

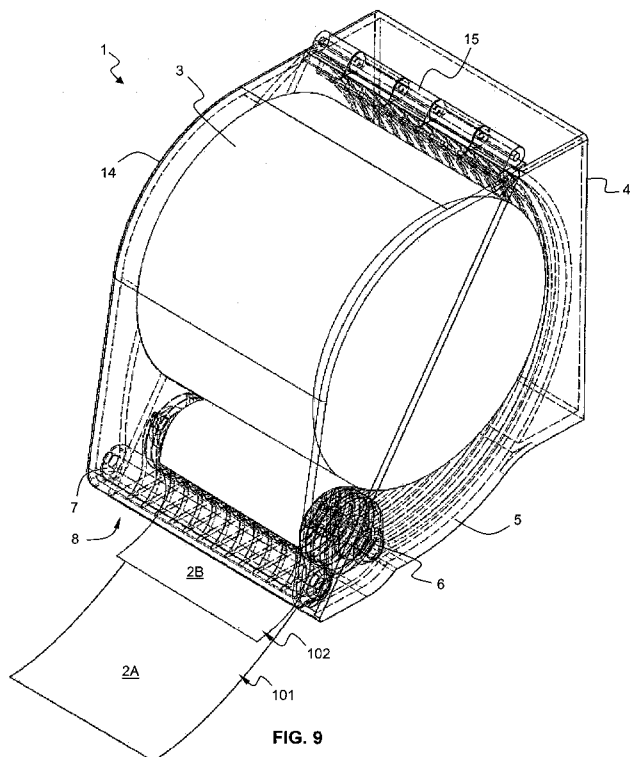


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(54) Title: A DISPENSER ASSEMBLY



(57) Abstract: A dispenser assembly (1) for tangentially dispensing a sheet (2) from a roll of sheet material (3), the roll of sheet material (3) comprising sheet material formed from two webs (101, 102), each web (101, 102) having lines of weakness (103, 104) positioned transversely across the web which allows the web (101, 102) to be separated into a plurality of sheets (2), the lines of weakness (103) of one web (101) being offset (105) from those (104) of the other web (102), the dispenser assembly (1) comprising: - a base (4) arranged to hold the roll of sheet material (3) and to couple the dispenser assembly (1) with an environment structure (10); - a first roller (6) and a counter roller means (7, 9) between which the sheet material is movable towards a dispensing outlet (8); wherein the dispenser assembly (1) further comprises a cradle (5) arranged to support the roll of sheet material (3) and to unwind the sheet material towards the first roller (6) whatever a consumption level of the roll of sheet material (3); and wherein the first roller (6) and the counter roller means (7, 9) are positioned relatively to each other spaced according to a fixed nip therebetween such as to generate a braking force on the sheet material sufficient to break the line of weakness of the web at the dispensing outlet (8) or downstream the dispensing outlet (8).

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A DISPENSER ASSEMBLY

FIELD OF THE INVENTION

An aspect of the invention relates to a dispenser assembly. Such a
5 dispenser assembly finds a particular, though non exclusive, application in
dispensing tissue paper roll of the type comprising two overlapping webs
formed into a single roll.

BACKGROUND OF THE INVENTION

Tissue paper rolls of the type comprising two overlapping webs formed
10 into a single roll are known in the art. The document US 400,913 describes a
roll of sheet material comprising sheet material formed from two webs, each
web having lines of weakness positioned transversely across the web which
allows the web to be separated into a plurality of sheets, the lines of
weakness of one web being offset from those of the other.

15 The document WO 2007/068883 describes a roll adapted to be
dispensed in a dispenser having rollers which form a nip therebetween. The
roll comprises material formed from two webs. Each web is configured to
have lines of weakness positioned transversely across the web which allows
the web to be separated into a plurality of sheets. The lines of weakness of
20 one web are offset from those of the other. The lines of weakness are formed
near each edge of the web such that when the roll is dispensed through a
dispenser, the lines of weakness positioned near each edge separate first to
facilitate sheets being dispensed singly from alternate webs as they are
withdrawn from the dispenser. However, this is not satisfactory because the
25 structure of the means for separating a sheet from the roll (flexible fingers),
and also the means for adapting the sheets distribution (nip controller) to the
weight of the roll that is reducing as a result of sheets distribution are
complex.

