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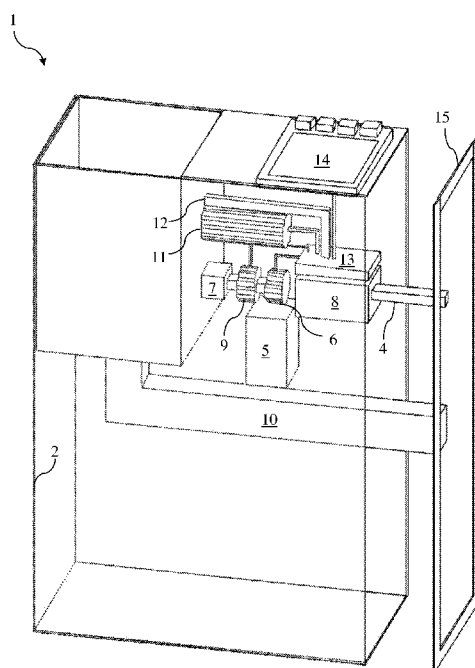


FIGURE 1

(57) Abstract: A cleaning unit (1) for removing harmful organisms, remnants and/or waste water drops before accumulating thereon, which remain on cleaning tools (T) after usage and are likely to reproduce and said unit basically includes; a container (2) having a space with a width such that a cleaning tool (T) can be placed therein and having at least one opening for the clean water inlet and waste water outlet; at least a clean water inlet pipe (4) transferring clean water to container (2); at least a valve (8) which allows or blocks water flow through the clean water inlet pipe (4); at least a motorized water pump (9) pressurizing the water flowing through clean water inlet pipe (4); at least a waste water outlet pipe (10) for discharging waste water out of container (2); at least a sensor (12) which senses whether a cleaning tool (T) is inserted into the container (2); and at least a control unit (13) adapted to activate a motorized water pump (9) depending on a signal received from the sensor (12).



A WASHING AND CLEANING UNIT FOR BRUSH AND MAT

Technical Field of the Invention

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The present invention is related to a cleaning unit which is usable for removing harmful organisms, remnants and waste water drops located on cleaning tools. This invention is specifically related to a cleaning unit enabling hygiene-oriented cleaning for the subsequent use of cleaning tools such as a water closet/toilet
10 cleaning brush, a body cleaning brush, a shower cleaning brush, a tooth brush, a bathroom sink cleaning brush, a kitchen sink cleaning brush, a floor cleaning brush, a floor washing brush, mat, etc. which are used in different ways and areas such as private and general bathrooms, toilets, wet surfaces, food production facilities, medicine production facilities, areas regarding to health services and
15 products and etc. which need to be ensured with sufficient sanitation and hygiene.

Background of the Invention

A cleaning tool such as typically a brush, a mat, etc. is used in cleaning various
20 surfaces such as water closets, sinks, floors, etc. These cleaning tools are repeatedly used in some areas such as hospitals, shopping malls, working centers, etc. without being cleaned enough. For example in the event that a closet brush is disposed into a container, human stools accumulate on and are stuck to the brush and dirty water drops left to seep, spread bad odors and this results in possible
25 bacteria production. In the event that toilet brushes are not provided with sufficient hygiene, bad odors will arise and dangerous conditions will occur due to harmful organisms, remnants and waste water.

Brush cleaning process in prior art is generally performed manually by the user.
30 This does not guarantee complete cleaning or this results in the same effort and

time wasted after every use. A toilet cleaning mechanisms in the prior art are insufficient to provide cleaning for all surfaces of the toilet brush.

Patent numbered 2010/04832 discloses a cleaning arrangement for a toilet brush
5 providing water in a mixture with a disinfecting agent which is conducted by means of a valve embedded on a wall or a floor and essentially mounted on the passage area of clean water to be injected via an injector. In said invention, water introduced by valve and injected by injector into system could not be sufficient in cleaning all surfaces of brush.

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Problems to be solved by the Invention

One aim of the invention is to provide a cleaning unit capable of removing harmful organisms, remnants and/or waste water drops on cleaning tools after use.

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Another aim of the invention is to provide a cleaning unit capable of saving time and effort in cleaning the cleaning tools

A further aim of the invention is to provide a cleaning unit capable of sensing the
20 presence of a cleaning tool and starting a cleaning process automatically.

Another aim of the invention is to provide a cleaning unit capable of cleaning a cleaning tool both with the use of water cleaning and air injection.

25 Another aim of the invention is to provide a cleaning unit capable of starting a cleaning process defined by the settings which are implemented on a control panel.

Detailed Description of the Invention

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Accompanying drawings related to a brush cleaning unit to be provided to achieve the aims according to the present invention are as follows.

Figure 1. is a perspective view of a cleaning unit according to the present invention,

Figure 2. is a perspective view of a cleaning unit used in an embodiment of the invention,

Figure 3. is an exploded view of the cleaning unit of Figure 2.

Figure 4. is another perspective view of the inner section of the cleaning unit shown in Figures 2 and 3.

Figure 5. is a perspective view of cleaning unit used in another embodiment of the invention.

Figure 6. is a perspective view of cleaning unit used in a further embodiment of the invention.

Figure 7. is a perspective view of cleaning unit used in another embodiment of the invention.

Components in the drawings are numbered and their corresponding numbers are listed below.

20

1. Cleaning unit

2. Container

3. Cover

4. Clean water inlet pipe

25 5. Disinfection tank

6. Dosage pump

7. Injector

8. Valve

9. Motor water pump

30 10. Waste water outlet pipe

11. Air injection unit

12. Sensor

13. Control unit

14. Panel

15. Bracket

5 T. Cleaning tool

A cleaning system (1) for removing before their accumulation, harmful organisms, remnants and/or waste water drops that remain on cleaning tools (T) after usage and are likely to reproduce, comprises;

- 10 - a container (2) having a space with a width such that a cleaning tool (T) can be placed into and having at least one opening for clean water inlet and waste water outlet,
- at least a cover (3) which closes said space on container (2),
- at least a clean water inlet pipe (4) transferring clean water to the container
- 15 (2),
- at least a disinfection tank (5) which contains therein a disinfectant material,
- at least a dosage pump (6) which transfers a certain amount of the disinfectant material located in the disinfection tank (5) into the clean water inlet pipe (4),
- at least an injector (7) located at the end of the clean water inlet pipe (4) that
- 20 connects to the container (2) which enables to deliver the pressurized water flowing from the clean water inlet pipe (4) into the container (2),
- at least a valve (8) which allows or blocks water flow through clean water inlet pipe (4),
- at least a motor water pump (9) which is coupled to the clean water inlet pipe
- 25 (4) and pressurizes the water flowing through the clean water inlet pipe (4),
- at least a waste water outlet pipe (10) for discharging waste water out of the container (2),
- at least an air injection unit (11) which injects air over the cleaning tool (T) disposed in the container (2),
- 30 - at least a sensor (12) which senses whether a cleaning tool (T) has been inserted into the container (2),

- at least a control unit (13) adapted to activate at least one of the groups consisting of a valve (8), a dosage pump (6), a motor water pump (9) and an air injection unit (11) depending on the signal received from the sensor (12),
- at least a panel (14) which is arranged on the container (2) and adapted to actuate the control unit (13).

A cleaning unit (1) according to the present invention, as shown in Figure 1, provides hygiene-oriented cleaning of the water closet/toilet brush, body cleaning brush, shower bath cleaning brush, tooth brush, bathroom sink cleaning brush, kitchen sink cleaning brush, floor cleaning brush, floor washing brush and other similar tools (T) for subsequent use by removing harmful organisms, remnants and waste water drops on said cleaning tools (T) which are used in different ways and different application areas such as private and general bathrooms, toilets, wet surfaces, food production facilities, medicine production facilities, health services sanitary products, etc.

As shown in Figure 2, in an embodiment of the present invention, the cleaning unit (1) is comprised of; a container (2), a clean water inlet pipe (4), an injector (7), a valve (8), a waste water outlet pipe (10), a sensor (12) and a control unit (13). Details of said components are provided below.

Cleaning unit (1) has a container (2) which protects system components from the outer environment and avoids undesirable odors resulting from the waste water from spreading. Said container (2) can be formed in different shapes like rectangular prism, cylindrical, spherical, ellipse, etc.

The inner surface of container (2) is preferably coated with a material such as foam and the like, used in typical isolation systems such that undesirable noise and the changes like temperature increases caused by water flow in the container (2) can be sealed off.

Components of the brush cleaning unit (1) such as; the container (2), cover (3), clean water inlet pipe (4), waste water outlet pipe (10), etc. may be made of stainless metal materials (e.g.; stainless chromium), aluminum, plastic materials or other different materials suitable according to their usage areas.

