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(54) Paper roll with lateral control groove and dispenser suitable to use said roll

(57) A paper roll (R) consisting of a rolled continuous band (B) wound on a cylindrical core (C) is provided on at least a lateral face (F) with a groove (G) extending linearly along a diameter of the roll (R). A corresponding dispenser of paper sheets obtained from said roll (R) includes one or more control protrusion preventing the use in the dispenser of rolls without the lateral groove (G) and/or having a smaller width.

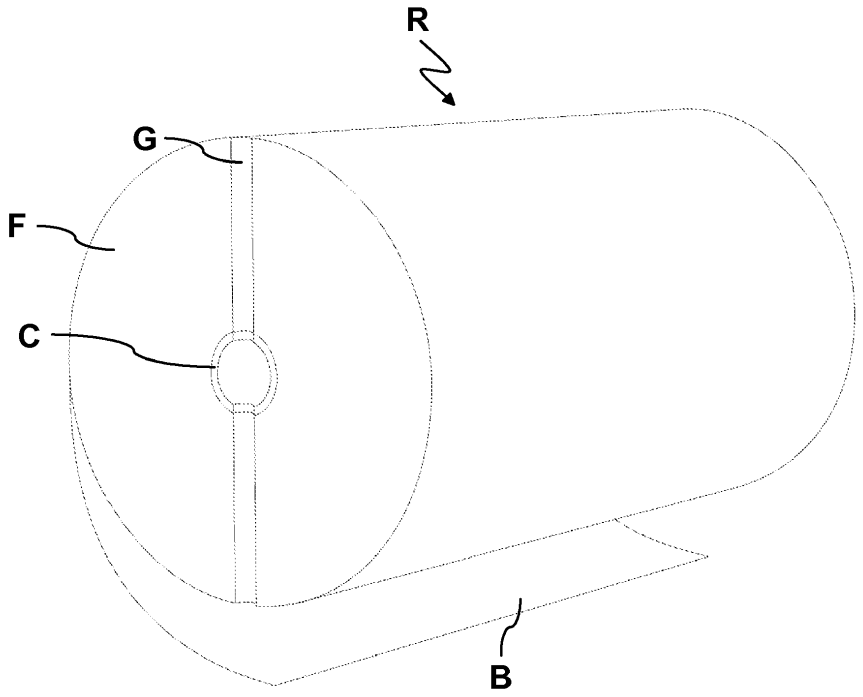

Fig.1

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Description

[0001] The present invention relates to a paper roll and a relevant dispenser that uses said roll, and in particular to a roll provided with a diametral lateral groove and a dispenser specifically designed to operate only with such a roll. In the following, specific reference will be made to a paper roll used to obtain paper towels but it is clear that what is being said also applies to rolls of toilet paper, absorbent kitchen paper and the like.

[0002] Common paper rolls for domestic use simply consist of a continuous paper band, possibly with transverse pre-cut lines, usually wound on a cylindrical core but sometimes even coreless. These rolls are often used without any dispenser or introduced in very simple dispensers that receive any brand of rolls as long as they have the right size (diameter and width).

[0003] For use in public places such as restaurants, offices, hospitals and the like, the paper rolls are usually introduced in more sophisticated and expensive dispensers that can even include a feeding and cutting mechanism and/or a mechanism for triggering a spare roll. Examples of such dispensers and mechanisms devised by the same inventor of the present application can be found in WO 2005/006932, EP 1053712 and EP 0930039.

[0004] These dispensers are usually supplied to the users at very low prices, when not altogether for free, by the manufacturers of paper rolls with the agreement that the users use in the dispensers only the rolls from said manufacturers, but sometimes the users find more convenient and/or cheaper to buy part or all of the rolls from another manufacturer. In order to prevent this, dispensers have been devised that are "customized" with one or more control protrusions at the roll supporting means such that they can receive only rolls with one or more corresponding annular lateral grooves.

[0005] In other words, if at least one of the roll-supporting arms has an internal protrusion such as a peg having a diameter "d" and located at a distance "x" from the rotational axis of the roll, only a roll having on its lateral face an annular groove having a diameter "x" and a width "d" will be able to be correctly received on the roll-supporting arms and to rotate freely without having the protruding peg stop it.

[0006] An example of such a roll is disclosed in US 2008/0099593 that specifically claims a roll whose annular groove is formed not by cutting material away as in prior art but by deforming the roll with a suitably shaped tool.

[0007] Regardless of the fact that the lateral groove is formed by cutting or deforming the material, the mere fact that the groove has a closed contour around the rotational axis of the roll makes the manufacturing of the roll more complicated and expensive. In fact, it is necessary to form the groove with a sufficient precision since even a small eccentricity with respect to the axis of rotation may make the dispenser operation less smooth, and if the roll is coreless the tool does not even have the core central opening to use as a reference.

[0008] Moreover, a roll with an annular lateral groove can not be used in a dispenser with a spare roll since the placing of the roll on the support with the protruding peg requires a manual intervention by an operator, whereby the automatic triggering of the spare roll upon exhaustion of the first roll is not possible.

[0009] Therefore the object of the present invention is to provide a roll and a relevant dispenser which overcome the above-mentioned drawbacks.

[0010] This object is achieved by means of a roll provided on at least one lateral face with a diametral control groove, i.e. a straight groove passing through the roll center, and of dispenser including one or more corresponding control protrusions. Other advantageous features of the roll and dispenser are recited in the dependent claims.

