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(54) **SUMP, IN PARTICULAR FOR A DISH WASHING MACHINE, AND METHOD FOR  
MANUFACTURING THE SAME**

BODENWANNE, INSBESONDERE FÜR EINEN GESCHIRRSPÜLER UND VERFAHREN ZUR  
DESSEN HERSTELLUNG

PUISARD, EN PARTICULIER POUR UN LAVE-VAISSELLE, ET SON PROCÉDÉ DE FABRICATION

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(72) Inventor: **BRIGNONE, Enzo**

**12025 Dronero (CN) (IT)**

(30) Priority: **11.10.2012 IT TO20120892**

(74) Representative: **Vitillo, Giuseppe**

**Barzanò & Zanardo Milano S.p.A.**

**Corso Vittorio Emanuele II, 61**

**10128 Torino (IT)**

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(73) Proprietor: **Bitron S.p.A.**

**10122 Torino (TO) (IT)**

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## Description

### Technical field

[0001] The present invention is relative to a sump, in particular for a dishwasher, and to a method for the manufacturing of the same.

### Technological background

[0002] In the field of home appliances, it is widely known to use dishwashers comprising a casing that delimits, on the inside, a washing tank, which houses dishes in suitable housings obtained in one or more racks, so as to allow them to be washed by means of spraying water under pressure that is delivered by one or more impellers.

[0003] In these dishwasher, on the bottom of the washing tank, there is generally provided a sump, adapted to store water and deliver it to the washing tank by means of the impellers.

[0004] An example of a sump of this type is described in the USA document no. US 2006/0054199.

[0005] This sump according to the prior art, though, has some drawbacks.

[0006] One drawback consists in the fact that the structure of the sump, in particular due to the specific shape of the main body and of its hollow portion, does not use a hydraulic pump actuated by an electric motor available on the market at a low cost, for example an electric motor of the asynchronous type provided with brushes. On the contrary, document US 2006/0054199 provides the use of a hydraulic pump with a brushless electric motor, which is typically expensive and requires a power supply that is particular and burdensome to be managed in terms of reduction of vibrations and noise, since the motor is rigidly assembled on the sump and has a rotation axis that is substantially vertical. Another sump according to the preamble of claim 1 is for example disclosed in document EP 1 728 461 A1.

### Summary of the invention

[0007] An object of the present invention is to provide a sump and a method for the manufacturing of the same, which are able to solve the drawbacks of the prior art and, at the same time, can be manufactured in a simple and economic fashion.

[0008] According to the present invention, this and other objects are reached by means of a sump and a method for the production thereof having the technical features set forth in the appended independent claims.

[0009] The appended claims are an integral part of the technical teaches provided in the following detailed description concerning the present invention. In particular, the appended claims define some preferred embodiments of the present invention and describe optional technical features.

## Brief description of the drawings

[0010] Further features and advantages of the present invention will be best understood upon perusal of the following detailed description, which is provided by way of example and is not limiting, with reference to the accompanying drawings, wherein:

- figures 1 and 2 are prospective views from the top and, respectively, from the bottom of a sump manufactured according to an explanatory embodiment of the present invention;
- figure 3 is an exploded view of the sump shown in the previous figures;
- figure 4 is a bottom prospective view similar to the one of figure 2, wherein, though, the sump is shown without some components; and
- figures 5 and 6 are section views of the sump shown in the previous figures, which are respectively obtained through vertical secant planes.

## Detailed description of the invention

[0011] With reference to the detailed description that follows, terms and adjectives such as "vertical", "horizontal", "lateral", "upper" and "lower" are used for the purpose of defining directions and relative positions of different components. These terms and adjectives are relative to a configuration of the sump according to the present invention in which it is positioned in the normal use condition (for example, when it is fitted in correspondence to the bottom wall of the washing tank), without this being considered as limiting for the scope of protection of the present invention.

[0012] With reference to the figures from 1 to 6, number 10 indicates, as a whole, a sump according to an explanatory embodiment of the present invention.

[0013] Sump 10 is suited to be mounted in a dishwasher, in particular in correspondence to the bottom of the washing tank or chamber, which is delimited by the casing of the dishwasher. More in detail, sump 10 is suited to store and deliver water, typically by means of one or more spray impellers, inside the washing tank.

[0014] Sump 10 comprises a main body 12, which is preferably monolithic, is manufactured, for example, with a plastic material by means of injection molding, is open on the upper side and has:

- a peripheral portion 12a, adapted to be coupled to the bottom of a washing tank of the dishwasher, and
- a first hollow or collecting portion 12b and a second hollow or supply portion 12c, around which peripheral portion 12a extends.

[0015] Collecting portion 12b and supply portion 12c and central and are both recessed, which means that they are provided with a greater depth compared to peripheral portion 12a; furthermore, they can hydraulically

communicate with one another by means of a washing pump 16 and are open on the upper side through a collecting opening 13 and a supply opening 14. In the embodiment shown, at least one between the first hollow portion 12b and the second hollow portion 12c - and preferably both of them - is substantially cup-shaped, which means that it extends by reentering on the lower side and in a central portion starting from peripheral portion 12a and by defining a lateral surface that is closed by a bottom on the lower side.

**[0016]** As discussed more in detail below, collecting portion 12b is adapted to store water coming from the washing tank and entering through collecting opening 13. In this embodiment, supply portion 12c is suited to deliver the water stored in supply portion 12b, thus causing it to flow out through supply opening 14.

**[0017]** Furthermore, sump 10 comprises a hydraulic washing pump 16 of the known type, which is mounted on main body 12, so that its impeller is able to rotate around an axis X that is substantially horizontal. This washing pump 16, for example manufactured as an electropump, is suited to suck the water stored in collecting portion 12b and to direct this water towards supply portion 12c, so that it can be delivered through supply opening 14.

**[0018]** In the embodiment shown, hydraulic washing pump 16 is mounted in a suction fitting 18, which is peripherally obtained on collecting portion 12b and, for example, is oriented in a substantially radial direction. In particular, suction fitting 18 (see for example figure 2) receives a feeding case or scroll 20 belonging to hydraulic washing pump 16 and hydraulically communicating, at the inlet, with collecting portion 12b and, at the outlet, with supply portion 12c. Furthermore, hydraulic washing pump 16 comprises an impeller (not numbered), adapted to rotate in the feeding scroll 20 around axis X and to suck the water contained in collecting portion 12b, and a motor (not shown), for example of the electric type, which is suited to control the impeller during its rotation. In the embodiment shown, therefore, washing pump 16 is suited to suck the water stored in collecting portion 12b, thus causing to flow out of the latter in a substantially radial direction towards suction fitting 18.