5

The container (2) can be formed as a movable (portable) configuration while it can be mounted on a wall, body of a water closet or any surface by means of a bracket (15) or can be embedded into corresponding cavities drilled into these surfaces. In an embodiment of the cleaning unit (1), said unit can be mounted on
10 the wall and has a cavity or a hole which is assigned to receive the bracket (15) at the proximate surface of container (2) in relation to wall.

The container (2) thereon, preferably on its upper surface or sidewall, has a cavity which is at a suitable width to receive a cleaning tool (T) partially or completely.
15 Said cavity covers partially or completely the upper surface or sidewall of the container (2). In an embodiment of the present invention, the container (2), preferably on its upper portion has a space at a suitable width into which an on/off button of a valve (8) allowing or blocking water flow through the clean water inlet pipe (4) can be inserted. In addition to this, the container preferably has a separate
20 inner chamber in which a cleaning tool can be cleaned.

The container (2) has thereon or on its sidewalls at least a cover (3) which covers partially or completely the sidewalls and closes said cavity and it comprises a handle on said cover (3). The water flow is blocked while the cleaning tool (T)
25 being cleaned in the container (2), by means of said cover (3). Said cover (3) can be opened and closed on the container (2) or its sidewalls in a sliding manner or can be opened or closed around the axis of a hinge coupled to container (2) in a rotating manner or can be a portable cover (3) fitting in a cavity into which the cleaning tool (T) can be inserted. In another embodiment of the invention said
30 cover (3) can be adjacent to the cleaning tool (T) (i.e., on handle of cleaning tool (T)).

The container (2) has at least a hole for water flow inlet and waste water outlet thereon. The clean water inlet pipe (4) and waste water outlet pipe (10) can enter through said hole (or one of these holes).

5

The clean water inlet pipe (4) is connected between the water installation of the building and the container (2) receives the clean water from the water installation of building. Alternatively, the clean water inlet pipe (4) is coupled between the flush tank and the container (2) and thereby clean water can be received from said tank.

10

The clean water inlet pipe (4) has an injector (7) or a water jet at its end connected to the container (2) and water flowing through the clean water inlet pipe (4) is injected into the container (2) in a pressurized manner by means of said injector (7). In an embodiment of the invention, water being introduced from the water installation or flush tank can be pressurized by means of a motorized water pump (9) coupled to the clean water inlet pipe (4). In a further embodiment of the invention, water in a chamber which will be filled through valve (8) is pressurized by a motorized water pump (9) and is transferred to the clean water inlet pipe (4).

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A button, a valve (8) or an electronic valve (8) coupled to the clean water inlet pipe (4) is adapted to allow or block the clean water flow into the container (2). In addition to this, said valve (8) performing on/off processes may be itself selected as a timed control valve (8) and thereby when said timed control valve (8) is activated, a spring in this valve (8) is closed automatically when it is tensioned due to a certain amount of pressure and said spring takes its final form and therefore it allows a certain amount of water to pass in this period of time in which said valve remains open. In an alternative embodiment, a valve (8) which is mounted on a wall or any surface is used and thereby the clean water inlet cannot be controlled through the container (2) but the wall or any different surface.

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In an embodiment of the invention, the container (2) has a disinfection tank (5) which is located inside or outside of the container. Said disinfection tank (5) contains a liquid or solid disinfectant material to provide a more sterilized cleaning for the cleaning tool (T). Additionally, a dosage pump (6) is provided
5 which is coupled to both the clean water inlet pipe (4) and the disinfection tank (5). In a further embodiment of the invention, when a pump (8) (and optionally aforementioned motor water pump (9)) is opened and a dosage pump (6) is actuated, (e.g. when said dosage pump is actuated manually via a button on a dosage pump (6), a key on a panel (14) and a control unit (13) depending on a
10 data received from a sensor (12)), the dosage pump (6) injects a certain amount of disinfectant material contained in a disinfection tank (5) in a clean water inlet pipe (4) and said disinfectant material interacts with the water in clean water inlet pipe (4) and is transferred into container (2) through the injector (7) at the end of clean water inlet pipe (4). Thereby the cleaning tool (T) that is disposed in the container
15 (2) is cleaned by means of the disinfectant water.

The water that has become dirty after this cleaning process in the container (2) exits through a waste water outlet pipe (10) preferably coupled to the bottom of the container (2). The waste water outlet pipe (10) is coupled to waste water
20 installation of building and the container (2) and water that becomes dirty after the cleaning process in the container (2), is directly introduced to waste water installation. Alternatively, the waste water outlet pipe (10) can be coupled between the container (2) and drain pipe under a drain by moving upward said drain which is located on the floors in bathrooms and toilets.

25

The waste water outlet pipe (10) preferably is an L-shaped pipe. Additionally, in order to prevent foul odors, an "S"-shaped waste water outlet pipe (10) and a clean water inlet pipe (4) may be used and may be positioned under the container (2) in a horizontal and vertical axis whereby it can block odors.

30

The container (2) has an air injection unit (11) therein. Said air injection unit (11); has a compressor including a fan and a motor or a resistor in addition to the fan and motor and operates in a similar principle with a hair dryer. Said air injection unit (11) injects air over a cleaning tool (T) being cleaned by clean water and provides the cleaning tool (T) to be purified from the liquid remaining on said tool. In an embodiment of the invention, said air injection unit (11) has a resistor and when said resistor is actuated, it gets heated and enables the air injection unit (11) to inject hot air and thereby dries/evaporates water drops being spilled out of cleaning tool (T).

10

The container (2) includes a sensor (12) which is disposed in or outside of said container. Said sensor (12) is connected to a control unit (13) and senses whether the cleaning tool (T) is disposed in the container (2) or if the cover (3) is closed. Said sensor (12); can be a proximity sensor (12) (Proximity Sensor) which can sense the presence or proximity of a cleaning tool (T) within a particular distance (within an area in maximum distance and minimum proximity). If the cleaning tool (T) is made of metal, capacitive or photoelectric sensors (12) can be used to ensure the inductive proximity sensor to sense a cleaning tool (T) which is made of plastic or a similar material. In a further embodiment of the invention, a sensor (12) such as a sonar sensor (12), a radar sensor (12), an ultrasonic sensor (12), a laser distance sensor (12), a vibration sensor (12), a motion sensor (12), a temperature sensor (12), etc. which can be placed in a suitable area of the container (2) and is known in the prior art can be used.

After it is sensed that the cleaning tool (T) is inserted into the container (2) by the sensor (12), said sensor sends a signal to a control unit (13) for example, a control unit (13) such as a microprocessor, a micro controller, PIC, ASIC, FPGA, Arduino, etc. The control unit (13) activates at least one of a motor water pump (9), a valve (8) and/or an air injection unit (11) depending on a signal received and enable the cleaning tool (T) inside the container (2) to be cleaned.

In an embodiment of the invention the container (2) includes a battery. Said battery can be a rechargeable battery in addition to a typical battery and supplies electric power which is demanded by all electronic components included in the cleaning unit (1) (a control panel (13), a panel (14), a motor water pump (9), an air injection unit (11), a resistance, etc.). In a further embodiment of the invention, the container (2) is connected to the electric installation of a building by means of an electric cable and thereby it supplies the demanded electric power for all electronic components included in the cleaning unit (1). In another embodiment of the invention, the container (2) is connected to a socket by means of an adaptor and thereby it supplies the demanded electric power (and charging power for batteries).

In another embodiment of the invention, the container (2) has a display and a control panel (14) thereon or on the cover (3). Said panel (14) can be a touchscreen and also can be comprised of a button and analogue/digital screen or buttons and led lights. Said panel (14) which operates depending on the control unit (13) can serve to actuate/stop the resistor, air injection unit (11), valve (8), motor water pipe (9) and to display the remaining power of battery.

The control unit (13) can be programmed by selecting a cleaning mode; for example, an only water cleaning and cleaning with air injection unit (11) in addition to water on the panel screen (14). Thereby the control unit (13) can automatically actuate the related equipment (motor water pump (9), air injection unit (11)..) according to the settings selected on the panel (14) depending on the data received from sensor (12) and it can start a cleaning process. In a further embodiment of the invention the automatic operation of the control unit (13) can be cancelled depending on data received from the sensor (12) and said unit can be programmed to start/stop a cleaning process by means of a button on the panel (14). In this embodiment the cleaning unit (1) can actuate the system after a cleaning tool (T) is disposed in the container (2) and a desired cleaning mode (only water or with water and air...) is selected using the panel (14).

