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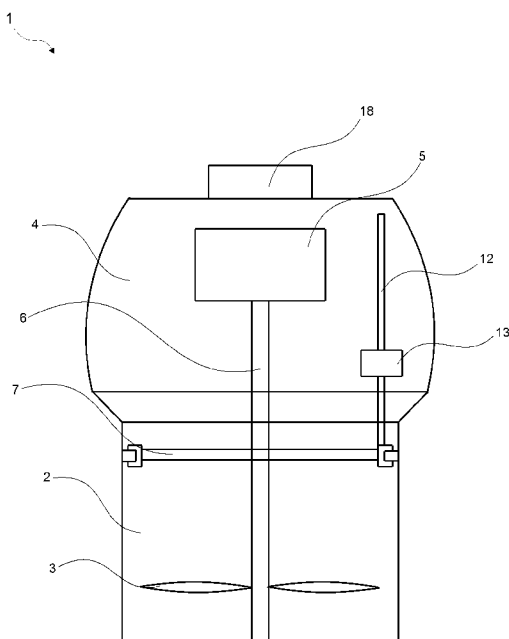
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[Continued on next page]

(54) Title: A KITCHEN APPLIANCE WITH IMPROVED CHOPPING/MIXING PERFORMANCE

Figure 1



(57) Abstract: The present invention relates to a kitchen ap-
pliance (1) comprising a lower body (2) wherein operations
such as mixing, blending and chopping are performed; a cut-
ting apparatus (3) that is disposed into the lower body (2) and
that provides the mixing, blending and chopping of the foods
in the lower body (2); an upper body (4) that is placed onto
the lower body (2); and a first motor (5) that is disposed in
the upper body (4), that has a first shaft (6) connected with
the cutting apparatus (3) when the upper body (4) is placed
onto the lower body (2) and that provides the rotation of the
cutting apparatus (3).



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Description**A KITCHEN APPLIANCE WITH IMPROVED CHOPPING/MIXING
PERFORMANCE**

- [0001] The present invention relates to a kitchen appliance with improved performance.
- [0002] Kitchen appliances used for chopping, grating, grinding, pressing, mixing or beating foods substantially facilitates the operations carried out before the cooking process. The kitchen appliance has cutting apparatuses that provide the proper processing of the foods placed into the container thereof. While the cutting apparatus is rotated, food pieces in the container are hurled towards the wall of the container and stick onto these surfaces due to the angular speed of the cutting apparatus. Therefore, the foods cannot be efficiently processed.
- [0003] In order that the food pieces sticking onto the container wall are processed by the cutting apparatus, the user stops the kitchen appliance and after manually scraping the container wall, restarts the kitchen appliance. In this case, the kitchen appliance cannot efficiently process the foods and the preparation stage before the cooking process gets longer.
- [0004] In the state of the art European Patent Document No. EP1430824, a catering equipment which includes utensils for mixing, blending and cutting food placed in a container is disclosed.
- [0005] The aim of the present invention is the realization of a kitchen appliance with increased chopping/mixing performance.
- [0006] The kitchen appliance realized in order to attain the aim of the present invention, explicated in the first claim and the respective claims thereof comprises a lower body wherein operations such as mixing, blending and chopping are performed; a cutting apparatus that is disposed into the lower body and that provides the mixing, blending and chopping of the foods in the lower body; an upper body that is placed onto the lower body; and a first motor that is disposed in the upper body, that has a first shaft connected with the cutting apparatus when the upper body is placed onto the lower body and that provides the rotation of the cutting apparatus. The kitchen appliance can be a mixer, blender or food processor.