**[0019]** In the embodiment shown, said hydraulic washing pump 16 is of the centrifugal type, since it sucks the water contained in collecting portion 12b in an axial direction relative to rotation axis X of the impeller, so as to deliver the water in a tangential direction relative to said direction axis X.

**[0020]** Preferably, peripheral portion 12a has a substantially concave shape, adapted to create a basin to convey water (for example by providing suitable surfaces that slightly slope down) towards collecting opening 13 of collecting portion 12b, which, during the assembly and the use of the dishwasher with which sump 10 is associated, remains open on the upper side.

**[0021]** Preferably, collecting portion 12b and supply portion 12c respectively have an approximately cylindrical

cal shape, if necessary slightly tapered downwards. The cross section (obtained through a horizontal secant plane) shown by collecting portion 12b and by supply portion 12c is smaller relative to the overall cross section offered by peripheral portion 12a. In this embodiment, the cross section of collecting portion 12b is substantially larger than the one shown by supply portion 12c.

**[0022]** In this embodiment, supply portion 12c has a substantially circular cross section.

**[0023]** Between collecting portion 12b and supply portion 12c there is provided a hydraulic connection, adapted to permit the fluid outflow controlled by washing pump 16. In the embodiment shown, the hydraulic connection is provided downstream of washing pump 16, in particular in correspondence to the outlet thereof, and upstream of supply portion 12c. To this regard, supply portion 12c preferably comprises, in turn, a delivery fitting 19, which, for example, is arranged laterally and projects transversely from supply portion 12c. In particular, between said outlet and delivery fitting 19 there is connected a duct D (not shown), for example an elbow pipe or a hose, so as to allow the liquid flow to flow from collecting portion 12b towards supply portion 12c. In the embodiment shown, the liquid stored, in use, by collecting portion 12b is sucked by washing pump 16 through delivery fitting 19, which pushes it through its outlet and into said duct D, which subsequently leads to delivery fitting 19 and finally gets to supply portion 12c.

**[0024]** Preferably, supply opening 14 is closed in fluid-tight manner, for example by means of an interlocking coupling, by a lid 22 (see in particular figure 3) having at least one outlet hole 24, adapted to let out the water flowing into supply portion 12c from collecting portion 12b. In the embodiment shown, which means in case sump 10 is compatible with the use of an alternate washing system, lid 22 comprises a pair of outlet holes 24, each of which can be hydraulically connected, in a known manner, to a respective rotary spraying organ (not shown) of the dishwasher.

**[0025]** Furthermore, supply portion 12c is designed so as to be adapted to house, through supply opening 14, at least one device selected in the group consisting of:

- a heating system 26, adapted to heat the water flow flowing through said supply portion 12c and sucked by washing pump 16, said system being preferably provided with relative control and/or safety means, and
- a flow diverter 28, adapted to direct the pressurized water flow, in a controlled manner (which means selectively and/or simultaneously), from washing pump 16 towards the washing tank, in particular towards outlet openings 24, so as to create an alternate washing system of the known type.

**[0026]** At least one between heating system 26 and flow diverter 28 is accessible and housed, preferably in a removable manner, in supply portion 12c through sup-

ply opening 14.

**[0027]** In this embodiment, the heating system comprises a resistor 26, adapted to be run through by an electric current, so as to transfer heat to the water flow flowing through supply portion 12c according to predetermined criteria. In particular, resistor 26 is housed, preferably in a removable manner, in the receptacle defined by supply portion 12c and is properly waterproofed in a known manner. For example, resistor 26 is folded, preferably defining a substantially U-shaped form, inside the cavity or chamber defined by supply portion 12c.

**[0028]** In this embodiment, flow diverter 28 comprises one or more holes 30, adapted to be positioned, especially by means of the rotation movement of a motor 32, in correspondence to outlet holes 24 according to predetermined criteria.

**[0029]** In this embodiment, the outlet holes are oriented in a substantially vertical direction, for example they are manufactured as sleeves projecting from lid 22 and adapted to be connected to the respective impellers by means of hydraulic ducts of the known type.

**[0030]** In this embodiment, flow diverter 28 is an organ of the rotary type, such as a disc that rotates around a substantially vertical axis. In particular, said disc has one or more holes 30 and one or more obstructions, each of them being suited to be arranged, every time, in positions facing or staggered relative to outlet holes 24, thus determining the controlled delivery of water through one impeller or both impellers of the dishwasher.

**[0031]** Preferably, furthermore, flow diverter 28 is coupled to a motor 32 (see in particular figures 2 and 5), for example an electric motor, which is mounted on supply portion 12c and is adapted to control the movement of flow diverter 28. In this embodiment, motor 32 is provided with a suitable reduction mechanism (not shown), for example a gear, which cooperates with flow diverter 28 to move it and cause it to rotate. In particular, motor 32 and the possible reduction mechanism are separated, in a fluid-tight manner, from the receptacle defined by supply portion 12c.

**[0032]** In this embodiment, motor 32 ends with a shaft 34, which is centrally splined to flow diverter 28, which is advantageously manufactured as a disc with a substantially circular shape.

**[0033]** In this embodiment, motor 32 is externally supported by supply portion 12c. Preferably, motor 32 is supported by bottom 36 of supply portion 12c, for example it is fixed by means of screws.

**[0034]** Preferably, flow diverter 28 rotates around a substantially vertical axis, which, in this embodiment, is advantageously perpendicular to the horizontal plane on which rotation axis X of the impeller of washing pump 16 lies.

**[0035]** In this embodiment, bottom 36 of hollow supply portion 12c has a hole 38, which is substantially arranged in the center and is adapted to be run through by shaft 34 of motor 32, on top of which there is advantageously splined flow diverter 28; furthermore, lid 22, which has

the pair of outlet holes 24, is fixed on supply opening 14. Preferably, the seal between shaft 34 and hole 38 is radially guaranteed by a gasket.

**[0036]** Preferably, during the sump manufacturing process, hole 38 is manufactured by removing a suitable removable item provided on the mold used for the injection molding of hollow supply portion 12c.

**[0037]** On the other hand, in case the sump is used in dishwashers that are not provided with flow diverter means, said hole 38 can be left out and the water flow reaches the impellers by flowing through both outlet holes 24.