SUMMARY OF THE INVENTION

30 It is an object of the invention to propose a dispenser assembly that
overcomes the above mentioned drawbacks, and in particular a dispenser
assembly of simple construction enabling tangentially dispensing in a reliable
manner tissue paper roll of the type comprising two overlapping webs formed

into a single roll.

According to one aspect, there is provided a dispenser assembly for tangentially dispensing a sheet from a roll of sheet material, the roll of sheet material comprising sheet material formed from two webs, each web having
5 lines of weakness positioned transversely across the web which allows the web to be separated into a plurality of sheets, the lines of weakness of one web being offset from those of the other web, the dispenser assembly comprising:

- a base arranged to hold the roll of sheet material and to couple the
10 dispenser assembly with an environment structure;

- a first roller and a counter roller means between which the sheet material is movable towards a dispensing outlet;

wherein the dispenser assembly further comprises a cradle arranged to support the roll of sheet material and to unwind the sheet material towards the
15 first roller whatever a consumption level of the roll of sheet material;

and wherein the first roller and the counter roller means are positioned relatively to each other spaced according to a fixed nip therebetween such as to generate a braking force on the sheet material sufficient to break the line of weakness of the web at the dispensing outlet or downstream the dispensing
20 outlet.

The roll of sheet material may be further supported by the first roller.

The first roller may be chosen among the group of rollers comprising a smooth roller, an embossing roller, a roller made of hard material, a roller made of steel, a roller made of a plastic material, a roller made of a flexible
25 material, a roller made of elastomer, and a roller made of rubber.

The counter roller means may be chosen among the group of counter roller means comprising a smooth flat wall, smooth curved wall, a smooth roller, an embossing roller, a roller made of hard material, a roller made of steel, a roller made of a plastic material, a roller made of a flexible material, a
30 roller made of elastomer, a roller made of rubber, and a combination of at least two deformed rollers.

The cradle may have a shape arranged to match the cylindrical shape of the roll of sheet material.

The cradle may be formed as a single part or as multiple parts.

The cradle may have a bottom part positioned below a top part of the first roller.

The cradle may be further arranged to position the roll of sheet material against the first roller.

5 The dispenser assembly may further comprise at least one decoupling roller positioned upstream the first roller, the free decoupling roller being arranged to decouple a rotation of the roll of sheet material from a rotation of the first roller whatever a clockwise or counterclockwise unwinding direction of the roll of sheet material.

10 The dispenser may include a cover coupled to the base, the first roller being associated with the base, the counter roller means being associated with the cover.

The dispenser may include a cover coupled to the base, the first roller and the counter roller means being associated with the base.

15 The dispenser may further comprise mechanical braking means acting on the at least one of the first roller and the counter roller means for generating a resistance against the free rotation of the at least one of the first roller and the counter roller means.

20 The dispenser may further comprise magnetic braking means generating a magnetic field acting on the at least one of the first roller and the counter roller means for generating a resistance against the free rotation of the at least one of the first roller and the counter roller means.

The roll of sheet material may be a tissue paper roll.

25 According to another aspect, there is provided a roll of sheet material arranged to be dispensed by a dispenser assembly of the invention. The roll of sheet material may comprise sheet material formed from two webs, each web having lines of weakness positioned transversely across the web which allows the web to be separated into a plurality of sheets, the lines of weakness of one web being offset from those of the other.

30 The invention enables dispensing tissue paper roll of the type comprising two overlapping webs formed into a single roll. The invention greatly reduces the risk of over-spinning of the roll of sheet material and even jamming of the dispenser assembly when a user pulls the free end of the sheet too vigorously. The invention further greatly reduces the risk of breaking

the sheet within the dispenser assembly.

The invention enables easy and quick authorized loading operations. This is particularly advantageous during maintenance of dispenser assembly used in a commercial application context.

5 Further, the invention prevents unauthorized stuffing action of the dispenser assembly by an unauthorized provider or operator by requiring said specific roll of sheet material. It enables the client of such dispenser assembly to have a specific, qualitative and controlled service during the maintenance operations.