[0011] A first manufacturing advantage of the present roll resides in the greater simplicity in forming the diametral lateral groove, whether it is formed by cutting or deforming material, whereby the roll cost is lower. Furthermore, the working precision is less critical for a straight groove than for an annular groove, so that the corresponding dispenser can operate smoothly even in the presence of greater manufacturing tolerances.

[0012] A second using advantage of the roll according to the present invention stems from the fact that since the groove extends throughout the whole diameter of the roll up to the edge it allows the engagement and disengagement of the roll by the control protrusion even without the intervention of an operator. This results in the possibility of using said roll also in a dispenser with automatic triggering of the spare roll, differently from prior art rolls with annular lateral groove.

[0013] These and other advantages and characteristics of the roll and of the corresponding dispenser according to the present invention will be clear to those skilled in the art from the following detailed description of some embodiments thereof, with reference to the annexed drawings wherein:

Fig.1 is a lateral perspective view of the roll provided with a diametral lateral groove;

Fig.2 is a diagrammatic perspective view of the main components of a first embodiment of a dispenser that uses the roll of Fig.1, in particular a dispenser with automatic triggering of a spare roll;

Fig.3 is a lateral diagrammatic view of the dispenser of Fig.2 at the beginning of the operation;

Fig.4 is a front diagrammatic view of the dispenser of Fig.2 at the beginning of the operation;

Fig.5 is a lateral diagrammatic view of the dispenser of Fig.2 at the spare roll triggering step;

Fig.6 is a diagrammatic perspective view of the main components of a second embodiment of a dispenser that uses the roll of Fig.1, in particular a dispenser with a single roll;

Fig.7 is a front view of a detail of the roll-supporting

means of the dispenser of Fig.6;
Fig. 8 is a lateral view of the detail of Fig.7;
Fig.9 is a top plan view of the detail of Fig.7; and
Fig.10 is a sectional view taken along line A-A of Fig. 8.

[0014] Referring to Fig.1, there is seen that a roll R according to the present invention has, on at least one lateral face F, a groove G linearly extending along a diameter of said roll R, said groove G preferably having a U-shaped cross-section. If roll R is obtained by winding a paper band B around a central core C, as is often the case, groove G obviously extends also through said core C.

[0015] In the case where groove G is formed by cutting material away, it is clear that a same tool (e.g. a cutter) can remove in a single simple working both the paper material of band B and the material of core C (usually cardboard or plastic). On the contrary, if groove G is formed by deforming the material than the end of core C can be deformed together with band B only when core C is made of cardboard or other similar deformable material.

[0016] When core C is made of rigid plastic its end will be already shaped with two diametrally opposed recesses that will be used as reference for the deforming tool which must form groove G aligned therewith. It should also be noted that although a single lateral groove G is sufficient for the purpose of the invention, nothing prevents from forming said groove G on both lateral faces F in which case they must be formed in a same diametral plane.

[0017] Referring now to figures 2 to 5, there is illustrated a first embodiment of a paper towels dispenser devised to operate only with the rolls of Fig.1, in particular with a roll provided with a single lateral groove G.

[0018] To this purpose, the dispenser is provided with a control protrusion 1 located at the top of the internal side of its left flank, said protrusion 1 having a width substantially equal to the width of groove G so as to act also as a guide and being preferably provided with a wedge-shaped tip to make its introduction into groove G easier.

[0019] The thickness of protrusion 1 defines a passage having a width A with respect to the opposite right flank of the dispenser, whereby a grooveless roll can not be wider than A in order to be able to enter the dispenser. This width A also corresponds to the distance between two levers 2 located in the bottom portion of the dispenser and pivoted on a horizontal axis. Each lever 2 is provided in its top portion with a tooth 3 arranged at a more central position, whereby the distance between the two teeth 3 is shorter than width A, and is kept raised by an elastic member 11.

[0020] In this way, if you introduce at the top of the dispenser a roll having a width greater than A (and obviously smaller than the distance between the two flanks) but provided with groove G, it can slide vertically down to the dispensing position guided by protrusion 1 and reach down to press both levers 2 so that teeth 3 are lowered. On the contrary, a roll having the same width but without the diametral groove can not pass through the passage having a width A while a roll having a width smaller than A can pass through the passage but can not simultaneously press both levers 2. As a consequence, at least one of the two teeth 3 remains in the raised position and engages the roll preventing the rotation thereof and thus the dispensing of the paper towels, whereby only a roll having the correct width and groove G can be used in the present dispenser.

[0021] This first embodiment of the dispenser also provides the presence of a spare roll that is automatically triggered when the first roll is almost finished. The mechanism that controls said triggering includes a horizontal-axis cam 4 on which abuts a roller 5 arranged at the end of a horizontal L-shaped arm pivoted on the back of the dispenser, an uprising stop 6 being integral with the pivoting side of said L-shaped arm.

[0022] As clearly shown in figures 3 and 4, at the beginning of its operation the dispenser is loaded with a first roll R1 that thanks to its groove G passes beyond the control protrusion 1 and slides down to the dispensing position in the bottom portion of the dispenser resting on a pair of rear rollers 7 and a pair of front rollers 9, and in the meantime it presses both levers 2 thus lowering both teeth 3.

[0023] The descent of roll R1 is made possible by the operator who manually rotates the L-shaped arm so that stop 6 is in abutment on the back and does not interfere, and also sees to passing the leading edge of the paper band B around a pair of return rollers 8 arranged to the front of a feeding and cutting/tearing unit 10 located under roll R1 at the paper towels delivery outlet.

