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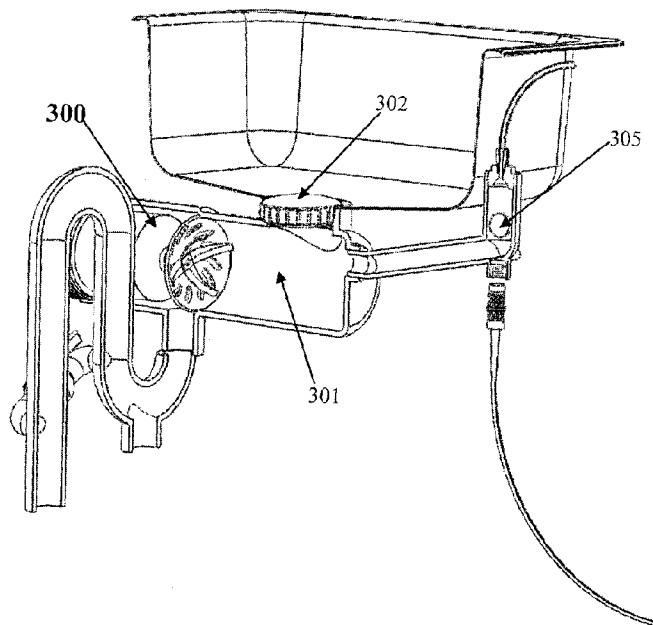
(72) Inventeur/Inventor:
NADON, GILLES, CA

(73) Propriétaire/Owner:
NADON, GILLES, CA

(74) Agent: NA

(54) Titre : MODULE D'ELIMINATION DE DECHETS SANS ODEUR

(54) Title: ODOURLESS WASTE DISPOSER UNIT



(57) **Abrégé/Abstract:**

A device for grinding and reducing food waste to be disposed of in sewage systems. The device eliminates disagreeable odours by using a swivel plug that, due to the positioning of a P-trap, retains around it fresh water from the last use of the tap. The fresh water serves as a barrier to odors by creating a partition, isolating the dirty water in the grinding chamber. Water is retained in the grinding chamber by the positioning of the P- trap. The matter to be grinded is segmented and tom up several times by a grinding apparatus made of cutting blades while it swirls in water until it is reduced to particles small enough to pass through openings in a spherical grid. The device can be adapted to different uses: residential, commercial or industrial.

ODOURLESS WASTE DISPOSER UNIT

Abstract

A device for grinding and reducing food waste to be disposed of in sewage systems. The device eliminates disagreeable odours by using a swivel plug that, due to the positioning of a P-trap, retains around it fresh water from the last use of the tap. The fresh water serves as a barrier to odors by creating a partition, isolating the dirty water in the grinding chamber. Water is retained in the grinding chamber by the positioning of the P-trap. The matter to be grinded is segmented and torn up several times by a grinding apparatus made of cutting blades while it swirls in water until it is reduced to particles small enough to pass through openings in a spherical grid. The device can be adapted to different uses: residential, commercial or industrial.

Description

The title of the invention is

Odourless waste disposer unit

This is a divisional application of the Canadian application 2,875,345 previously filed on 16 December 2014, entitled *Floating methanization system*. The odourless waste disposer unit complements the floating methanization system described in the Canadian patent application 2,875,345 because the ideal way to bring the putrescible material to the anaerobic processors is by way of the sewage systems.

The invention is in the technical field of waste disposer units, specifically in the field of mechanisms for reducing food waste.

Usually, when a waste disposer unit is installed, food waste is fed with water into this waste disposer unit stored under a kitchen sink. The food waste is ground within the disposer, reducing and comminuting said waste so that it can be flushed to the plumbing system of a house or commercial establishment. One of the problems identified is the fact that some bad odours may emanate from the unit.

The waste disposer unit of the present application addresses the problems of disagreeable odours emanating from the unit and from the sewage by using a swivel plug that allows clean water to remain all around said plug placed in an opening connecting a kitchen sink or other recipient to the plumbing system. Organic waste to be ground deposited by the user and water coming from the tap will go through said opening that constitutes the inlet to a grinding chamber. The features of the swivel plug and the positioning of a fitting for a pipe in the form of a U-shape, called an air trap or P-trap, allow a ring of clean water to remain in the opening around said swivel plug. The clean water serves to prevent the emanation of disagreeable odours from the waste disposer unit and from the sewage pipe.