10 Other advantages will become apparent from the hereinafter description of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention is illustrated by way of examples and not limited to the accompanying drawings, in which like references indicate similar elements:

- 15 • FIGS. 1 to 3 are side sectional view schematically illustrating the principle of operation of various embodiments of a dispenser assembly of the invention;
- FIGS. 4 to 6 are side sectional view schematically illustrating
20 different embodiments of roller and a counter roller means;
- FIG. 7 is a perspective view schematically illustrating another embodiment of roller and a counter roller means;
- FIG. 8 is a perspective and partially transparent view of an exemplary embodiment of a dispenser assembly of the invention;
- 25 • FIG. 9 is a perspective and partially transparent view of an exemplary embodiment of a dispenser assembly of FIG. 8 holding and dispensing a roll of sheet material;
- FIG. 10 is a side and partially transparent view of an exemplary embodiment of the dispenser assembly depicted in FIGS. 8 and 9;
- 30 • FIG. 11 is a side and partially transparent view of another exemplary embodiment of the dispenser assembly of the invention;
- FIG. 12 schematically illustrates a tissue paper roll of the type comprising two overlapping webs comprising offset cutting lines;
- FIG. 13 schematically illustrates various examples of the cradle

shape; and

- FIG. 14 is a side and partially transparent view of a further exemplary embodiment of the dispenser assembly of the invention.

DETAILED DESCRIPTION OF THE INVENTION

5 In the following description, the terminology "a roll of sheet material" has a large meaning encompassing, as examples, the rolls of paper towels, toilet tissues, plastic sheets or the like, metal sheets (e.g. aluminum) sheets or the like, food preservation bags, wraps, etc... The sheet material may be rolled as a continuous pre-perforated sheet. Further, the terminology "roll of sheet material" also covers either roll of sheet material having a core, or roll of sheet material being coreless. In particular, during the manufacturing process of the roll of sheet material, either the sheet material is wound into a cylinder onto a core (as an example a hollow cylinder made of cardboard, or a plastic mandrel, or a metallic axle, etc...), or the sheet material is wound into a cylinder on itself such as to define a central hollow cavity of substantially cylindrical shape and of variable size extending longitudinally.

15 The dispenser assembly may be used for residential or commercial applications for dispensing multiple of the hereinbefore mentioned sheets of material from a roll of sheet material.

20 The dispenser assembly may dispense the sheets of material from the roll of sheet material manually, i.e. a user may pull the sheet of material with a hand.

FIGS. 1 to 3 schematically illustrate in side sectional views various embodiments of a dispenser assembly 1 according to the invention. In these 25 embodiments, the dispenser assembly 1 is used to dispense a sheet 2 from a roll of sheet material 3 in a tangential manner. More precisely, the dispenser assembly 1 is used to dispense sheets of paper towel 2 from a tissue paper roll 3 of the type comprising two overlapping webs (formed into a single roll). As depicted in FIG. 12, the roll of paper towel 3 comprises paper towel 30 formed from two webs 101, 102. Each web 101, 102 has lines of weakness 103, 104, respectively, positioned transversely across the web which allows the web to be separated into a plurality of sheets 2. The lines of weakness 103 of one web 101 are offset 105 from those 104 of the other web 102.

FIGS. 1 to 3 also illustrate the principle of operation of various

embodiments of the dispenser assembly of the invention.

The dispenser assembly 1 comprises a base 4, a first roller 6 and a counter roller means 7, 9, a dispensing outlet 8, and a cradle 5.

5 The base 4 is arranged to hold the tissue paper roll 3. It further couples the dispenser assembly 1 with an environment structure 10. For example, it may be connected to a wall by various screws (not shown).

The sheet paper towel 2 is movable between the first roller 6 and the counter roller means 7, 9 towards the dispensing outlet 8.

10 The cradle 5 is arranged to support the tissue paper roll 3 and to unwind the sheet material towards the first roller 6 whatever a consumption level of the roll of sheet material. It enables adapting the frictional force exerted onto the tissue paper roll 3 that decreases with the level of consumption of the tissue paper roll (because the mass and also the inertia of the tissue paper roll decreases with said consumption level). The cradle enables always
15 correctly positioning the tissue paper roll with respect to the first roller 6.