[0024] Once the first roll R1 has been positioned and is ready for use, the L-shaped arm can return to its operative position with stop 6 projecting above roll R1 and roller 5 abutting on cam 4, which is pivoted on the same shaft of the front rollers 9 and projects in the passage between the latter and the return rollers 8. The second roll R2, i.e. the spare roll, can thus be introduced in the dispenser in the same way as roll R1 and remains at a rest position in the top portion being retained between stop 6 and the control protrusion 1 that engages its groove G.

[0025] The diameter of the first roll R1 decreases progressively with use until it reaches a value lower than the width of the passage between rollers 8 and 9, whereby it falls by gravity to a discharging position in the front portion of the dispenser as shown in Fig.5. While passing between rollers 8 and 9, roll R1 causes a rotation of cam 4 (clockwise in figures 3 and 5) which in turn causes a rising or roller 5 and therefore an upwards rotation of the L-shaped arm resulting in a backwards movement of stop 6, which allows the fall of the spare roll R2 into the dispensing position previously occupied by roll R1.

[0026] It should be noted that, during this roll replacement step, the automatic triggering of the spare roll R2

is made possible by the fact that it disengages protrusion 1 thanks to its groove G extending up to the edge. The leading edge of roll R2 is automatically introduced into the feeding and cutting/tearing unit 10 being drawn by the band of roll R1, and for some cycles the dispenser will deliver a double towel. When roll R1 is finished, a ner spare roll can be loaded into the dispenser while removing the core of the finished roll, if any, thus returning to the state illustrated in Fig. 3.

[0027] Finally, figures 6 to 10 illustrate a second embodiment of a single roll dispenser, i.e. without spare roll, provided with specific roll supporting means to allow only the use of a roll according to the present invention.

[0028] This dispenser has a very simple structure with two side arms 12 for supporting roll R that are secured or pivoted on the back and provided at their distal ends with rotatable disks 13. Only the feeding and cutting/tearing unit 10 with its relevant return rollers 8 is provided under these supporting means.

[0029] As shown in detail in figures 7 to 10, the left disk 13 is provided on its inner side with two straight ribs 14, aligned along a diameter and sized to engage groove G, and with a central hub 15 having the same height of the ribs 14 and a diameter suitable to enter the core of roll R.

[0030] Thanks to the presence of ribs 14, a roll without groove G even when having a width equal to the distance between the inner sides of the rotatable disks 13 and a core sized to receive hub 15 can not be mounted on arms 12 due to the interference of said ribs 14. The height of hub 15 can obviously be also slightly greater or lower than the height of ribs 14, which preferably have the same width of groove G so as to provide a better grip of roll R.

[0031] It should also be noted that hub 15 has a substantially T-shaped cross-section, with the vertical leg of the T extending externally beyond disk 13 for the mounting on arm 12 and the horizontal arm of the T connected to the inner side of the rotatable disk 13 (Fig.10). In this way, it is not even possible for the user to introduce into hub 15 a piece of pipe of the like acting as an extension to support a narrower roll that does not interfere with ribs 14.

[0032] It is clear that in order to achieve the desired effect it is sufficient that only one of the two disks 13 is provided with ribs 14 whereas the other disk may have only hub 15, but nothing prevents from having ribs 14 on both disks 13 if roll R is provided with groove G on both sides.

Claims

1. Paper roll (R) consisting of a rolled continuous band (B), preferably wound on a cylindrical core (C), **characterized in that** it is provided on at least a lateral face (F) with a groove (G) extending linearly along a diameter of said roll (R).

2. Roll (R) according to claim 1, **characterized in that** the lateral groove (G) has a U-shaped cross-section.

3. Roll (R) according to claim 1 or 2, **characterized in that** when said roll (R) is obtained by winding the continuous band (B) on a cylindrical core (C) the lateral groove (G) extends through said core (C) too.

4. Dispenser of paper sheets obtained from a roll (R) according to any of the preceding claims, **characterized in that** it includes a control protrusion (1) defining a passage for the introduction of the roll (R), said passage having a width (A) equal to the distance between two levers (2) provided in their top portions with teeth (3) arranged at a more central position whereby the distance between said teeth (3) is shorter than said width (A), said levers (2) being kept raised by respective elastic members (11) in a position where the teeth (3) interfere with the rotation of the roll (R) when it is in the dispensing position.

5. Dispenser according to the preceding claim, **characterized in that** it further includes a roller (5) arranged at the end of a horizontal L-shaped arm pivoted on the back of the dispenser and abutting on a horizontal-axis cam (4), an uprising stop (6) being integral with the pivoting side of said L-shaped arm and cooperating with the control protrusion (1) to support a spare roll (R2) in a waiting position above the dispensing position, said cam (4) extending in a passage crossed by the roll (R) when it reaches a minimum diameter and falls to a discharging position, the passing of the roll (R) across said passage causing a rotation of the cam (4) and a subsequent rising of said roller (5) and of said stop (6) sufficient to cause said spare roll (R2) to fall into the dispensing position.

6. Dispenser of paper sheets obtained from a roll (R) according to any of the claims 1 to 3, comprising two side arms (12) for supporting the roll (R) that are provided at their distal ends with a rotatable disk (13) having on its inner side a central hub (15) with a diameter suitable to enter the core (C) of the roll (R), **characterized in that** on the inner side of at least one of said rotatable disks (13) there are also provided two straight ribs (14) aligned along a diameter and sized to engage the lateral groove (G) of the roll (R), the height of the relevant central hub (15) being substantially equal to the height of said ribs (14).

7. Dispenser according to the preceding claim, **characterized in that** the width of the ribs (14) is equal to the width of the lateral groove (G).