Following is a general description of the figures that illustrate the realization of the invention: Figure 1 is a perspective cut view of the waste disposer unit showing the grinding chamber, the swivel plug and the P-trap. Figure 2 is another perspective cut view of the waste disposer unit showing the grinding chamber, the swivel plug and the P-trap. Figure 3 is an exploded view of the waste disposer unit showing the bypass valve. Figure 4 is another perspective cut view of the waste disposer unit showing the sealing cover plug. Figure 5 is an enlarged perspective cut view of the waste disposer unit shown in figures 1 and 4. Figure 6 is a close-up sectional view of the waste disposer unit showing the cutting blades and the spherical grid. Figure 7 is an enlarged exploded view of a rotation mandrel, the spherical grid and the back blade of the waste disposer unit. Figures 8, 9, 10A, and 10B show different embodiments of the waste disposer unit for industrial uses, figure 10B showing a detailed close-up view of part of figure 10A.

Referring to the drawings in greater detail and by reference characters thereto, there is illustrated an odourless waste disposer unit 300.

The waste disposer unit 300 being claimed comprises a grinding chamber 301 having an inlet opening in fluid communication with a recipient such as a kitchen sink or other apparatus used to receive organic waste and water destined to be disposed of in the sewage. The waste disposer unit 300 also has an outlet opening in fluid communication with a piping, said piping being in fluid communication with the sewage system. The grinding chamber 301 is positioned horizontally underneath a sink or other device used for the disposal of waste and water destined to the sewage system. The top portion of a P-trap is positioned slightly higher than the grinding chamber 301, this positioning of the P-trap allowing retention of water in the grinding chamber at all times. These elements can be best viewed in figures 1, 2 and 5.

Disposed at a longitudinal end of the grinding chamber is a grinding apparatus comprising a plurality of cutting blades in fluid connection with a spherical grid 306 comprising small openings to let small particles of waste go through but retaining large pieces of waste in the grinding chamber. The cutting blades segment the matter by tearing

it up several times while it swirls in the water remaining in the grinding chamber. The cutting blades of the grinding apparatus segment the objects by slicing them, or by tearing them up several times while they swirl in the water inside the grinding chamber 301. This process of cutting and tearing continues until the matter is reduced to fragments small enough to go through the openings of said spherical grid 306, best seen in figures 5, 6, and 7.

In order to prevent the proliferation and emanation of disagreeable odours and to achieve the odourless grinding of waste material, the principle consists in the establishment of a ring of clean water from the ultimate flow of the tap around a swivel plug 302. Besides serving to close the inlet opening, the essential function of the swivel plug 302 is to allow clean water to remain all around it, preventing the emanation of disagreeable odours from the grinding chamber and from the sewage pipe. The swivel plug 302 is a tiltable and removable plug of round shape constructed so that the diameter of said plug is slightly less than the diameter of the inlet opening in which it is positioned. The swivel plug 302 lets water flow through the inlet opening of the grinding chamber 301 to eventually reach the outlet opening of said grinding chamber in communication with the sewage pipe. Each time the sink is used and water from the tap flows down the drain, a small quantity of clean water remains all around said swivel plug 302 due to the positioning of the P-trap. The fresh clean water remaining around the swivel plug 302 prevents disagreeable odours from emanating from the grinding chamber 301 and from the sewage by creating a partition of clean water from the tap. The principle is like the principle of the P-traps that are usually a part of all plumbing installations. The swivel plug 302 can easily be tilted and removed by the user to introduce large pieces of organic waste to be ground by the waste disposer unit. These elements are illustrated in figures 1 and 2. A sealing cover plug 304, best seen in figures 4 and 5, can be added over when one wishes to fill the sink.

The P-trap that maintains the water level is equipped with a bypass valve 303 (seen in figure 3) that allows complete drainage when maintenance is required.

A float 305, shown in figures 1, 2, 4 and 5, can be used to activate the mechanism when water accumulates in the sink. Because the grinding apparatus and the spherical grid 306 in the grinding chamber 301 make a fence, holding the not yet chopped matter, the water flowing from the tap may then rise in level and lift the float 305 that will engage the grinding motion to reduce that matter. When the matter has been evacuated from the grinding chamber 301, the water will be free to rest to its proper level, relieving the contact from the float and stopping the motion. In this way, we have an automation potential.

Behind the spherical grid 306, there may be one or several back blades 307, best seen in figure 7. The cutting edges of these blades segment the particles coming through the openings of the grid 306. The tail edges of the blades 307 rise apart as a propeller pitch to create a vortex to pump the material when necessary.

The waste disposer unit can be fabricated in different sizes and adapted to commercial and industrial uses. A few possible embodiments are illustrated in figures 8, 9, 10A, and 10B. As can be seen in figure 9, the waste disposer unit can be installed inside a recipient big enough to contain large solid matter to be ground. Since these large objects swirl in the recipient by the impact, the turbulence and the vortex coming from the rotation of the back blades 307, they can be torn up and shredded into particles. Figures 10A and 10B show another possible embodiment for industrial use. In this case, the invention can be used to extract decanted layers of sediments.

It will be understood that the above described embodiments are for purposes of illustration only, and that changes or modifications may be made thereto without departing from the spirit and scope of the invention.