- [0007] The kitchen appliance of the present invention comprises a cleaning apparatus that is disposed into the lower body and that sweeps the side wall of the lower body when moved. During the operation of the kitchen appliance the cleaning apparatus is moved in the lower body and the food pieces sticking onto the side wall of the lower body are swept thanks to the contact between the cleaning apparatus and the side wall of the lower body during the movement of the cleaning apparatus.
- [0008] In an embodiment of the present invention, the kitchen appliance comprises more than one tooth disposed on the cleaning apparatus and a gear box that is disposed on the first shaft and that has at least one gear, one end of which engages with the tooth. When the first shaft is rotated by means of the first motor, the cutting apparatus connected to the first shaft is also rotated and the foods placed into the lower body are processed. By means of the gear box disposed onto the first shaft, the rotational movement of the first shaft is transmitted to the cleaning apparatus through the teeth. Thus, when the kitchen appliance is operated, the cleaning apparatus is enabled to be rotated by means of the first motor and to clean the side walls of the lower body.
- [0009] In another embodiment of the present invention, the cleaning apparatus comprises at least one arm with one end extending towards the upper body and the other end towards the base of the lower body. The arm with a length as much as the height of the lower body is positioned between the base and the ceiling of the lower body so as to contact the side wall of the lower body. Thus, when the cleaning apparatus is rotated, the arm rotates by contacting the side wall of the lower body and sweeps and cleans the food pieces sticking onto the side wall of the lower body.
- [0010] In another embodiment of the present invention, the arm extends in an inclined manner between the base of the lower body and the upper body. By means of its inclined form, the arm moves the food pieces swept from over the side wall of the lower body towards the base of the lower body. Thus, the food pieces are collected on the base of the lower body again and processed by the cutting apparatus. Consequently, the food pieces splattered onto the side wall of the lower body are prevented from taken

out of the kitchen appliance without being processed and the food placed into the kitchen appliance is enabled to be homogeneously processed.

- [0011] In another embodiment of the present invention, the cleaning apparatus comprises a first housing arranged on the arm and a first scraping member placed into the first housing. The scraping member preferably produced from elastic material prevents the direct contact of the arm with the side wall of the lower body, thus preventing the side wall of the lower body from being scratched and damaged. Moreover, by means of the pressure applied by the scraping member squeezed between the arm and the side wall of the lower body onto the side wall of the lower body, the cleaning apparatus is prevented from moving by sliding over the food pieces sticking onto the side wall of the lower body, thus enabling the food pieces to be efficiently scraped off.
- [0012] In another embodiment of the present invention, the kitchen appliance comprises a second motor that is disposed on the upper body, that has a second shaft connected with the cleaning apparatus when the upper body is placed onto the lower body and that provides the movement of the cleaning apparatus. In this embodiment, the movement of the cleaning apparatus is controlled by the second motor independently from the first motor. The movement of the cleaning apparatus is triggered by the second shaft disposed on the second motor.
- [0013] In another embodiment of the present invention, the kitchen appliance comprises a control unit that is disposed on the upper body and that provides the controlling of the second motor according to the data received from the first motor. The control unit continuously monitors the speed of the first motor and adjusts the speed of the second motor according to the speed of the first motor. The control unit increases the speed of the second motor when the speed of the first motor increases and decreases the speed of the second motor when the speed of the first motor decreases. Thus, the rotational speed of the cleaning apparatus is controlled depending on the rotational speed of the cutting apparatus and the performance of the cleaning apparatus is improved.
- [0014] In another embodiment of the present invention, the second motor

provides the movement of the second shaft in the vertical direction. By moving upwards-downwards the second shaft with one end connected to the cleaning apparatus, the second motor provides the movement of the cleaning apparatus in the vertical direction. During the movement of the cleaning apparatus in the vertical direction, the food pieces on the side wall of the lower body are swept and moved towards the base of the lower body.

[0015] In another embodiment of the present invention, the kitchen appliance comprises the circular cleaning apparatus that surrounds the side wall of the lower body. The cleaning apparatus surrounds the inner surface of the lower body, thus the cleaning apparatus is enabled to sweep the entire side wall of the lower body during its upwards-downwards movement.