The cradle 5 has a shape arranged to match the cylindrical shape of the roll of sheet material 3. It may be a curved line or a complex shape combining multiple straight lines or curved lines (in cross-section). FIG. 13 schematically illustrates various examples of the cradle shape A, B, C, D and E. The cradle
20 shape A is based on a single concave curved line offering a single contacting point or length to the roll 3. The cradle shape B is based on two straight lines symmetrically positioned with respect to each other offering two contacting points or lengths to the roll 3. The cradle shape C is based on two concave curved lines symmetrically positioned with respect to each other offering two
25 contacting points or lengths to the roll 3. The cradle shape D is based on two convex curved lines symmetrically positioned with respect to each other offering two contacting points or lengths to the roll 3. The cradle shape E is based on a two parts, each comprising a convex curved line portion combined to a concave curved line portion, both parts being symmetrically positioned
30 with respect to each other and offering two contacting points or lengths to the roll 3.

In the embodiments of FIGS. 1 and 2, the cradle 5 is arranged to position the roll of sheet material 3 against the first roller 6. The shape of the cradle is a curved line (in cross-section). The cradle 5 has a bottom part 25

positioned below a top part 26 of the first roller 6. This enables always guiding the roll of sheet material 3 against the first roller 6 whatever the level of consumption of the roll of sheet material 3. Further, this configuration increases the surface of contact between the web and the first roller 6, thus increasing the friction and avoiding that the web slips onto the first roller 6. Thus, a better separation of the sheets of material from the web at the lines of weakness is obtained.

In the embodiment of FIG. 3, the shape is a combination of curved lines (in cross-section), for example a parabolic curve at the center combined with a curved line of inversed curvature at both edge (in cross-section). The cradle 5 further comprises at least one free decoupling roller 11 positioned upstream the first roller 6. In the depicted example, the cradle 5 further comprises a second free decoupling roller 12 symmetrically positioned relatively to the central parabolic curve and the first free decoupling roller 11. The free decoupling roller 11 is arranged to decouple the rotation of the roll of sheet material 3 from the rotation of the first roller 6 and to avoid jamming of the dispenser whatever the unwinding direction of the roll (clockwise or counterclockwise) within the dispenser 1. The sheet material may be unwound towards the first roller 6 by the bottom (plain lines) or by the top (dotted lines). The free decoupling roller 11 avoids the roll of sheet material 3 to contact against the first roller 6. Thus, this embodiment enables an operator to feed the dispenser without taking into account the unwinding direction of the roll (clockwise or counterclockwise). FIG. 3 further illustrates the roll of sheet material having various sizes 3, 3A, 3B, 3C depending on the level of sheet material having been dispensed. At the beginning of the dispensing operation, the roll of sheet material 3, 3A is supported by the free decoupling rollers 11 and 12, while at the end of the dispensing operation, the roll of sheet material 3B, 3C is supported by the central parabolic curve of the cradle 5.

As an alternative (not depicted), the free decoupling roller 11 may be replaced by a braked decoupling roller 11. This enables avoiding over rolling of the roll of sheet material 3 within the dispenser assembly that would result in jamming the dispenser assembly.

The first roller 6 and the counter roller means 7, 9 are positioned

relatively to each other spaced according to a fixed nip therebetween. This is used to generate a braking force on the sheet material sufficient to break the line of weakness of the web at the dispensing outlet 8 or downstream the dispensing outlet 8. This enables always having a piece of sheet material available for grasping outside the dispensing outlet 8. This further prevents breaking the line of weakness of the web upstream the dispensing outlet 8. This would result in preventing further dispensing of the sheet material or otherwise requires opening the dispenser in order to correctly position the sheet material between the first roller 6 and the counter roller means 7, 9.

10 In the embodiments of FIGS. 1 and 3, the counter roller means is another roller 7. Various alternatives are possible as depicted in FIGS. 4 to 7 and explained hereinafter. Alternatively, the counter roller means may also comprise two counter rollers (not shown) increasing breaking and friction.

