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- (71) Applicant: **KONINKLIJKE PHILIPS N.V.** [NL/NL];
High Tech Campus 5, NL-5656 AE Eindhoven (NL).
- (72) Inventor: **LINNEWIEL, Remco**; c/o High Tech Campus,
Building 44, NL-5656 AE Eindhoven (NL).
- (74) Agents: **COOPS, Peter** et al.; c/o High Tech Campus,
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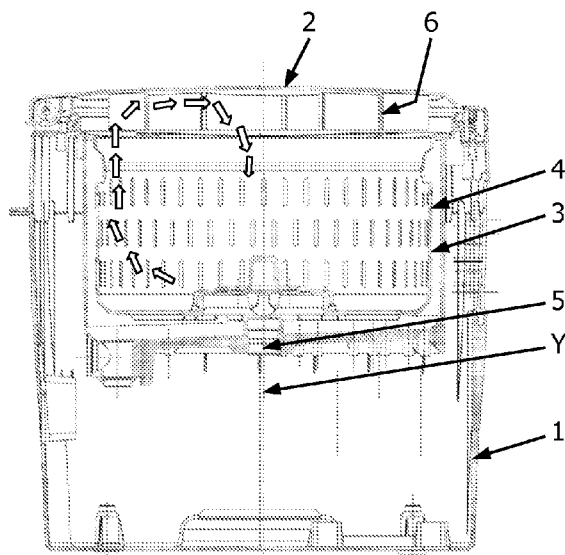


FIG. 1

(57) Abstract: The present invention relates to a vegetable and fruit cleaning machine, comprising: a machine body (1), a lid body (2), a cleaning bucket (3) disposed in the machine body (1), and a rotating basket (4) located in the cleaning bucket (3), wherein a gap (7) between the cleaning bucket (3) and the rotating basket (4) includes a narrow area (71) and a wide region (72) on a cross section thereof. Due to the arrangement of the narrow area and wide area, a water flow in the gap is enabled to advance in a rotation direction of the rotating basket and enters from the wide area to the narrow area. As a flow path of the water narrows, the water flow will be pressurized so that the water flow speed is improved. As such, an upward water flow (which, guided by the lid body, forms a downward washing water flow) and inward water flow enhances the mechanical cleaning effect for the vegetables and fruits.

VEGETABLE AND FRUIT CLEANING MACHINE

FIELD OF THE INVENTION

5 The present invention relates to a cleaning device, and particularly to an vegetable a fruit cleaning machine.

BACKGROUND OF THE INVENTION

10 Conventional vegetable and fruit cleaning machines usually employ a cleaning bucket plus a built-in rotating basket to clean vegetables or fruits or the like. During operation of the vegetables and fruit cleaning machine, water in the cleaning bucket, driven by the rotating basket, forms a rotating water flow to clean the vegetables and fruits. Specifically speaking, a power portion of the vegetable and fruit cleaning machine brings the rotating basket into rotation and thereby agitates water in the cleaning bucket to press against an inner
15 wall of the cleaning bucket to form the rotating water flow, and the vegetable and fruits are cleaned by drifting along with the rotating water flow. During the cleaning procedure, part of top water flow arrives a lid body of the vegetable and fruit cleaning machine during rotation, and falls due to resistance from the lid body to wash the vegetables and fruits to some extent.

20 However, since the above vegetable and fruit cleaning machine lid body is not particularly designed so that water falling from the lid body might not form a water flow and at least might not form a water flow for washing the vegetables and fruits, thereby affecting achievement of a better cleaning effect. In order to improve the cleaning effect, Applicant of the present application once advanced an improved cleaning machine lid body which is provided with guide ribs for guiding water so that upward water flow lifted by the rotating
25 basket during rotation onto the lid body is guided again to form a downward washing water flow.

 Although the cleaning effect of the cleaning machines in the prior art (e.g., removing mud, sand or the like on the vegetable and fruits) can already meet users' needs,

how to further enhance the mechanical cleaning effect of the machine to better remove the mud and sand on the vegetable and fruits is still a challenging subject matter for those skilled in the art.

5 SUMMARY OF THE INVENTION

Therefore, it is advantageous to provide a vegetable and fruit cleaning machine with improved cleaning effects.