**[0038]** In the embodiment shown, hence in case sump 10 comprises at the same time the heating system and the flow diverter, resistor 26 is mounted in an annular seat 40 (numbered in figure 5), which is obtained close to bottom 36 of the second hollow portion 12c. Preferably, said annular seat 40 surrounds hole 38, adapted to house shaft 34 allowing it to freely rotate. By way of example, an insert 42, which is advantageously arranged in the center relative to annular seat 40 and is made of elastomer or rubber, permits the rotation of shaft 34 and the hydraulic seal between motor 32 and hollow portion 12c.

**[0039]** The structure of main body 12 described above is particularly advantageous in terms of simplicity in the assembly of flow diverter 28 and/or of heating system 26. As a matter of fact, sump 10 can be easily and effectively adjusted to a dishwasher structure that does not envisage an alternate washing, since hole 38 is left out during the injection molding step and, during the assembly, neither motor 32 nor flow diverter 28 are mounted, regardless of whether a heating system for the water to be delivered, which is built-in in sump 10 itself, has to be provided or not. By way of example, during sump 10 manufacturing process, hole 38 can be left out by properly installing said removable item on the mold used for the injection molding of hollow supply portion 12c.

**[0040]** Furthermore, the structure described above allows operators to easily perform their tasks during the maintenance of sump 10, in case they need to access flow diverter 28 and resistor 26, since they only need to remove lid 22 and take out the components contained therein through supply opening 14.

**[0041]** Preferably, the second hollow portion 12c supports at least one peripheral fitting 44, which leads, in the embodiment shown, in a lateral direction, into the receptacle defined inside the second hollow portion 12c and adapted to house control and/or safety means 46. In particular, said peripheral fitting 44 is manufactured as a tubular section that transversely runs through the lateral surface of supply portion 12c.

**[0042]** In the embodiment shown, control means 46 are suited to perform at least one function selected between:

- detecting and/or controlling the operating conditions assumed by at least one between heating system 26 and flow diverter 28, and

- detecting the physical/chemical properties of the liquid flow flowing through supply portion 12c.

**[0043]** In particular, control means 46 can comprise one or more components adapted to be used as sensors, for example:

- at least one heat sensor suited to detect data indicating the temperature of resistor 26 (for example of the current flowing through it), and/or
- at least one position sensor adapted to detect data indicating the configuration or position of flow diverter 28, and/or
- at least one pressure sensor (for example, such as the one shown in figure 5) adapted to detect the pressure of the liquid flow flowing through the receptacle defined in supply portion 12c.

**[0044]** In combination with said components or as an alternative thereto, control means 46 can comprise one or more apparatuses adapted to control the supply of electric power to heating system 26 according to predetermined criteria. Preferably, these apparatuses can comprise at least one current interrupter or switch, which is able to interrupt the current flow through resistor 26 according to predetermined control criteria, which optionally depend on indicating data detected by one or more of said components or sensors, for example by said pressure sensor.

**[0045]** In the embodiment shown, supply portion 12c has a plurality of said peripheral fittings 44, which are laterally supported by the second hollow portion 12c, so as to receive a plurality of said control and/or safety means 46.

**[0046]** In the embodiment shown, supply portion 12c has a manifold or tubular sleeve, which is substantially horizontally oriented and intersects supply portion 12c in a transverse direction. The tubular manifold radially communicates with the receptacle defined by supply portion 12c and has axial ends where delivery fitting 19 and one of peripheral fittings 44 are defined. In particular, the tubular manifold also has at least one further peripheral fitting 44, which radially projects outwards, thus creating a particularly compact arrangement to house a plurality of different kinds of control means 46.

**[0047]** The presence of peripheral fittings 44 allows users to customize sump 10 as a function of the different technical features and of the installation needs of the dishwasher, thus providing it with proper components and with apparatuses that are suited to be interfaced with the control system of the machine.

**[0048]** Furthermore, the presence of a monolithic main body 12 involves, besides the economical advantages in the production of sump 10 and the reduction of the possible water leaking points during its life, the advantage of permitting preliminary tests and inspections, thus allowing operators to perform simulations in laboratories or in assembly testing lines before sump 10 is fitted in

the dishwasher.

**[0049]** In this embodiment, sump 10 also comprises a draining fitting 48, which communicates with - and laterally projects from - collecting portion 12b and, furthermore, is associated with a hydraulic draining pump (not shown). Preferably, draining fitting 48 laterally projects, for example in a radial direction, from an opposite side relative to suction fitting 18.

**[0050]** In particular, draining fitting 48 defines a draining case or screw, adapted to house the impeller (not shown) belonging to the draining pump (not shown), which can preferably rotate around a substantially horizontal axis, so as to drain the water stored in collecting portion 12b on the outside of the washing tank.

**[0051]** In the embodiment shown, the hydraulic draining pump is of the centrifugal type and can be operated by a motor, generally of the electric type, suited to control the rotation of said impeller.

**[0052]** Naturally, the principle of the present invention being set forth, the embodiments and the implementation details can be widely changed with respect to what described above and shown in the drawings as a mere way of non-limiting example, without in this way going beyond the scope of protection provided by the accompanying claims.

## LIST OF THE ALPHANUMERIC REFERENCES

### [0053]

10	Sump
12	Main body
12a	Peripheral portion
12b	Hollow collecting portion
12c	Hollow supply portion
13	Collecting opening
14	Supply opening
16	Hydraulic washing pump
18	Suction fitting
19	Delivery fitting
20	Feeding case or scroll
22	Lid
24	Outlet hole
26	heating system
28	Flow diverter
30	Holes on the diverter
32	Motor
34	Shaft
36	Bottom
38	Hole
40	Annular seat
42	Insert
44	Peripheral fitting
46	Sensors
48	Draining fitting
50	Connection fitting

## Claims

1. Sump (10), in particular for a dishwasher, comprising:

- a main body (12) which is open on the upper side and has a peripheral portion (12a) for coupling to the bottom of a washing tank of said dishwasher; said body (12) having, furthermore, a hollow collecting portion (12b) which is internally recessed with respect to said peripheral portion (12a) and is arranged for storing a liquid coming from said tank; and
- a hydraulic washing pump (16) which is connected to said body (12), so that its impeller is able to rotate about a substantially horizontal axis (X);
- a hollow supply portion (12c) which is internally recessed with respect to said peripheral portion (12a) and for receiving, due to the action of said pump (16), a flow of said liquid and to direct said flow towards at least one outlet (24);
- at least one device selected within the set consisting of a heating system (26), for heating said flow, and a diverter (28), for delivering said flow in a controlled manner to at least one impeller by means of said at least one outlet (24);

said sump being **characterised in that** said hollow supply portion (12c) is open on the upper side at an opening (14) through which said at least one device (26, 28) is accessible and housed, in a removable manner, in said hollow supply portion (12c); and **in that** said second hollow portion (12c) is for receiving, at said opening (14), a lid (22) having at least one of said outlets (24) for letting water out; said lid (22) being removable so as to access said at least one device (26, 28) by taking it out (22) through said supply opening (14).

