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(71) Applicant: **Clenporte Representaçôes e Comercio De Brindes, Lda.**
4540 Chave (PT)

(72) Inventor: **Miguel, Fernandez Gomes**
Zona Industrial Da Farrapa
4540 Arouca-Chave (PT)

(74) Representative: **Esteban Perez-Serrano, Maria Isabel**
UDAPI & ASOCIADOS
Explanada, 8
28040 Madrid (ES)

Remarks:
Amended claims in accordance with Rule 137 (2) EPC.

(54) Rotating drum of vending machines with money box

(57) The object of the present invention is a rotating drum of vending machines with money box which allows the user to extract a soluble product contained in a recipient which forms part of a column of these, wherein each of the recipients is partially inserted in that immediately above since the rotating drum separates and collects the bottom recipient of the column from that immediately above it, so that when a turn is made of the money box handle, the recipient falls to a discharge tube of the same so that the user can collect them.

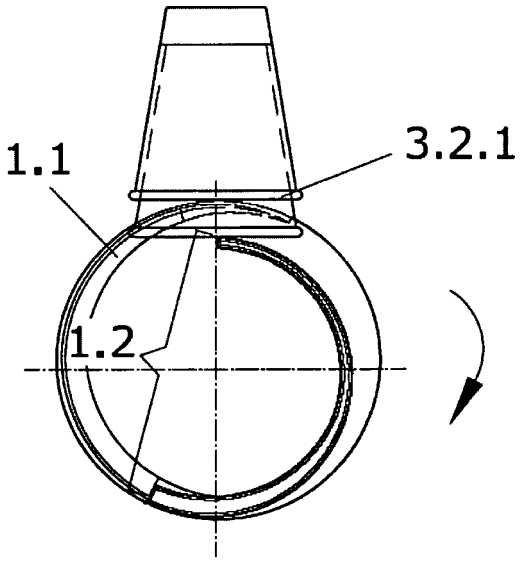

FIG.3

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Description

OBJECT OF THE INVENTION

[0001] The object of the present invention is a rotating drum of vending machines with money box which allows the user to extract a soluble product contained in a recipient which forms part of a column thereof, in which each of the recipients is partially inserted in that immediately above.

[0002] The present invention is characterized by the presence of a rotating drum which separates and collects the bottom recipient of the column from that immediately above, so that when a turn is made of the money box handle, the recipient falls into a discharge tube thereof so that the user can collect them.

[0003] The recipients have in their interior the soluble product delimited by a film which prevents it from spilling out and which is adjacent to the recipient immediately below, since in the column of recipients these are arranged in the reverse position to that of their use.

BACKGROUND OF THE INVENTION

[0004] Vending machines with money box are very well known in the state of the art which allow, once a coin is inserted, a handle to be turned and a can or similar to be extracted from the machine.

[0005] Among the aforementioned machines is the Portuguese patent with publication number PT101787 referring to a modular display device of articles and of their distribution with natural selection which has a receptacle into which the products fall on rotating the money box handle through 180° and wherein on being rotated through a further 180°, the products are made to fall into a discharge tube of the same so that the user can collect them.

[0006] Likewise the Spanish patent is known with publication number ES2116942 referring to a dispensing mechanism for cans and similar in vending machines with money box which comprises a rotating drum in the form of a tubular body which has an opening for the entry of a can or similar inside a stationary piece, arranged concentrically to the drum.

[0007] In the foregoing mechanisms, it is not possible to obtain a product, container or recipient when these are partially inserted in the product, container or recipient immediately above, since the rotating drum would come into collision with the recipient below and the mechanism would be blocked.

[0008] All these drawbacks are overcome by means of the invention that is now disclosed.

DESCRIPTION OF THE INVENTION

[0009] The present invention relates to a rotating drum of vending machines with money box which allows the user to extract a soluble product contained in a recipient which is part of a column thereof.

[0010] This type of recipient, which is not the object of the present invention, is usually plastic cups which are arranged in a column in the reverse position to that of their final use.