In a basic method for operating the invention, the following steps are performed;

- sensing the position of the cover (3) of the container (2) (open/closed position) or cleaning tool (T) by the sensor (12),
- 5 - sending a signal to the control unit (13) by the sensor (12),
- mixing the disinfectant contained in a disinfection tank (5) with a predetermined amount of clean water by operating a dosage pump (6) by means of the control unit (13),
- pressurizing the water flowing through the clean water inlet pipe (4) and
- 10 feeding water flow into the container (2) once the control unit (13) sends a signal to an electronic valve (8) and motor water pump (9),
- actuating an air injection unit (11) and a resistance in the air injection unit (11) of a control unit (13) and injecting hot air over a cleaning tool (T),

15 In an alternative embodiment of the invention, a cleaning system for removing harmful organisms, remnants and/or waste water drops before their accumulation, which remain on the cleaning tools (T) after the usage of these tools and are likely to reproduce on the tools, comprises;

- 20 - a container (2) having a space with a width such that a cleaning tool (T) can be placed therein, and having at least one opening for the clean water inlet and waste water outlet,
- at least a cover (3) closing said space on the container (2),
- at least a clean water inlet pipe (4) transferring clean water to the container
- 25 (2),
- at least an injector (7) located at the end of the clean water inlet pipe (4) that connects to the container (2) and that injects pressurized water that is flowing through the clean water inlet pipe (4) into the container (2),
- at least a valve (8) which allows or blocks water flow through the clean water
- 30 inlet pipe (4),
- at least a disinfection tank (5) which contains a disinfectant material,

- at least a dosage pump (6) which transfers a certain amount of the disinfectant material in the disinfection tank (5) into the clean water inlet pipe (4),
- at least a waste water outlet pipe (10) for discharging waste water out of the container (2).

5

In an alternative embodiment of the invention shown in Figure 5, the cleaning unit (1) according to the present invention provides hygiene-oriented cleaning of the water closet/toilet brush, body cleaning brush, shower bath cleaning brush, tooth brush, bathroom sink cleaning brush, kitchen sink cleaning brush, floor cleaning
10 brush, floor washing brush and other similar tools (T) for subsequent use by removing harmful organisms, remnants and waste water drops on said cleaning tools (T) which are used in different ways and different application areas such as private and general bathrooms, toilets, wet surfaces, food production facilities, medicine production facilities, health services sanitary products, etc.

15

The cleaning unit (1) has a container (2) which protects system components from the outer environment and avoids undesirable odors from waste water from spreading. Said container (2) can be formed in different shapes like rectangular prism, cylindrical, sphere, ellipse, etc.

20

The inner surface of container (2) is preferably coated with a material such as foam and the like used in typical isolation systems such that undesirable noise and the changes like temperature increases caused by water flow in container (2) can be sealed off.

25

Components of a cleaning unit (1) such as; container (2), cover (3), clean water inlet pipe (4), waste water outlet pipe (10), etc. may be made of stainless metal materials (e.g.; stainless chromium), aluminum, plastic materials or other different materials suitable according to their usage areas.

30

The container (2) can be formed in a movable (portable) configuration while it can be mounted on a wall, body of a water closet or any surface by means of a bracket (15) or can be embedded into corresponding cavities drilled on these surfaces. In an embodiment of the cleaning unit (1), said unit can be mounted on the wall and
5 has a cavity or a hole which is assigned to receive the bracket (15) at the proximate surface of container (2) in relation to wall.

The container (2) preferably on its upper surface or sidewall, has a cavity thereon which is at a suitable width to receive a cleaning tool (T) partially or completely.
10 Said cavity covers partially or completely the upper surface or sidewall of the container (2). Additionally, the container (2), preferably on its upper portion has a space at a suitable width into which an on/off button of a valve (8) allowing or blocking water flow through the clean water inlet pipe (4) can be inserted.

15 The container (2) has thereon or on its sidewalls at least a cover (3) which covers partially or completely the sidewalls and closes said cavity and a handle on said cover (3). Water flow is blocked while the cleaning tool (T) is being cleaned in container (2) by means of said cover (3). Said cover (3) can be opened and closed on the container (2) or its sidewalls in a sliding manner or can be opened or closed
20 around the axis of a hinge coupled to container (2) in a rotating manner or can be a portable cover (3) fitting in a cavity into which cleaning tool (T) can be inserted.

The container (2) thereon has at least a hole for water flow inlet and waste water outlet. The clean water inlet pipe (4) and waste water outlet pipe (10) can enter
25 through said hole (or one of these holes).

The clean water inlet pipe (4) is connected between the water installation of a building and the container (2) receives the clean water from the water installation of a building. Alternatively, the clean water inlet pipe (4) is coupled between the
30 flush tank and the container (2) and thereby clean water can be received from said tank. The clean water inlet pipe (4) has an injector (7) or a water jet at its end that

connects to the container (2) and water flowing through the clean water inlet pipe (4) is injected into the container (2) in a pressurized manner by means of said injector (7).

- 5 A button, a valve (8) or an electronic valve (8) coupled to the clean water inlet pipe (4) is adapted to allow or block clean water flow into the container (2). In addition to this, said valve (8) performing on/off processes may be itself selected as a control valve (8) with a timer and thereby when said timer control valve (8) is activated, a spring in this valve (8) is closed automatically at a certain period of
- 10 time by being tensioned due to a certain amount of pressure and the spring takes its final shape and allows a certain amount of water to pass in this period of time in which said valve remains open. In an alternative embodiment, a valve (8) which is mounted on a wall or any surface is used and thereby the clean water inlet cannot be controlled through the container (2) but the wall or any different
- 15 surface.

- Water that has become dirty after the cleaning process in the container (2) exits through a waste water outlet pipe (10) preferably coupled to the bottom of the container (2). The waste water outlet pipe (10) is coupled to the waste water
- 20 installation of the building and the container (2) and water that becomes dirty after the cleaning process in the container (2) is directly introduced to the waste water installation. Alternatively, the waste water outlet pipe (10) can be coupled between the container (2) and the drain pipe under a drain by moving upward said drain which is located on the floors in bathrooms and toilets.

25

The waste water outlet pipe (10) preferably is an L-shaped pipe. Additionally, in order to prevent odors from spreading an "S"-shaped waste water outlet pipe (10) and clean water inlet pipe (4) may be used and may be positioned under the container (2) in a horizontal and vertical axis whereby it blocks smells.

30

In an embodiment of the invention the container (2) has a disinfection tank (5) which is located inside or outside of the container. Said disinfection tank (5) contains a liquid or solid disinfectant material to provide a more sterilized cleaning for the cleaning tool (T). Additionally, a dosage pump (6) is provided
5 which is coupled to both the clean water inlet pipe (4) and the disinfection tank (5). In this embodiment of the invention, when a pump (8) (and optionally aforementioned motor water pump (9)) is opened and a dosage pump (6) is actuated, (e.g. when said dosage pump is actuated manually via a button on the dosage pump (6), a key on a panel (14) and a control unit (13) depending on a
10 data received from a sensor (12)), the dosage pump injects a certain amount of disinfectant material contained in the disinfection tank (5) into a clean water inlet pipe (4) and said disinfectant material interacts with the water in clean water inlet pipe (4) and is transferred into the container (2) through the injector (7) at the end of the clean water inlet pipe (4). Thereby the cleaning tool (T) disposed in the
15 container (2) is cleaned by the disinfectant water.

In an embodiment of the invention container (2) includes a battery. Said battery can be a rechargeable battery in addition to a typical battery and supplies electric power which is demanded by all electronic components included in the cleaning
20 unit (1) (a dosage pump (6), a motor water pump (9), etc.). In a further embodiment of the invention, the container (2) is connected to the electric installation by means of an electric cable and thereby supplies the demanded electric power for all electronic components included in the cleaning unit (1). In another embodiment of the invention, the container (2) is connected to a socket by
25 means of an adaptor and thereby supplies the demanded electric power (and charging power for batteries).

In this alternative embodiment of the invention, said cleaning unit may also include other components (a motor water pump (9), an air injection unit (11), a
30 sensor (12), a control panel (13), a panel (14)...) which are described in aforementioned embodiments.