2. Sump according to claim 1, wherein said hydraulic washing pump (16) is connected to said body (12) by means of fittings or pipe unions (18, 19).
3. Sump according to claim 2, wherein said hydraulic washing pump (16) is mounted in a suction fitting (18), which is peripherally obtained on collecting portion (12b) and receives a feeding case or scroll (20) belonging to hydraulic washing pump (16) and hydraulically communicating, at the inlet, with collecting portion (12b) and, at the outlet, with supply portion (12c).
4. Sump according to claim 1, wherein said body (12) is monolithic.
5. Sump according to any of the preceding claims, wherein the bottom (36) of said supply portion (12c)

is adapted to externally house a motor (32) configured for controlling said flow diverter (28).

6. Sump according to claim 5, wherein said bottom (36) has a hole (38) for being passed through by a shaft (34) which belongs to said motor (32) and is able to transmit motion to said flow diverter (28).
7. Sump according to claim 1, wherein said lid (22) presents a pair of outlets (24), each of them being hydraulically connectable to a respective movable sprayer member of said dishwasher.
8. Sump according to any of the previous claims, further comprising sensor means for detecting data indicating the position assumed by the diverter (28).
9. Sump according to any of the previous claims, wherein said heating system comprises a resistor (26) positioned in said supply portion (12c).
10. Sump according to claim 9, wherein said resistor (26) is mounted in an annular seat (40) obtained close to the bottom (36) of the supply portion (12c).
11. Sump according to any of the previous claims, wherein said supply portion (12c) supports at least one peripheral fitting (44) leading into a receptacle which is defined by said supply portion (12c) and is arranged for housing control and/or safety means (46).
12. Sump according to claim 11, wherein said control means (46) are adapted to perform at least one function selected between:
- detecting and/or controlling the operating conditions assumed by at least one between said heating system (26) and said diverter (28), and
  - detecting the physical/chemical properties of said liquid flow flowing through said supply portion (12c).
13. Sump according to claim 12, wherein said control means (46) comprise at least one apparatus arranged for controlling the electrical power supply to said heating system (26) according to predetermined criteria.
14. Sump according to claim 13, wherein said at least one apparatus is a current interrupter or switch.
15. Dishwasher comprising a sump (10) according to any of the previous claims.
16. Method for manufacturing a sump (10) according to any of the claims from 1 to 14, said method comprising the steps of:

- manufacturing, by means of injection molding, at least said hollow supply portion (12c), the mold being adapted to receive, in a removable manner, an appropriate arrangement; and  
 - manufacturing and respectively omitting a hole (38) on the bottom (36) of said hollow supply portion (12c) by removing and respectively installing said arrangement which is removable from - or with respect to - said mold; wherein said hole (38) is capable of being passed through by a shaft (34) belonging to a motor (32) configured to be coupled to a flow diverter (28) and to be mounted on said supply portion (12c) for controlling the movement of said flow diverter (28).

### Patentansprüche

1. Wanne (10), insbesondere für eine Spülmaschine, aufweisend:

- einen Hauptkörper (12), der an der Oberseite offen ist und einen Randbereich (12a) zur Verbindung mit dem Boden eines Waschtanks der Spülmaschine hat; wobei der Körper (12) außerdem einen hohlen Sammelabschnitt (12b) hat, welcher im Inneren des Randbereiches (12a) eingelassen und dazu ausgeführt ist, eine aus dem Tank kommende Flüssigkeit zu speichern; und  
 - eine hydraulische Waschpumpe (16), die mit dem Körper (12) verbunden ist, so dass ihr Impeller um eine im Wesentlichen horizontale Achse (X) rotieren kann;  
 - ein hohler Versorgungsabschnitt (12c), welcher im Inneren des Randabschnitts (12a) eingelassen und dazu ausgelegt ist, einen Fluss der Flüssigkeit aufgrund der Aktivität der Pumpe (16) zu empfangen und den Fluss in Richtung zumindest eines Ablaufes (24) zu leiten;  
 - zumindest ein Gerät aus der Menge bestehend aus einer Heizanlage (26) zum Erhitzen des Flusses und einem Verteiler (28) zum Zuführen des Flusses in kontrollierter Weise zu zumindest einem Impeller mittels zumindest einem der Abläufe (24);  
 - wobei sich die Wanne dadurch auszeichnet, dass der hohle Versorgungsabschnitt (12c) an der Oberseite offen ist bei einer Öffnung (14), durch die zumindest eines der Geräte (26, 28) zugänglich ist und zumindest eines der Geräte (26, 28) in einer entfernbarer Weise in dem hohlen Versorgungsabschnitt (12c) untergebracht ist; und  
 - wobei der zweite hohle Abschnitt (12c) dazu da ist, an der Öffnung (14) einen Deckel (22) zu erhalten, welcher zumindest einen der Abläufe

(24) aufweist, um Wasser auszulassen; wobei der Deckel (22) abnehmbar ist, um auf zumindest eines der Geräte (26, 28) durch die Versorgungsöffnung (14) zuzugreifen, indem er (22) abgenommen wird.

2. Wanne nach Anspruch 1, wobei die hydraulische Waschpumpe (16) mit dem Körper (12) mittels Verbindungsstücken oder Rohrschraubungen (18, 19) verbunden ist.
3. Wanne nach Anspruch 2, wobei die hydraulische Waschpumpe (16) in ein Saugformstück (18) montiert ist, welches peripher an den Sammelabschnitt (12b) angeschlossen ist und ein zu der hydraulischen Waschpumpe (16) gehörendes Zuführgehäuse oder einen Zuführdurchlauf (20) empfängt und hydraulisch bei dem Einlauf mit dem Sammelabschnitt (12b) und bei dem Ablauf mit dem Versorgungsabschnitt (12c) verbunden ist.
4. Wanne nach Anspruch 1, wobei der Körper (12) monolithisch ist.
5. Wanne nach einem der vorhergehenden Ansprüche, wobei der Boden (36) des Versorgungsabschnitts (12c) dazu ausgelegt ist, einen Motor (32) extern aufzunehmen, welcher zur Steuerung des Strömungsverteilers (28) ausgelegt ist.
6. Wanne nach Anspruch 5, wobei der Boden (36) ein Loch (38) hat, durch das ein Schaft (34) treten kann, der zu dem Motor (32) gehört und Bewegungen auf den Strömungsverteiler (28) übertragen kann.
7. Wanne nach Anspruch 1, wobei der Deckel (22) ein Paar von Abflüssen (24) aufweist, wobei jeder der beiden Abflüsse mit einem beweglichen Sprühelement der Spülmaschine verbunden werden kann.
8. Wanne nach einem der vorhergehenden Ansprüche, zusätzlich aufweisend Sensormittel zur Detektion von Daten, die die durch den Verteiler (28) angenommene Position bezeichnen.
9. Wanne nach einem der vorhergehenden Ansprüche, wobei die Heizanlage einen Widerstand (26) aufweist, der in dem Versorgungsabschnitt (12c) positioniert ist.
10. Wanne nach Anspruch 9, wobei der Widerstand (26) in eine ringförmige Aufnahme (40) montiert ist, die sich nahe des Bodens (36) des Versorgungsabschnitts (12c) befindet.
11. Wanne nach einem der vorhergehenden Ansprüche, wobei der Versorgungsabschnitt (12c) zumindest ein peripheres Anschlussstück (44) aufnimmt, das