8. Dispenser according to claim 6 or 7, **characterized in that** the central hub (15) has a substantially T-shaped cross-section, with the vertical leg extending externally beyond the rotatable disk (13) for the

mounting on the supporting arm (12) and the horizontal arm connected to the inner side of the rotatable disk (13).

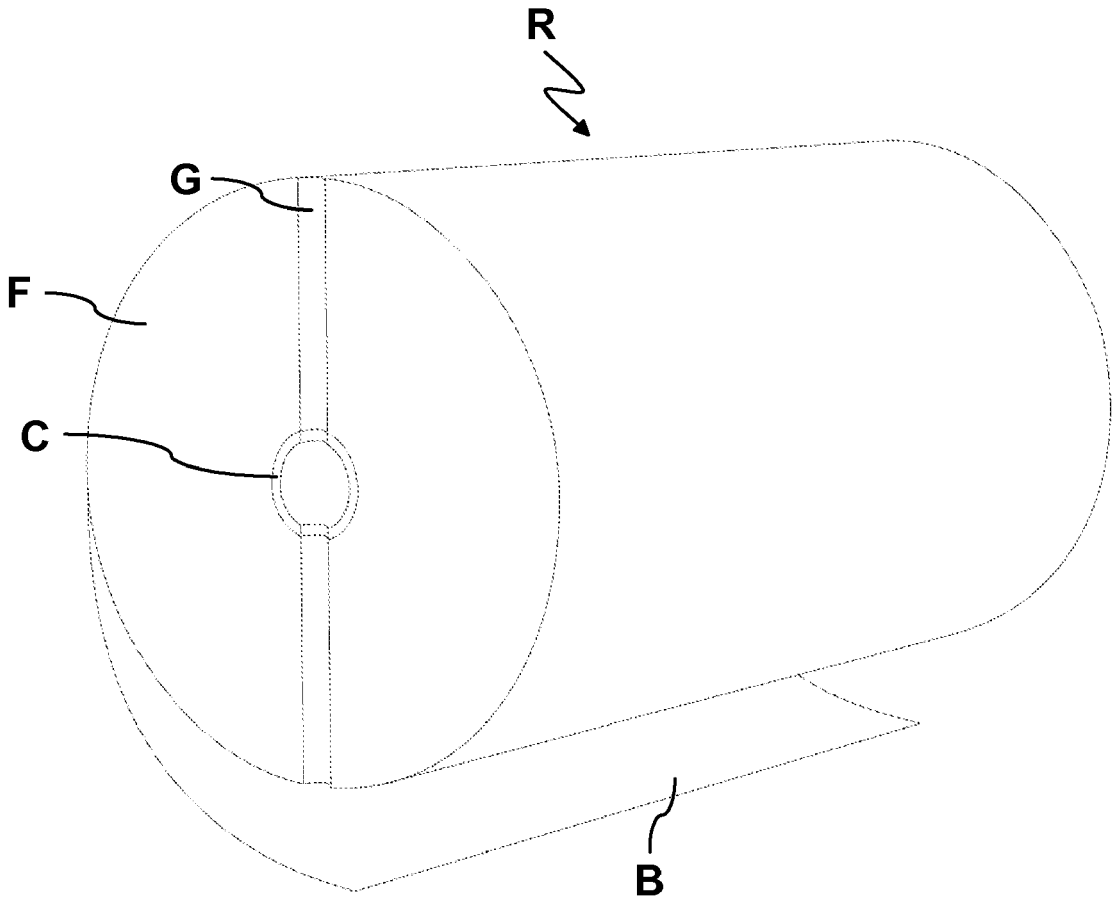


Fig.1

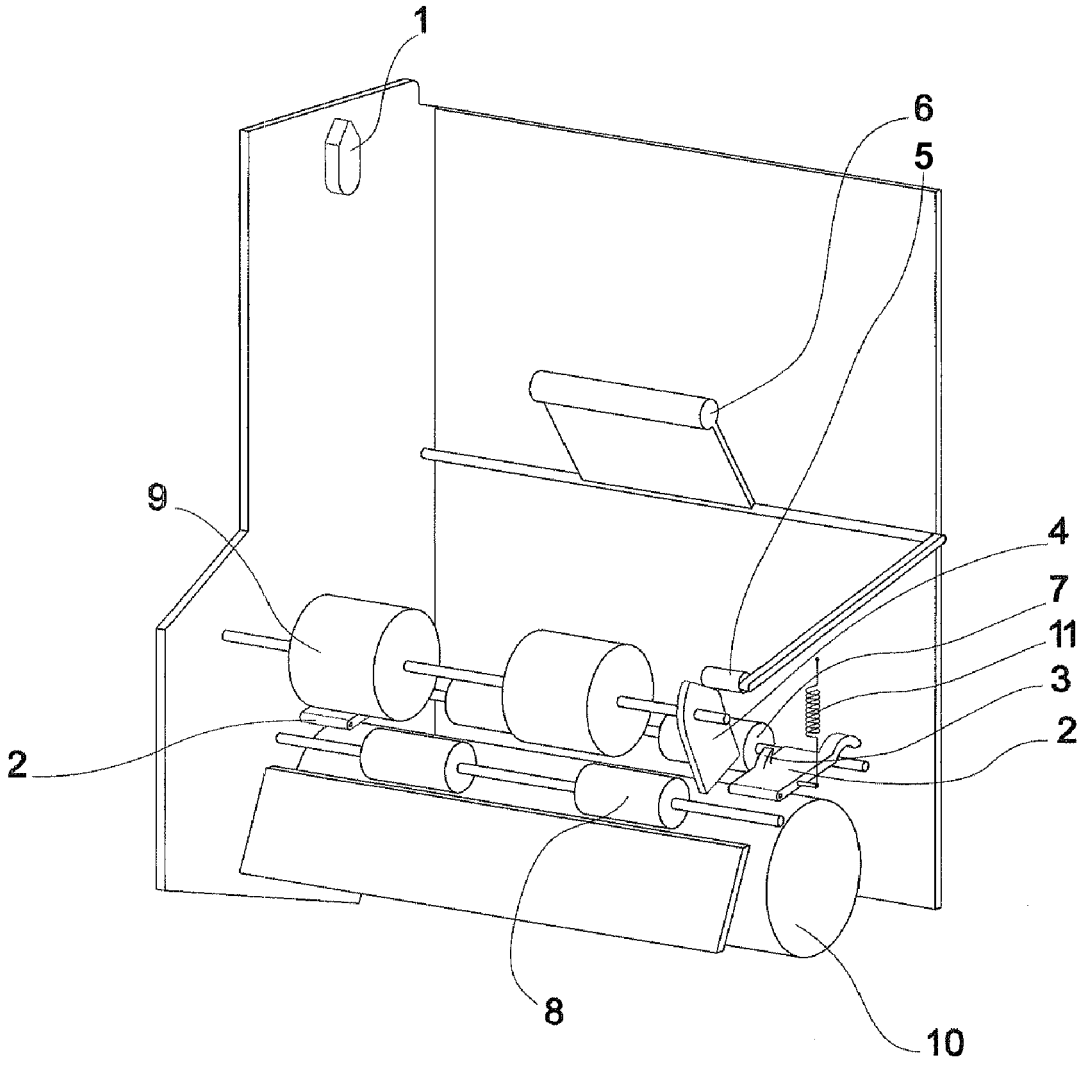