To this end, according to one aspect of the present invention, there is provided a vegetable and fruit cleaning machine, comprising: a machine body, a lid body, a cleaning
10 bucket disposed in the machine body, and a rotating basket located in the cleaning bucket, wherein, a gap between the cleaning bucket and the rotating basket includes a narrow area and a wide area on a cross section thereof. With such an arrangement, when a water flow in the gap is enabled to advance in a rotation direction of the rotating basket and enters from the wide area to the narrow area, the water flow will be pressurized and the water flow speed is
15 improved due to a flow path of the water narrowing. As such, an upward water flow (which, guided by the lid body, forms a downward washing water flow) and inward water flow enhances the mechanical cleaning effect for the vegetables and fruits.

Preferably, there are at least one narrow area and at least one wide area.

Preferably, the cleaning bucket has an oval cross section, and the rotating
20 basket has a circular cross section so as to form two narrow areas and two wide areas distributed alternately. On account of this design, the water flow is pressurized twice during travel in the gap, and the mechanical cleaning effect of the vegetables and fruits is further enhanced.

Preferably, the cleaning bucket has a flower basket-shaped cross section, and
25 the rotating basket has a circular cross section so as to form a plurality of narrow areas and a plurality of wide areas distributed alternately. On account of this design, the water flow is pressurized for a plurality of times during travel in the gap, and the mechanical cleaning effect of the vegetables and fruits is further enhanced.

These aspects and other aspects of the present invention will be described clearly with reference to embodiments described below.

BRIEF DESCRIPTION OF DRAWINGS

The structure and operating modes and further objects and advantages of the present invention will be made more apparent by the following description with reference to the figures, wherein the same reference number designates the same component:

Fig.1 is a schematic cross-sectional view of a vegetable and fruit cleaning machine according to a preferred embodiment of the present invention;

Fig.2 is a perspective view of the vegetable and fruit cleaning machine according to the preferred embodiment of the present invention, showing a lid body-opened state;

Fig.3 is a top view of the vegetable and fruit cleaning machine of Fig.2;

Fig.4 is a perspective view of the vegetable and fruit cleaning machine according to the preferred embodiment of the present invention similar to Fig.2, but the rotating basket is already removed to clearly show an oval shape of the cleaning bucket.

Fig.5 is a top view of the vegetable and fruit cleaning machine of Fig.4;

Fig.6 is a perspective view of the vegetable and fruit cleaning machine according to another preferred embodiment of the present invention similar to Fig.4, but the rotating basket is already removed to clearly show a flower basket shape of the cleaning bucket.

Fig.7 is a top view of the vegetable and fruit cleaning machine of Fig.6.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

As required, specific embodiments of the present invention will be revealed here. However, it should be appreciated that the embodiments revealed here are only typical examples of the present invention and may be in various forms. Therefore, specific details revealed here cannot be regarded as restrictive, but only serve as a basis for claims and serve as a typical basis for teaching those skilled in the art to differently apply the present invention in any suitable manner in practice, including use of various features revealed here in combination with features that might not be explicitly revealed.

As shown in Fig.1, a vegetable and fruit cleaning machine according to a preferred embodiment of the present invention comprises a machine body 1, a lid body 2, a cleaning bucket 3 disposed in the machine body, a rotating basket 4 located in the cleaning bucket, a drive motor 5 located at a bottom portion of the machine body 1 and driving the rotating basket 4 to rotate via a transmission shaft. Guide ribs 6 for guiding water are provided on an inner surface of the lid body 2, a seal ring (not shown) is provided at an outer periphery of the lid body 2, and the lid body 2 is watertight sealed relative to an upper portion of the machine body 1 by virtue of the seal ring. The rotating upward water flow in the vegetable and fruit cleaning machine, upon arriving the lid body 2, forms a water flow via the guide ribs 6, wherein a water flow is shown by arrows in Fig.1.

A substantial improvement of the vegetable and fruit cleaning machine of the present embodiment over the prior art lies in the cleaning bucket 3. As shown in Figs.2-3 with reference to Figs.4-5, a shape or cross-sectional shape of the cleaning bucket 3 is no longer circular in the prior art as viewed from top, but oval. When the rotating basket 4 having a circular shape or cross sectional shape as viewed from top is mounted in place in the cleaning bucket 3, a gap 7 between the cleaning bucket 3 and the rotating basket 4 includes a narrow area 71 and a wide region 72 on the cross section, as viewed from top of the vegetable and fruit cleaning machine. As clearly seen from Fig.3, in the present embodiment, there are two narrow areas 71 and two wide areas 72 which are distributed alternately in a rotation direction of the rotating basket 4.