Claims

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A device for the grinding and reduction of organic waste and the prevention of odours emanating from said device comprising:

a grinding chamber for grinding and reducing organic waste, said grinding chamber positioned horizontally underneath a sink or other recipient, said sink or recipient receiving organic matter to be ground, said organic matter being conveyed with a water supply, said grinding chamber further comprising an inlet opening in fluid communication with said sink or recipient and an outlet opening in fluid communication with a piping of a sewage system,

a P-trap positioned alongside said grinding chamber with top portion of said P-trap extending higher than the grinding chamber to allow retention of water in said grinding chamber at all times,

disposed at a longitudinal end of said grinding chamber is a plurality of cutting blades in fluid connection with a spherical grid, wherein said cutting blades are positioned in front of said spherical grid, said spherical grid comprising openings to let ground matter pass through, said cutting blades and spherical grid are constructed and arranged to cut, tear, grind and comminute organic waste while said organic waste swirls in water in said grinding chamber,

disposed at said inlet opening of said grinding chamber is a removable and tiltable swivel plug, said swivel plug permitting retention of clean water from said water supply because said P-trap is positioned higher than said grinding chamber, said clean water around said swivel plug preventing disagreeable odours from emanating from said grinding chamber and said sewage system.

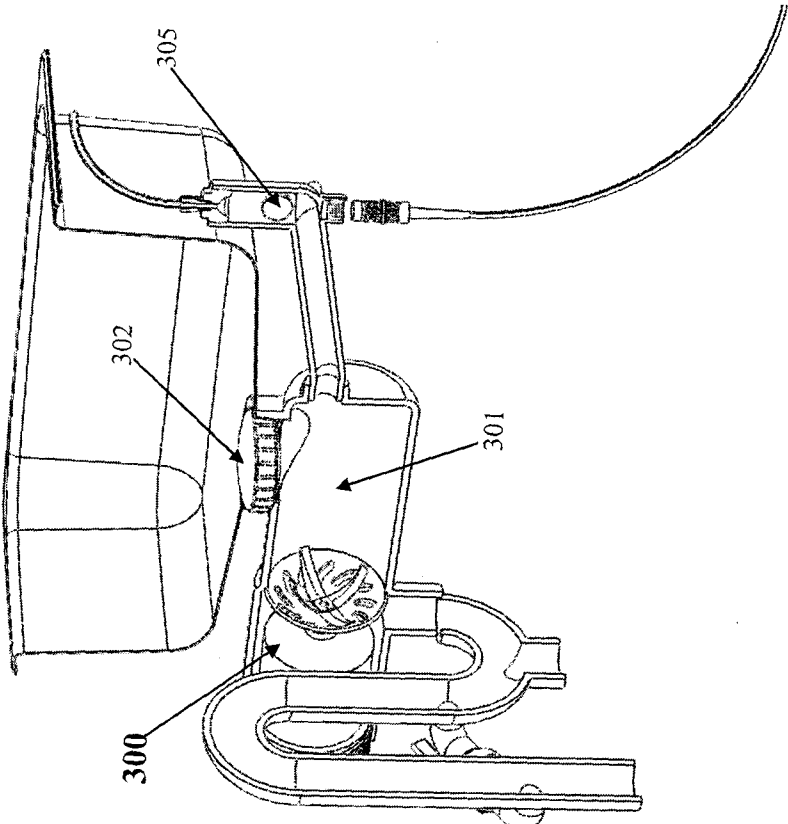


FIG. 1

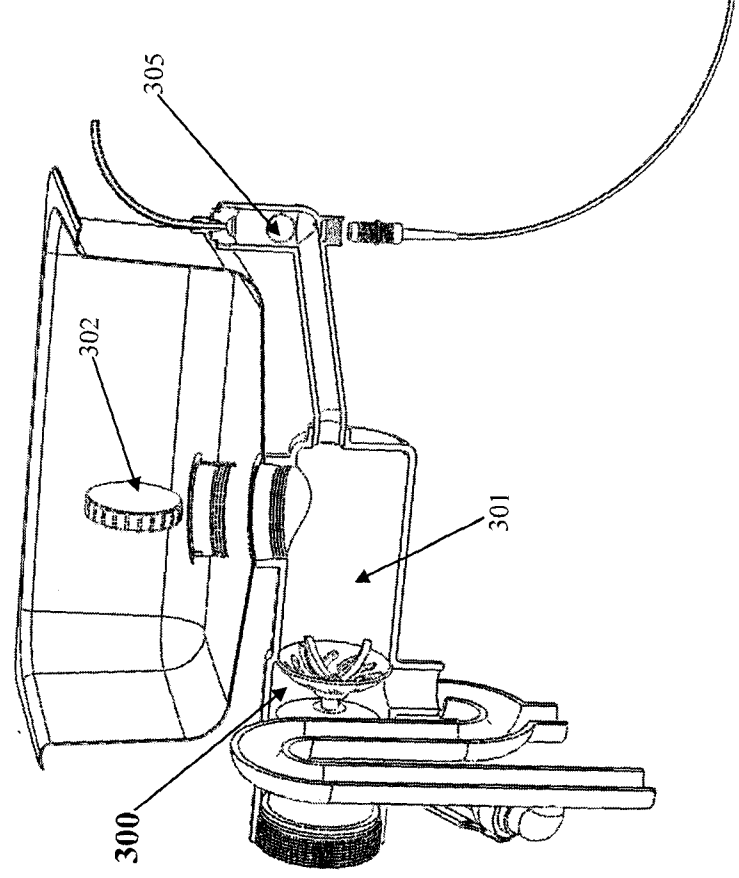


FIG. 2

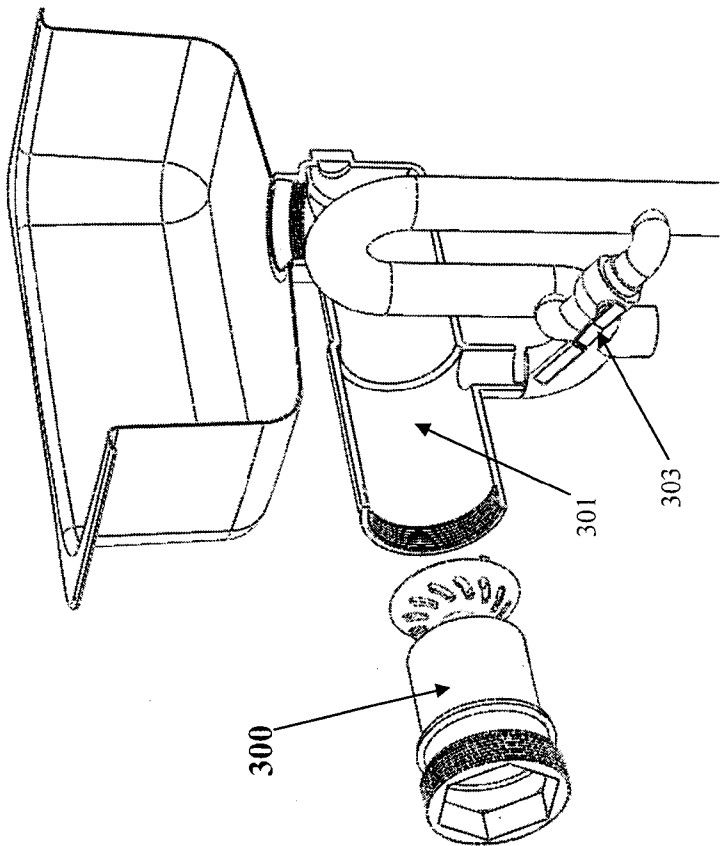


FIG. 3

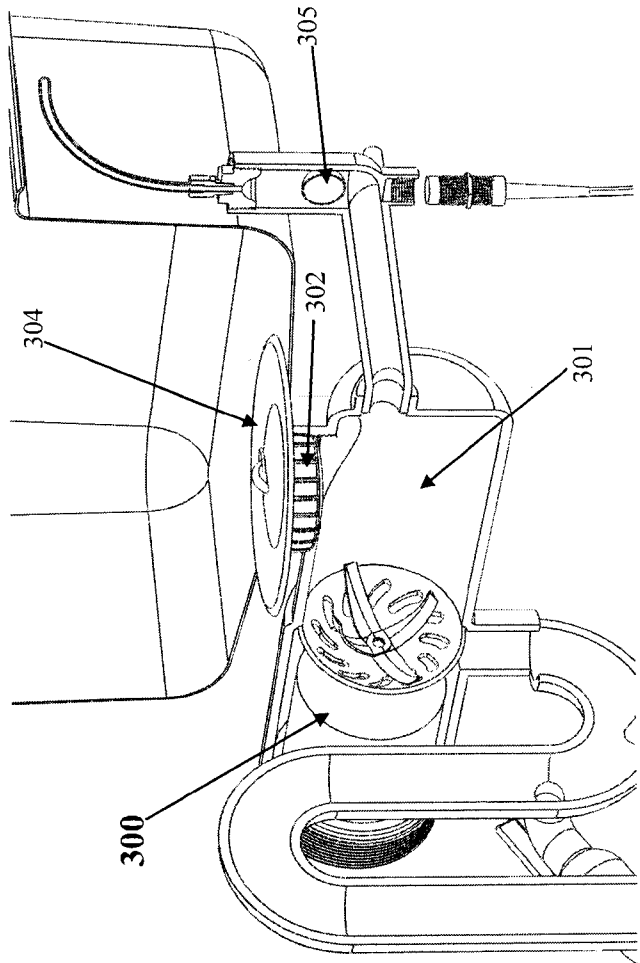