Fig.2

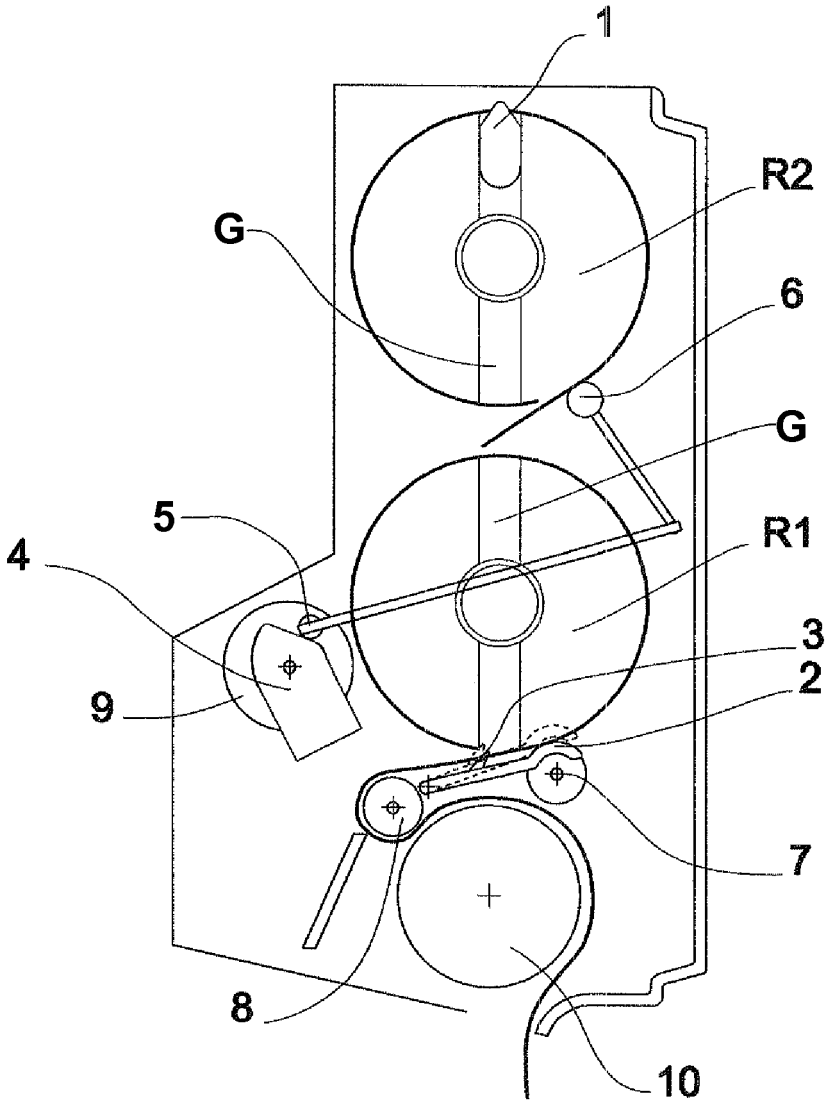


Fig.3

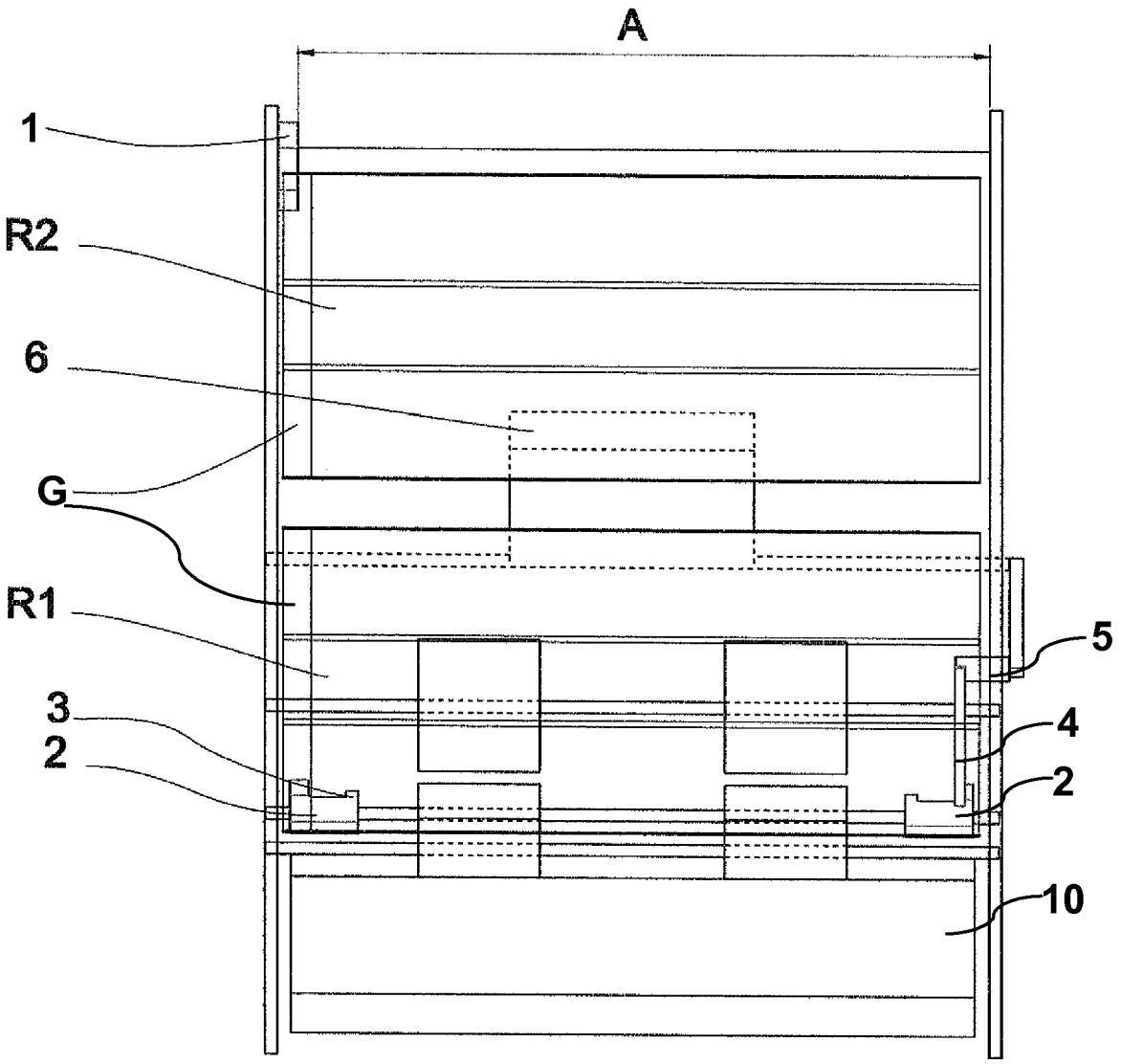


Fig.4

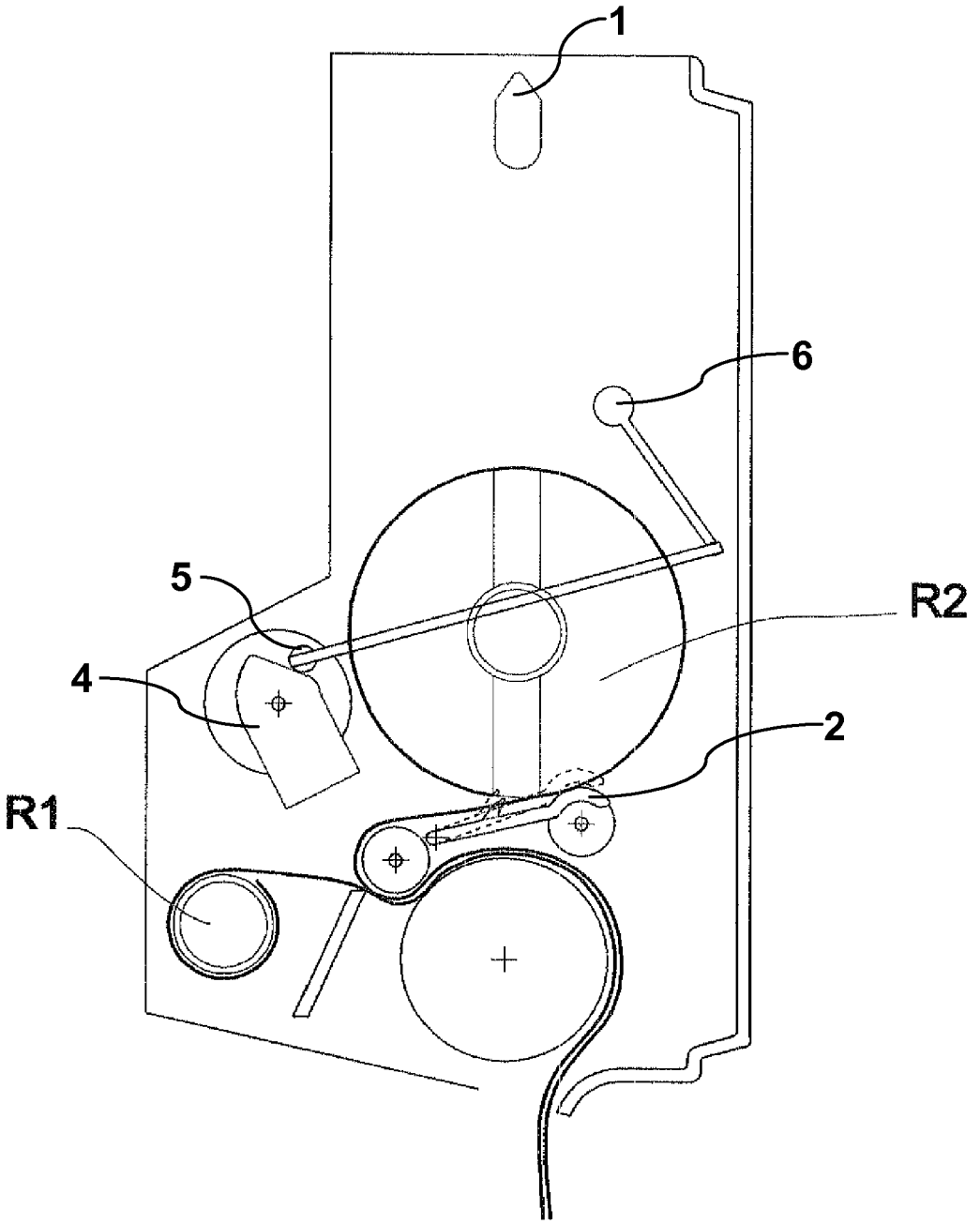


Fig.5

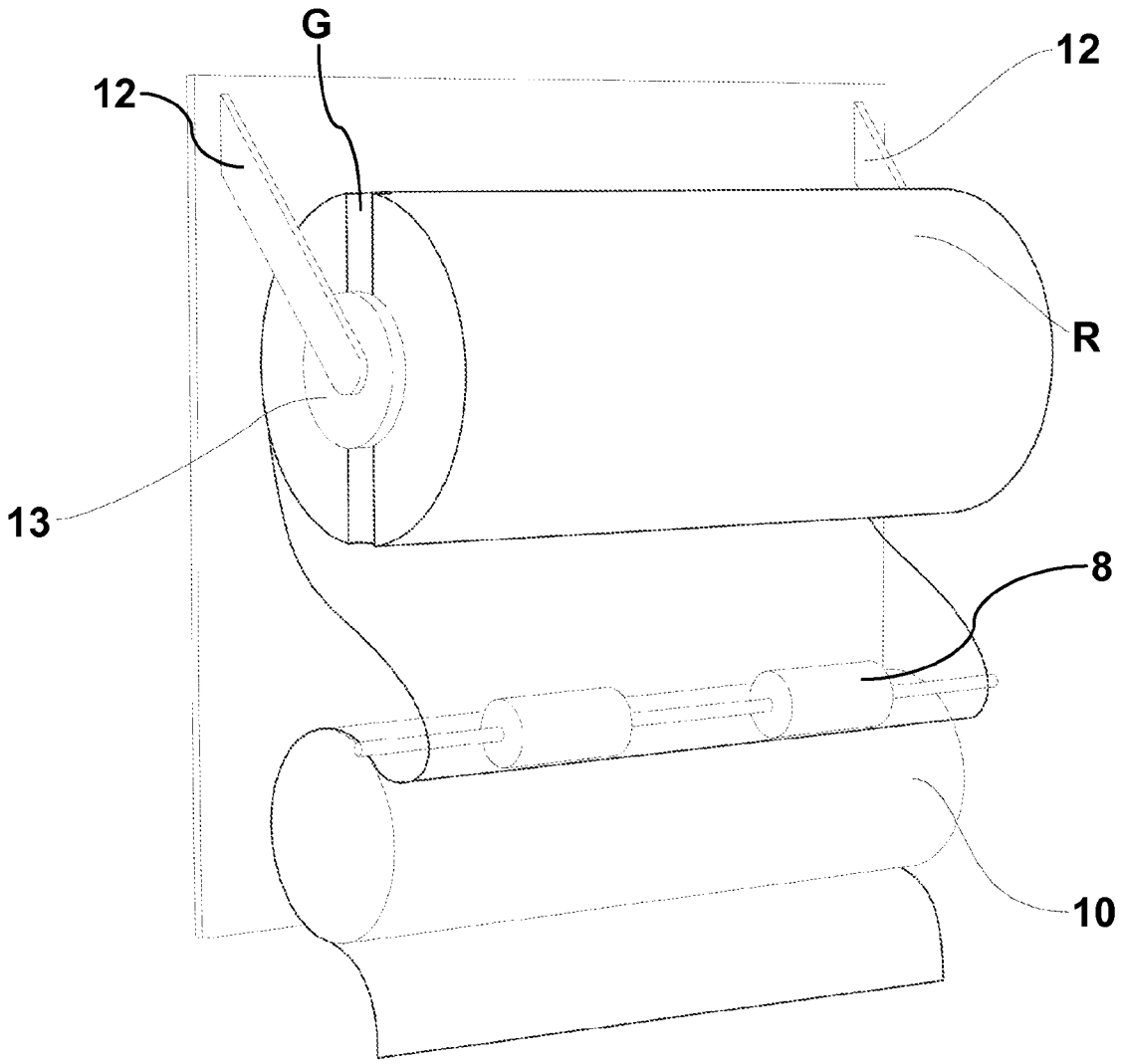


Fig.6

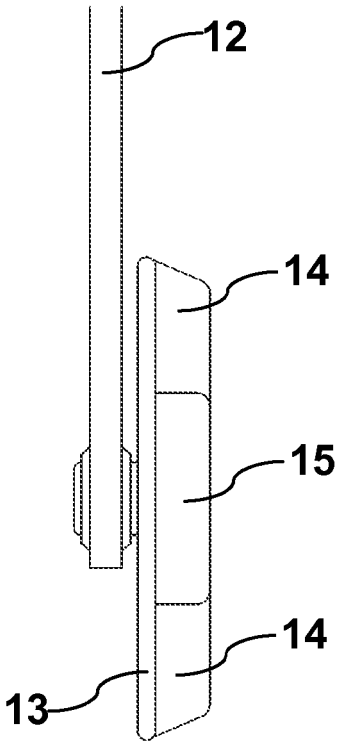


Fig.7

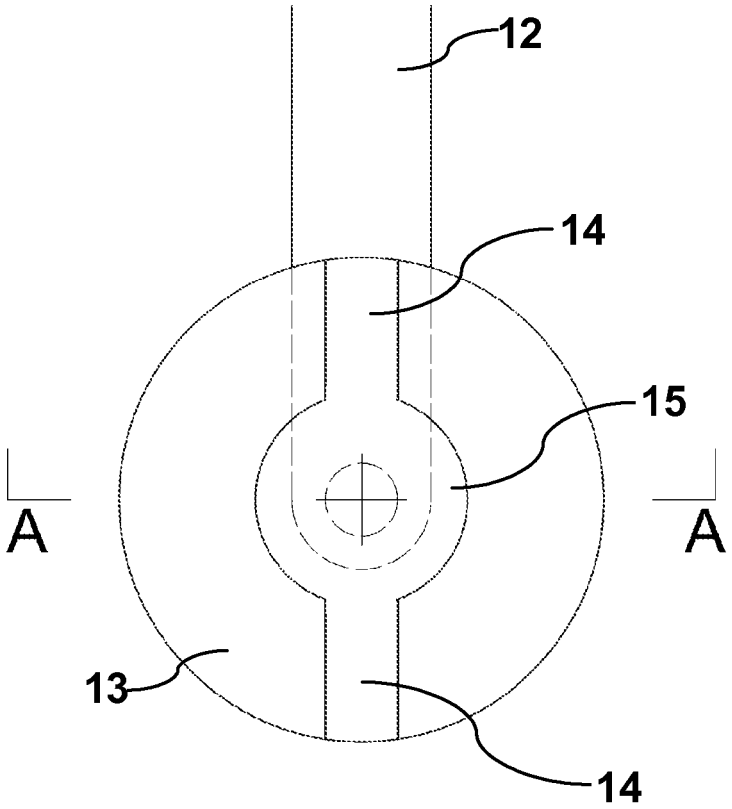


Fig.8

Fig.9

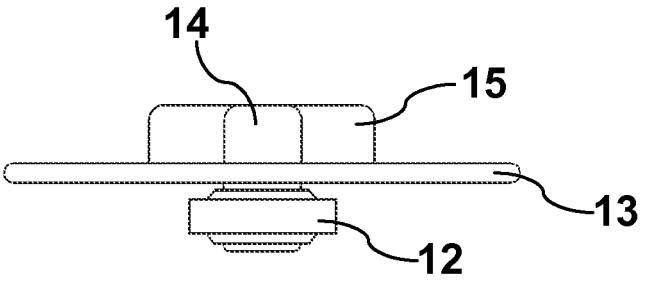
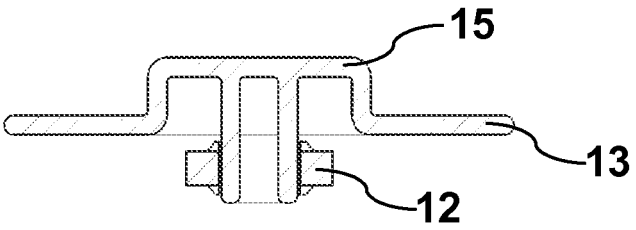


Fig.10