in einen Behälter führt, der durch den Versorgungsabschnitt (12c) definiert und dazu ausgelegt ist, Steuerungen und/oder Sicherheitsmittel (46) aufzunehmen.

12. Wanne nach Anspruch 11, wobei die Steuerungen (46) dazu ausgelegt sind, zumindest eine der folgenden Funktionen auszuführen:

- Detektion und/oder Kontrolle der Betriebsbedingungen, die von zumindest einem Gerät, der Heizanlage (26) oder dem Verteiler (28), angenommen werden, und
- Detektion der physikalisch/chemischen Eigenschaften des Flüssigkeitsstroms, der durch den Versorgungsabschnitt (12c) strömt.

13. Wanne nach Anspruch 12, wobei die Steuerungen (46) mindestens eine Vorrichtung aufweisen, die dazu ausgelegt ist, die elektrische Energiezufuhr zu der Heizanlage (26) nach vorgegebenen Kriterien zu steuern.

14. Wanne nach Anspruch 13, wobei zumindest eine der Vorrichtungen ein Stromunterbrecher oder -schalter ist.

15. Spülmaschine, aufweisend eine Wanne (10) nach einem der vorhergehenden Ansprüche.

16. Verfahren zur Herstellung einer Wanne (10) nach einem der Ansprüche 1 bis 14, wobei das Verfahren die Schritte aufweist:

- Herstellung zumindest des hohlen Versorgungsabschnitts (12c) mittels Spritzgießen, wobei die Gussform dazu ausgelegt ist, eine geeignete Anordnung in entfernbarer Weise zu empfangen; und
- Herstellung und respektive Auslassen eines Lochs (38) am Boden (36) des hohlen Versorgungsabschnitts (12c) durch Entfernen und respektive Installieren der Vorrichtung, die entfernbar von - oder in Bezug auf - die Gussform ist; wobei das Loch (38) von einem Schaft (34) durchtreten werden kann, der zu einem Motor (32) gehört, der dazu ausgelegt ist, mit einem Strömungsverteiler (28) gekoppelt und auf dem Versorgungsabschnitt (12c) montiert zu sein, um die Bewegung des Strömungsverteilers (28) zu steuern.

## Revendications

1. Siphon (10), en particulier pour un lave-vaisselle, comprenant :

- un corps principal (12) qui est ouvert sur le côté supérieur et a une portion périphérique (12a) pour le couplage au fond d'une cuve de lavage dudit lave-vaisselle; ledit corps (12) ayant, de plus, une portion de recueil creuse (12b) qui est en retrait à l'intérieur par rapport à ladite portion périphérique (12a) et est agencée pour stocker un liquide provenant de ladite cuve ; et
- une pompe de lavage hydraulique (16) qui est raccordée audit corps (12), de sorte que sa turbine est capable de tourner autour d'un axe sensiblement horizontal (X) ;
- une portion d'alimentation creuse (12c) qui est en retrait à l'intérieur par rapport à ladite portion périphérique (12a) et pour la réception, en raison de l'action de ladite pompe (16), d'un écoulement dudit liquide et de diriger ledit écoulement vers au moins une sortie (24) ;
- au moins un dispositif sélectionné dans l'ensemble constitué d'un système de chauffage (26), pour le chauffage dudit écoulement, et d'un inverseur (28), pour la délivrance dudit écoulement de manière régulée à au moins une turbine au moyen dudit au moins une sortie (24) ;

ledit siphon étant **caractérisé en ce que** ladite portion d'alimentation creuse (12c) est ouverte sur le côté supérieur au niveau d'une ouverture (14) à travers laquelle ledit au moins un dispositif (26, 28) est accessible et logé, de manière amovible, dans ladite portion d'alimentation creuse (12c) ; et

**en ce que** ladite seconde portion creuse (12c) est destinée à recevoir, au niveau de ladite ouverture (14), un couvercle (22) ayant au moins l'une desdites sorties (24) pour laisser sortir l'eau ; ledit couvercle (22) étant amovible de façon à accéder audit au moins un dispositif (26, 28) en l'enlevant (22) à travers ladite ouverture d'alimentation (14).

2. Siphon selon la revendication 1, dans lequel ladite pompe de lavage hydraulique (16) est raccordée audit corps (12) au moyen de raccords ou de raccords de tuyauterie (18,19).
3. Siphon selon la revendication 2, dans lequel ladite pompe de lavage hydraulique (16) est montée dans un raccord d'aspiration (18), qui est obtenu périphériquement sur la portion de recueil (12b) et reçoit un carter ou rouleau d'amenée (20) appartenant à la pompe de lavage hydraulique (16) et communiquant hydrauliquement, au niveau de l'entrée, avec la portion de recueil (12b) et, au niveau de la sortie, avec la portion d'alimentation (12c).
4. Siphon selon la revendication 1, dans lequel ledit corps (12) est monolithique.
5. Siphon selon l'une quelconque des revendications



précédentes, dans lequel le fond (36) de ladite portion d'alimentation (12c) est adapté pour loger à l'extérieur un moteur (32) configuré pour commander ledit inverseur d'écoulement (28).