FIG. 4

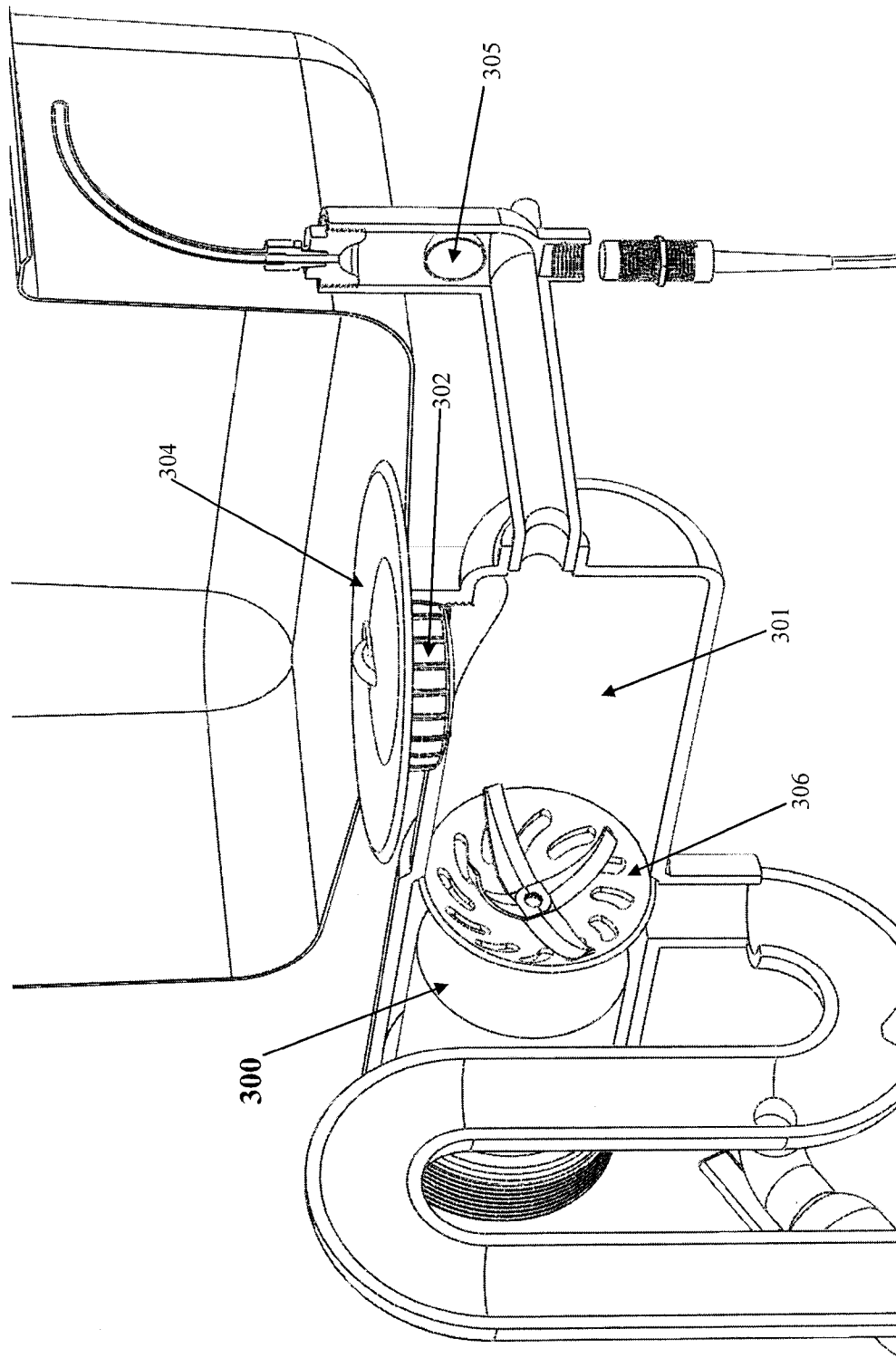


FIG. 5

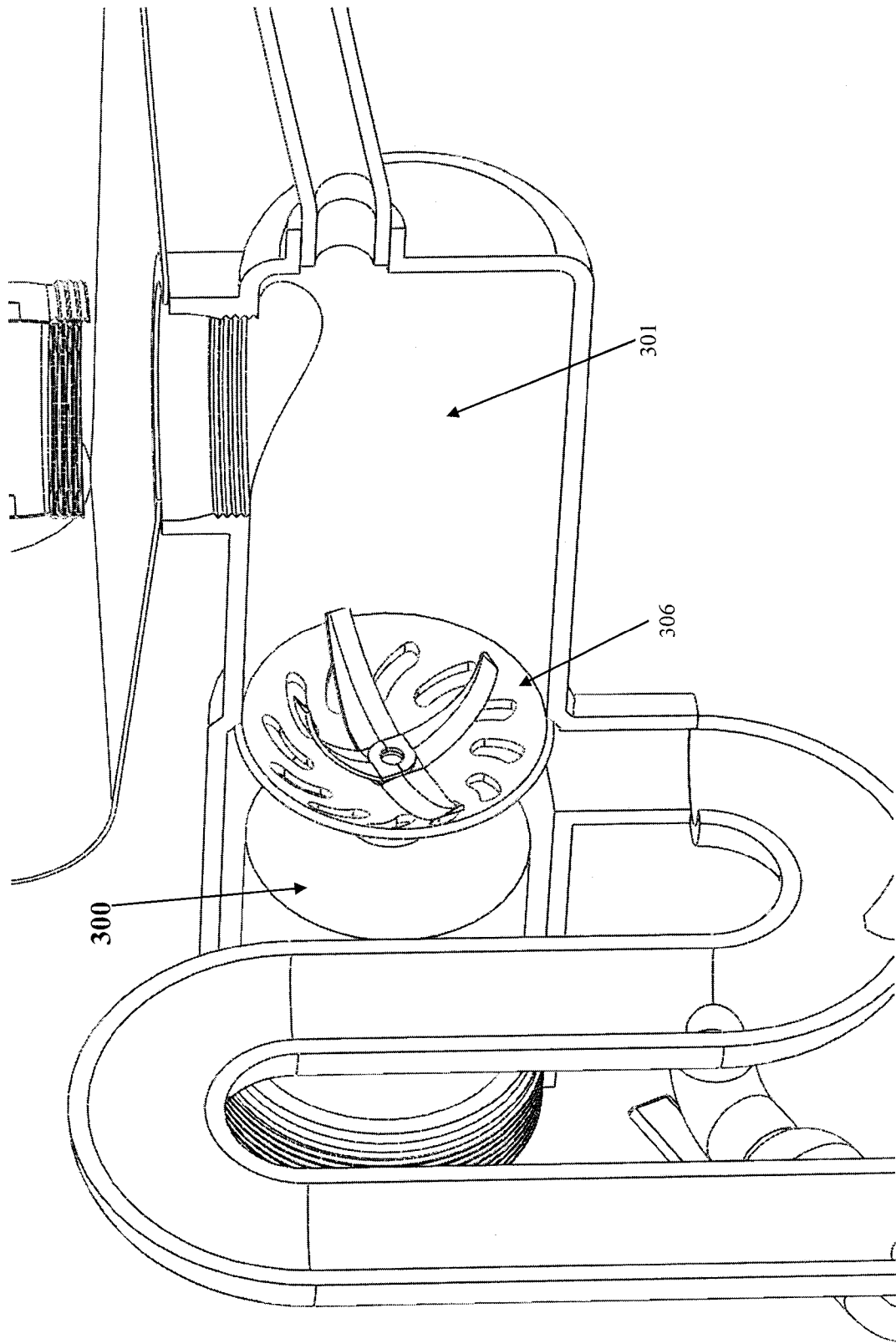


FIG. 6

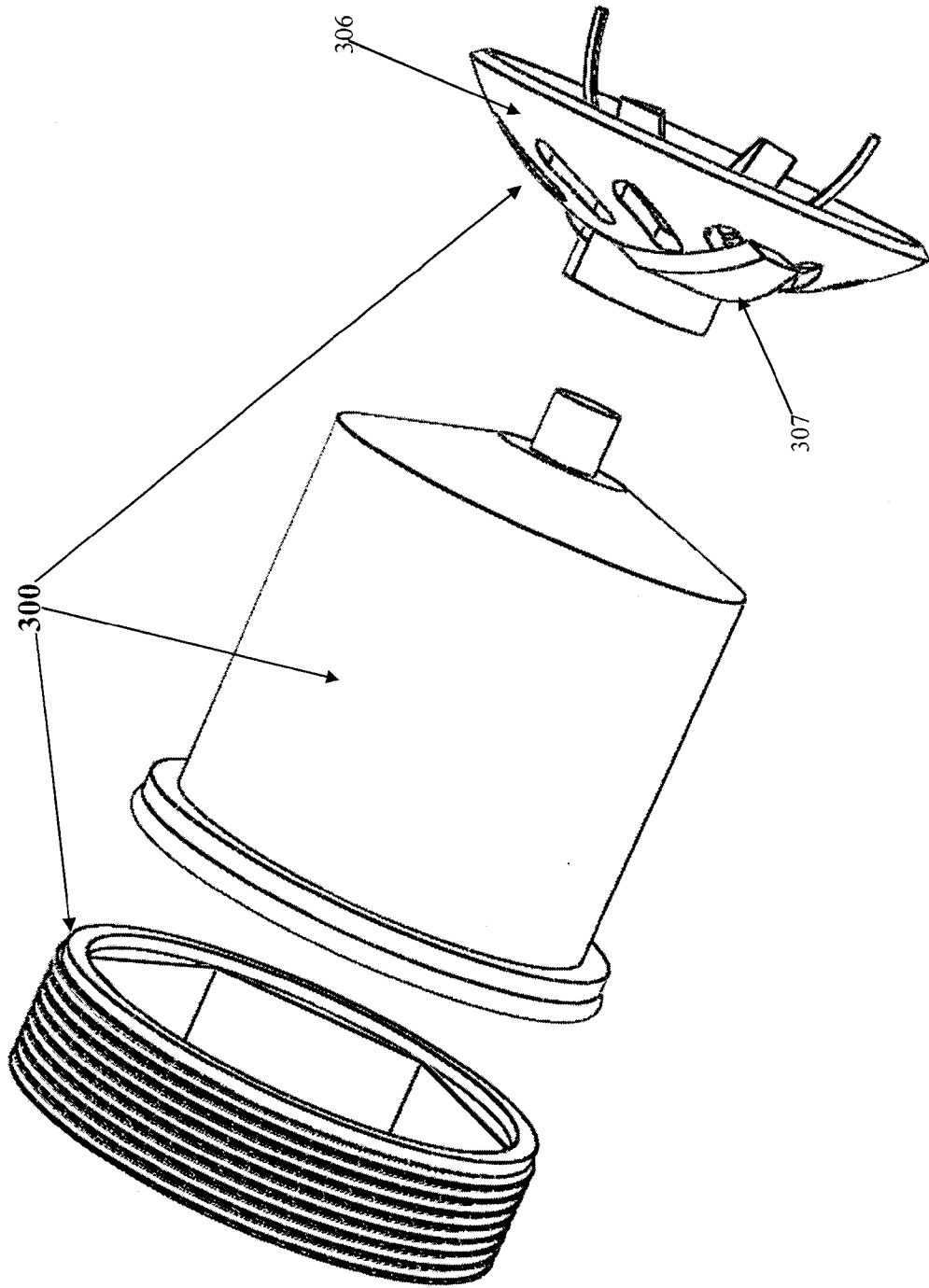


FIG. 7

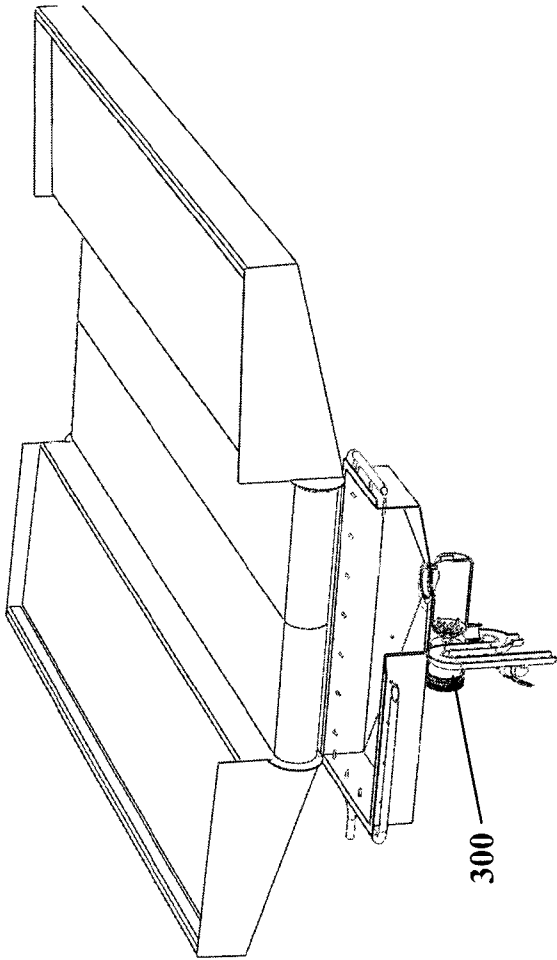


FIG. 8

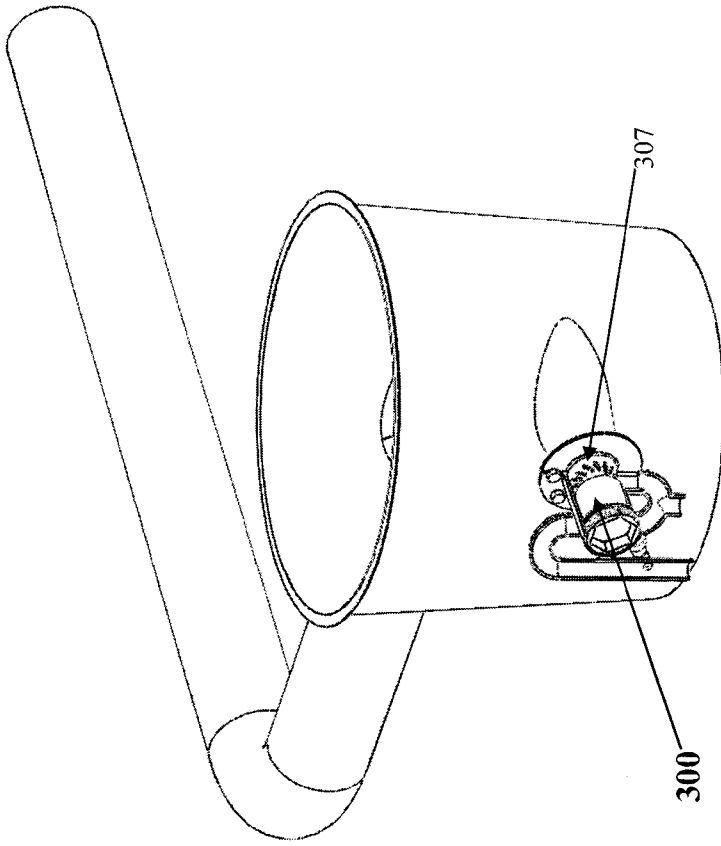


FIG. 9

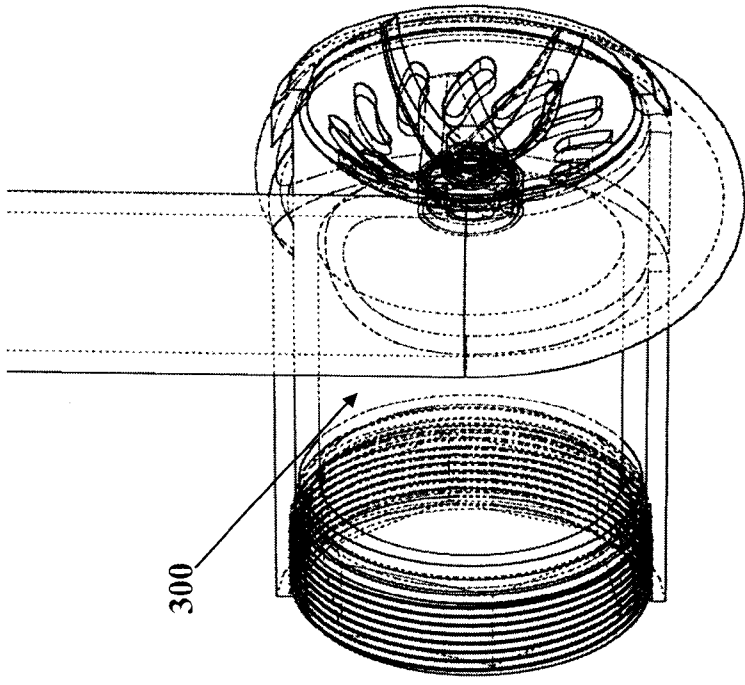


FIG. 10B

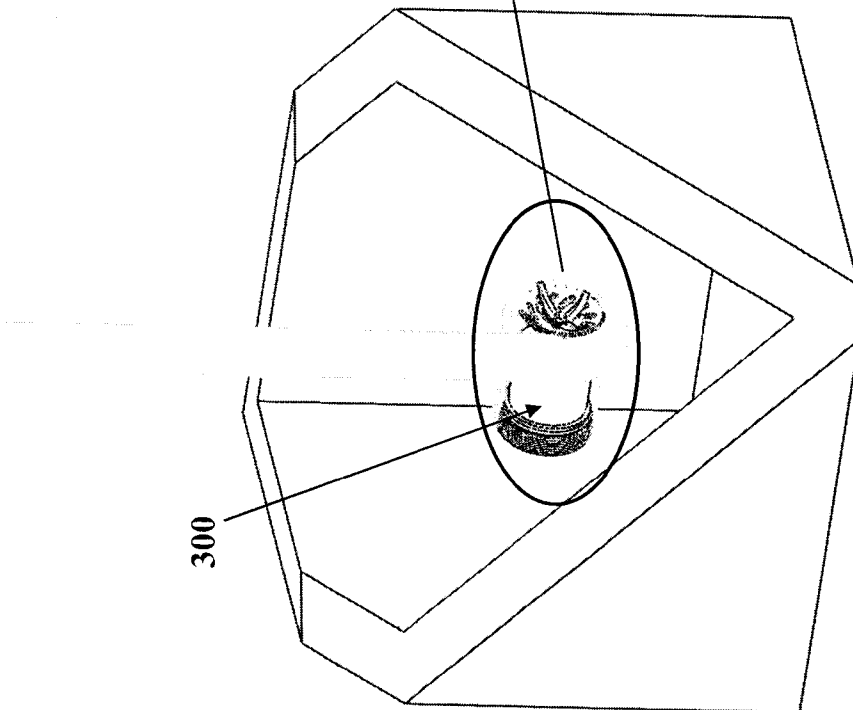


FIG. 10A