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EUROPEAN SEARCH REPORT

Application Number
EP 11 15 5757

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A,D	US 2008/099593 A1 (RUPPEL REMY [FR] ET AL) 1 May 2008 (2008-05-01) * paragraph [0002] - paragraph [0005] * * paragraph [0026] - paragraph [0039]; figures *	1,4	INV. A47K10/16 A47K10/38
A	EP 0 380 438 A1 (JAMES RIVER CORP [US]) 1 August 1990 (1990-08-01) * abstract * * column 4, line 18 - column 5, line 53; figures *	1	

TECHNICAL FIELDS SEARCHED (IPC)

A47K
B65H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	6 July 2011	Clasing, Martina

CATEGORY OF CITED DOCUMENTS

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2008099593 A1	01-05-2008	CA 2608495 A1	30-04-2008
		EA 200702089 A1	30-06-2008
		EP 1920697 A1	14-05-2008
		FR 2907653 A1	02-05-2008
EP 0380438 A1	01-08-1990	CA 2008260 A1	23-07-1990
		DE 69007815 D1	11-05-1994
		DE 69007815 T2	04-08-1994
		DE 380438 T1	14-08-1991
		ES 2020805 T3	01-06-1994
		GR 91300068 T1	15-11-1991
		US 4951891 A	28-08-1990

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Patent documents cited in the description

- WO 2005006932 A **[0003]**
- EP 1053712 A **[0003]**
- EP 0930039 A **[0003]**
- US 20080099593 A **[0006]**