[0011] The recipients have in their interior the soluble product delimited by a film which prevents it from spilling out and which is adjacent to the bottom of the recipient immediately below, so that each of the recipients is partially inserted in that immediately above, a gap existing between the upper rims of two consecutive recipients due to the soluble product.

[0012] The vending machines wherein the rotating drum of the present invention is inserted, have a rotating circular recipient holder with a series of holes along its periphery to hold the lower elements of each of the columns of products, containers or recipients.

[0013] The rotating drum is hollow in order to house the recipients, where its external wall is spiral in form, so that the initial part begins on the periphery of the drum and after one turn, the final part finishes facing the initial part through the interior of the drum, and separated by a certain distance.

[0014] Furthermore, the spiral grows in height in the first segment, there being a step thereafter that maintains the height constant until the final segment.

[0015] Thus, initially, before turning the money box handle to make the rotating drum rotate, the product column selected by the user of the circular recipient holder is located on the external wall of the rotating drum and more specifically, on the area behind the step in height.

[0016] When the user turns the money box handle, the drum rotates, so that the bottom recipient which is inside that immediately above, proceeds to pass along the last segment of the spiral until reaching the initial segment.

[0017] In that instant, on continuing to turn the money box handle, the bottom recipient travels the last segment of the spiral while the recipient immediately above begins to travel the first segment of the spiral.

[0018] Due to the presence of the remaining recipients of the column, the recipient immediately above the bottom recipient begins to travel the spiral, whilst the last recipient falls into the interior of the drum by the effect of gravity on completion of the spiral.

[0019] On completing the full turn of the money box handle, the first part of the spiral is in the bottom part, adjacent to the discharge tube of the machine, whereby the recipient falls in its position of use to be collected by the user.

[0020] In that position, the selected column of recipients is again located over the area behind the step in height of the external wall of the rotating drum, whereby the recipient that now occupies the bottom position cannot fall inside the rotating drum, the machine being ready for a new operation of extraction of a recipient after introducing a coin in the money box.

[0021] Afterwards, the user removes the film that protects the soluble product, fills the recipient with hot or

cold water, and stirs it to prepare his drink.

DESCRIPTION OF THE DRAWINGS

[0022] The present descriptive specification is supplemented with a set of drawings which illustrate the preferred embodiment of the invention but which are not restrictive.

[0023] Figure 1 shows a view in perspective of the rotating drum of vending machines with money box object of the invention.

[0024] Figure 2 shows a view in rear elevation of the rotating drum in the starting position after the column of recipients is selected.

[0025] Figure 3 shows a view in rear elevation of the rotating drum in the position in which the bottom recipient rests on the last part of the spiral and that immediately above on the initial part.

[0026] Figure 4 shows a view in rear elevation of the rotating drum in the position in which the bottom recipient has fallen by gravity into the interior of the rotating drum and that immediately above rests on the spiral.

[0027] Figure 5 shows a view in rear elevation of the rotating drum in the final position, in which the bottom recipient falls by gravity into the discharge tube so that the user can collect it.

[0028] Figure 6 shows a view in perspective of the recipient holder on which are located the columns of the recipients with the diverse types of soluble products.

PREFERRED EMBODIMENT OF THE INVENTION

[0029] In the light of the foregoing, the object of the present invention is a rotating drum (1) of vending machines with money box which allows the user to extract a soluble product (2) contained in a recipient (3.1, 3.2) which forms part of a column (3) thereof.

[0030] Although each recipient becomes the bottom one when that preceding it has fallen in the rotating drum, for a better understanding of the invention it will be considered that the column of recipients has only two recipients (3.1, 3.2), the bottom one (3.1) and that immediately above (3.2).

[0031] The recipients (3.1, 3.2) hold in their interior the soluble product (2) delimited by a plastic film (4) which prevents it spilling out and which is adjacent to the base of the bottom recipient (3.1), so that each of the recipients (3.1, 3.2) is partially inserted in that immediately above (3.2), since a gap exists between the two consecutive recipients (3.1, 3.2) due to the soluble product (2).

