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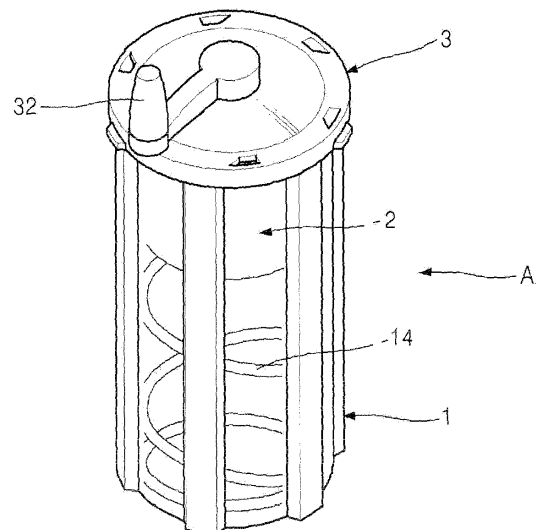
(54) **Cutting line formative device for lump type fruit and plant**

(57) The present invention is an improved version of Korea Patent No. 867198 "Cutting line formative device for lump type fruit and plant" and includes a main body that is formed to have the inside penetrated through, an elastic member that is installed inside said main body, a cutting blade container that is installed on the top of said elastic member, and an operating cover that is coupled to the upper end of said main body and rotates the subject, wherein a stopper ring is installed inside the upper end of said main body.

Therefore, after assembling the cutting blade container into the main body, the separate stopper ring is fixed by means of screws to the inside of the upper end of main body of the formative device and, by the existence of this stopper ring, the upper end of the cutting blade container is prevented from protruding out of the main body of the formative device.

The present invention thereby makes the handling of the cutting line formative device for lump type fruit and plant much easier, improving its usability and also can prevent the safety-related accidents from happening while handling.

Figure 1



EP 2 199 041 A1

Description

[0001] The present invention relates to a cutting line formative device for lump type fruit wherein, after assembling the cutting blade container into the main body, a separate stopper ring is fixed by means of screws to the upper inner surface of the main body of the formative device and, by the existence of this stopper ring, the upper end of the cutting blade container is prevented from protruding out of the main body of the formative device.

[0002] Generally for lump type fruits (for example, an apple or pear) or plants (for example, potato or carrot) with a certain size, the processing method is quite limited. In other words, the secondary processing of those lump type fruits or plants into a novel shape is impossible.

[0003] Therefore, there is no other choice but to provide the consumers with food processed by a well-known simple cooking type.

[0004] On the other hand, the "cutting line formative device for lump type fruit and plant" of Korea Patent No. 867198 (hereinafter referred to as "prior-registered invention55), which was applied and registered by the present applicant, has been used in order to make the secondary processing of those lump type fruits or plants in more sanitary way and provide the consumers with food processed to have a unique aesthetic effect.

[0005] Said prior-registered invention has a lump type fruit or plant like potato loaded into a cutting blade container of the cutting line formative device and rotated.

[0006] Then, said subject has a continuous, helically shaped cutting line formed therein by a blade and is discharged through the bottom of the device, maintaining its original shape.

[0007] Thereafter, a separate skewer is inserted into the discharged subject so that it can be transformed into various shapes.

[0008] Therefore, said prior-registered invention makes possible the secondary processing of all kinds of lump type fruits and plants to various novel shapes, thus improving the merchantability of the processed foods using these fruits or plants as main ingredients

[0009] However, the cutting line formative device for lump type fruit and plant according to said prior-registered invention is assembled in such a way that the cutting blade container, which is a key configurational element of the formative device, is inserted into the main body of the formative device simply against the elastic force of coil spring and kept pushed down by an operating cover.

[0010] Therefore, in case the user disengages the operating cover for the use of the formative device and separates it from the main body, the cutting blade container inside the main body bounces upward to a certain extent by the elastic force of the coil spring underneath, making its upper end protrude out of the main body.

[0011] Due to this reason, in said prior-registered invention, it is a very complicated and difficult process to mount the operating cover with a lump type fruit or plant

(hereinafter referred to as "subject,") threaded onto a fixing pin to the upper end of the main body in such a way that the subject is seated in a stable position in the cutting blade container, resulting in imperfect forming quality of the subject.

[0012] Thus, said prior-registered invention has a problem of huge concerns raised over the occurrence of the safety-related accidents during the mounting process as well as very probable occurrence of the poor-quality end products.

[0013] It is an object of the present invention to solve the aforementioned problems by providing a cutting line formative device for lump type fruit and plant wherein the cutting blade container that is installed inside the main body does not protrude out of the upper end of the main body by the elastic force of the coil spring even when the operating cover is separated, but is kept suppressed by the stopper ring, maintaining the installation always in a stable position.

[0014] To achieve aforesaid objects, the cutting line formative device for lump type fruit and plant according to the present invention includes a main body that is formed to have the inside penetrated through, an elastic member that is installed inside said main body, a cutting blade container that is installed on the top of said elastic member, and an operating cover that is coupled to the upper end of said main body and rotates the subject, wherein the feature is that the stopper ring is installed inside the upper end of Said main body.

[0015] Furthermore, the cutting line formative device for lump type fruit and plant according to the present invention includes coupling screw holes that are formed completely through said main body at the upper end and fastening holes that are formed on said stopper ring in such a way that they correspond to said coupling screw holes, wherein the feature is that said stopper ring is fixed to said main body by means of fixing screws through said coupling screw holes and fastening holes.

[0016] According to this configuration, the cutting blade container installed inside the main body is prevented from protruding out of the upper end of said main body even when the operating cover coupled to the upper end of the main body is separated from said main body.

[0017] In accordance with the cutting line forming device for lump type fruit and plant of the present invention, the cutting blade container is always kept inside the main body without protruding out of the upper end of the main body even when the operating cover is separated out from the main body.

[0018] This provides the advantageous effects that its usability is substantially improved as the handling of the formative device becomes much easier and at the same time the safety-related accidents can be prevented from occurring.