Again as shown in Fig.3, when the rotating basket 4 rotates in the cleaning bucket 3 in a clockwise direction, since the gap between the cleaning bucket 3 and the rotating basket 4 widens and narrows alternately in the rotation direction, the water flow driven by the rotating basket 4 enters from the wide area 72 into the narrow area 71 in the rotation direction, and then enters from the narrow area 71 to the wide area 72, and then starts a new circulation. In this case, the speed of the water flow varies for ever. When the water flow enters the narrow area 71 from the wide area 72, the speed of the water flow increases, on the one hand, urging the water flow to flow in an upward direction so that water rushing onto the lid body 2, guided by the guide ribs 6, forms a downward water flow to wash the vegetables and fruits in the rotating basket 4 and thereby enhance the cleaning effect; on the other hand, urging the water flow to, in an inward direction, enter the rotating basket 4 via holes on the rotating basket 4 to wash the vegetables and fruits in the rotating basket 4. As such, the mechanical cleaning effect by the water flow for the vegetables and fruits is naturally enhanced.

Certainly, an oval shape is only a shape of the cleaning bucket 3 in an embodiment of the vegetable and fruit cleaning machine according to the present invention. According to the design idea of the instant invention, there is provided a vegetable and fruit cleaning machine in another embodiment. As shown in Figs.6 to 7 (for the sake of clarity, the rotating basket 4 is removed from the figures), the shape or cross-sectional shape of the cleaning bucket 3' is a shape of a flower basket as viewed from top. As such, when the rotating basket 4 having a circular shape or cross sectional shape as viewed from top is mounted in place in the cleaning bucket 3', a gap 7' between the cleaning bucket 3' and the rotating basket 4 naturally includes a plurality of narrow areas 71' and a plurality of wide region 72' (the figures only illustrates the positions thereof) on the cross section (namely, in the rotation direction), as viewed from top of the vegetable and fruit cleaning machine. These narrow areas 71' and the wide areas 72' are distributed alternately in a rotation direction of the rotating basket 4. As in the above embodiment, when the water flow in the cleaning bucket 3' flows from the wide areas 72' into the narrow areas 71', since a flow path narrows

in dimensions to increase a pressure of the water flow, the water pressure at the locality urges the increase of the speed of the water flow so that upward water flow (which, guided by the guide ribs of the lid body, forms a downward washing water flow) and inward water flow increase the washing strength for the vegetables and fruits and improves the mechanical cleaning effect. Furthermore, since there are a plurality of narrow areas and wide areas distributed alternately in the present embodiment, the water flow is pressurized for a plurality of times in the rotation direction so that the mud and sand on the vegetables and fruits in the rotating basket 4 is more easily removed. Meanwhile, a user may have a better visual and perceptual knowledge of cleaning circulation. The mechanical cleaning effect of the vegetable and fruit cleaning machine is effectively improved.

As compared with the prior art, in the vegetable and fruit cleaning machine of the present invention the gap between the cleaning bucket and the rotating basket 4 includes narrow areas and wide areas in the rotation direction, i.e., a size of the gap varies, so the water pressure or water flow speed at the locality also varies. Particularly during the flow of water from the wide areas to the narrow areas, since the water pressure or water flow speed increases abruptly, the water pressure or water flow speed of the upward water flow and the inward water flow increases, thereby enhancing the mechanical cleaning effect by the water flow for the vegetables and fruits.

It should be appreciated that although the above two embodiments respectively illustrate a cleaning bucket with an oval cross section and a flower basket-shaped cross section, the cross-sectional shape of the cleaning bucket may be any shape other than circular shape under the circumstances that the cross section of the rotating basket 4 is circular as in the prior art according to the idea of the present invention. For example, besides the oval shape and the flower basket shape, the cross section of the cleaning bucket may be designed to be circular in one half and oval in the other half. As such, the gap between the cleaning bucket and the rotating basket has one narrow area and one wide area in the rotation direction of the rotating basket; the cross section of the cleaning bucket may also be designed to be in a flower basket shape different from the flower basket shape as stated in the above another

embodiment, for example, the number of flower petals of the flower basket may be changed from 9 to for example 3 to 8.