15 In the embodiment of FIG. 2, the counter roller means comprises an element having a smooth curved wall 9 orientated towards the first roller 6. The web of sheet material easily slides along the smooth curved wall 9. Alternatively, the counter roller means may be a smooth flat wall (not represented). Alternatively, the respective position of the first roller 6 and the counter roller means 9 may be inverted.

20 The dispenser may further comprises a cover 14 coupled to the base 4. The first roller 6 may be secured to the base 4. The counter roller means 7, 9 may be secured to the cover 14. The cover 14 may be secured to the base 4 through appropriate locking means. Further, a spring means (not shown) may be provided between the cover 14 and the base 4 enabling applying the first roller 6 against the counter roller means 7, 9, and also easing opening the cover 14.

25 FIGS. 4 to 6 are side sectional view schematically illustrating different embodiments of a roller 6 associated with a counter roller means 7. This association generates a continuous braking force on the sheet material that, combined with the pulling force applied by the user, is sufficient to break the line of weakness of the web at the dispensing outlet 8 or downstream the dispensing outlet 8.

30 In the embodiment of FIG. 4, the first roller 6 is a smooth roller made of a flexible material, while the counter roller means 7 is a smooth roller made of

a hard material. For example, the roller 6 is an elastomer roller, a rubber roller, etc... Alternatively, it may be a roller coated with an elastomer or a rubber coating. For example, the counter roller means 7 is a roller made of a hard plastic material, a roller made of steel, etc...

5 In the embodiment of FIG. 5, the first roller 6 is a smooth roller made of a flexible material, while the counter roller means 7 is an embossing roller. For example, the roller 6 is an elastomer roller, a rubber roller, etc... Alternatively, it may be a roller coated with an elastomer or a rubber coating. The embossing roller 7 may be provided with an embossing pattern in order
10 to generate esthetic effects on the sheet material when it is distributed. The embossing pattern may comprise dots, curved lines, straight lines or a combination of them. For example, the embossing roller is made of a hard plastic material, of steel, etc...

In the embodiment of FIG. 6, both the first roller 6 and the counter roller
15 means 7 are embossing rollers operating in a male/female relationship. The first roller 6 and the embossing roller 7 may be provided with an embossing motive in order to generate esthetic effects on the sheet material when it is distributed. For example, both rollers are made of a hard plastic material, of steel, etc...

20 In the embodiment of FIG. 7, both the first roller 6 and the counter roller means 7 are linear embossing rollers operating in a male/female relationship. Each linear embossing roller comprises a train of multiple wheels 16. As an example, both linear embossing rollers are rollers coated with an elastomer or a rubber coating. A further anti-jamming means (not shown) may be provided
25 between two consecutive wheels of each linear embossing roller.

FIG. 8 is a perspective and partially transparent view of a dispenser assembly according to the first embodiment of the invention schematically depicted in FIG. 1. FIG. 9 is a perspective and partially transparent view of the dispenser assembly of FIG. 8 further depicting how the roll of sheet
30 material is held and how the sheets are dispensed. FIG. 10 is a side and partially transparent view of the dispenser assembly depicted in FIGS. 8 and 9.

When filling the dispenser 1, an operator opens the cover 14 that is coupled to the base 4 through a hinge arrangement 15. The roll of sheet

material 3 is laid down onto the cradle 5 and contacts the first roller 6. A few first sheets 2 are pull from the roll of sheet material 3 without breaking the web and laid down onto the first roller 6. The cover 14 is closed so as to apply the counter roller means 7 associated to the cover 14 onto the sheets 2 and
5 the first roller 6, and define the fixed nip between the first roller 6 and the counter roller means 7. When closed, the cover 14 rests onto the base 4 by its own weight. Alternatively, the cover 14 may be further secured to the base 4 through appropriate locking means 17. The few first sheets 2 protrude out of the opening 8. Due to the sheet material formed from two webs 101, 102 (as
10 depicted in details in FIG. 12), each web 101, 102 having lines of weakness 103, 104 positioned transversely across the web which allows the web 101, 102 to be separated into multiple sheets 2, the lines of weakness 103 of one web 101 being offset 105 from those 104 of the other web 102, one sheet 2A may be separated from the roll by the combined action of a user pulling onto
15 the edge of the sheet 2A and the braking force applied by the first roller 6 and the counter roller means 7. At the same time, the edge of another sheet 2B has passed the opening 8 and is ready to be grasped (see FIG. 9).