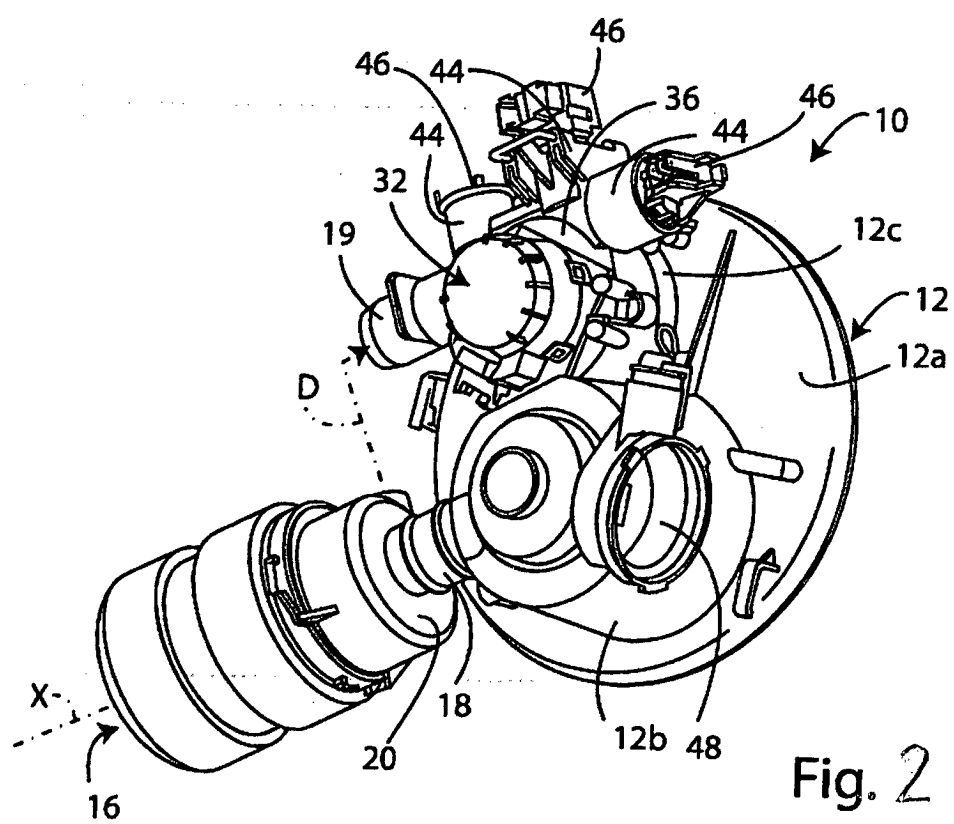
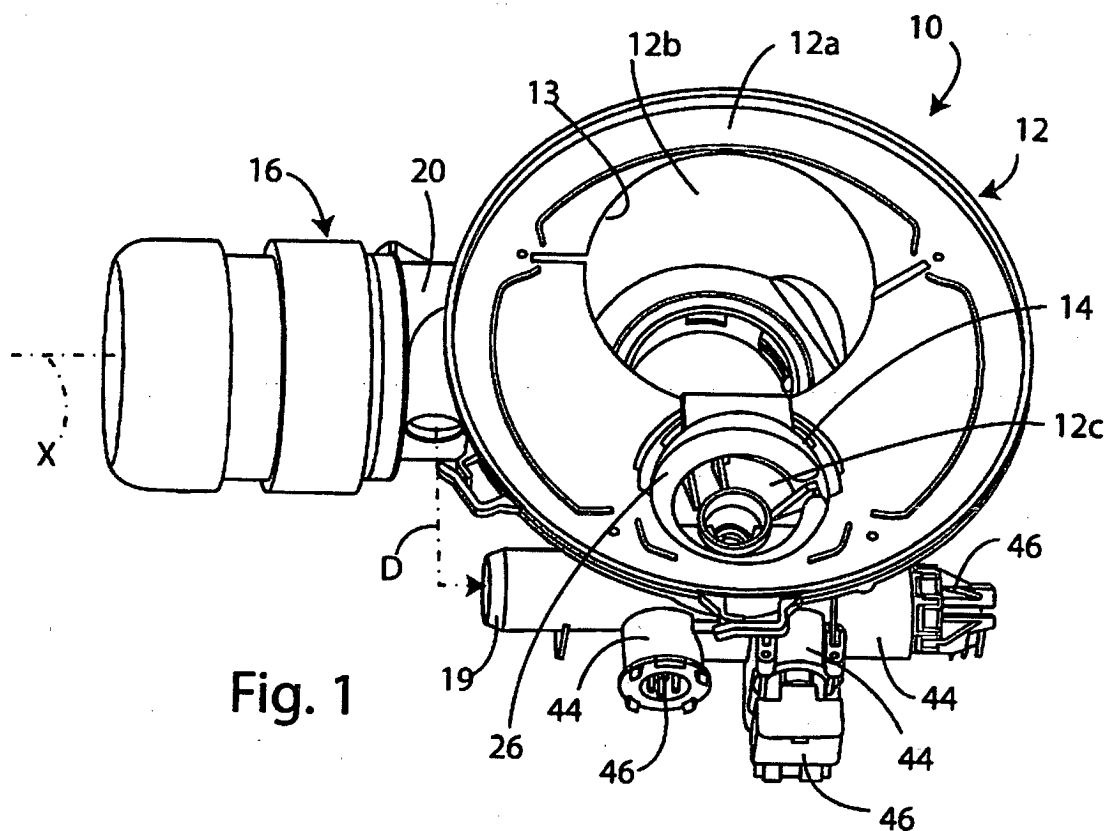
6. Siphon selon la revendication 5, dans lequel ledit fond (36) a un trou (38) permettant d'être traversé par un arbre (34) qui appartient audit moteur (32) et est capable de transmettre un mouvement audit inverseur d'écoulement (28). 5
7. Siphon selon la revendication 1, dans lequel ledit couvercle (22) présente une paire de sorties (24), chacune desquelles pouvant être raccordée hydrauliquement à un organe pulvérisateur mobile respectif dudit lave-vaisselle. 15
8. Siphon selon l'une quelconque des revendications précédentes, comprenant en outre un moyen de capteur pour la détection des données indiquant la position adoptée par l'inverseur (28). 20
9. Siphon selon l'une quelconque des revendications précédentes, dans lequel ledit système de chauffage comprend une résistance (26) positionnée dans ladite portion d'alimentation (12c). 25
10. Siphon selon la revendication 9, dans lequel ladite résistance (26) est montée dans un siège annulaire (40) obtenu proche du fond (36) de la portion d'alimentation (12c). 30
11. Siphon selon l'une quelconque des revendications précédentes, dans lequel ladite portion d'alimentation (12c) supporte au moins un raccord périphérique (44) menant dans un réceptacle qui est défini par ladite portion d'alimentation (12c) et est agencé pour loger des moyens de commande et/ou de sécurité (46). 35
12. Siphon selon la revendication 11, dans lequel lesdits moyens de commande (46) sont adaptés pour réaliser au moins une fonction choisie parmi : 40
  - la détection et/ou la commande des conditions de fonctionnement adoptées par au moins l'un entre ledit système de chauffage (26) et ledit inverseur (28), et 45
  - la détection des propriétés physiques/chimiques dudit écoulement de liquide s'écoulant à travers ladite portion d'alimentation (12c). 50
13. Siphon selon la revendication 12, dans lequel lesdits moyens de commande (46) comprennent au moins un appareil agencé pour commander l'alimentation électrique dudit système de chauffage (26) selon des critères prédéterminés. 55

14. Siphon selon la revendication 13, dans lequel ledit au moins un appareil est un interrupteur de courant ou un commutateur.