DESCRIPTION OF DRAWINGS

[0019]

FIG. 1 is a perspective view of the cutting line formative device for lump type fruit and plant according to the present invention;

FIG. 2 is an exploded perspective view of the cutting line formative device for lump type fruit and plant according to the present invention;

FIG. 3 is a detailed view of the operating cover that is a part of the cutting line formative device for lump type fruit and plant according to the present invention;

FIG. 4 and 5 are views illustrating the operating state of the cutting line formative device for lump type fruit and plant according to the present invention;

FIG. 6 is a cross-sectional view of the cutting blade container that is a part of the cutting line formative device for lump type fruit and plant according to the present invention;

FIG. 7 is a view illustrating the installation and use state of the cutting line formative device for lump type fruit and plant according to the present invention;

FIG. 8 is an exemplary illustration of the subject that has been processed by the cutting line formative device for lump type fruit and plant according to the present invention;

FIG. 9 is an exploded rear perspective view of cutting blade container which is a part of the cutting line formative device for lump type fruit and plant according to the present invention;

FIG. 10 is a rear perspective view of bottom plate that is a part of the cutting line formative device for lump type fruit and plant according to the present invention;

FIG. 11 is a cross-sectional view taken along the section S-S in FIG. 10;

FIG. 12 is a rear perspective view of cutting blade container that is a part of the cutting line formative device for lump type fruit and plant according to the present invention; and

FIG. 13 is an external perspective view of cutting line formative device for lump type fruit and plant according to the present invention.

<Description of the reference numerals of main parts in the drawings>

[0020]

1 : main body	2: cutting blade container
3: operating cover	5: stopper ring
14: coil spring	22: bottom plate
23: plate fixing device	

[0021] the preferred embodiment of the present invention will be explained in detail with reference to the accompanying drawings to enable others skilled in the art to practice the present invention easily.

[0022] The present invention includes a main body (1)

that is formed to have the inside penetrated through, an elastic member (14) that is installed inside said main body (1), a cutting blade container (2) that is installed on the top of said elastic member (14), and an operating cover (3) that is coupled to the upper end of said main body (1) and rotates the subject (a), wherein a stopper ring (5) is installed inside the upper end of said main body (1).

[0023] On the other hand, the coupling screw holes (15) formed at the upper end of the main body (1) through said main body (1) and fastening holes (51a) formed on said stopper ring (5) in such a way that they correspond to said coupling screw holes (15) are included, wherein said stopper ring (5) is fixed to said main body (1) by means of fixing screws (52) through said coupling screw holes (15) and fastening holes (51a).

[0024] According to this configuration, the cutting blade container (2) installed inside the main body (1) is prevented from protruding out of the upper end of said main body (1) even when the operating cover (3) coupled to the upper end of the main body (1) is separated from said main body (1).

[0025] Therefore, as the installation of said cutting blade container (2) inside the main body (1) is maintained always in a stable position, the handling of the formative device becomes easier and its usability can be substantially improved, preventing the safety-related accidents from occurring.

[0026] The operating cover (3) comprises an operating rod (31) penetrating through said operating cover (3), a fixing pin (31b) formed at the front end of said operating rod (31), a plurality of fixing projections (31a), and an operating handle (32) that is connected to said operating rod (31).

[0027] It is desirable to use a coil spring for said elastic member (14).

[0028] At the lower end of the bottom plate (22) of said cutting blade container (2), it is desirable to install additionally a plate fixing device (23) of ring shape to support said bottom plate.

[0029] In the accompanying drawings, FIG. 1 is a perspective view illustrating the configuration of formative device according to the present invention, FIG. 2 is an exploded perspective view illustrating the configuration of the cutting line formative device for lump type fruit and plant according to the present invention, FIG. 3 is a detailed view illustrating the configuration of operating cover that is a part of the cutting line formative device for lump type fruit and plant according to the present invention, FIG. 4 and 5 are views illustrating the operating state of the configuration of cutting line formative device for lump type fruit and plant according to the present invention, FIG. 6 is a cross-sectional view of cutting blade container that is a part of the cutting line formative device for lump type fruit and plant according to the present invention, FIG. 7 is a view illustrating the installation and use state of the configuration of cutting line formative device for lump type fruit and plant according to the present invention, and FIG. 8 is an exemplary illustration of the subject

that has been processed by a cutting line formative device for lump type fruit and plant according to the present invention, wherein the device comprises a main body (1), a cutting blade container (2), an operating cover (3), and a stopper ring (5).

[0030] Additionally, FIG. 9 is an exploded rear perspective view of cutting blade container, FIG. 10 is a rear perspective view of bottom plate, FIG. 11 is a cross-sectional view taken along the section S-S in FIG. 10, FIG. 12 is a rear perspective view of cutting blade container, and FIG. 13 is a perspective view of cutting line formative device for lump type fruit and plant according to the present invention.

[0031] Said main body (1) is of through sleeve type.

[0032] Said main body (1) is formed with a plurality of projecting insertion grooves (12) around the circumference.

[0033] A locking tab (13) is formed on a side of each of those insertion grooves (12) and also a coupling screw hole (15) is formed on each of any two opposite insertion grooves (12) among said insertion grooves (12).

[0034] A support ledge (11) is formed inside the lower end of said main body (1) so that a coil spring (14) is seated stably.

[0035] Said cutting blade container (2) is installed on the coil spring (14) inside said main body (1) and have a plurality of insertion projections (21) formed around the circumference, which are fitted into the insertion grooves (12) of said main body (1).

[0036] A bottom plate (22) which is fanned with a cutting blade (22a) and a through-hole (22b) is installed inside said cutting blade container (2) wherein the cutting blade forms a continuous cutting line in the subject (a) as the loaded subject (a) rotates.

[0037] According to the present invention, when the cutting blade container (2) is installed inside the main body (1), the insertion projections (21) of the cutting blade container (2) are inserted into the insertion grooves (12) of said main body (1).

[0038] Therefore, the subject (a) loaded inside the cutting blade container (2) rotates by the operating cover (3), but said cutting blade container (2) does not rotate inside the main body (1).

[0039] Thus, in order to prevent the cutting blade container (2) from rotating inside the main body (1), the present invention is configured in such a way that the insertion projections (21) formed on the cutting blade container (2) are inserted into the insertion grooves (12) formed on said main body (1).

[0040] On the other hand, besides the above-mentioned configuration, the main body (1) can be of polygonal shape instead of through sleeve type and then the cutting blade container (2) that is installed inside said main body (1) would be forked with a shape corresponding to the polygonal shape of the main body (1) so that the cutting blade container (2) does not rotate inside the main body (1).

[0041] As shown in FIGS. 9 and 12, said cutting blade

container (2) is of circular pipe shape and have a plurality of insertion projections (21) formed to be spaced apart from each other around the circumference.

[0042] Said insertion projections (21) are extended from the top surface (2a) of the cutting blade container (2) and protruded beyond the bottom surface (2b) of said cutting blade container (2).

[0043] On the other hand, there are totally six insertion projections (21) formed according to the present invention.

[0044] Here, among said insertion projections (21), two adjacent insertion projections and one other insertion projection that is one projection over from said two insertion projections are formed with grooves (21a) and stopping bumps (21b).

[0045] Desirably, there are totally three said grooves (21a) and stopping bumps (21b) to be formed.