[0032] The vending machines wherein the rotating drum (1) of the present invention is inserted, have a rotating circular recipient holder (5) with a series of holes (5.1) around its periphery to house the bottom elements of each of the columns of products, containers or recipients (3.1, 3.2).

[0033] The rotating drum (1), hollow in order to house the recipients, has an external wall in spiral form, so that the initial segment (1.1) begins on the periphery of the rotating drum (1) and after one turn, its final segment (1.2) finishes facing through the interior of the rotating drum (1) the initial segment (1.1), and separated from that (1.1) by a certain distance, which in this example of preferred embodiment is the thickness of the soluble product (2) of the recipients (3.1, 3.2).

[0034] Moreover, the spiral grows in height in the initial segment (1.1), there being thereafter a step which maintains the height constant over the final segment (1.2) of the spiral.

[0035] Initially, before turning the money box handle to make the drum (1) rotate, shown in Figure 2, the product column selected by the user of the circular recipient holder (5) rests on the external wall of the rotating drum and more specifically, on the area behind the step in height which corresponds with the initial area (1.2.1) of the final segment (1.2) .

[0036] When the user rotates the money box handle, the bottom recipient (3.1) rests on the final segment (1.2) of the spiral while the front rim (3.2.1) of the recipient immediately above (3.2) rests on the initial segment (1.1) of the spiral, as is shown in Figure 3.

[0037] When the rotation continues, the bottom recipient (3.1) does not find support on the spiral and falls to the interior of the rotating drum (1) by the effect of gravity, as shown in Figure 4.

[0038] On completing the full turn of the money box handle, the first segment (1.1) of the spiral is located on the bottom part of the rotating drum (1), adjacent to the discharge tube of the machine, whereby the bottom recipient (3.1) falls once again by gravity, this time to the discharge tube to which the user has access.

[0039] In that position, the selected column of recipients rests on the initial area (1.2.1) of the final segment (1.2) of the spiral, the machine being ready for a new operation of extraction of a recipient from any of the columns (3) mounted in the circular recipient holder (5), after the introduction of a coin in the money box.

[0040] Focusing on the essence of the invention, this relates to a rotating drum (1) of vending machines with money box of among those which have at least one column (3) of products, containers or recipients (3.1, 3.2) located above the rotating drum (1) characterized in that it has a spiral which allows the last recipient (3.1) of the column (3) to fall by gravity to the interior of the rotating drum (1) at the same time that it retains the remaining recipients of the column (3) outside of the rotating drum (1), where in the column, each of the recipients (3.1, 3.2) is partially inserted in that immediately above.

[0041] The essential nature of this invention is not altered by variations in materials, form, size and arrangement of the component elements, described in a non-restrictive manner, this being sufficient for an expert to proceed to the reproduction thereof.

Claims

1. - Rotating drum of vending machines with money box of among those which have at least one column (3) of products, containers or recipients (3.1, 3.2) located above the rotating drum (1) **characterized in that** it has a spiral which allows the last recipient (3.1) of the column (3) to fall by gravity to the interior of the rotating drum (1) at the same time that it retains the remaining recipients of the column (3) outside of the rotating drum (1), where in the column, each of the recipients (3.1, 3.2) is partially inserted **in that** immediately above.

2. - Rotating drum of vending machines with money box according to claim 1 **characterized in that** above the rotating drum (1) is a rotating circular recipient holder (5) with a series of holes (5.1) around its periphery to house the bottom elements of each of the columns (3) of products, containers or recipients (3.1, 3.2) selectable by the user.

3. - Rotating drum of vending machines with money box according to claim 1 **characterized in that** the recipients (3.1, 3.2) have in their interior a soluble product (2) delimited by a film (4) which prevents it spilling out and which is adjacent to the base of the bottom recipient (3.1).

