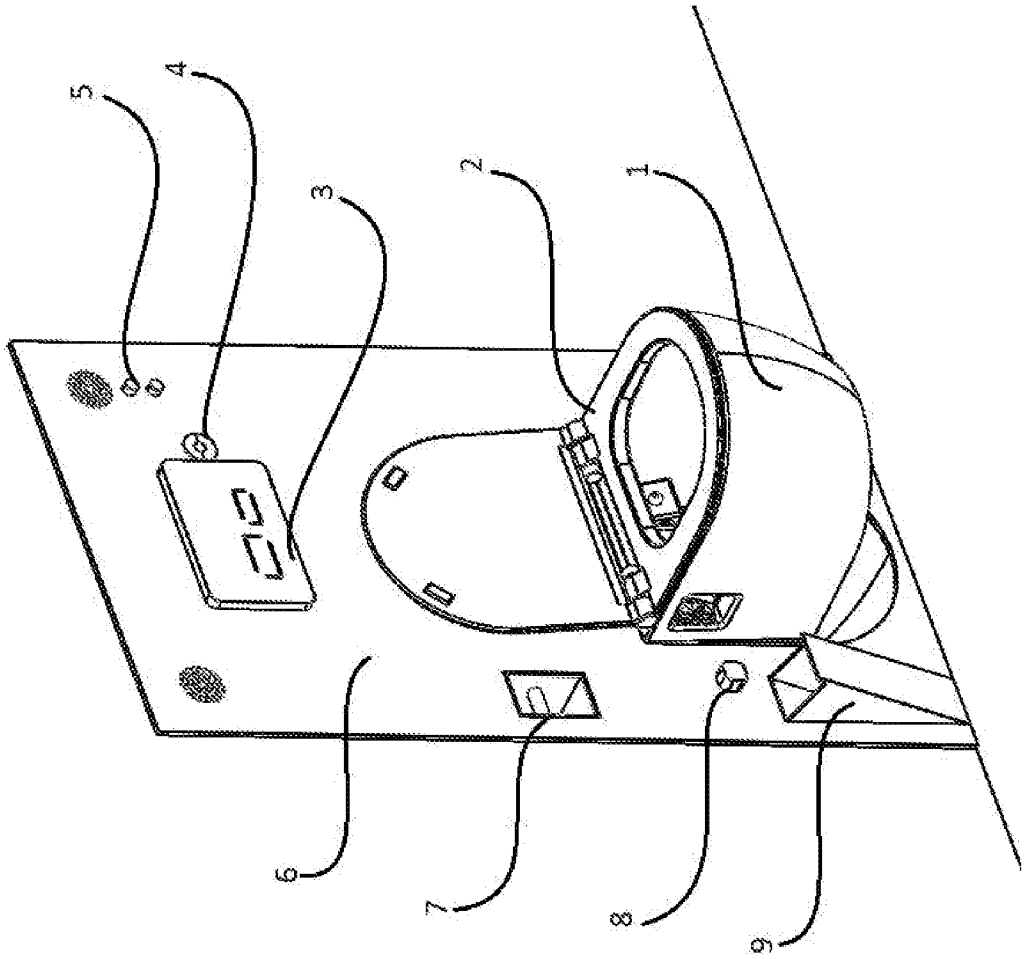

FIGURE 2

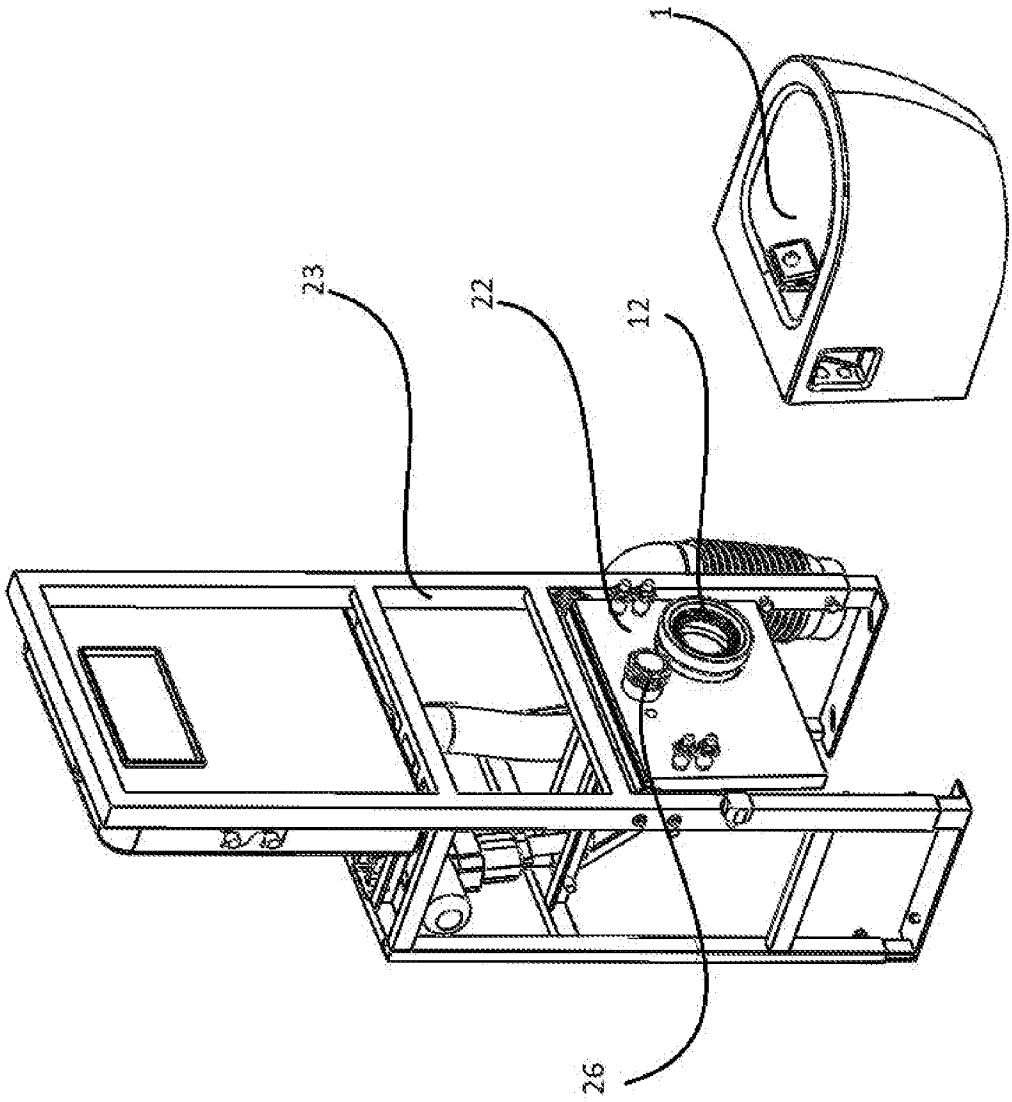

FIGURE 3

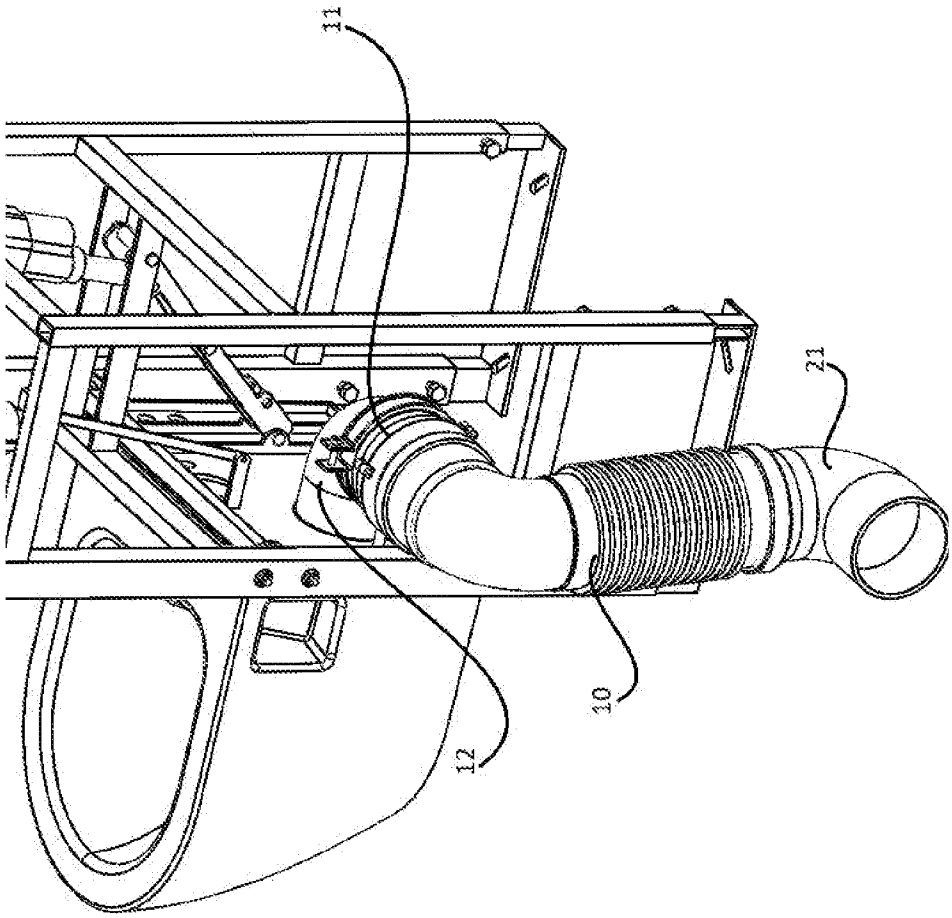

FIGURE 4

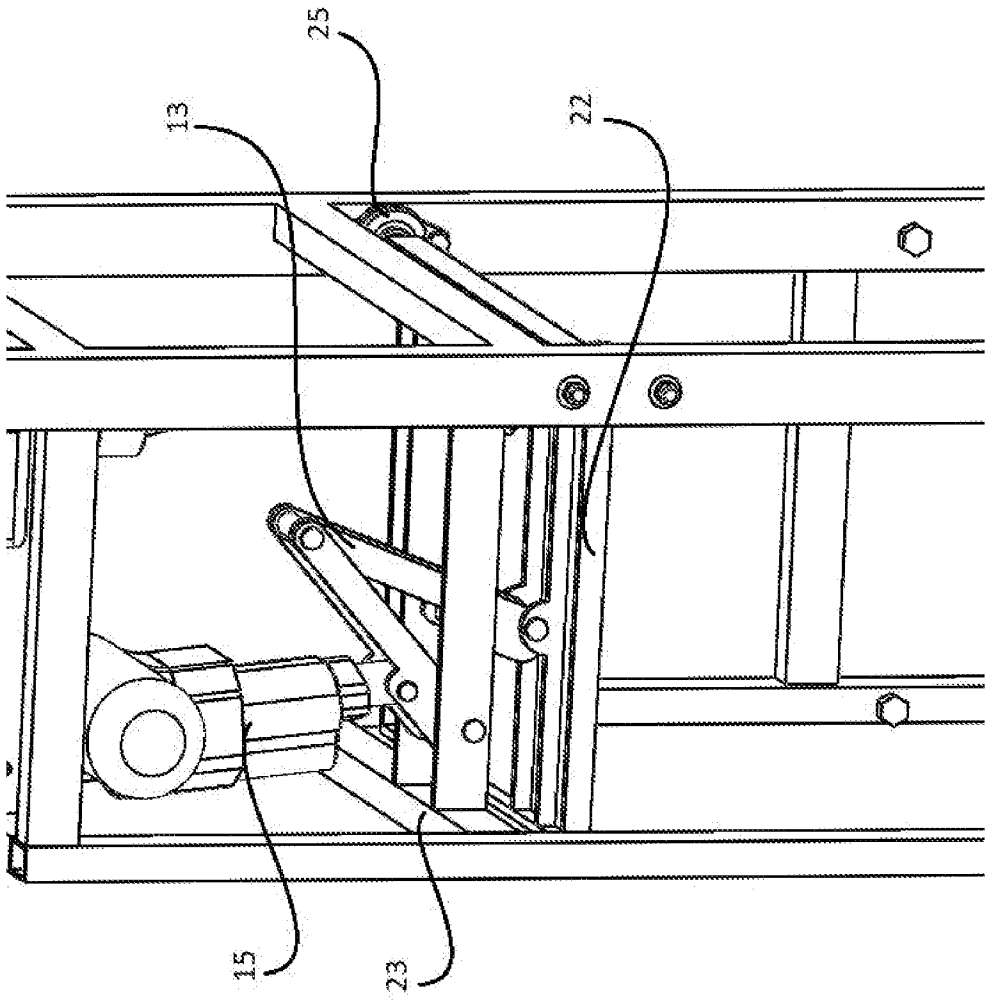

FIGURE 5

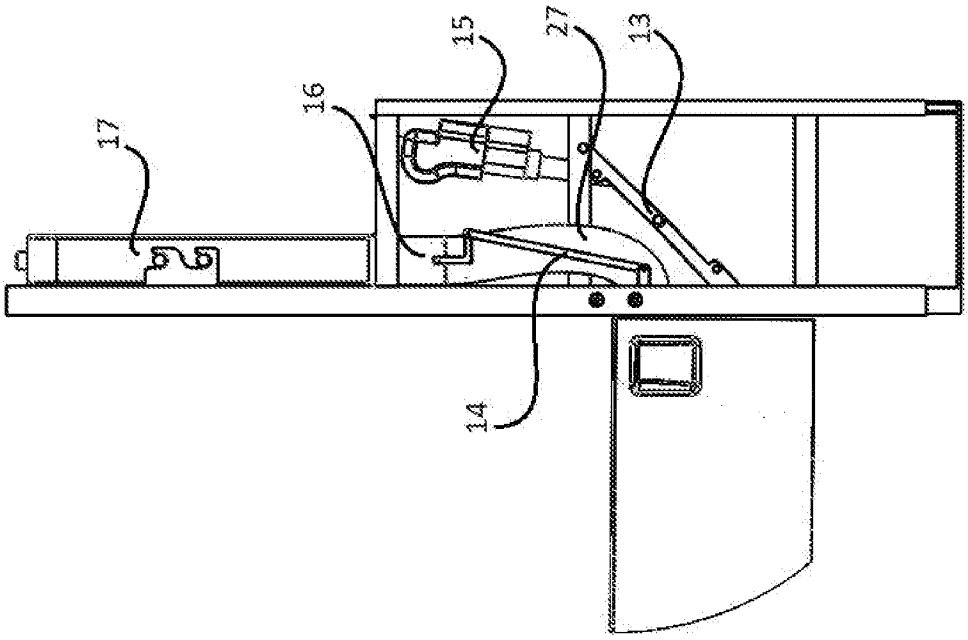