[0046] According to this configuration, only by separating a portion of the bottom plate (22) and the plate fixing device (23) from one of the other insertion projections, the entire bottom plate (22) and plate fixing device (23) can be easily separated from the cutting blade container (2).

[0047] Said grooves (21a) are formed in the center of the inner surface of the insertion projections (21) and are extended from the lower end surface of said insertion projections (21) through the lower end surface (2b) of the cutting blade container (2).

[0048] Therefore, the tabs (22c) of the bottom plate (22) that is going to be described later are inserted into the grooves (21a).

[0049] On the other hand, the stopping bumps (21b) are formed in such a way that they are projected on each edge of the inner surface of the insertion projections (21).

[0050] Therefore, if the bottom plate (22) is inserted at the bottom of the cutting blade container (2) and then additionally the plate fixing device (23) is inserted therein, said plate fixing device (23) is seated into the stopping bumps (21b) and does not move out of the cutting blade container (2), making said bottom plate (22) fixed firmly to the cutting blade container (2).

[0051] Here, because the bottom portion of said stopping bumps (21b) are of round shape, the bottom plate (22) and the plate fixing device (23) can be easily inserted into the cutting blade container (2).

[0052] Said stopping bumps (21b) are formed at the location with a certain distance apart from the location of the lower end surface (295) of the cutting blade container (2) and the distance corresponds to the sum of the heights of the bottom plate (22) and the plate fixing device (23).

[0053] Here, the bottom plate (22) which actually makes the cutting line formed in the subject (a) is fixed by means of plate fixing device (23) at the lower end of the cutting blade container (2) in such a way that the bottom plate is detachable.

[0054] Therefore, since the bottom plate (22) becomes replaceable using this plate fixing device (23), the bottom

plate (22) can be conveniently replaced with a new bottom plate (22) where the cutting blade (22a) formed to be extended to the midway point of the bottom plate (22) can be changed into many different shapes.

[0055] On the other hand, the bottom plate (22) is of disc shape have a plurality of tabs (22c) formed spaced apart around the circumference, which are inserted into the aforementioned grooves (21a).

[0056] Said bottom plate (22) is formed with a through hole (22b) in the center.

[0057] In a portion of a half of said bottom plate (22) is a discharge outlet (22d) of long hole shape formed in such a way that it is connected to said through hole (22b).

[0058] Said discharge outlet (22d) comprises a longitudinal side (22e) that is extended toward the circumference of the bottom plate (22) from the through hole (22b), an opposite side (22f) of said longitudinal side (22e), and a circumferential portion of the bottom plate (22) that connects the end points of said longitudinal side (22e) and opposite side (22f).

[0059] Said longitudinal side (22e) is formed with cutting blade (22a).

[0060] Here, the bottom plate (22), as shown in FIG. 10 that is a rear perspective view of said bottom plate (22), is formed in such a way that the slope is getting steeper gradually in a counterclockwise direction, starting at the longitudinal side (22e) of the discharge outlet (22d) where said cutting blade (22a) is formed.

[0061] In other words, as shown in FIG. 11, setting as a datum line the center line (L) which centrally divides horizontally the bottom plate (22), the longitudinal side (22e) on which the cutting blade (22a) is formed is located below said center line (L) while the opposite side (22f) is located above said center line (L).

[0062] According to this configuration, as you rotate the operating handle (32) that is exposed to the outer surface of said operating cover (3), the subject (a) that is fixed by means of the fixing projections (31a) and fixing pins (31b) formed on the operating cover (3) and loaded inside the cutting blade container (2) starts to rotate, making a close contact with the top surface of the bottom plate (22).

[0063] Then, said subject (a) passes through the discharge outlet (22d) as it is formed with a helically shaped cutting line by the cutting blade (22a) and is discharged through the bottom part of the main body (1), moving from the top surface to the bottom surface of the bottom plate (22).

[0064] Said operating cover (3) is installed to cover the upper opening of said main body (1).

[0065] A plurality of locking projections (33), which are inserted into and coupled with respective locking tabs (13) of the main body (1), are formed around the inner circumference of said operating cover (3).

[0066] Said operating cover (3) is formed in the inside of central portion with an operating rod (31), which projects to a certain length and is connected with an operating handle (32) that is exposed to the outer surface

of the operating cover (3) and rotates.

[0067] Here, a plurality of fixing projections (31a) are formed at the front end of the operating rod (31) to hold in place the subject (a) that is loaded into the cutting blade container (2), and a fixing pin (31b) of needle shape that is inserted through the subject is formed to a certain length between these fixing projections (31a).

[0068] Said stopper ring (5) is formed with a plurality of insertion projections around the circumference that are inserted into the insertion grooves (12) of said main body (1).

[0069] Each of any two opposite insertion projections (51) among those insertion projections is formed with a fastening hole (51a) so that the stopper ring is fixedly installed to the main body (1) by means of fixing screws (52) through the coupling screw holes (15) once it is inserted inside the upper end of said main body (1).

[0070] Therefore, by this stopper ring (5), the upper end of the cutting blade container (2) which is installed against the elastic force of the coil spring (14) inside the main body (1) is prevented from protruding out of the main body (1) when the operating cover (3) is separated from the main body (1).

[0071] The following is the explanation on the installation and use of the cutting line formative device for lump type fruit and plant according to the present invention that is configured as described above.

[0072] With the cutting line formative device of the present invention (A) installed in a separate case (4), you separate the operating cover (3) from the main body (1) by unlocking the locking projections (33) of the operating cover (3) out of the locking tabs (13) at the upper end of the main body (1).

[0073] Then, when the fixing pin (31b) of the operating cover (3) is inserted through the subject, the fixing projections (31a) at the front end of the operating rod (31) are also made to be inserted into the top of the subject to a certain depth.

[0074] Then, you make the subject (a) loaded into the cutting blade container (2) in such a way that the tip of the fixing pin (31b) pass through the through-hole (22b) that is formed at the bot plate (22) of the cutting blade container (2) and make the locking projections (33) of the operating cover (3) engaged into the respective locking tabs (13) in the upper end of the main body (1).

[0075] By now, the subject (a) is contained in the cutting line formative device (A) of the present invention and becomes ready to be processed by the device.

[0076] Then, as you slowly rotate the operating handle (32) that is exposed to the outer surface of the operating cover (3), the subject (a) that is fixed by means of the fixing projections (31a) and fixing pins (31b) of the operating rod (31) starts to rotate, making a close contact with the bottom plate (22) of the cutting blade container (2).