Although the above reveals that the cross section of the rotating basket 4 is circular as in the prior art, and the cross-sectional shape of the cleaning bucket is changed in order to form the water flow gap including the narrow areas and wide areas, for example as stated in the above embodiments, it should be appreciated that according to the idea of the present invention, the cross-sectional shape of the cleaning bucket may be maintained to be circular and the cross-sectional shape of the rotating basket 4 is changed so as to enable the water flow gap between the cleaning bucket and the rotating basket to comprise narrow areas and wide areas.

Noticeably, "cross section" mentioned above refers to a section perpendicular to a longitudinal axis Y of the drive motor 5.

The technical content and technical features of the present invention are already revealed as above. However, it should be appreciated that under the creation ideas of the present invention, those skilled in the art may make various changes and improvements to the above structures and shapes, for example, the shapes and number of the narrow areas and wide areas may vary according to the creation ideas of the present invention, including combinations of technical features revealed individually here or to be protected, obviously including other combinations of these features. These variations and/or combinations all fall within the technical field to which the present invention relates, and fall within the protection scope of claims of the present invention. It is noticeable that according to practices, an individual element used in claims includes one or more such elements. Besides, any reference number in the claim set should not be understood as limiting the scope of the present invention.

CLAIMS:

1. A vegetable and fruit cleaning machine, comprising: a machine body, a lid
5 body, a cleaning bucket disposed in the machine body, and a rotating basket located in the
cleaning bucket, characterized in that, a gap between the cleaning bucket and the rotating
basket includes a narrow area and a wide area on a cross section thereof.

2. The vegetable and fruit cleaning machine according to claim 1, characterized
10 in that there are at least one narrow area and at least one wide area.

3. The vegetable and fruit cleaning machine according to claim 2, characterized
in that the cleaning bucket has an oval cross section, and the rotating basket has a circular
cross section so as to form two narrow areas and two wide areas, the narrow and wide areas
15 being distributed alternately.

4. The vegetable and fruit cleaning machine according to claim 2, characterized
in that the cleaning bucket has a flower basket-shaped cross section, and the rotating basket
has a circular cross section so as to form a plurality of narrow areas and a plurality of wide
20 areas distributed alternately.

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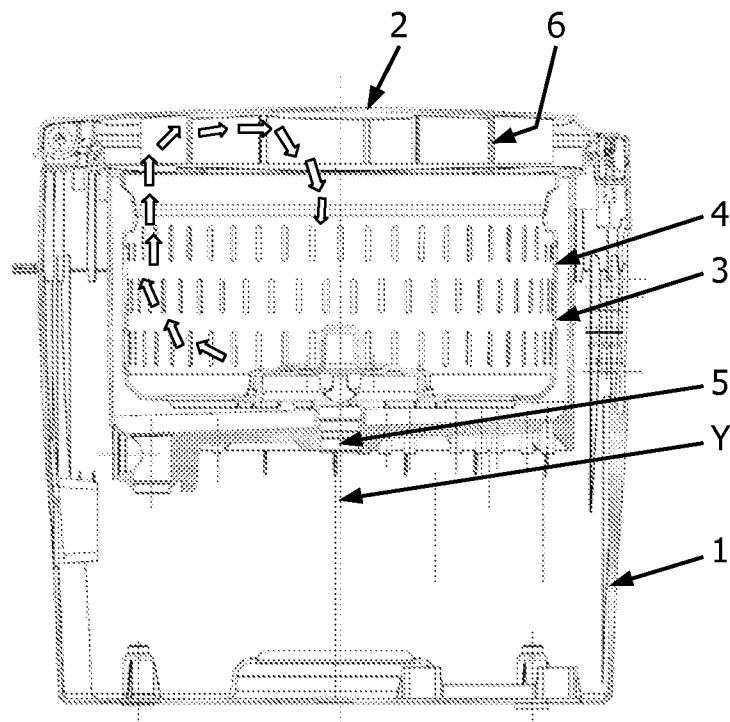