In an alternative embodiment of the invention, a cleaning system (1) for removing harmful organisms, remnants and/or waste water drops which remain on cleaning tools (T) after usage and are likely to reproduce before accumulating thereon,

5 comprises;

- a container (2) having a space with a width such that a cleaning tool (T) can be placed into it and having at least one opening for clean water inlet and waste water outlet,
- at least a cover (3) which closes said space on the container (2),
- 10 - at least a clean water inlet pipe (4) transferring clean water to the container (2),
- at least an injector (7) located at the end of the clean water inlet pipe (4) that connects to the container (2) and injects pressurized water flowing through the clean water inlet pipe (4) into the container (2),
- 15 - at least a valve (8) which allows or blocks water flow through the clean water inlet pipe (4),
- at least a waste water outlet pipe (10) used for discharging the waste water out of the container (2).
- at least an air injection unit (11) which injects air over the cleaning tool (T)
- 20 disposed in the container (2),

In this alternative embodiment of the invention shown in Figure 6, the cleaning unit (1) according to the present invention provides hygiene-oriented cleaning of water closet/toilet brush, body cleaning brush, shower cleaning brush, tooth brush,

25 bathroom sink cleaning brush, kitchen sink cleaning brush, floor cleaning brush, floor washing brush and other similar tools (T) for subsequent use by removing harmful organisms, remnants and waste water drops on said cleaning tools (T) which are used in different ways and different application areas such as private and general bathrooms, toilets, wet surfaces, food production facilities, medicine

30 production facilities, health services sanitary products, etc.

The cleaning unit (1) has a container (2) which protects system components from the outer environment and avoids undesirable odors from waste water from spreading. Said container (2) can be formed in different shapes like rectangular prism, cylindrical, sphere, ellipse, etc.

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The inner surface of the container (2) is preferably coated with a material such as foam and the like used in typical isolation systems such that undesirable noise and the changes like temperature increases caused by water flow in container (2) can be sealed off.

10

Components of the cleaning unit (1) such as; container (2), cover (3), clean water inlet pipe (4), waste water outlet pipe (10), etc. may be made of stainless metal materials (e.g.; stainless chromium), aluminum, plastic materials or other different materials suitable according to their usage areas.

15

The container (2) can be formed in a movable (portable) configuration while it can be mounted on a wall, body of a water closet or any surface by means of a bracket (15) or can be embedded into corresponding cavities drilled into these surfaces. In an embodiment of the cleaning unit (1), said unit can be mounted on the wall and
20 has a cavity or a hole which is assigned to receive the bracket (15) at the proximate surface of container (2) in relation to wall.

The container (2), preferably on its upper surface or sidewall, has a cavity which is at a suitable width to receive a cleaning tool (T) partially or completely. Said
25 cavity covers partially or completely the upper surface or sidewall of the container (2). Additionally, the container (2), preferably on its upper portion has a space at a suitable width into which an on/off button of a valve (8) allowing or blocking water flow through the clean water inlet pipe (4) can be inserted.

30 The container (2) has thereon or on its sidewalls at least a cover (3) which covers partially or completely the sidewalls and closes said cavity and has a handle on

said cover (3). Water flow is blocked while the cleaning tool (T) is being cleaned in container (2) by means of said cover (3). Said cover (3) can be opened and closed on container (2) or its sidewalls in a sliding manner or can be opened or closed around the axis of a hinge coupled to container (2) in a rotating manner or
5 can be a portable cover (3) fitting in a cavity into which the cleaning tool (T) can be inserted.

The container (2) has at least a hole for water flow inlet and waste water outlet thereon. The clean water inlet pipe (4) and waste water outlet pipe (10) can enter
10 through said hole (or one of these holes).

The clean water inlet pipe (4) is connected between the water installation of the building and the container (2) and it receives the clean water from water installation of building. Alternatively, the clean water inlet pipe (4) is coupled
15 between the flush tank and the container (2) and thereby clean water can be received from said tank. The clean water inlet pipe (4) has an injector (7) or a water jet at its end that connects to the container (2) and water flowing through the clean water inlet pipe (4) is injected into the container (2) in a pressurized manner by means of said injector (7).

20

A button, a valve (8) or an electronic valve (8) coupled to the clean water inlet pipe (4) is adapted to allow or block the clean water flow into the container (2). In addition to this, said valve (8) performing on/off processes may be itself selected as a timer control valve (8) and thereby when said timer control valve (8) is
25 activated, a spring in this valve (8) is closed automatically in a period of time by being tensioned due to a certain amount of pressure and it takes its final shape and allows a certain amount of water to pass in this period of time in which said valve remains open. In another alternative embodiment, a valve (8) which is mounted on a wall or any surface is used and thereby the clean water inlet cannot be controlled
30 via the container (2) but the wall or any different surface.

- Water that becomes dirty after this cleaning process in the container (2) exits through a waste water outlet pipe (10) preferably coupled to the bottom of the container (2). The waste water outlet pipe (10) is coupled to the waste water installation of the building and the container (2) and the water that becomes dirty
- 5 after the cleaning process in the container (2) is directly introduced to the waste water installation. Alternatively, the waste water outlet pipe (10) can be coupled between the container (2) and the drain pipe under a drain by moving upward, said drain which is located on the floors in bathrooms and toilets.
- 10 The waste water outlet pipe (10) preferably is an L-shaped pipe. Additionally, in order to prevent spreading of odors an "S"-shaped waste water outlet pipe (10) and clean water inlet pipe (4) may be used and may be positioned under the container (2) in a horizontal and vertical axis whereby it blocks odors.
- 15 The container (2) has an air injection unit (11). Said air injection unit (11); has a compressor including a fan and a motor or a resistor in addition to the fan and the motor and it operates in a similar principle of a hair dryer. Said air injection unit (11) injects air over a cleaning tool (T) being cleaned by the clean water and provides the cleaning tool (T) to be purified from the liquid remaining on said
- 20 tool. In an embodiment of the invention, said air injection unit (11) has a resistor and when said resistor is actuated, it gets heated and enables the air injection unit (11) to inject hot air and thereby provides drying/evaporating of water drops being spilled out of cleaning tool (T).
- 25 In an embodiment of the invention the container (2) includes a battery. Said battery can be a rechargeable battery in addition to a typical battery and supplies electric power which is demanded by all electronic components included in cleaning unit (1) (a motor water pump (9), an air injection unit (11), a resistance, etc.). In another embodiment of the invention, the container (2) is connected to the
- 30 electrical installation by means of an electrical cable and thereby supplies the demanded electric power by all electronic components included in the cleaning

unit (1). In a further embodiment of the invention, the container (2) is connected to a socket by means of an adaptor and thereby supplies the demanded electric power (and charging power for batteries).

- 5 In this alternative embodiment of the invention, said cleaning unit may also include other components (a disinfection tank (5), a dosage pump (6), a motor water pump (9), a sensor (12), a control panel (13), a panel (14)...) which are described in the aforementioned embodiments.
- 10 In an alternative embodiment of the invention, a cleaning system (1) for removing harmful organisms, remnants and/or waste water drops which remain on the cleaning tools (T) after usage and are likely to reproduce, before accumulating thereon, comprises:
- a container (2) having a space with a width such that a cleaning tool (T) can be placed therein and having at least one opening for clean water inlet and waste water outlet,
 - at least a cover (3) which closes said space on the container (2),
 - at least a clean water inlet pipe (4) transferring clean water to the container (2),
 - 20 - at least an injector (7) located at the end of the clean water inlet pipe (4) connecting to the container (2) and injecting pressurized water flowing through the clean water inlet pipe (4) into the container (2),
 - at least a valve (8) which allows or blocks water flow through the clean water inlet pipe (4),
 - 25 - at least a motor water pump (9) which is coupled to the clean water inlet pipe (4) which pressurizes the water flowing through the clean water inlet pipe (4),
 - at least a waste water outlet pipe (10) for discharging waste water out of the container (2).
- 30 In this alternative embodiment of the invention shown in Figure 7, the cleaning unit (1) according to the present invention provides hygiene-oriented cleaning of

water closet/toilet brush, body cleaning brush, shower cleaning brush, tooth brush, bathroom sink cleaning brush, kitchen sink cleaning brush, floor cleaning brush, floor washing brush and other similar tools (T) for a next use by removing harmful organisms, remnants and waste water drops on said cleaning tools (T) which are used in different ways and different application areas such as private and general bathrooms, toilets, wet surfaces, food production facilities, medicine production facilities, health services sanitary products, etc.

The cleaning unit (1) has a container (2) which protects system components from the outer environment and avoids undesirable odors from waste water from spreading. Said container (2) can be formed in different shapes like rectangular prism, cylindrical, sphere, ellipse, etc.

The inner surface of the container (2) is preferably coated with a material such as foam and the like and is used in typical isolation systems such that undesirable noise and the changes like temperature increases caused by water flow in container (2) can be sealed off.

Components of the cleaning unit (1) such as; container (2), cover (3), clean water inlet pipe (4), waste water outlet pipe (10), etc. may be made of stainless metal materials (E.g.; stainless chromium), aluminum, plastic materials or other different materials suitable according to their usage areas.

The container (2) can be formed in a movable (portable) configuration while it can be mounted on a wall, body of a water closet or any surface by means of a bracket (15) or can be embedded into corresponding cavities drilled into these surfaces. In an embodiment of cleaning unit (1), said unit can be mounted on the wall and has a cavity or a hole which is assigned to receive a bracket (15) at the proximate surface of the container (2) in relation to wall.