[0077] Here, the cutting blade container (2) where the subject (a) is contained is always subject to the elastic force upward by the coil spring (14) in the main body (1)

[0078] Therefore, as the subject (a) contained inside

the cutting blade container (2) rotates repeatedly and passes the cutting blade (22a) sequentially upward from the bottom, a continuous, helically shaped cutting line is formed by the blade throughout the whole body.

[0079] Here, because the cutting blade (22a) is of the type formed with a predetermined height difference, the pitch of the cutting line formed in the subject (a) can be adjusted by adjusting the height difference of the cutting blade.

[0080] In other words, the difference in heights between the longitudinal side (22e) on which the cutting blade (22a) is formed and the opposite side (22f) is equal to the pitch of the cutting line formed in the subject (a).

[0081] Therefore, the pitch of the cutting line formed in the subject (a) becomes different depending on the difference in heights between the longitudinal side (22e) on which the cutting blade (22a) is formed and the opposite side (22f) which is in the opposite side of said cutting blade (22a), in the bottom plate (22).

[0082] According to the present invention with this configuration, the pitch of the cutting line formed in the subject (a) can be changed variously by having several different bottom plates (22) with different height-difference between the longitudinal side (22e) on which the cutting blade (22a) is formed and the height of the opposite side (22f) which is in the opposite side of said cutting blade (22a) available for replacement as needed.

[0083] The subject (a) formed with a continuous, helically shaped cutting line by the blade throughout the whole body in this way is discharged through the bottom of the main body (1) of the cutting line formative device (A) of the present invention.

[0084] Then, with a separate skewer (6) inserted at the center of the subject (a) that has been formed with a cutting line, both top and bottom ends of the subject (a) are stretched out so that its length is elongated, creating more novel aesthetic effect in this processed food (b) for merchandizing.

[0085] Later, even in case that the operating cover (3) is separated and removed from the main body (1) by disengaging the locking projections (33) of the operating cover (3) from the locking tabs (13) at the upper end of the main body (1), the upper end of the cutting blade container (2) that is installed in the state of being always supported against upward elastic force of the coil spring (14) inside the main body (1) is always kept inside the main body (1) touching the bottom of the stopper ring (5).

[0086] Therefore, the present invention prevents such an insecurity that the cutting blade container (2) bounces upward and protrudes to a certain extent out of the main body (1) when the operating cover (3) is separated and removed from the main body (1) as in the prior-registered invention, thus making the handling and use of the cutting line formative device (A) for lump type fruit and plant more stable.

Although the present invention herein has been described in the above with reference to the preferred embodiment, it is not intended to limit the invention to the

above described embodiment in any way and will be understood that various changes and modification may be made to the above described embodiments, without departing from the scope and spirit of the present invention as disclosed in the accompanying claims.

[0087] The present invention is suitable for use to make lump type fruit and plant formed with cutting line that creates an unique novel aesthetic effect, making possible the merchandizing of the lump type and plant.

Claims

1. A cutting line formative device for lump type fruit and plant including:

a main body that is formed to have the inside penetrated through;
 an elastic member that is installed inside said main body;
 a cutting blade container that is installed on the top of said elastic member; and
 an operating cover that is coupled to the upper end of said main body and rotates the subject,

wherein a stopper ring is installed inside the upper end of said main body.

2. A cutting line formative device for lump type fruit and plant according to claim 1 including:

screw holes that are formed completely through said main body at the upper end; and
 fastening holes that are formed on said stopper ring in such a way that they correspond to said coupling screw holes,

wherein said stopper ring is fixed to said main body by means of fixing screws through said coupling screw holes and fastening holes.

3. A method for making lump type fruit and plant formed with at least one cutting line preferably using a cutting line formative device of claim 1 or 2.