FIG. 1

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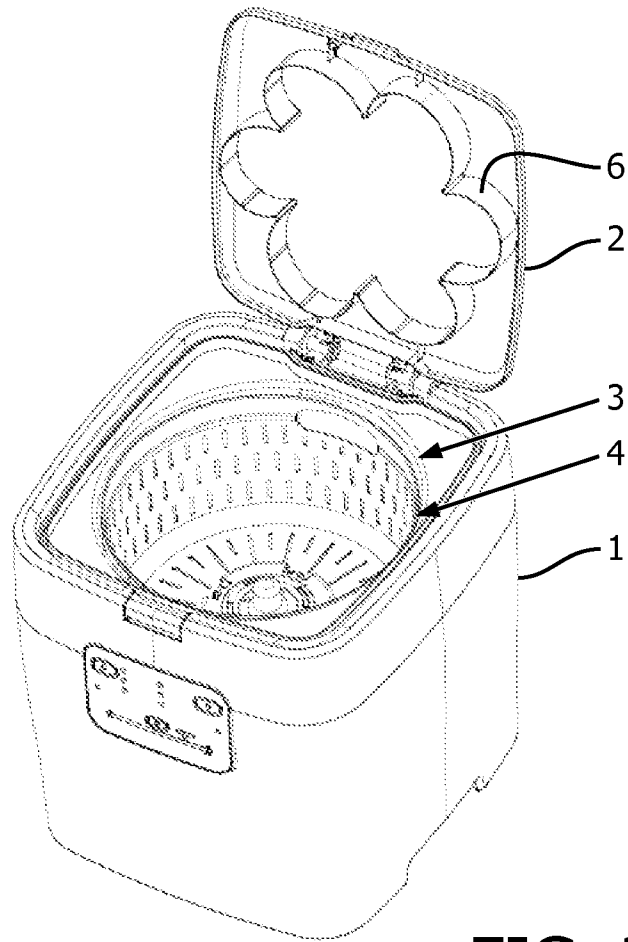