[0016] In another embodiment of the present invention, the cleaning apparatus comprises a second housing arranged on the part of the cleaning apparatus facing the side wall of the lower body and a second scraping member placed into the second housing. The scraping member preferably produced from elastic material prevents the direct contact of the arm with the side wall of the lower body, thus preventing the side wall of the lower body from being scratched and damaged. Moreover, by means of the pressure applied by the scraping member squeezed between the arm and the side wall of the lower body onto the side wall of the lower body, the cleaning apparatus is prevented from moving by sliding over the food pieces sticking onto the side wall of the lower body, thus enabling the food pieces to be efficiently scraped off.

[0017] By means of the present invention, a kitchen appliance is realized wherein food pieces splattering onto the side walls of the lower body in which operations such as mixing, blending, chopping food, etc. are swept by means of the cleaning apparatus and wherein the food pieces are prevented from sticking onto the side walls of the lower body.

[0018] The kitchen appliance realized in order to attain the aim of the present invention is illustrated in the attached figures where

[0019] Figure 1 – is the schematic view of a kitchen appliance.

[0020] Figure 2 – is the perspective view of the cleaning apparatus in an

embodiment of the present invention.

[0021] Figure 3 – is the perspective view of the cleaning apparatus in another embodiment of the present invention.

[0022] Figure 4 – is the perspective view of the cleaning apparatus in another embodiment of the present invention.

[0023] Figure 5 – is the perspective view of the cleaning apparatus in another embodiment of the present invention.

[0024] Figure 6 – is the top schematic view of the cleaning apparatus in another embodiment of the present invention.

[0025] The elements in the figures are numbered as follows:

1. Kitchen appliance
2. Lower body
3. Cutting apparatus
4. Upper body
5. First motor
6. First shaft
7. Cleaning apparatus
8. Tooth
9. Gear
10. Gear box
11. Arm
12. Second shaft
13. Second motor
14. First housing
15. First scraping member
16. Second housing
17. Second scraping member
18. Control unit

[0026] The kitchen appliance (1) comprises a lower body (2) wherein operations such as mixing, blending and chopping are performed; a cutting apparatus (3) that is disposed into the lower body (2) and that provides the mixing, blending and chopping of the foods in the lower body (2); an upper body (4) that is placed onto the lower body (2); and a first motor (5) that is

disposed in the upper body (4), that has a first shaft (6) connected with the cutting apparatus (3) when the upper body (4) is placed onto the lower body (2) and that provides the rotation of the cutting apparatus (3) (Figure 1).

[0027] The kitchen appliance (1) of the present invention comprises a cleaning apparatus (7)

- that is disposed into the lower body (2) and
- that sweeps the side wall of the lower body (2) when moved.

[0028] When moved, the cleaning apparatus (7), that contacts the side wall of the lower body (2) when placed into the lower body (2), enables the food pieces sticking onto the surface that the cleaning apparatus (7) contacts to be scraped and removed from the side wall of the lower body (2). The food pieces swept by the cleaning apparatus (7) contact again the cutting apparatus (3), thus the foods placed into the kitchen appliance (1) are enabled to be efficiently processed.

[0029] In an embodiment of the present invention, the kitchen appliance (1) comprises more than one tooth (8) disposed on the cleaning apparatus (7) and a gear box (10) that is disposed on the first shaft (6) and that has at least one gear (9), one end of which engages with the tooth (8). The gear (9) in the gear box (10) that is disposed on the first shaft (6) is rotated by being triggered by means of the first shaft (6). The gear box (10) transmits rotational movement of to the cleaning apparatus (7) by means of the teeth (8). Thus, the cleaning apparatus (7) is enabled to be rotated together with the cutting apparatus (3) when the first motor (5) is operated (Figure 6).

[0030] In another embodiment of the present invention, the cleaning apparatus (7) comprises at least one arm (11) with one end extending towards the upper body (4) and the other end towards the base of the lower body (2). During the rotation of the cleaning apparatus (7) inside the lower body (2), the food pieces sticking onto the side wall of the lower body (2) are swept and removed by means of the arm (11). The arm (11) preferably with a length as much as the height of the lower body (2) enables the side wall of the lower body (2) to be completely swept. Thus, by enabling the cutting apparatus (3) to better process the food, the performance of the kitchen

appliance (1) is improved (Figure 2 and Figure 3).