Figure 1

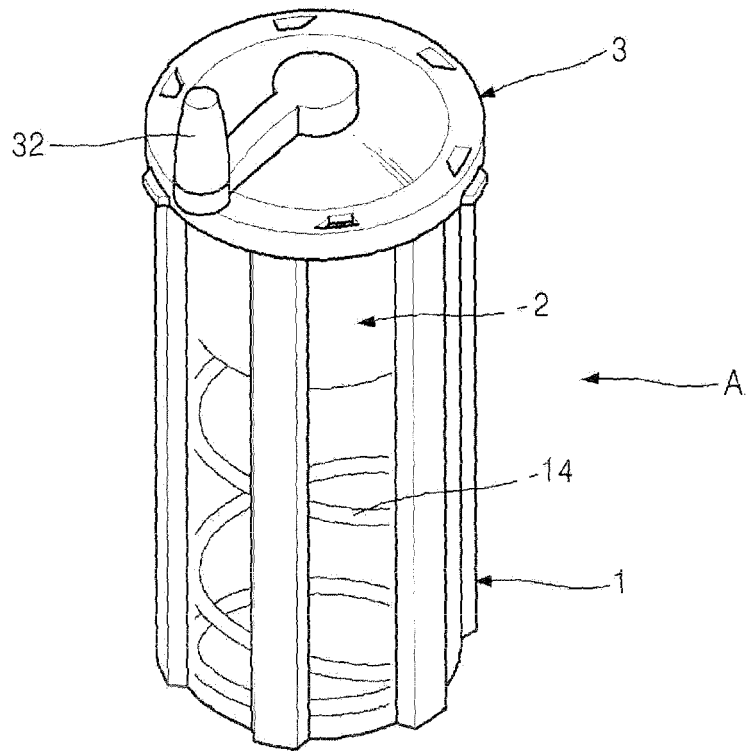


Figure 2

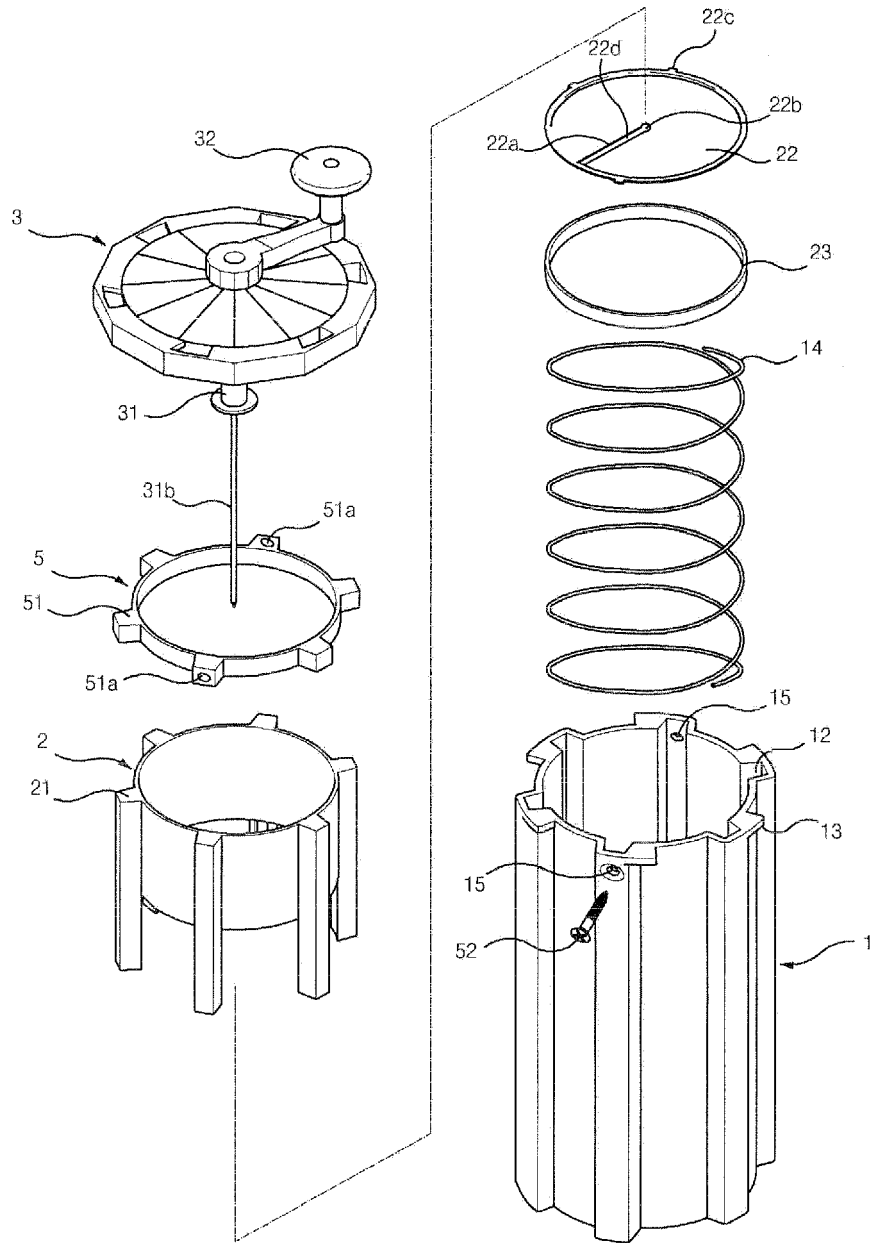


Figure 3

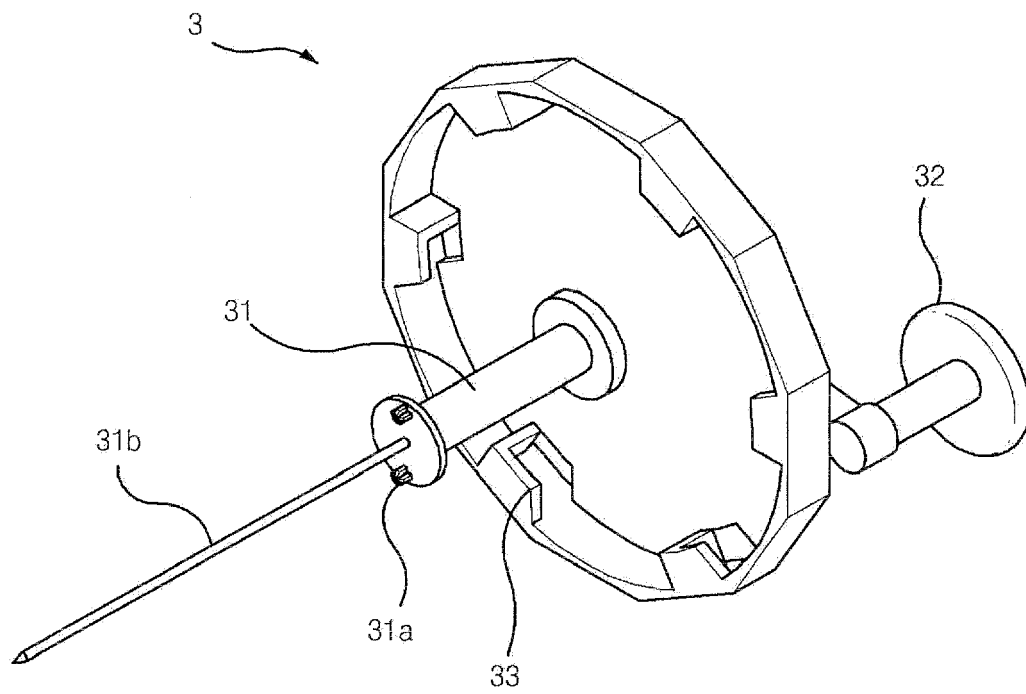


Figure 4

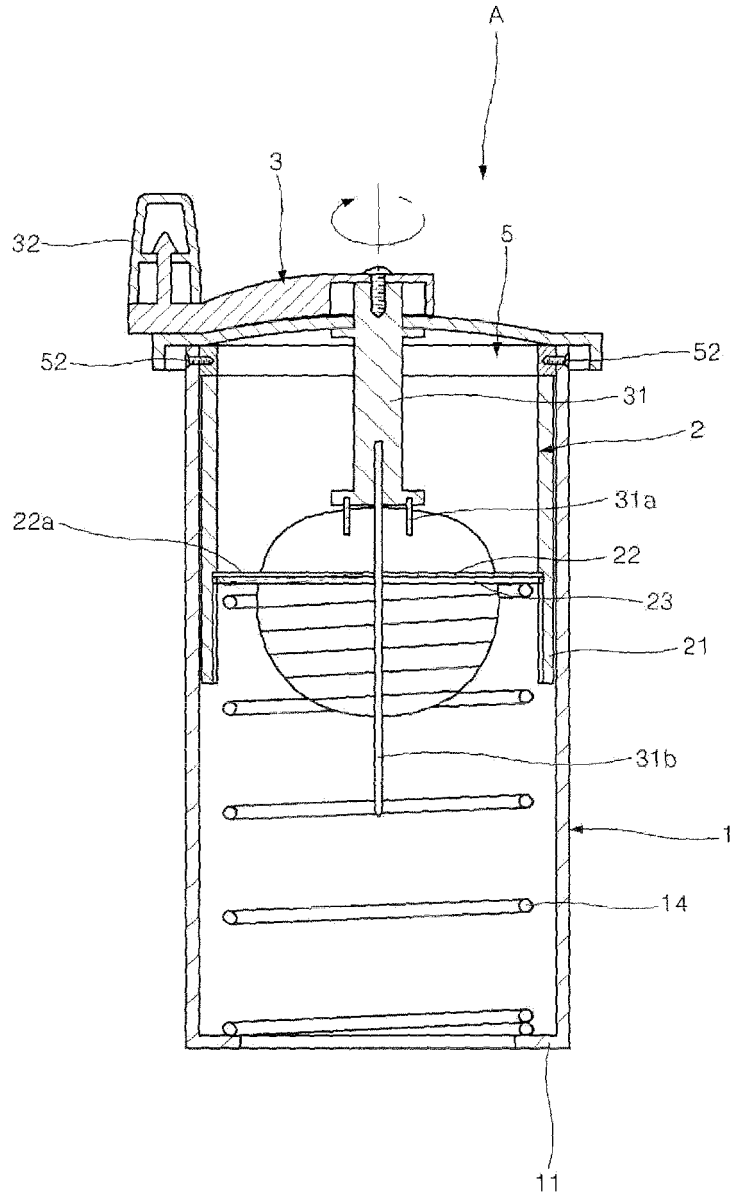


Figure 5

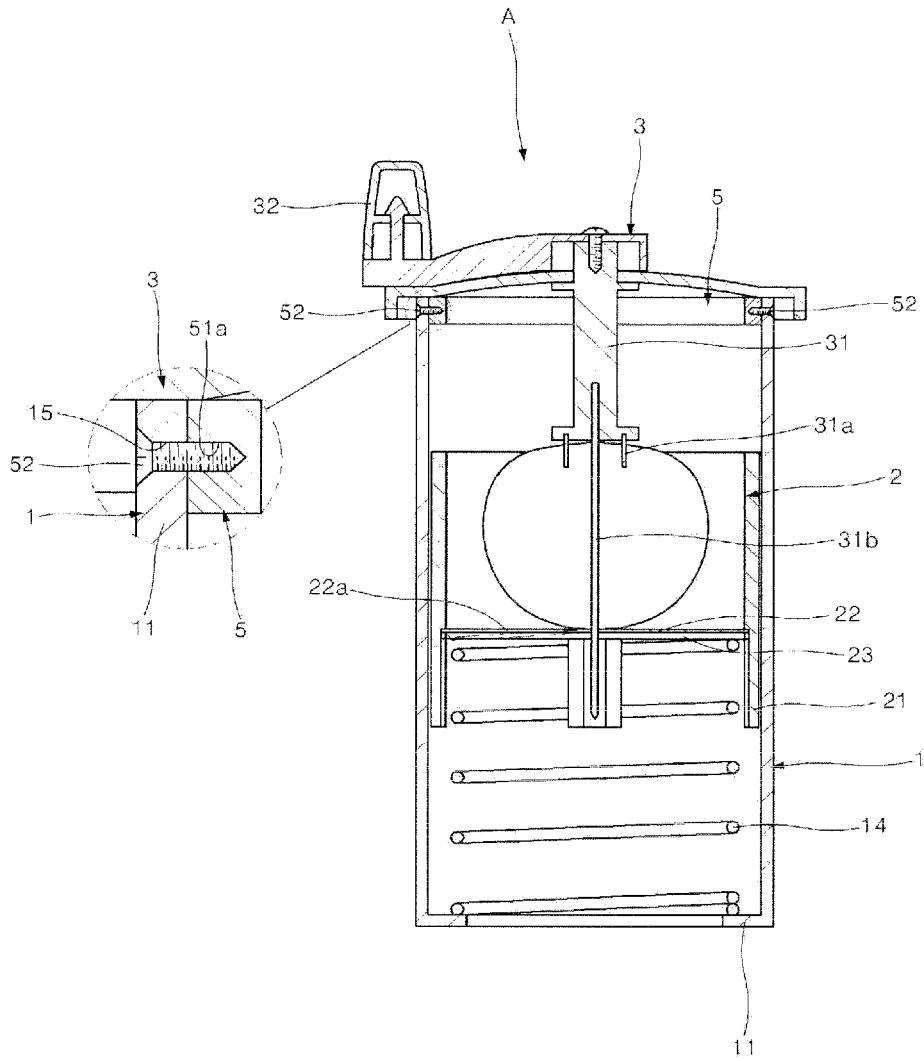