- 5 15. Lave-vaisselle comprenant un siphon (10) selon l'une quelconque des revendications précédentes.

16. Procédé de fabrication d'un siphon (10) selon l'une quelconque des revendications 1 à 14, ledit procédé comprenant les étapes de : 10

- fabrication, au moyen de moulage par injection, d'au moins ladite portion d'alimentation creuse (12c), le moule étant adapté pour recevoir, de manière amovible, un agencement approprié ; et
- fabrication et omission respectivement d'un trou (38) sur le fond (36) de ladite portion d'alimentation creuse (12c) en enlevant et en installant respectivement ledit agencement qui est amovible dudit - ou par rapport audit - moule ; dans lequel ledit trou (38) est capable d'être traversé par un arbre (34) appartenant à un moteur (32) configuré pour être couplé à un inverseur d'écoulement (28) et pour être monté sur ladite portion d'alimentation (12c) pour commander le mouvement dudit inverseur d'écoulement (28).



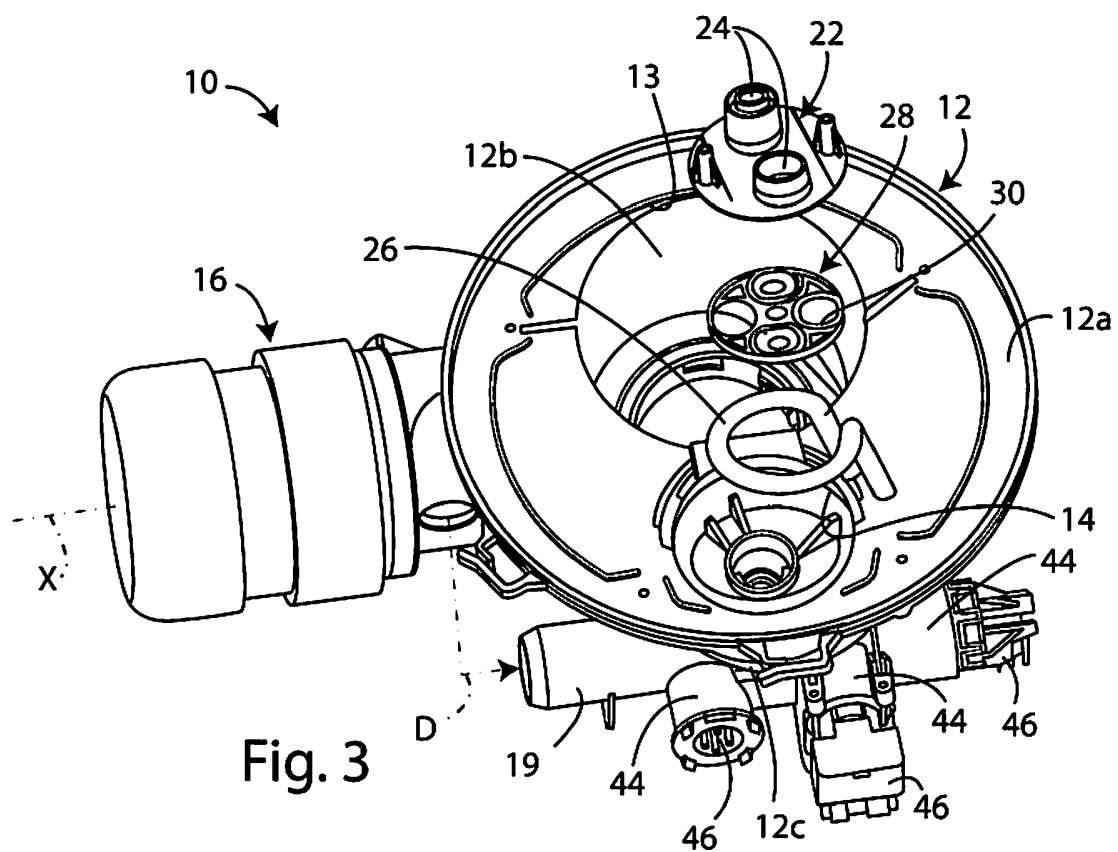


Fig. 3

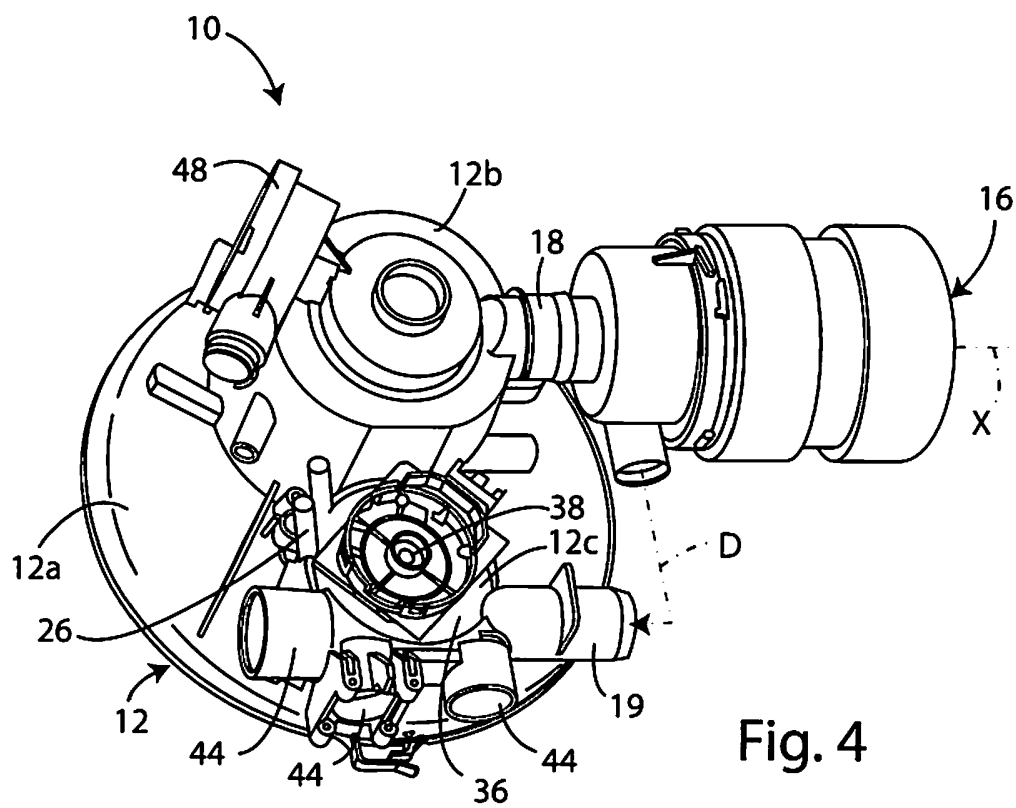


Fig. 4

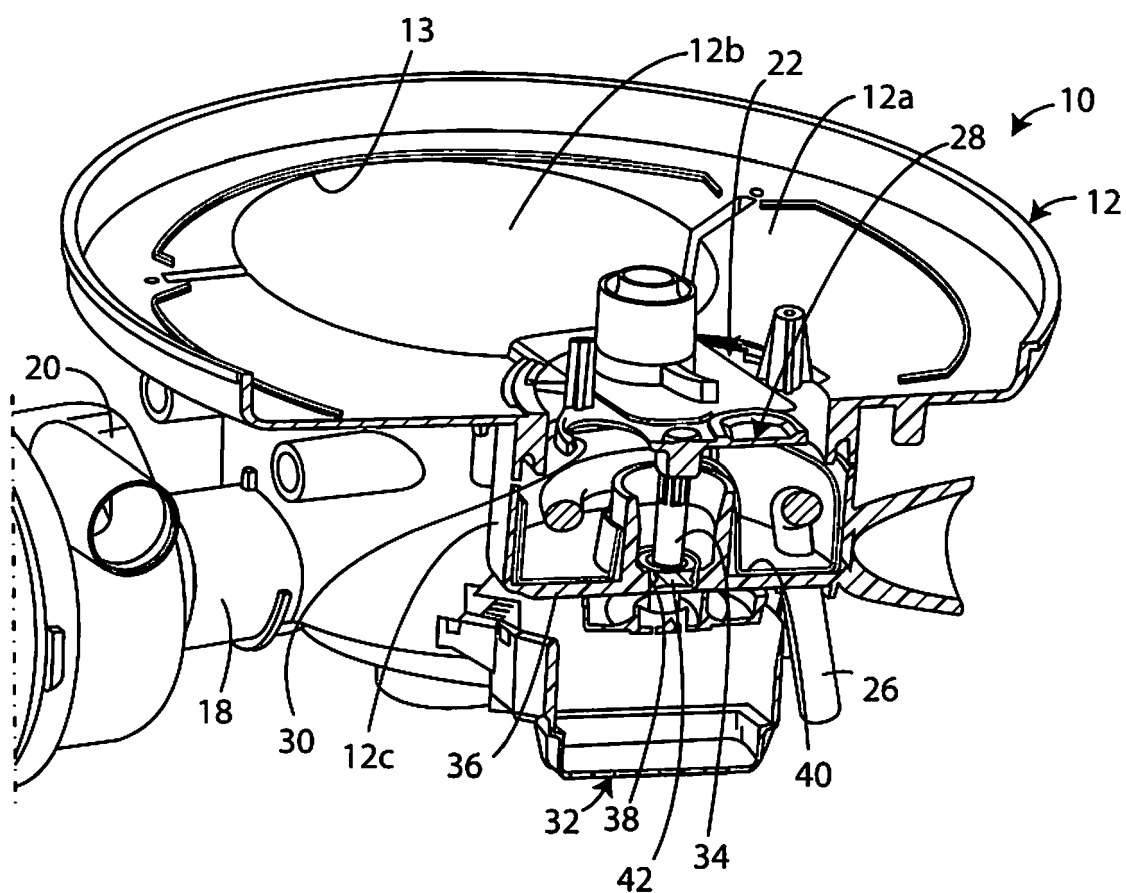


Fig. 5

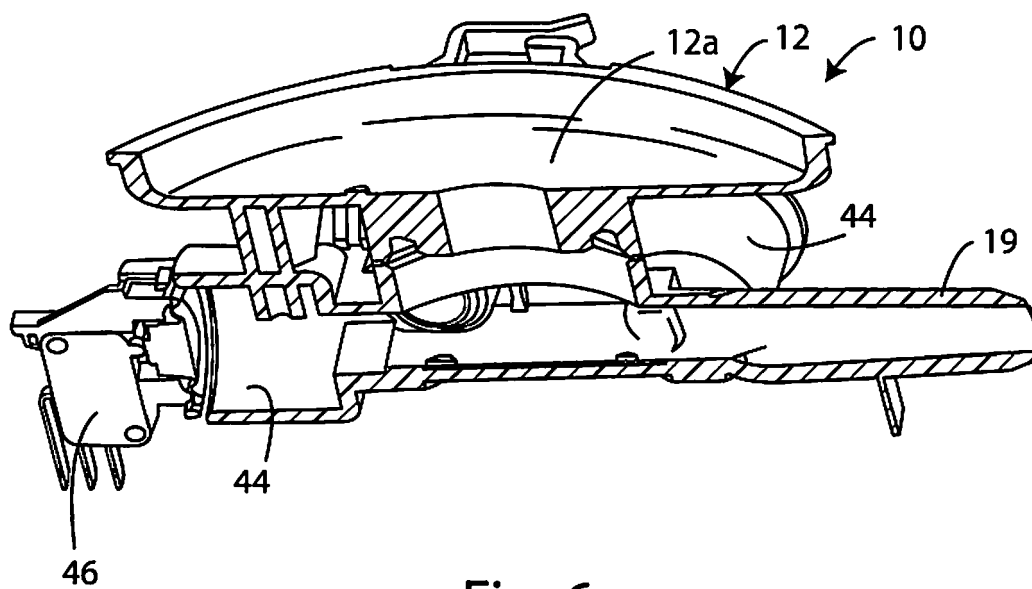


Fig. 6

**REFERENCES CITED IN THE DESCRIPTION**

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