- [0031] In another embodiment of the present invention, the arm (11) extends in an inclined manner between the base of the lower body (2) and the upper body (4). By means of the inclined form of the arm (11), during the rotation of the cleaning apparatus (7), the food pieces sticking onto the side wall of the lower body (2) contact the arm (11) surface and are pushed downwards. Thus, the food pieces collected on the side wall of the lower body (2) are enabled to contact again the cutting apparatus (3). Consequently, the cutting apparatus (3) is enabled to efficiently process the food.
- [0032] In another embodiment of the present invention, the cleaning apparatus (7) comprises a first housing (14) arranged on the arm (11) and a first scraping member (15) placed into the first housing (14). In this embodiment, the first housing (14) is positioned so as to face the side wall of the lower body (2) and one end of the first scraping member (15) bears against the side wall of the lower body (2) when the first scraping member (15) is placed into the first housing (14). By means of the first scraping member (15) squeezed between the arm (11) and the side wall of the lower body (2), the food pieces sticking onto the side wall of the lower body (2) are efficiently swept (Figure 2 and Figure 3).
- [0033] In another embodiment of the present invention, the kitchen appliance (1) comprises a second motor (13) that is disposed on the upper body (4), that has a second shaft (12) connected with the cleaning apparatus (7) when the upper body (4) is placed onto the lower body (2) and that provides the movement of the cleaning apparatus (7). In this embodiment, the movement of the cleaning apparatus (7) is controlled by the second motor (13) independently from the first motor (5). The second motor (13) provides the movement of the cleaning apparatus (7) inside the lower body (2) by means of the second shaft (12) (Figure 1).
- [0034] In another embodiment of the present invention, the kitchen appliance (1) comprises a control unit (18) that is disposed on the upper body (4) and that provides the controlling of the second motor (13) according to the data received from the first motor (5). The control unit (18) controls and

changes the speed of the second motor (13) according to the speed of the first motor (5). When the speed of the first motor (5) is increased, the rotational speed of the cutting apparatus (3) and the amount of food pieces splattered onto the side wall of the lower body (2) also increase. The control unit (18) monitors the speed of the first motor (5) and when the speed of the first motor (5) increases, the control unit (18) increases the speed of the second motor (13) and causes the cleaning apparatus (7) to accelerate. Thus, when the amount of food pieces sticking onto the side wall of the lower body (2) increases, the cleaning apparatus (7) is operated faster, thus providing an efficient cleaning.

[0035] In another embodiment of the present invention, the second motor (13) provides the movement of the second shaft (12) in the vertical direction. By moving the second shaft (12) upwards-downwards, the second motor (13) provides the movement of the cleaning apparatus (7) in the vertical direction. During the movement of the cleaning apparatus (7) from top to bottom towards the base of the lower body (2), the food pieces collected onto the side wall of the lower body (2) are swept towards the base of the lower body (2). Thus, the food pieces are enabled to be processed by the cutting apparatus (3).

[0036] In another embodiment of the present invention, the kitchen appliance (1) comprises the circular cleaning apparatus (7) that surrounds the side wall of the lower body (2). When placed into the lower body (2), the cleaning apparatus (7) contacts the inner surfaces of the lower body (2) and when the second motor (13) is operated, the cleaning apparatus (7) is pushed downwards inside the lower body (2) by means of the second shaft (12). Thus, the food pieces sticking onto the side wall of the lower body (2) are swept downwards and carried to the base of the lower body (2) by means of the cleaning apparatus (7).

[0037] In another embodiment of the present invention, the cleaning apparatus (7) comprises a second housing (16) arranged on the part of the cleaning apparatus (7) facing the side wall of the lower body (2) and a second scraping member (17) placed into the second housing (16). In this embodiment, the second housing (16) is positioned so as to face the side

wall of the lower body (2) and one end of the second scraping member (17) bears against the side wall of the lower body (2) when the second scraping member (17) is placed into the second housing (16). By means of the second scraping member (17) squeezed between the cleaning apparatus (7) and the side wall of the lower body (2), the food pieces sticking onto the side wall of the lower body (2) are efficiently swept (Figure 4 and Figure 5).