Figure 6

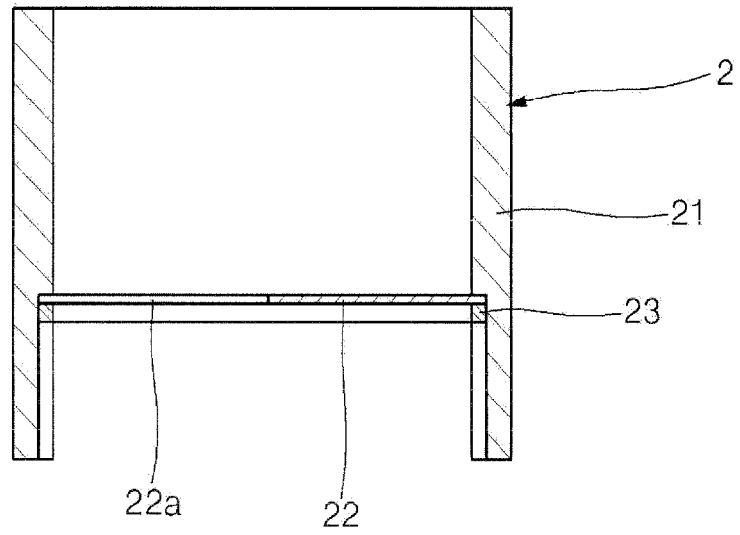


Figure 7

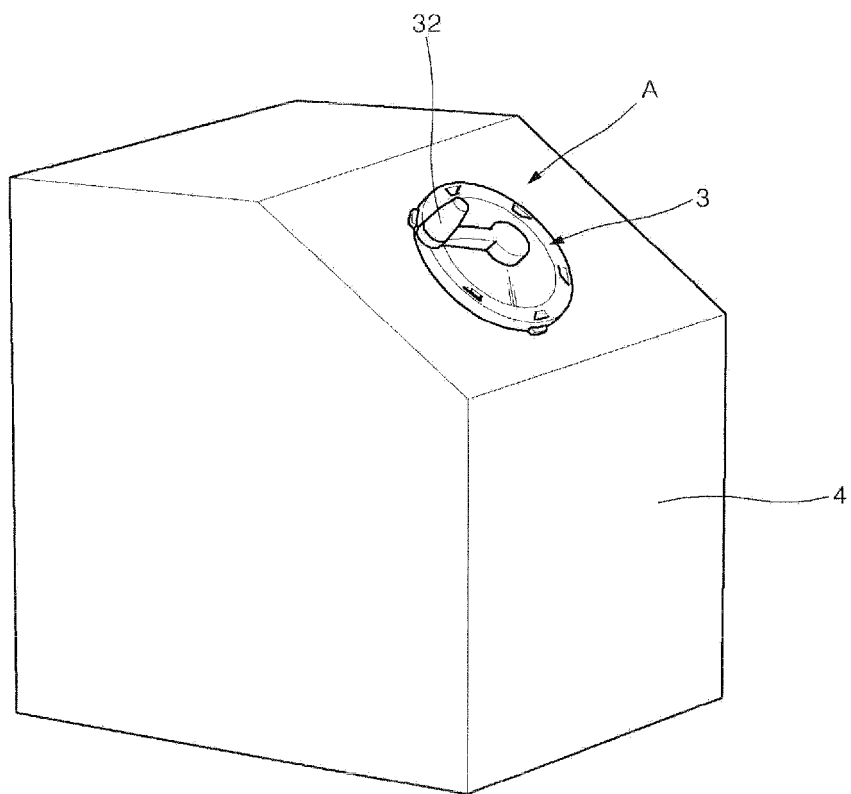


Figure 8

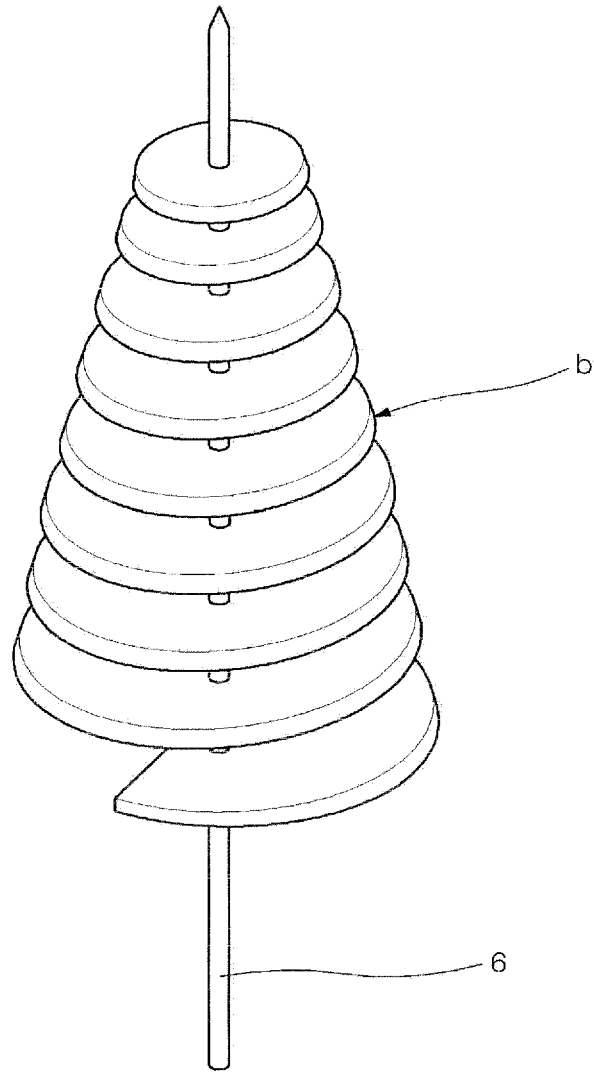


Figure 9

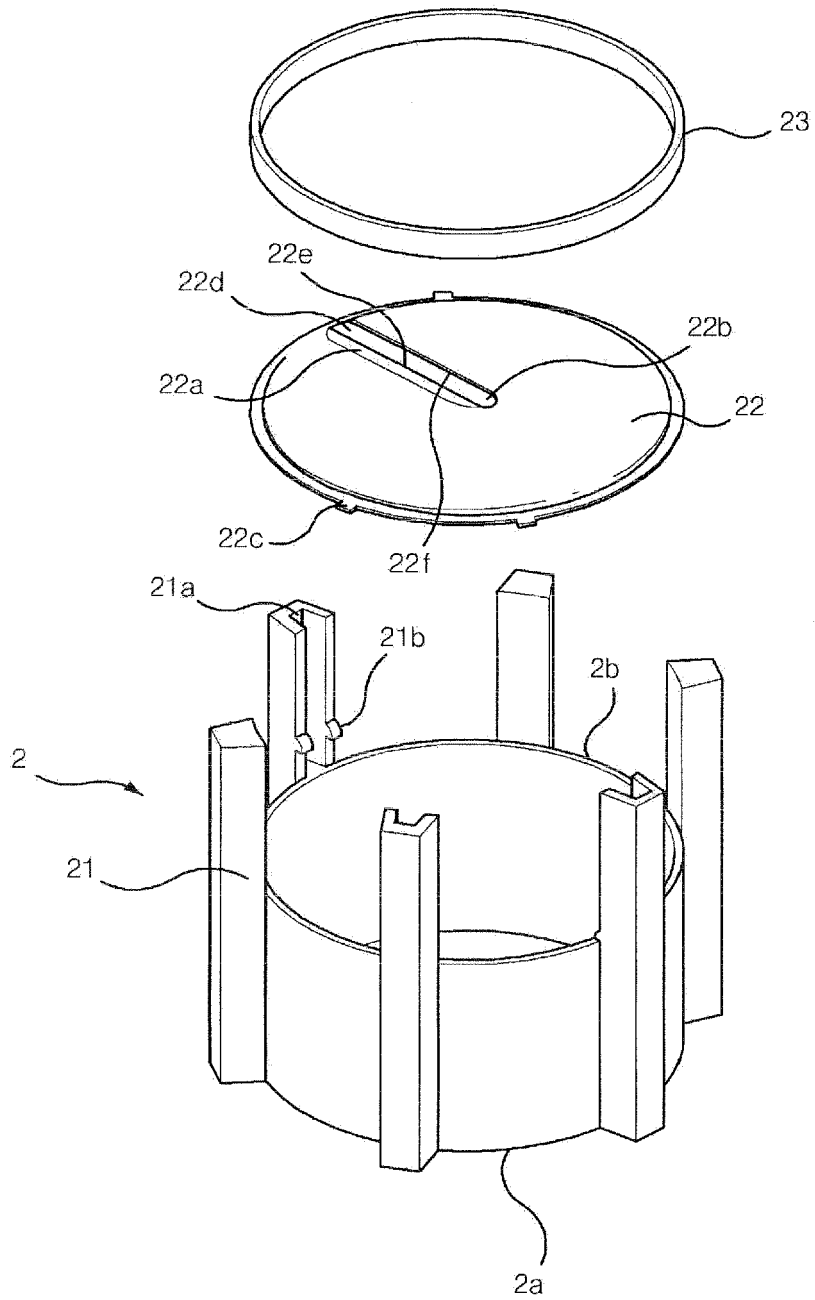


Figure 10