30

The container (2) preferably on its upper surface thereon or sidewall, has a cavity which is at a suitable width to receive a cleaning tool (T) partially or completely. Said cavity covers partially or completely the upper surface or sidewall of the container (2). Additionally, the container (2), preferably on its upper portion has a
5 space at a suitable width into which an on/off button of a valve (8) allowing or blocking water flow through the clean water inlet pipe (4) can be inserted.

The container (2) has thereon or on its sidewalls at least a cover (3) which covers partially or completely the sidewalls and closes said cavity and also has a handle
10 on said cover (3). The water flow is blocked while the cleaning tool (T) is being cleaned in the container (2) by means of said cover (3). Said cover (3) can be opened and closed on the container (2) or its sidewalls in a sliding manner or can be opened or closed around the axis of a hinge coupled to the container (2) in a rotating manner or can be a portable cover (3) fitting in a cavity into which
15 cleaning tool (T) can be inserted.

The container (2) thereon has at least a hole for water flow inlet and waste water outlet. The clean water inlet pipe (4) and waste water outlet pipe (10) can enter through said hole (or one of these holes).

20

The clean water inlet pipe (4) is connected between the water installation of the building and the container (2) and it receives the clean water from the water installation of the building. Alternatively, the clean water inlet pipe (4) is coupled between the flush tank and the container (2) and thereby clean water can be
25 received from said tank. The clean water inlet pipe (4) has an injector (7) or a water jet at its end connecting to the container (2) and water flowing through the clean water inlet pipe (4) is injected into container (2) in a pressurized manner by means of said injector (7).

30 A button, a valve (8) or an electronic valve (8) coupled to the clean water inlet pipe (4) is adapted to allow or block clean water flow into container (2). In

addition to this, said valve (8) performing on/off processes may be itself be selected as a timer control valve (8) and thereby when said timer control valve (8) is activated, a spring in this valve (8) is closed automatically at a certain amount of time by being tensioned due to a certain amount of pressure and the spring
5 takes its final shape and allows a certain amount of water passage in this period of time in which said valve remains open. In another alternative embodiment, a valve (8) which is mounted on a wall or any surface is used and thereby the clean water inlet cannot be controlled via the container (2) but can be controlled via the wall or any different surface.

10

Water that has become dirty after this cleaning process in the container (2) exits through a waste water outlet pipe (10) preferably coupled to the bottom of the container (2). The waste water outlet pipe (10) is coupled to the waste water installation of the building and the container (2) and the water that has become
15 dirty after the cleaning process in the container (2) is directly introduced to the waste water installation. Alternatively, the waste water outlet pipe (10) can be coupled between the container (2) and the drain pipe under a drain by moving upward, said drain which is located on the floors in bathrooms and toilets.

20 The waste water outlet pipe (10) preferably is an L-shaped pipe. Additionally, in order to prevent the spreading of odors an "S"-shaped waste water outlet pipe (10) and clean water inlet pipe (4) may be used and may be positioned under the container (2) in a horizontal and vertical axis whereby it blocks odors.

25 In an embodiment of the invention the container (2) includes a battery. Said battery can be a rechargeable battery in addition to a typical battery and it supplies electric power which is demanded by all electronic components included in the cleaning unit (1) (a motor water pump (9), etc.). In another embodiment of the invention, the container (2) is connected to the electrical installation by means of
30 an electrical cable and thereby supplies the demanded electric power by all electronic components included in cleaning unit (1). In a further embodiment of

the invention, the container (2) is connected to a socket by means of an adaptor and thereby supplies the demanded electric power (and charging power for batteries).

- 5 In this alternative embodiment of the invention, said cleaning unit may also include other components (a disinfection tank (5), a dosage pump (6), an air injection unit (11), a sensor (12), a control panel (13), a panel (14)...) which are described in the aforementioned embodiments.

CLAIMS

1. A cleaning system (1) for removing harmful organisms, remnants and/or waste water drops before accumulating thereon, which remain on cleaning tools (T) after usage and are likely to reproduce, **characterized in that it basically comprises;**
- 5
- a container (2) having a space with a width such that a cleaning tool (T) can be placed therein and having at least one opening for clean water inlet and waste water outlet,
 - 10 - at least a clean water inlet pipe (4) transferring clean water to the container (2),
 - at least a valve (8) which allows or blocks water flow through the clean water inlet pipe (4),
 - at least a waste water outlet pipe (10) for discharging waste water out of the container (2),
 - 15 - at least a sensor (12) which senses whether the cleaning tool (T) has been inserted into the container (2),
 - at least a control unit (13) adapted to activate a valve (8) depending on a signal received from the sensor (12).
 - 20
2. A cleaning unit (1) according to claim 1, **characterized by** at least an injector (7) located at the end of the clean water inlet pipe (4) that connects to the container (2) which enables to deliver the pressurized water flowing from the clean water inlet pipe (4) into the container (2),
- 25
3. A cleaning unit (1) according to claim 1, **characterized by** at least a water pump (9) which is coupled to a clean water inlet pipe (4) and pressurizes the water flowing through the clean water inlet pipe (4).
- 30

4. A cleaning unit (1) according to claim 1, **characterized by** at least a disinfection tank (5) containing a disinfectant material.
5. A cleaning unit (1) according to claim 4, **characterized by** at least a dosage pump (6) which transfers a certain amount of the disinfectant material contained in a disinfection tank (5) into the clean water inlet pipe (4).
6. A cleaning unit (1) according to claim 1, **characterized by** a space which partially or completely covers the upper surface or sidewall of the container (2).
7. A cleaning unit (1) according to claim 6, **characterized in that** at least a cover (3) closes said space on the container (2).
8. A cleaning unit (1) according to claim 1, **characterized in that** at least an air injection unit (11) injects air over a cleaning tool (T) disposed in the container (2).
9. A cleaning unit (1) according to claim 8, **characterized in that** at least a resistor is provided in the air injection unit (11) and it heats the air that has been injected.
10. A cleaning unit (1) according to claim 1, 5 or 8 **characterized in that** a control unit (13) is adapted to activate at least one of the groups consisting of a valve (8), a dosage pump (6), a motorized water pump (9) and an air injection unit (11) depending on the signal received from the sensor (12).
11. A cleaning unit (1) according to claim 10, **characterized in that** at least a panel (14) is arranged on the container (2) which enables programming

and/or operating of a control unit (13) in order for it to be started and stopped.

- 5 **12.** A cleaning unit (1) according to claim 1, **characterized in that** the cleaning tool (T) is one selected out of the group including water closet/toilet cleaning brushes, a body cleaning brush, a shower/bath tub cleaning brush, a tooth brush, a bathroom sink cleaning brush, a kitchen sink cleaning brush, a floor cleaning brush, a floor washing brush or mat.
- 10 **13.** A cleaning unit (1) according to claim 1, **characterized in that** a bracket (15) enables the container (2) to be mounted on the body of the water closet or a surface/wall.
- 15 **14.** A cleaning unit (1) according to claim 1, **characterized in that** the sensor (12) can be one selected out of the group including an inductive proximity sensor (12), a capacitive proximity sensor (12), a photoelectric proximity sensor (12), a sonar sensor (12), a radar sensor (12), an ultrasonic sensor (12), a laser distance sensor (12), a vibration sensor (12), a motion sensor (12) and a temperature sensor (12).
- 20 **15.** A cleaning unit (1) according to claim 1, **characterized in that** the control unit (13) is one selected out of the group including a microprocessor, a micro controller, PIC, ASIC, FPGA and Arduino.
- 25 **16.** A cleaning unit (1) according to claim 11, **characterized in that** a panel (14) is one selected out of the group consisting of a touchscreen or a button and an analogue/digital screen or buttons and led lights.
- 30 **17.** A method for operating a cleaning system (1) for removing harmful organisms, remnants and/or waste water drops which remain on cleaning tools (T) after usage and are likely to reproduce before their accumulation,

wherein said system includes a sensor (12), a control unit (13), a dosage pump (6), a motor water pump (9) and an air injection unit (11) and said method is **characterized in that** it comprises the following steps;

- 5 - sensing the position of the cover (3) of the container (2) or cleaning tool (T) by a sensor (12),
- sending a signal to the control unit (13) by the sensor (12),
- pressurizing the water flowing through the clean water inlet pipe (4) and feeding the water flow into the container (2) once the control unit (13) sends a signal to an electronic valve (8) and the motorized water pump
- 10 (9),
- actuating an air injection unit (11) and a resistance in the air injection unit (11) of the control unit (13) and injecting hot air over the cleaning tool (T).