[0038] In the kitchen appliance (1) of the present invention, while the foods placed into the lower body (2) are processed by means of the cutting apparatus (3), the food pieces sticking onto the side wall of the lower body (2) are swept by means of the cleaning apparatus (7) and the food pieces are enabled to contact again the cutting apparatus (3). Thus, the user is not required to stop the kitchen appliance (1) and manually clean the food pieces sticking onto the side wall of the lower body (2) and by enabling the food pieces away from the cutting apparatus (3) to contact again the cutting apparatus (3), the operations of mixing, blending and chopping are enabled to be efficiently performed without the intervention of the user.

Claims

1. A kitchen appliance (1) **comprising** a lower body (2) wherein operations such as mixing, blending and chopping are performed; a cutting apparatus (3) that is disposed into the lower body (2) and that provides the mixing, blending and chopping of the foods in the lower body (2); an upper body (4) that is placed onto the lower body (2); and a first motor (5) that is disposed in the upper body (4), that has a first shaft (6) connected with the cutting apparatus (3) when the upper body (4) is placed onto the lower body (2) and that provides the rotation of the cutting apparatus (3), **characterized by** a cleaning apparatus (7)
 - that is disposed into the lower body (2) and
 - that sweeps the side wall of the lower body (2) when moved.
2. A kitchen appliance (1) as in Claim 1, **characterized by** more than one tooth (8) disposed on the cleaning apparatus (7) and a gear box (10) that is disposed on the first shaft (6) and that has at least one gear (9), one end of which engages with the tooth (8).
3. A kitchen appliance (1) as in Claim 2, **characterized by** at least one arm (11) that is disposed on the cleaning apparatus (7), one end of the arm (11) extending towards the upper body (4) and the other end towards the base of the lower body (2).
4. A kitchen appliance (1) as in Claim 3, **characterized by** the arm (11) that extends in an inclined manner between the upper body (4) and the base of the lower body (2).
5. A kitchen appliance (1) as in Claim 3 or 4, **characterized by** a first housing (14) that is disposed on the arm (11) and a first scraping member (15) that is placed into the first housing (14).
6. A kitchen appliance (1) as in Claim 1, **characterized by** a second motor (13) that is disposed on the upper body (4), that has a second shaft (12) connected with the cleaning apparatus (7) when the upper body (4) is placed onto the lower body (2) and that provides the movement of the cleaning apparatus (7).
7. A kitchen appliance (1) as in Claim 6, **characterized by** a control unit (18) that is disposed on the upper body (4) and that provides the controlling of the second motor (13) according to the data received from the first motor (5).
8. A kitchen appliance (1) as in Claim 6 or 7, **characterized by** the second motor

(13) that provides the movement of the second shaft (12) in the vertical direction.

9. A kitchen appliance (1) as in any one of the claims 6 to 8, **characterized by** the circular cleaning apparatus (7) that surrounds the side wall of the lower body (2).
10. A kitchen appliance (1) as in any one of the claims 6 to 9, **characterized by** a second housing (16) that is disposed on the part of the cleaning apparatus (7) facing the side wall of the lower body (2) and a second scraping member (17) that is placed into the second housing (16).