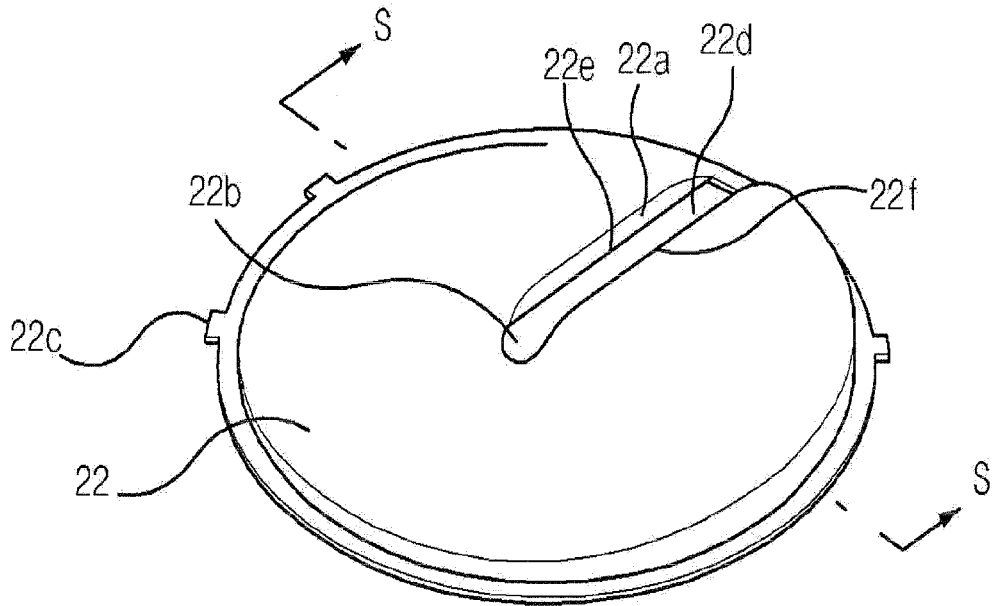


Figure 11

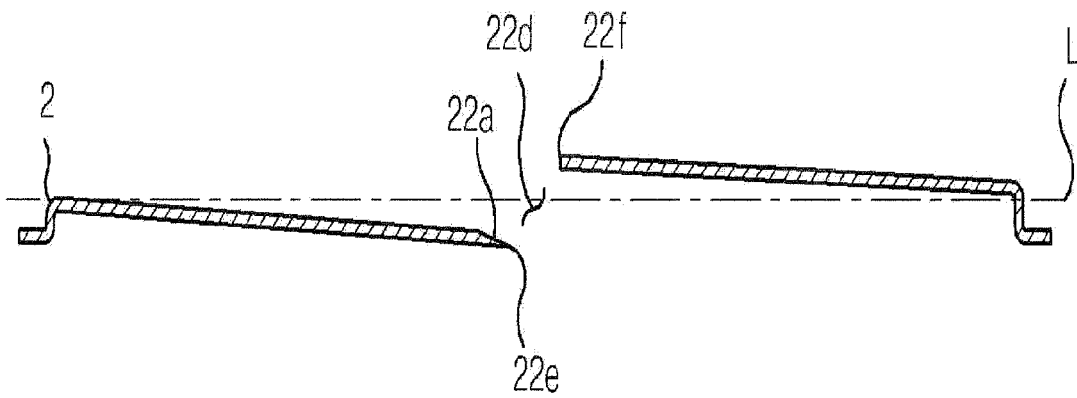


Figure 12

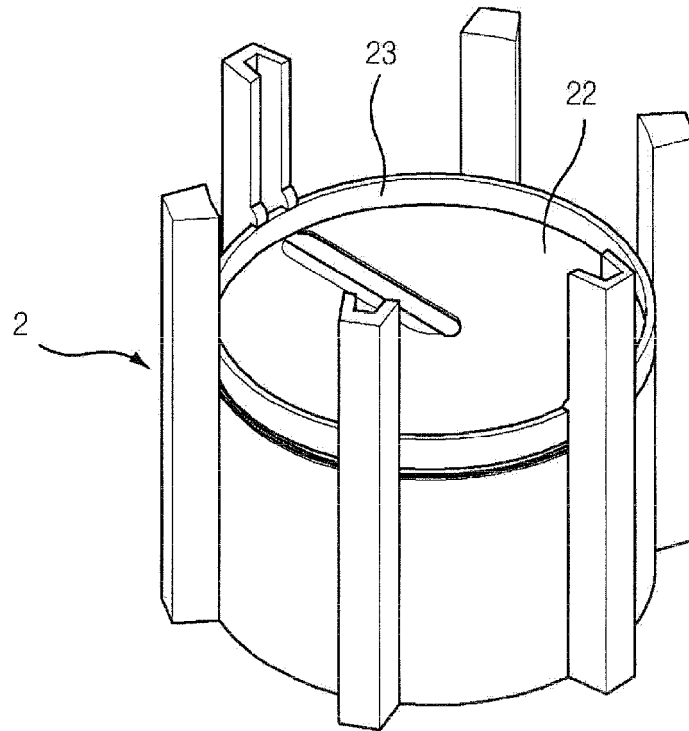
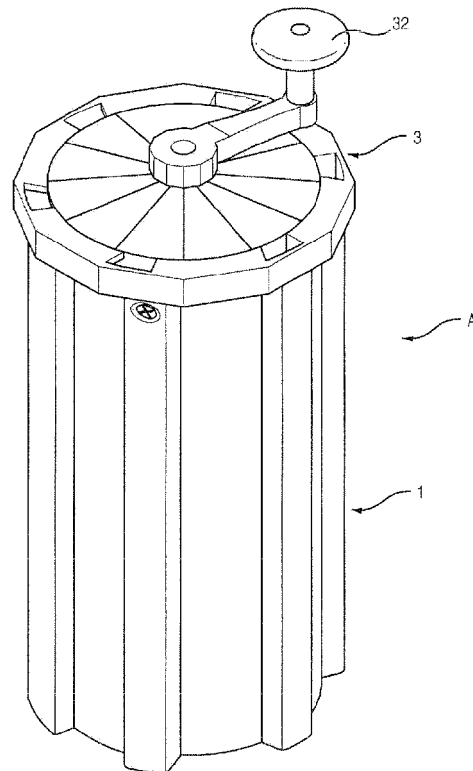


Figure 13





EUROPEAN SEARCH REPORT

Application Number
EP 09 17 1155

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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 8 April 2010	Examiner Canelas, Rui
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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