15 **18.** A method according to claim 17, **characterized in that** it comprises a step of mixing the disinfectant contained in the disinfection tank (5) with a predetermined amount of clean water by operating a dosage pump (6) via the control unit (13) following to the step of “sending a signal to control the unit (13) by sensor (12)”.

20

19. A cleaning unit (1) for removing harmful organisms, remnants and/or waste water drops before accumulating thereon, which remain on cleaning tools (T) after usage and are likely to reproduce, **characterized in that it comprises;**

- 25 - a container (2) having a space with a width such that a cleaning tool (T) can be placed therein and having at least one opening for the clean water inlet and waste water outlet,
- at least a clean water inlet pipe (4) transferring clean water to the container (2),
- 30 - at least a valve (8) which allows or blocks water flow through the clean water inlet pipe (4),

- at least a disinfection tank (5) which contains therein a disinfectant material,
- at least a dosage pump (6) which transfers a certain amount of the disinfectant material in the disinfection tank (5) into the clean water inlet pipe (4),
- at least a waste water outlet pipe (10) used for discharging waste water out of the container (2).

20. A cleaning unit (1) for removing harmful organisms, remnants and/or waste water drops before accumulating thereon, which remain on cleaning tools (T) after usage and are likely to reproduce, **characterized in that it comprises:**

- a container (2) having a space with a width such that a cleaning tool (T) can be placed therein and having at least one opening for the clean water inlet and waste water outlet,
- at least a clean water inlet pipe (4) transferring clean water to the container (2),
- at least a valve (8) which allows or blocks water flow through the clean water inlet pipe (4),
- at least a waste water outlet pipe (10) for discharging waste water out of the container (2).
- at least an air injection unit (11) injecting hot air over a cleaning tool (T) located inside the container (2).

21. A cleaning unit (1) according to claim 20, **characterized in that** at least a resistor is provided within an air injection unit (11) and it heats the air that has been injected.

22. A cleaning unit (1) for removing harmful organisms, remnants and/or waste water drops before accumulating thereon, which remain on cleaning

tools (T) after usage and are likely to reproduce, **characterized in that it comprises:**

- a container (2) having a space with a width such that a cleaning tool (T) can be placed therein and having at least one opening for clean water inlet and waste water outlet,
- at least a clean water inlet pipe (4) transferring clean water to the container (2),
- at least a valve (8) which allows or blocks water flow through the clean water inlet pipe (4),
- at least a motorized water pump (9) which is coupled to the clean water inlet pipe (4) which pressurizes the water flowing through the clean water inlet pipe (4),
- at least a waste water outlet pipe (10) for discharging waste water out of the container (2).

15

23. A cleaning unit (1) according to claim 19, 20 or 22, **characterized in that** at least an injector (7) is located at the end of the clean water inlet pipe (4) which is connected to the container (2) and injects pressurized water flowing through the clean water inlet pipe (4) into the container (2).

20

24. A cleaning unit (1) according to claim 19, 20 or 22, **characterized by** a space which partially or completely covers the upper surface or sidewalls of the container (2).

25

25. A cleaning unit (1) according to claim 23, **characterized in that** at least a cover (3) closes said space on container (2).

30

26. A cleaning unit (1) according to claim 19, 20 or 22, **characterized in that** at least a motorized water pump (9) is coupled to the clean water inlet pipe (4) and it is used to pressurize the water flowing through the clean water inlet pipe (4).