FIG. 2

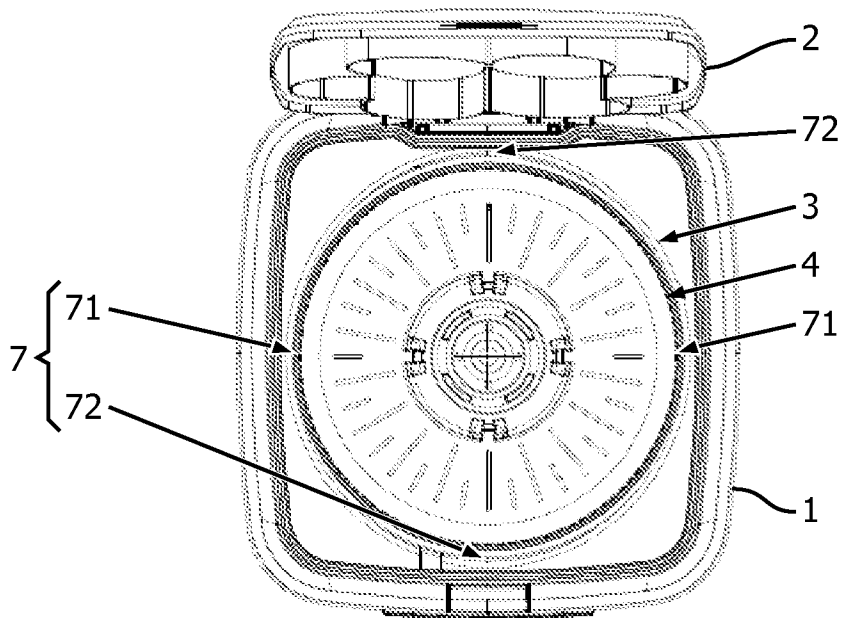


FIG. 3

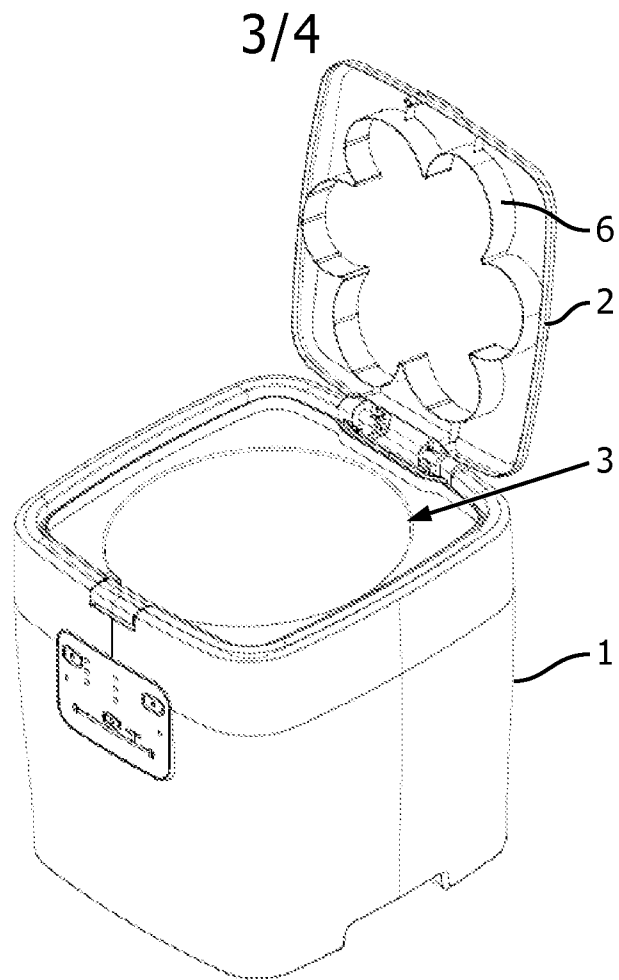


FIG. 4

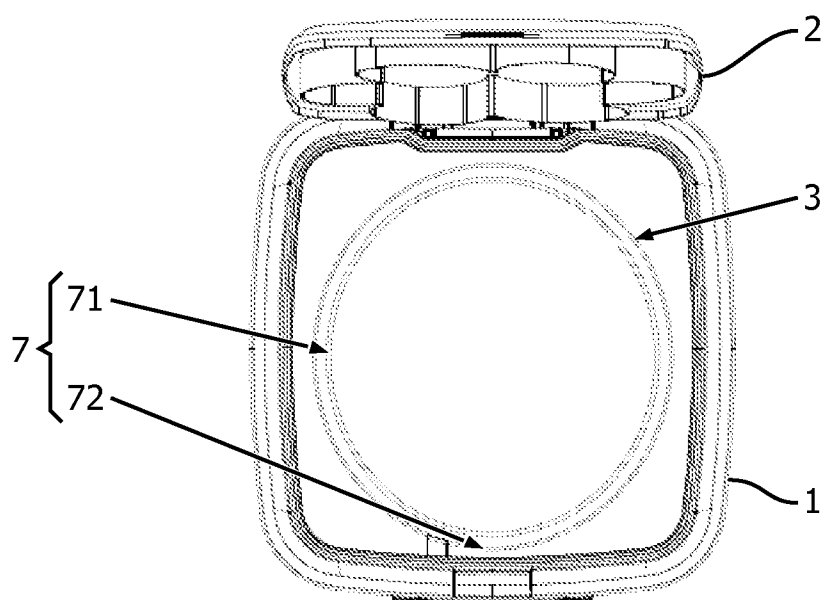


FIG. 5

4/4

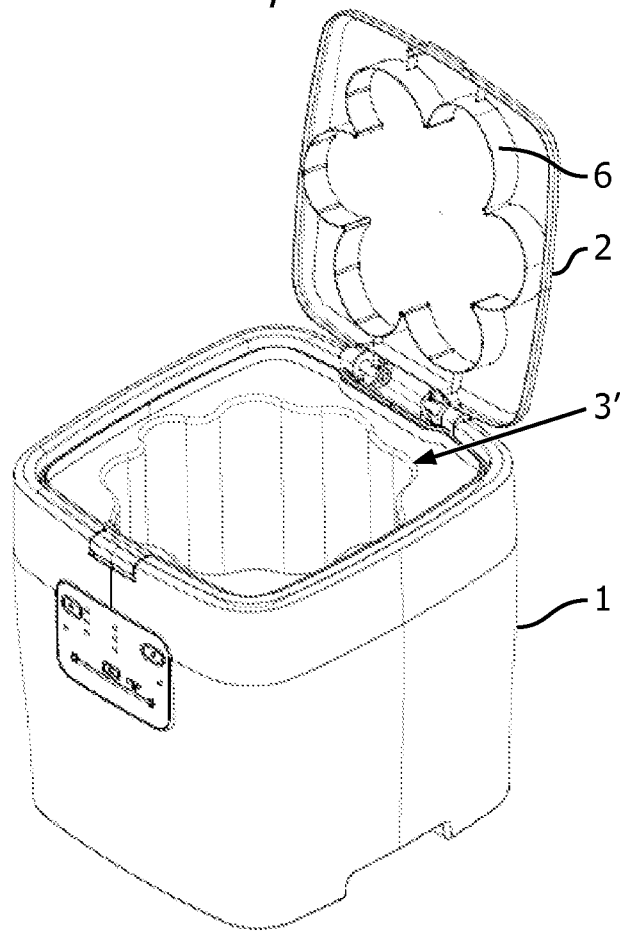


FIG. 6

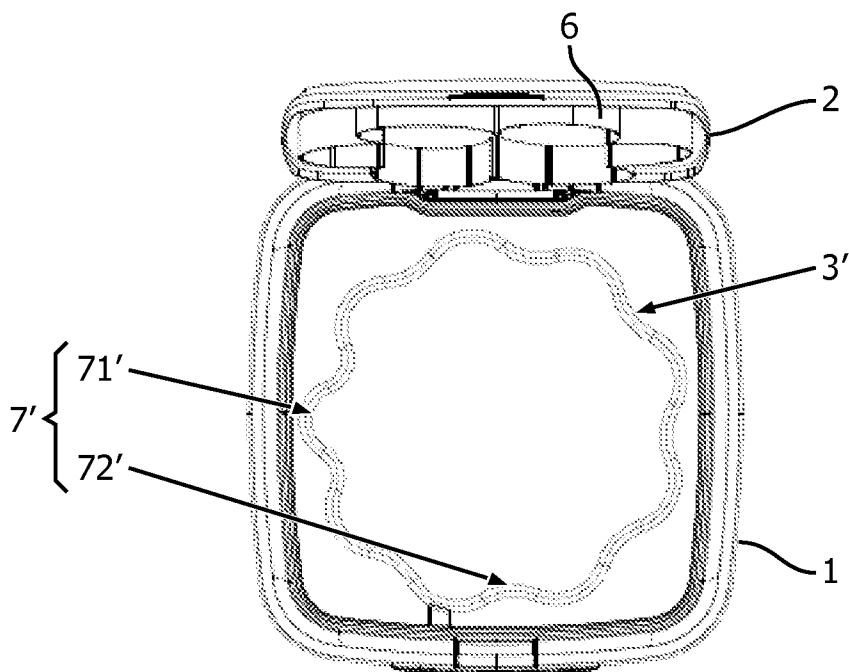


FIG. 7

INTERNATIONAL SEARCH REPORT

International application No

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A. CLASSIFICATION OF SUBJECT MATTER

INV. A47J31/24

ADD.

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A47J

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

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

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 10 2006 017322 A1 (WEINBERG ANDREAS [DE]; RUF MARTIN [DE]) 18 October 2007 (2007-10-18) paragraphs [0001] - [0005]; figures -----	1-3
X	AT 120 897 B (BOEHM PAUL [DE]) 26 January 1931 (1931-01-26) the whole document -----	1,2,4
X	DE 464 379 C (PAUL BOEHM) 16 August 1928 (1928-08-16) the whole document -----	1,2,4
X	US 2003/079761 A1 (RICH SANDRA S [US]) 1 May 2003 (2003-05-01) paragraphs [0025] - [0081]; figures ----- -/--	1-3



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

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"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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Date of the actual completion of the international search

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Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

De Terlizzi, Marino

INTERNATIONAL SEARCH REPORT

International application No

PCT/IB2013/050182

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 904 090 A (LILLELUND STIG [DK] ET AL) 18 May 1999 (1999-05-18) column 2, line 36 - column 5, line 5; figures -----	1,2

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Information on patent family members

International application No

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