FIG. 11 is a side and partially transparent view of another exemplary embodiment of the dispenser assembly of the invention.

20 In this embodiment, the first roller 6 and the counter roller means 7 are secured to the base 4. The cover (not shown) may be omitted. The roll of sheet material 3 is merely put onto the cradle 5 and contacts the first roller 6. The dispenser further comprises a magnetic braking means 20 for generating a magnetic field acting on the at least one of the first roller 6 and/or the
25 counter roller means 7. This magnetic field generates a resistance against the free rotation of the at least one of the first roller 6 and/or the counter roller means 7. For example, the magnetic braking means 20 comprises a first magnet positioned in the first roller and another magnet closely positioned in/on the base. In the depicted embodiment, the magnetic braking means 20
30 is positioned close to the first roller 6 so as to generate a magnetic field braking the rotation of the first roller 6. Alternatively, the magnetic braking means 20 may be replaced by a mechanical braking means (not shown).

FIG. 14 is a side and partially transparent view of a further exemplary embodiment of the dispenser assembly of the invention. This further

embodiment differs from the exemplary embodiments of FIGS. 1-3 and 8-10 in that the first roller 6 and the counter roller 7 are both associated with the base 4; in that the cradle 5 is formed as multiple parts 5A and 5B, and in that the roll of sheet material 3 is supported by the first roller 6 and an additional free decoupling roller 12. More precisely, the cradle 5 is formed as a first part 5A and a second part 5B. The first part 5A is positioned behind the roll 3 and associated with the base 4. The second part 5B is positioned in front of the roll 3 and associated with either the base 4 or the cover 14. The two parts of the cradle 5A and 5B enables retaining the roll of sheet material 3 towards a rest position on the first roller 6 and additional free decoupling roller 12. This may be of particular interest where a user pulls the free end of the sheet 2 such a way that the roll is put in an over-spinning situation within the dispenser assembly. Though, the drawing shows the counter roller 7 positioned on the right of the first roller 6, the counter roller 7 may also be positioned below the first roller 6 in a given dispenser assembly. The relative position of the first roller 6 and the counter roller means 7 defines the exit position and angle of the free end of the sheet 2.

According to this embodiment, when user pulls the free end of the sheet 2, said sheet drives the first roller 6 and the counter roller 7, the first roller 6 driving in rotation of the roll of sheet material 3. Thus, the roll of sheet material 3 only rotates on demand, greatly reducing the risk of over-spinning and jamming. Further, due to the presence of the free decoupling roller 12, the roll of sheet material 3 is not braked by its own weight. This in combination with the fact that the roll is also supported by the first roller greatly reduces the risk of breaking the line of weakness of the web upstream the nip between the first roller 6 and the counter roller 7, and also upstream the dispensing outlet 8.

This embodiment is particularly adapted to dispense sheet material from a roll of important size. As an example, the roll has a width around 210 mm, a diameter around 195 mm and a core diameter around 40 mm. Such rolls of sheet material may be typically used in professional/commercial applications.

The drawings and their descriptions hereinbefore illustrate rather than limit the invention.

The depicted embodiments of dispenser in FIGS. 1-3, 8-10 and 14

illustrate a particular example of a base coupled to a housing cover. The housing over is advantageous for hygiene reasons because it prevents user from touching the roll of sheet material. However, other kind of base, for example providing an open access to the roll of sheet material may be
5 convenient provided that the counter roller means is positioned relatively to the first roller spaced according to a fixed nip therebetween such as to generate a braking force on the sheet material sufficient to break the line of weakness of the web at or downstream the dispensing outlet as described hereinbefore.

10 Further, though the FIGS illustrate a roll of sheet material freely supported by the cradle, the roll of sheet material may alternatively be further held by its core through an axis or plug(s) which displacement is controlled within the dispenser assembly in dependence on the consumption level of the roll of sheet material. For example, the axis or plug ends may be supported
15 by a lateral groove disposed in the cover or base. The plug associated with one side face of the roll of sheet material may further cooperate with an appropriate slot associated with the base of the dispenser assembly forming a foolproof means that helps the user to correctly position the roll of sheet material in the dispenser assembly.