4. - Rotating drum of vending machines with money box according to claim 1 **characterized in that** the spiral has an initial segment (1.1) which begins on the periphery of the rotating drum (1) and after one turn, a final segment (1.2) finishes facing through the interior of the rotating drum (1) with the initial segment (1.1), and separated therefrom (1.1) by a certain distance.

5. - Rotating drum of vending machines with money box according to claim 4 **characterized in that** the space between the final segment (1.2) and the initial segment (1.1) of the spiral is equal to the thickness of soluble product (2) of the recipients (3.1, 3.2).

6. - Rotating drum of vending machines with money box according to claim 4 **characterized in that** the spiral grows in height in the initial segment (1.1), there being thereafter a step which maintains the height constant along the final segment (1.2) of the spiral.

7. - Rotating drum of vending machines with money box according to claim 4 **characterized in that** initially, before turning the money box handle to make the rotating drum (1) rotate, the column (3) of recipients (3.1, 3.2) rests on the external wall of an initial area (1.2.1) of the final segment (1.2) of the spiral.

8. - Rotating drum of vending machines with money box according to claim 7 **characterized in that** when the user turns the money box handle, the bottom recipient (3.1) rests on the final segment (1.2) of the spiral while the front rim (3.2.1) of the recipient immediately above (3.2) rests on the initial segment (1.1) of the spiral.

9. - Rotating drum of vending machines with money box according to claim 8 **characterized in that** on continuing to turn the handle of the money box, the bottom recipient (3.1) does not encounter support on the spiral and falls to the interior of the rotating drum (1) by the effect of gravity.

10. - Rotating drum of vending machines with money box according to claim 9 **characterized in that** on completing the full turn of the money box handle, the first segment (1.1) of the spiral is located in the bottom part of the rotating drum (1), adjacent to the discharge tube of the machine, whereby the bottom recipient (3.1) falls once again by gravity, this time to a discharge tube to which the user has access.

11. - Rotating drum of vending machines with money box according to claim 9 **characterized in that** on completing the full turn of the money box handle, the selected column of recipients rests on the initial area (1.2.1) of the final segment (1.2) of the spiral, leaving the machine ready for a new extraction operation.

12. - Rotating drum of vending machines with money box according to claim 1 **characterized in that** in the column (3) the recipients (3.1, 3.2) are arranged in the reverse position to that of use.

13. - Rotating drum of vending machines with money box according to claim 10 **characterized in that** the bottom recipient (3.1) falls to the discharge tube in the position of use.

Amended claims in accordance with Rule 137(2) EPC.

1. - Rotating drum of vending machines with money box of among those which have at least one column (3) of products, containers or recipients (3.1, 3.2) located above the rotating drum (1) **that** has a spiral which allows the last recipient (3.1) of the column (3) to fall by gravity to the interior of the rotating drum (1) at the same time that it retains the remaining recipients of the column (3) outside of the rotating drum (1), where in the column, each of the recipients (3.1, 3.2) is partially inserted in that immediately above **characterised in that** the spiral has an initial segment (1.1) which begins on the periphery of the rotating drum (1) and after one turn of spiral, a final

segment (1.2) finishes facing the initial segment (1.1) through the interior of the rotating drum (1), and is separated from the initial segment (1.1) by a certain distance.

2. - Rotating drum of vending machines with money box according to claim 1 **characterized in that** above the rotating drum (1) is a rotating circular recipient holder (5) with a series of holes (5.1) around its periphery to house the bottom elements of each of the columns (3) of products, containers or recipients (3.1, 3.2) selectable by the user.

3. - Rotating drum of vending machines with money box according to claim 1 **characterized in that** the recipients (3.1, 3.2) have in their interior a soluble product (2) delimited by a film (4) which prevents it spilling out and which is adjacent to the base of the bottom recipient (3.1).

4. - Rotating drum of vending machines with money box according to claim 3 **characterized in that** the space between the final segment (1.2) and the initial segment (1.1) of the spiral is equal to the thickness of soluble product (2) of the recipients (3.1, 3.2).