FIGURE 1

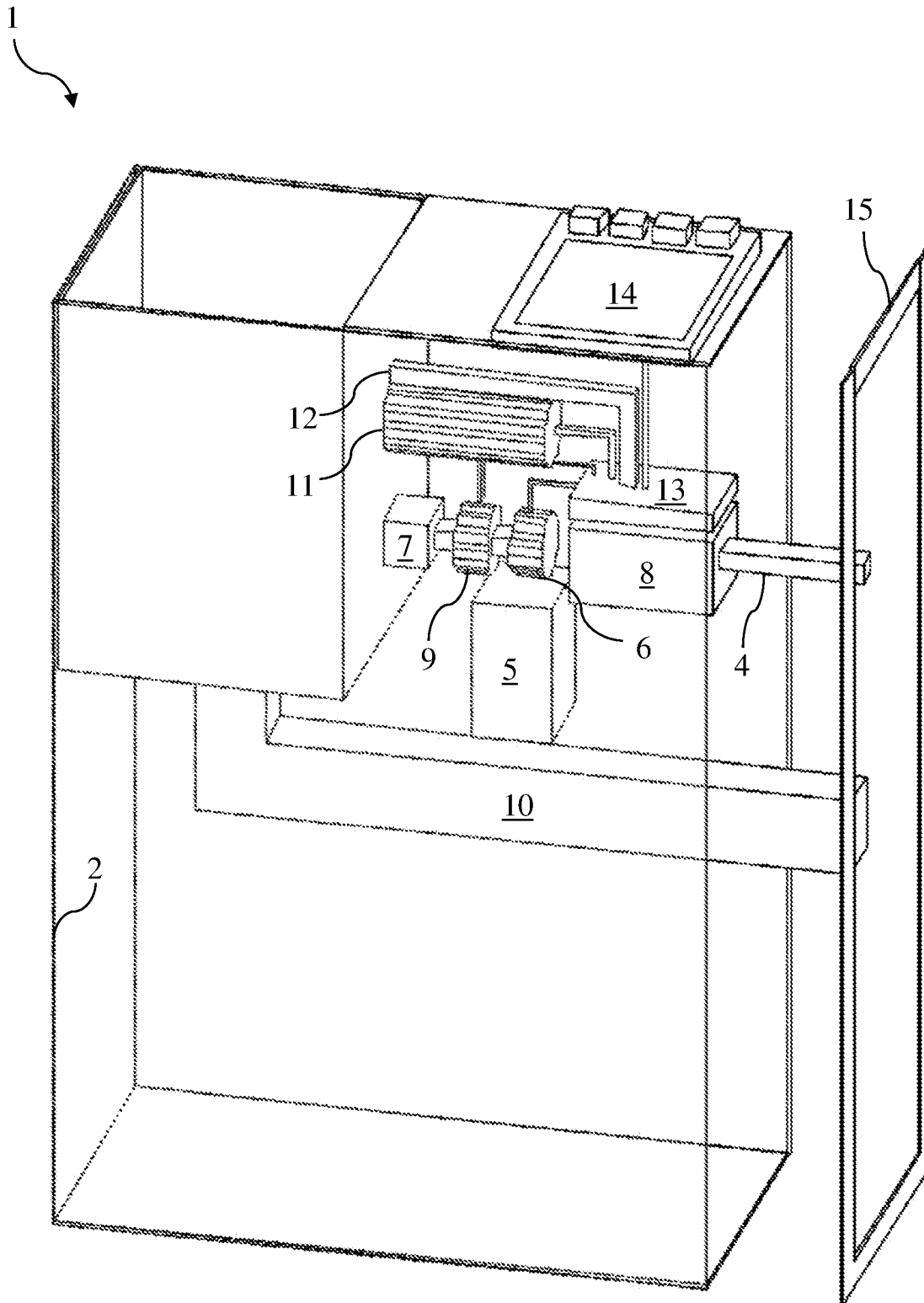


FIGURE 2

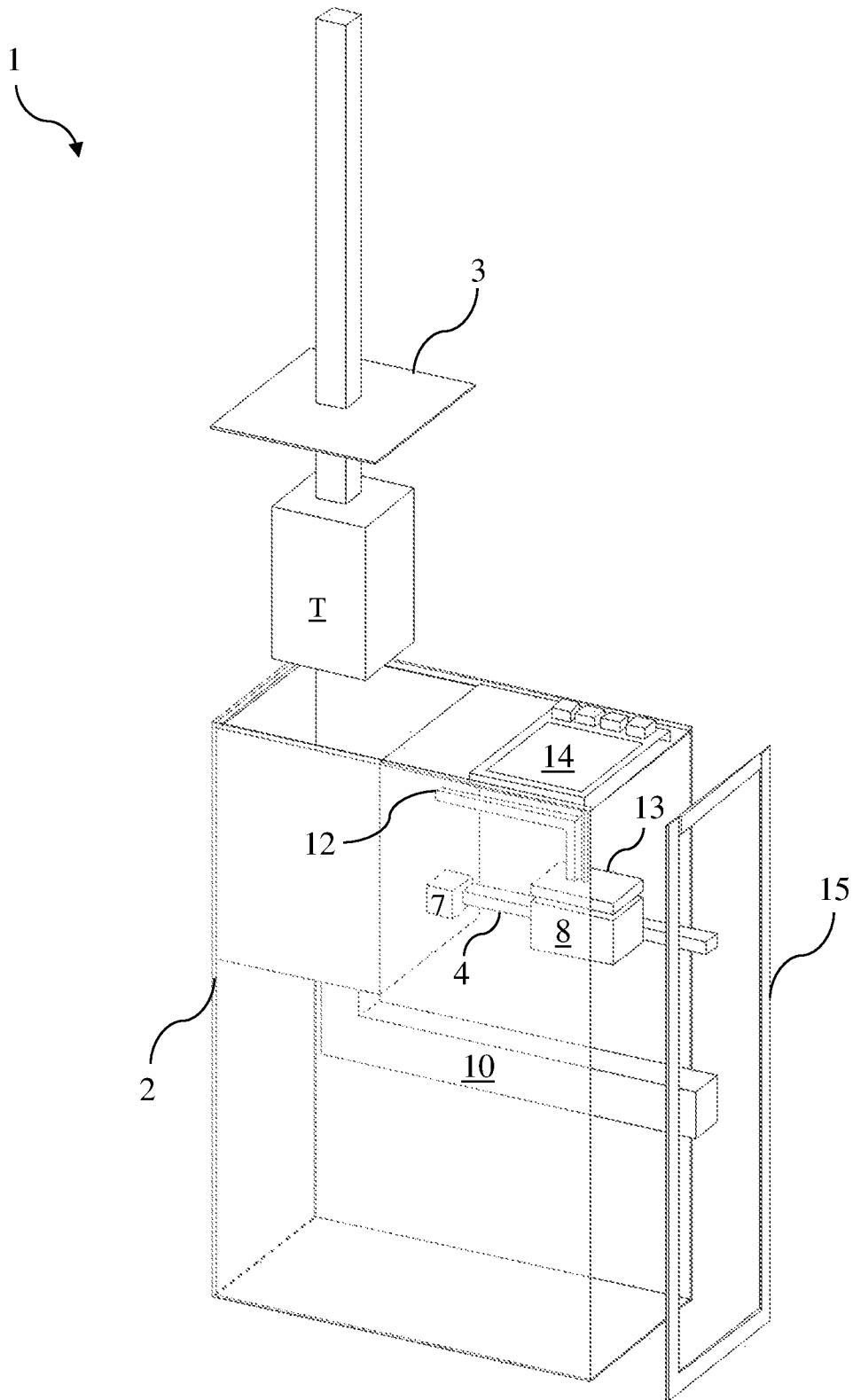


FIGURE 3

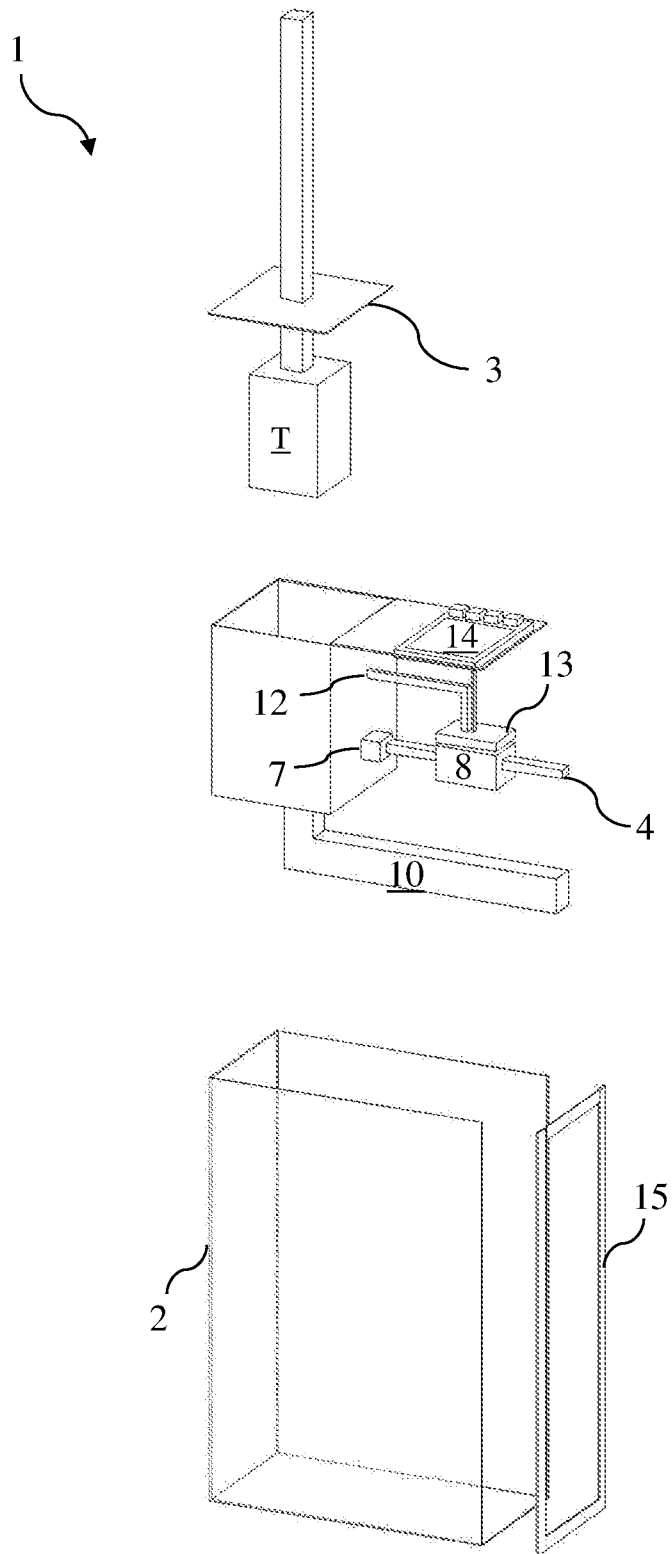