FIGURE 6a

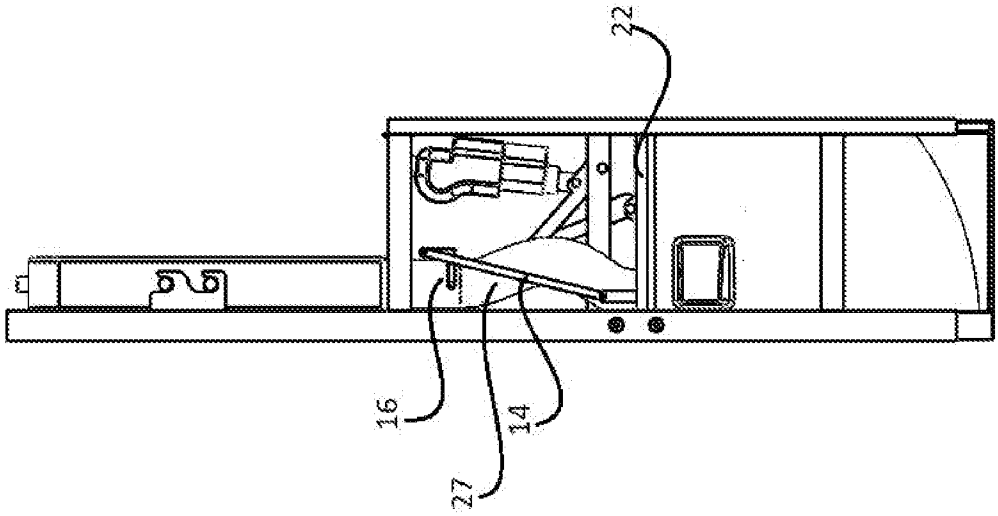

FIGURE 6b

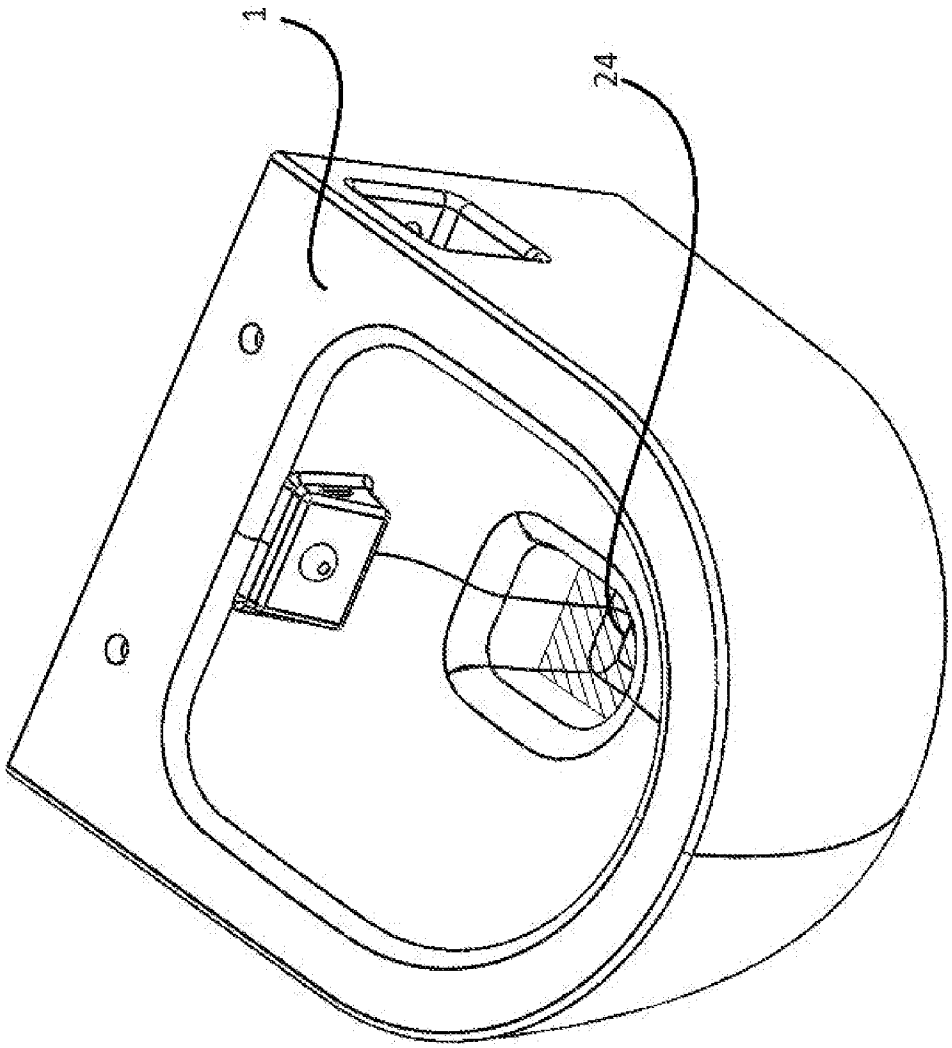

FIGURE 7

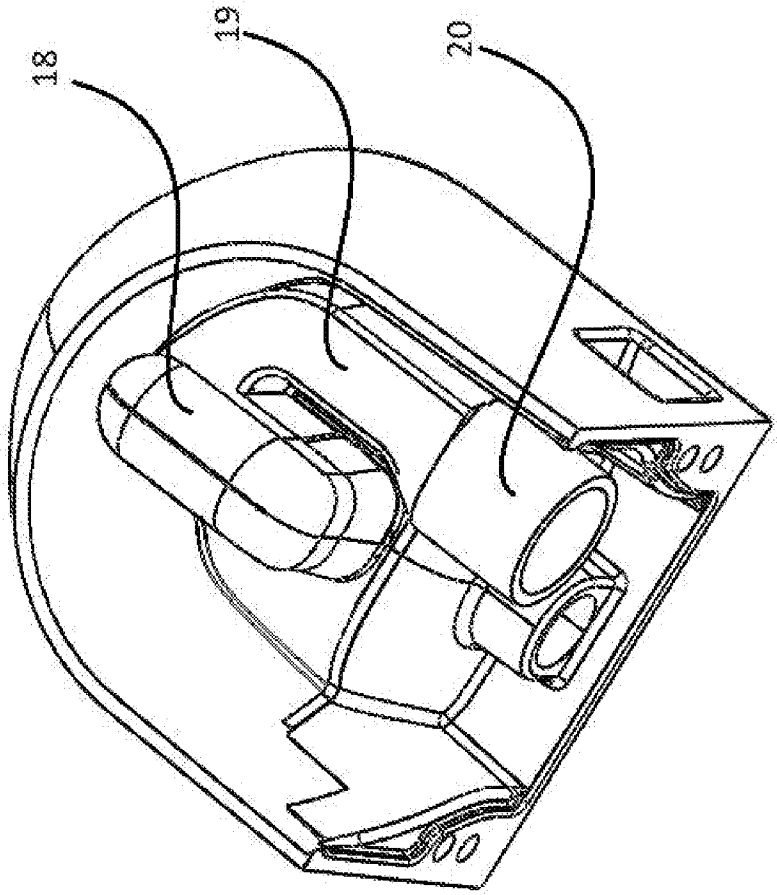

FIGURE 8

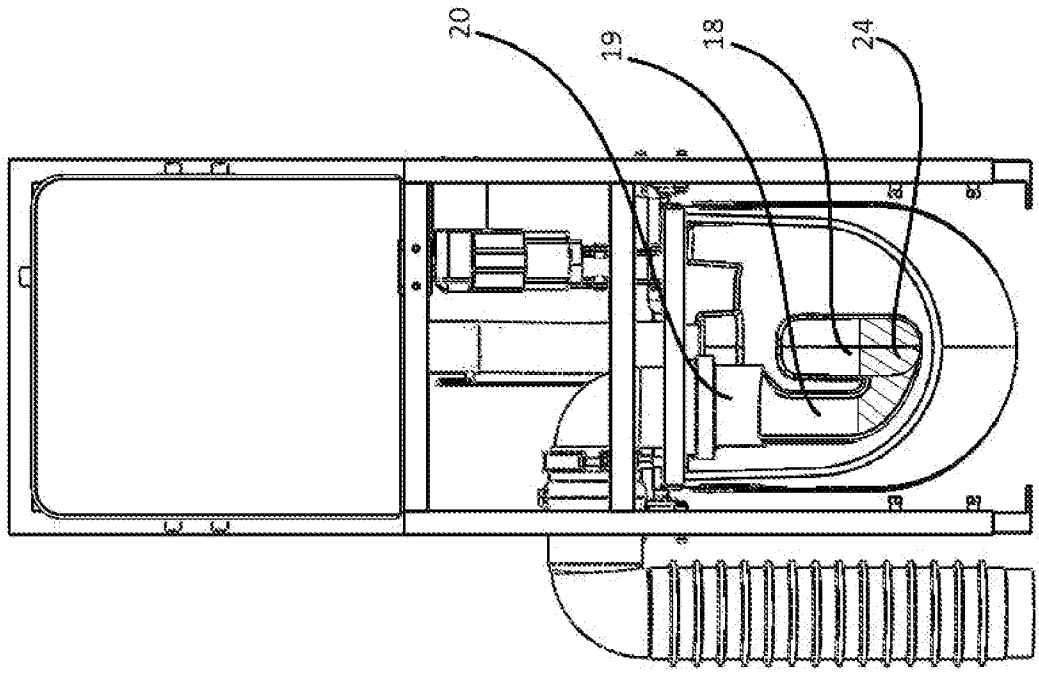

FIGURE 9