5. - Rotating drum of vending machines with money box according to claim 1 **characterized in that** the spiral grows in height in the initial segment (1.1), there being thereafter a step which maintains the height constant along the final segment (1.2) of the spiral.

6. - Rotating drum of vending machines with money box according to claim 1 **characterized in that** initially, before turning the money box handle to make the rotating drum (1) rotate, the column (3) of recipients (3.1, 3.2) rests on the external wall of an initial area (1.2.1) of the final segment (1.2) of the spiral.

7. - Rotating drum of vending machines with money box according to claim 6 **characterized in that** when the user turns the money box handle, the bottom recipient (3.1) rests on the final segment (1.2) of the spiral while the front rim (3.2.1) of the recipient immediately above (3.2) rests on the initial segment (1.1) of the spiral.

8. - Rotating drum of vending machines with money box according to claim 7 **characterized in that** on continuing to turn the handle of the money box, the bottom recipient (3.1) does not encounter support on the spiral and falls to the interior of the rotating drum (1) by the effect of gravity.

9. - Rotating drum of vending machines with money box according to claim 8 **characterized in that** on completing the full turn of the money box handle, the first segment (1.1) of the spiral is located in the bottom part of the rotating drum (1), adjacent to a discharge tube of the machine, whereby the bottom recipient (3.1) falls once again by gravity, this time to a discharge tube to which the user has access.

10. - Rotating drum of vending machines with money box according to claim 8 **characterized in that** on completing the full turn of the money box handle, the selected column of recipients rests on the initial area (1.2.1) of the final segment (1.2) of the spiral, leaving the machine ready for a new extraction operation.

11. - Rotating drum of vending machines with money box according to claim 1 **characterized in that** in the column (3) the recipients (3.1, 3.2) are arranged in the reverse position to that of use.

12. Rotating drum of vending machines with money box according to claim 9 **characterized in that** the bottom recipient (3.1) falls to the discharge tube in the position of use.