FIGURE 4

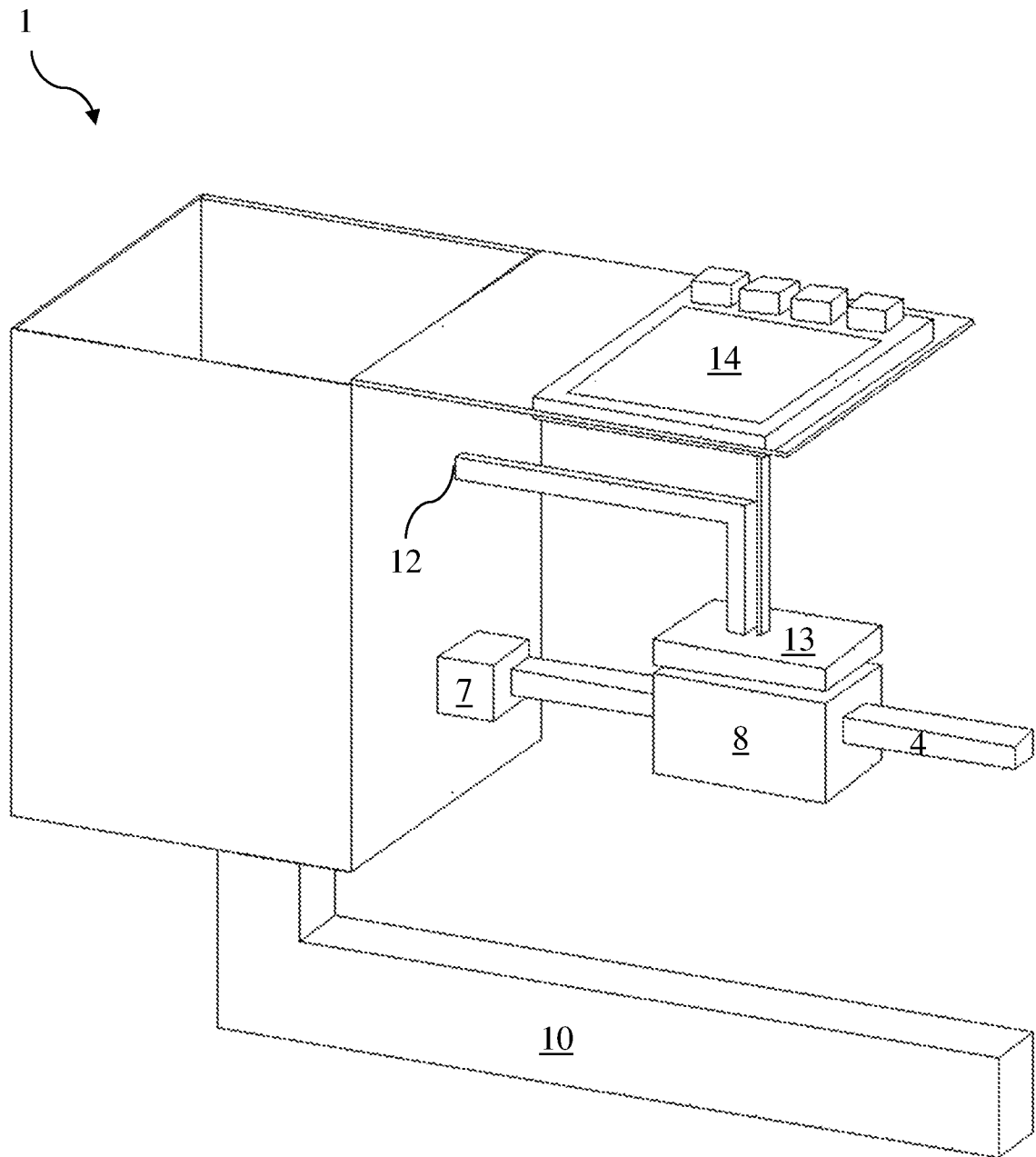


FIGURE 5

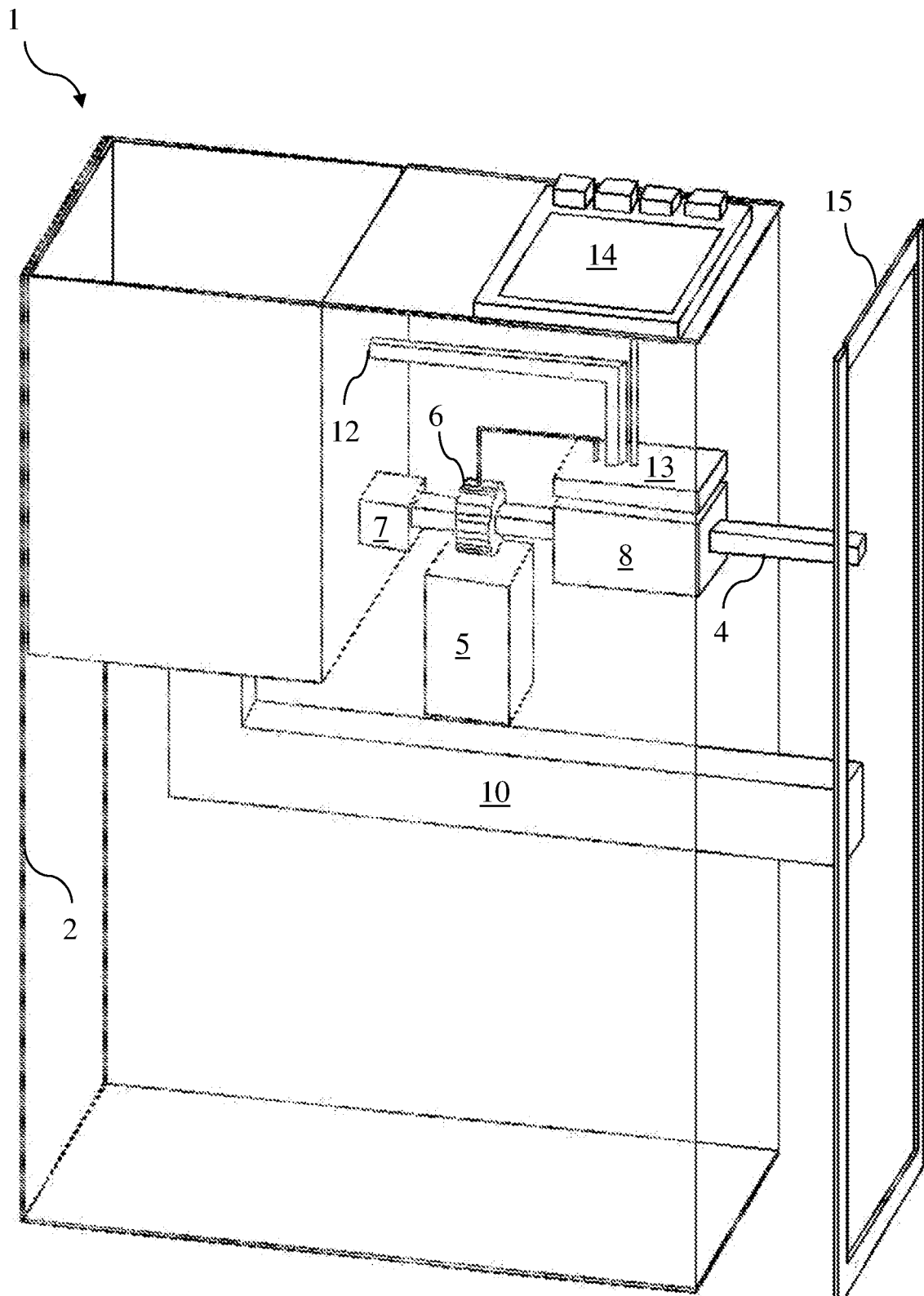


FIGURE 6

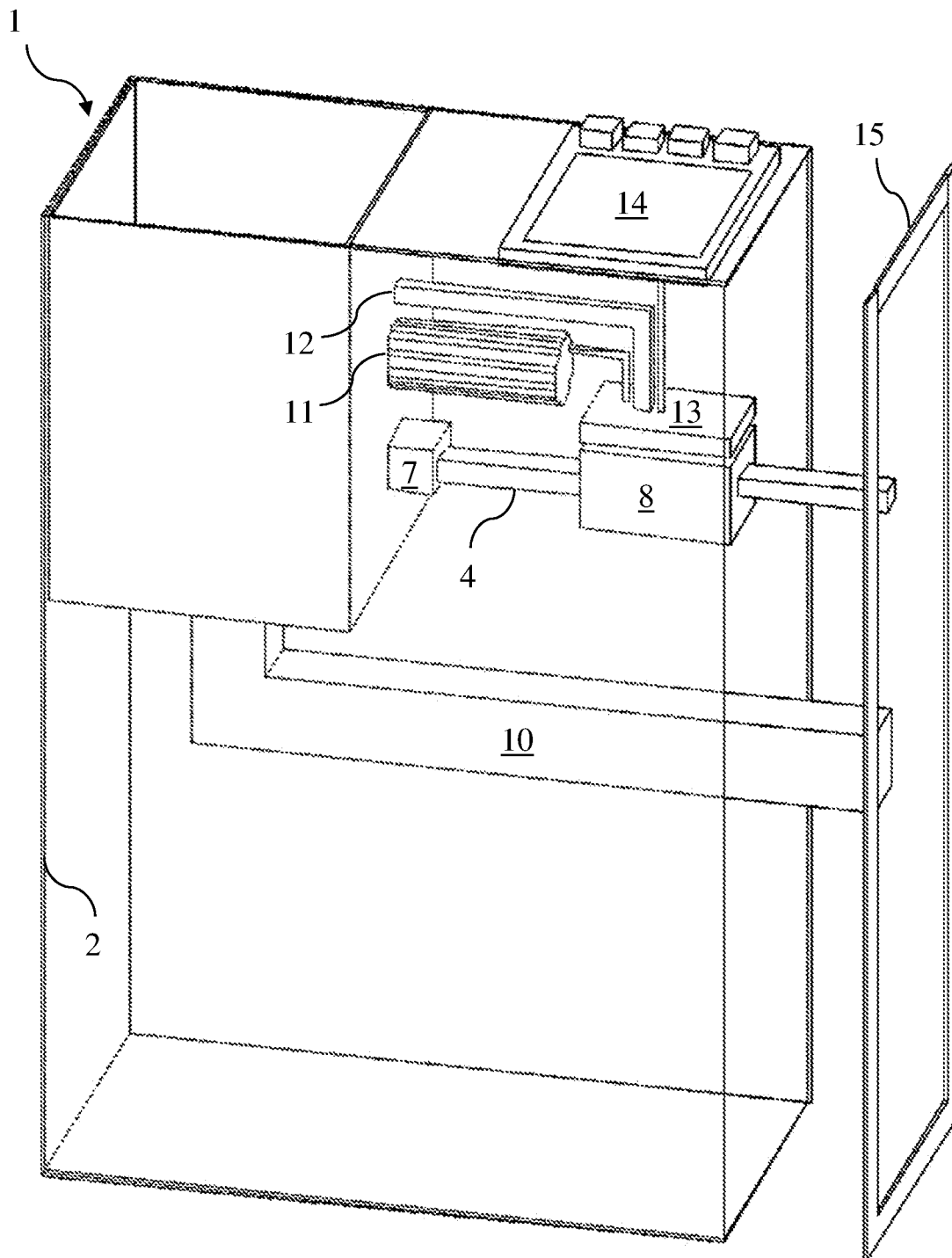


FIGURE 7