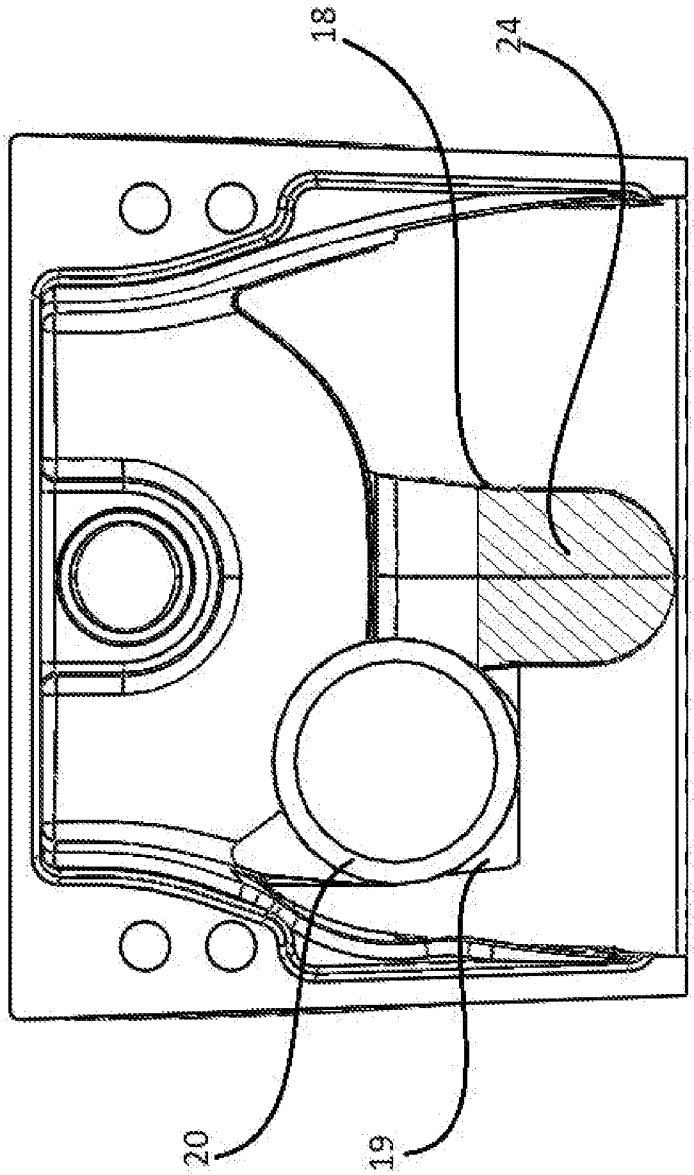

FIGURE 10

INTERNATIONAL SEARCH REPORT

International application No.
PCT/TR2019/051191

A. CLASSIFICATION OF SUBJECT MATTER

E03D 11/12 (2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

E03D 11/12

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, EPODOC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2011048544 A1 (NON SOLO YACHTING S A S DI SALZANO ALESSANDRO E GRIMALDI ORFEO PAOLO [IT]) 28 April 2011 (2011-04-28) The Whole Document	1-5
A	US 2794988 A (ANGELO COLONNA) 11 June 1957 (1957-06-11) The Whole Document	1-5
A	US 4944047 A (AT AVANZATA TECNOLOGIA SRL [IT]) 31 July 1990 (1990-07-31) The Whole Document	1-5

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☑ See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
22 July 2020	**22 July 2020**

Name and mailing address of the ISA/TR	Authorized officer
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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/TR2019/051191

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
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		AU 7855187 A	24 February 1988
		IT 209259Z Z2	20 September 1988
		EP 0315644 A1	17 May 1989