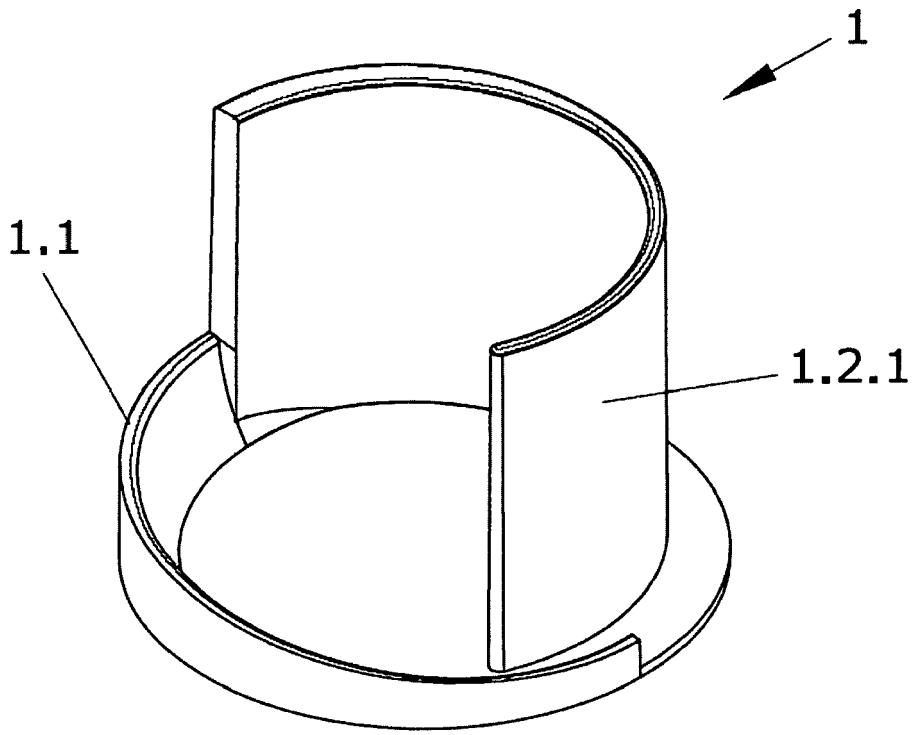

FIG.1

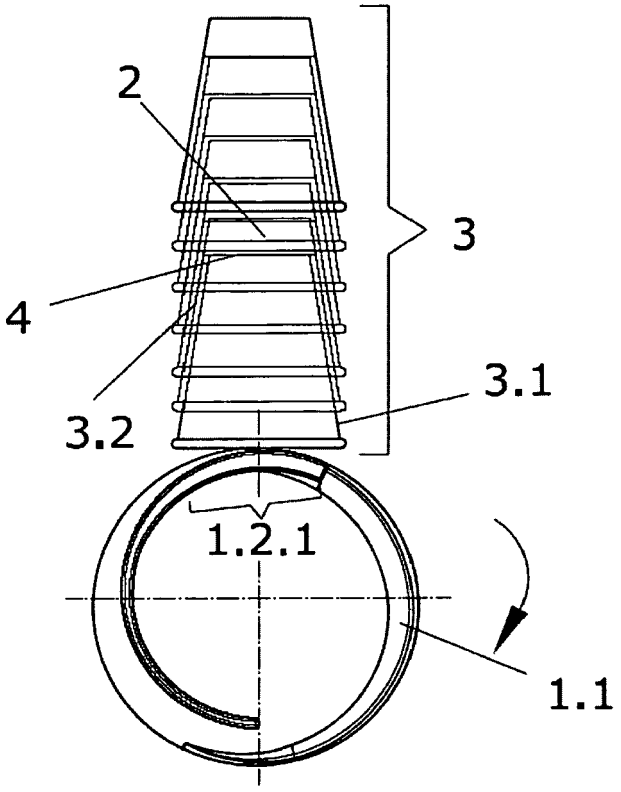

FIG.2

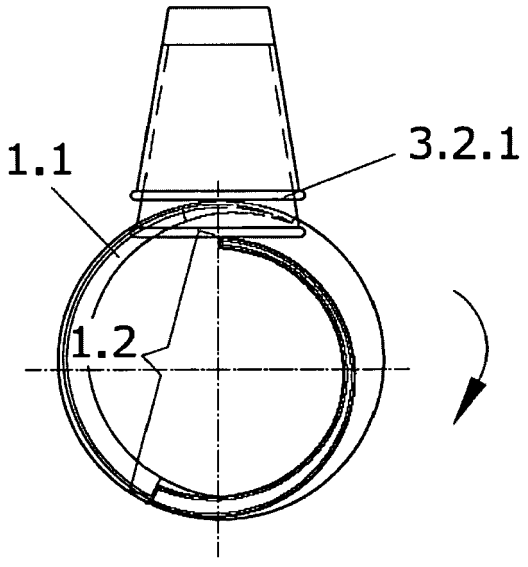

FIG.3

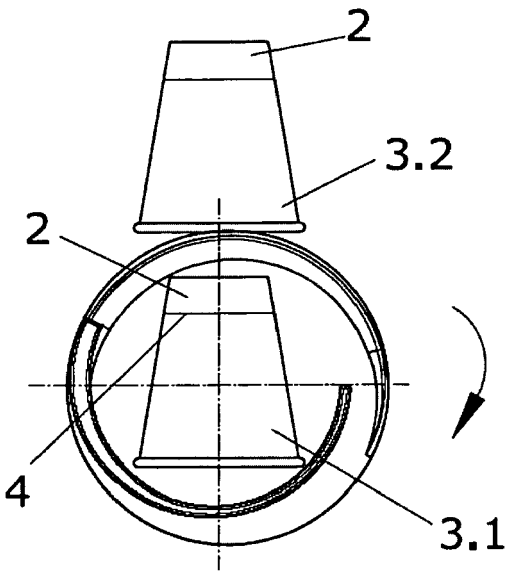

FIG.4

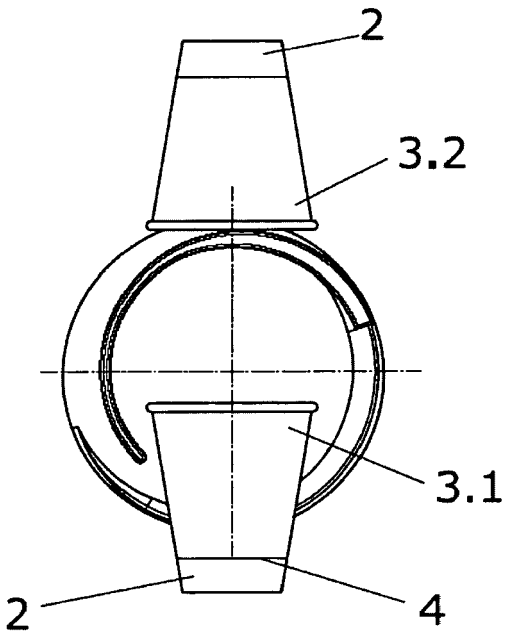

FIG.5

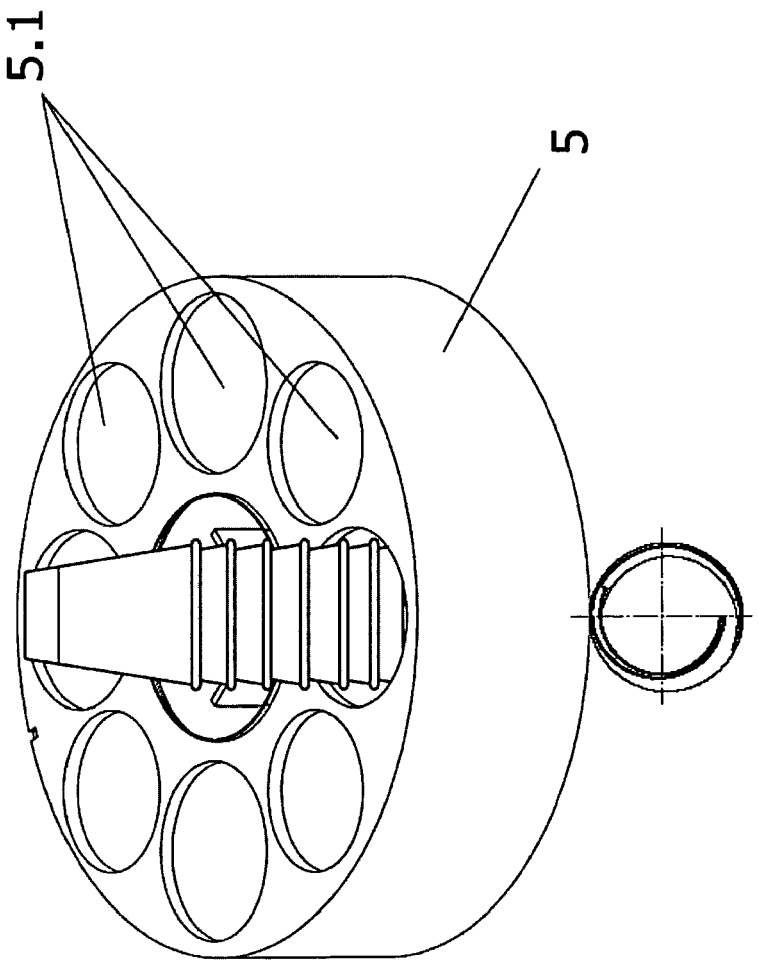

FIG.6

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EUROPEAN SEARCH REPORT

Application Number
EP 06 38 1044

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	11 April 2007	Liendl, Martin

CATEGORY OF CITED DOCUMENTS

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11-04-2007

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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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- ES 2116942 **[0006]**