Figure 1

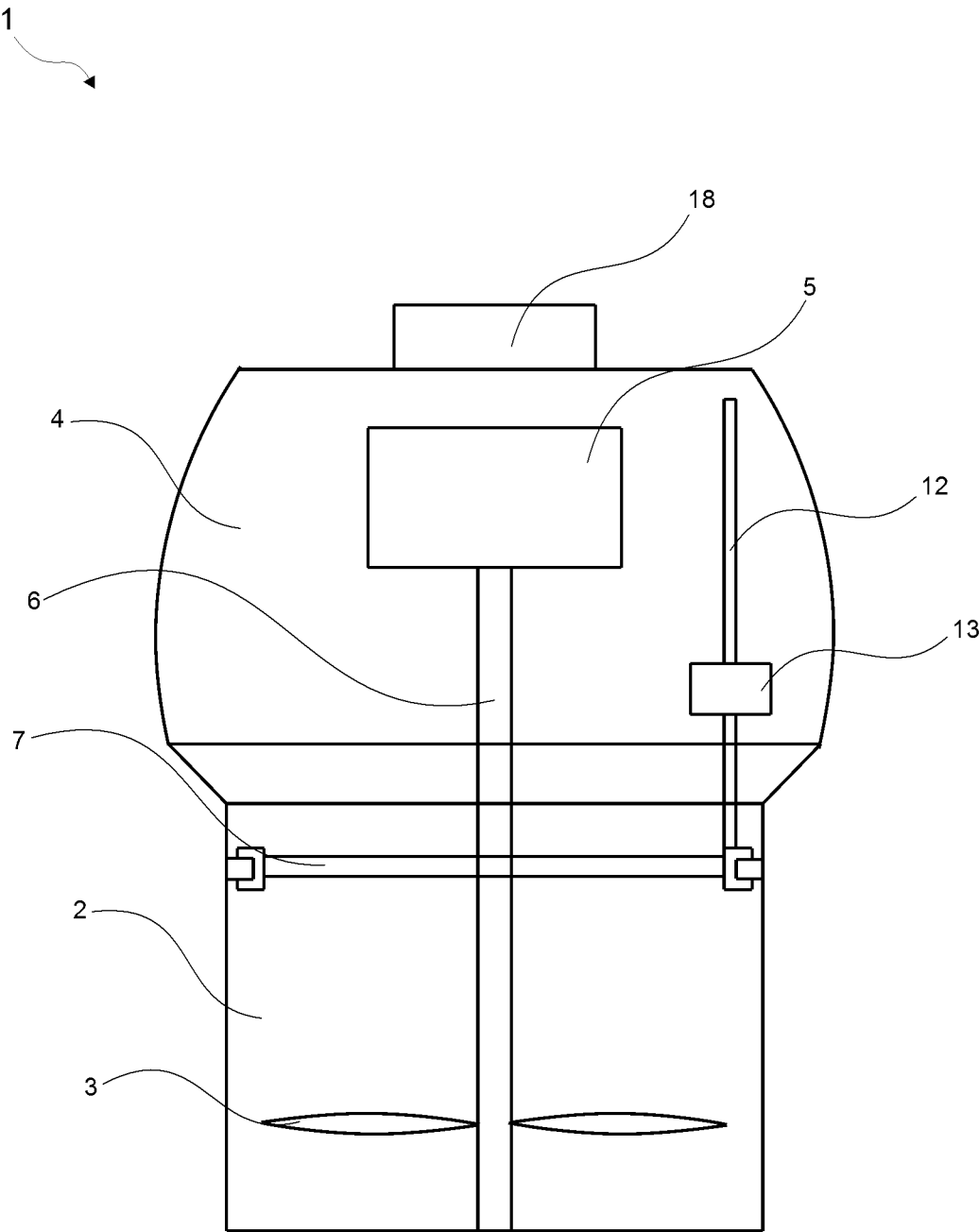


Figure 2

7

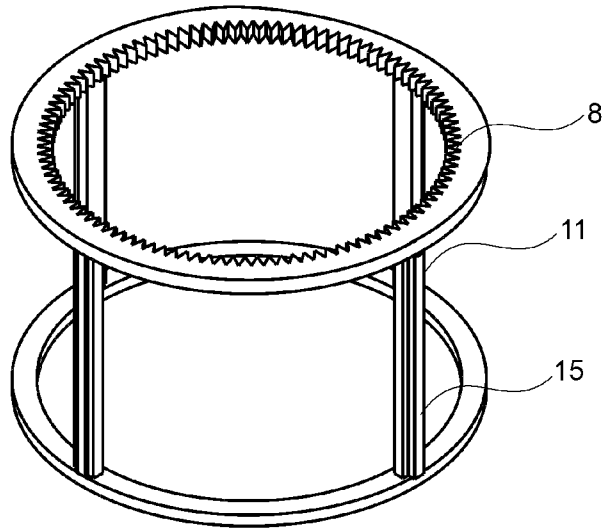


Figure 3

7

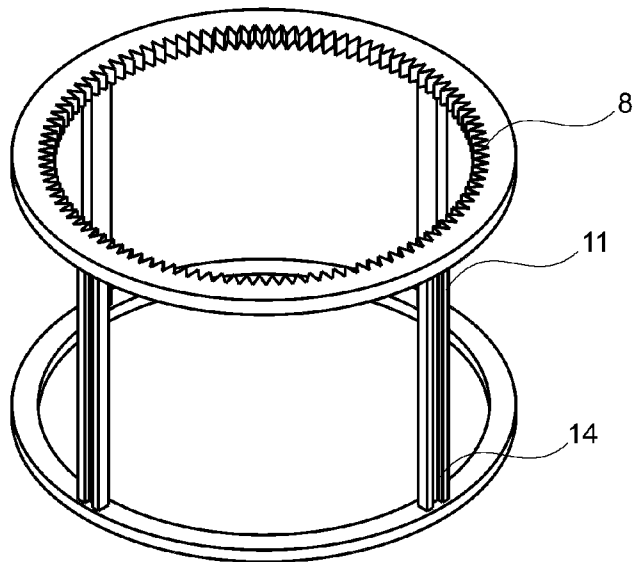


Figure 4

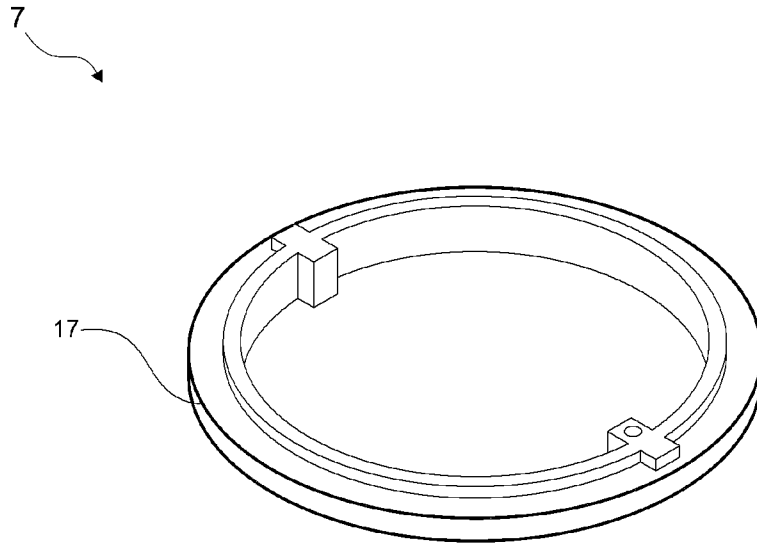


Figure 5

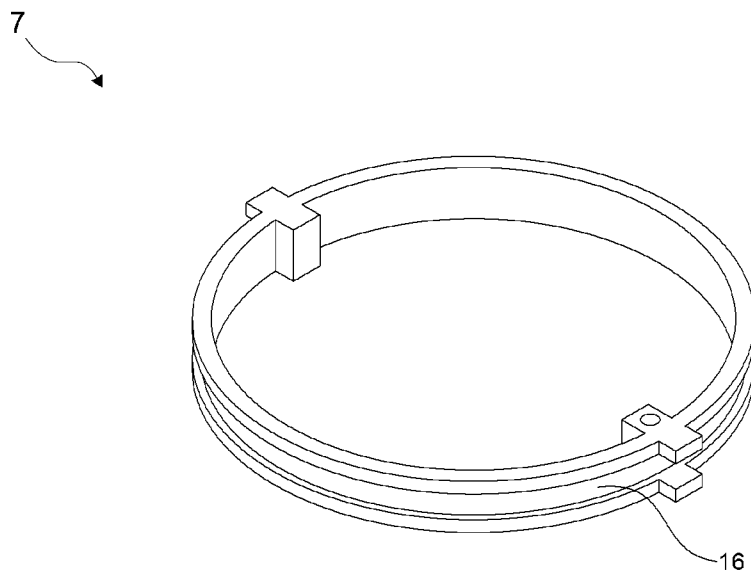
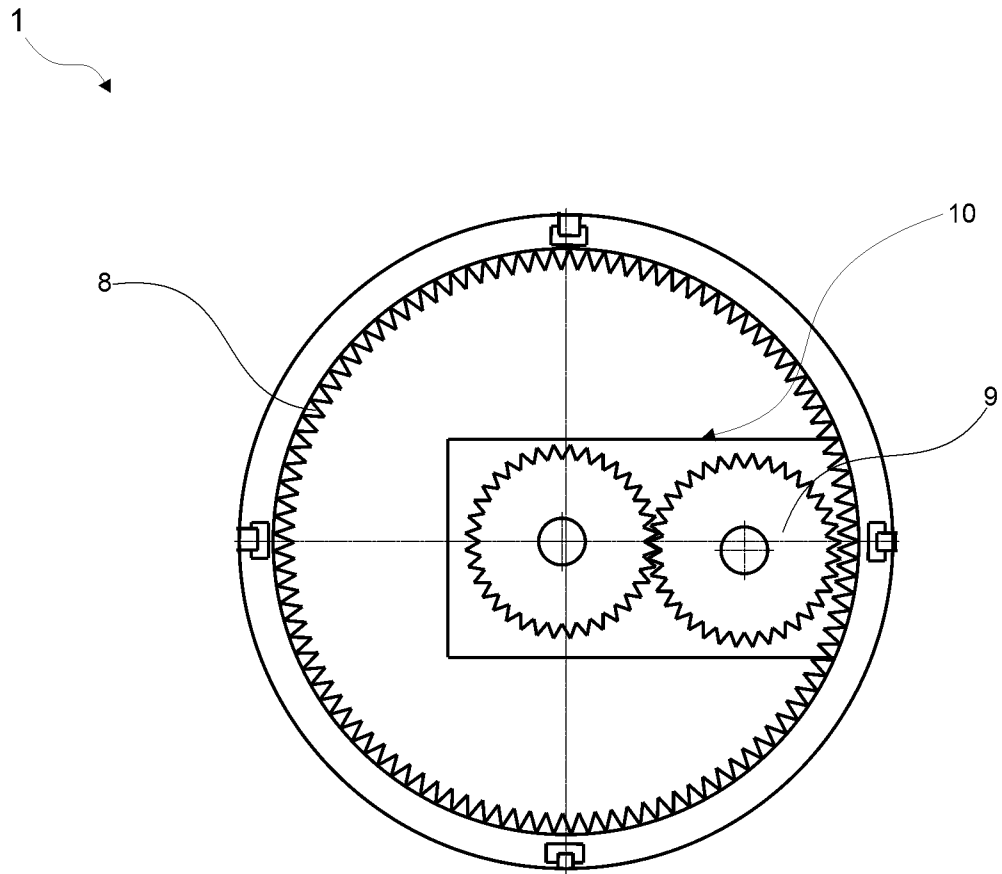


Figure 6



INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
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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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2 753 160 A (GUNN SR JOHN C) 3 July 1956 (1956-07-03) the whole document -----	1-10
X	US 4 190 371 A (DURR HERBERT [DE] ET AL) 26 February 1980 (1980-02-26) the whole document -----	1-10
X	FR 2 605 207 A1 (ROBOT COUPE SA [FR]) 22 April 1988 (1988-04-22) the whole document -----	1-10
X	US 2012/294108 A1 (DICKSON JR THOMAS D [US] ET AL) 22 November 2012 (2012-11-22) paragraphs [0005], [0006], [0051], [0078], [0079]; claims; figures -----	1-10



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Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2753160	A	03-07-1956	NONE

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