20 Any reference sign in a claim should not be construed as limiting the claim. The word "comprising" does not exclude the presence of other elements than those listed in a claim. The word "a" or "an" preceding an element does not exclude the presence of a plurality of such element.

CLAIMS

- 1) A dispenser assembly (1) for tangentially dispensing a sheet (2) from a roll of sheet material (3), the roll of sheet material (3) comprising sheet material formed from two webs (101, 102), each web (101, 102) having lines of weakness (103, 104) positioned transversely across the web which allows the web (101, 102) to be separated into a plurality of sheets (2), the lines of weakness (103) of one web (101) being offset (105) from those (104) of the other web (102), the dispenser assembly (1) comprising:
- 10 - a base (4) arranged to hold the roll of sheet material (3) and to couple the dispenser assembly (1) with an environment structure (10);
- a first roller (6) and a counter roller means (7, 9) between which the sheet material is movable towards a dispensing outlet (8);
- wherein the dispenser assembly (1) further comprises a cradle (5)
- 15 arranged to support the roll of sheet material (3) and to unwind the sheet material towards the first roller (6) whatever a consumption level of the roll of sheet material (3);
- and wherein the first roller (6) and the counter roller means (7, 9) are positioned relatively to each other spaced according to a fixed nip
- 20 therebetween such as to generate a braking force on the sheet material sufficient to break the line of weakness of the web at the dispensing outlet (8) or downstream the dispensing outlet (8).
- 2) The dispenser assembly of claim 1, wherein the roll of sheet material (3) is further supported by the first roller (6).
- 25 3) The dispenser assembly of claim 1 or 2, wherein the first roller (6) is chosen among the group of rollers comprising a smooth roller, an embossing roller, a roller made of hard material, a roller made of steel, a roller made of a plastic material, a roller made of a flexible material, a roller made of elastomer, and a roller made of rubber.
- 30 4) The dispenser assembly according to anyone of the claims 1 to 3, wherein the counter roller means (7, 9) is chosen among the group of counter roller means comprising a smooth flat wall, smooth curved wall, a smooth roller, an embossing roller, a roller made of hard material, a roller made of steel, a roller made of a plastic material, a roller made of a flexible material, a

roller made of elastomer, a roller made of rubber, and a combination of at least two deformed rollers.

5 5) The dispenser assembly according to anyone of the claims 1 to 4, wherein the cradle (5) has a shape arranged to match the cylindrical shape of the roll of sheet material (3).

6) The dispenser assembly according to anyone of the claims 1 to 5, wherein the cradle (5) is formed as a single part (5) or as multiple parts (5A, 5B).

10 7) The dispenser assembly according to anyone of the claims 1 to 6, wherein the cradle (5) has a bottom part (25) positioned below a top part (26) of the first roller (6).

8) The dispenser assembly according to anyone of the claims 1 to 7, wherein the cradle (5) is further arranged to position the roll of sheet material (3) against the first roller (6).

15 9) The dispenser assembly according to anyone of the claims 1 to 8, wherein the dispenser assembly (1) further comprises at least one decoupling roller (11) positioned upstream the first roller (6), the free decoupling roller (11) being arranged to decouple a rotation of the roll of sheet material (3) from a rotation of the first roller (6) whatever a clockwise or counterclockwise
20 unwinding direction of the roll of sheet material (3).

10) The dispenser assembly according to anyone of the claims 1 to 9, wherein the dispenser includes a cover (14) coupled to the base (4), the first roller (6) being associated with the base (4), the counter roller means (7, 9) being associated with the cover.

25 11) The dispenser assembly according to anyone of the claims 1 to 9, wherein the dispenser includes a cover (14) coupled to the base (4), the first roller (6) and the counter roller means (7, 9) being associated with the base (4).

30 12) The dispenser assembly according to anyone of the claims 1 to 11, wherein the dispenser further comprises magnetic braking means (20) generating a magnetic field acting on the at least one of the first roller (6) and the counter roller means (7) for generating a resistance against the free rotation of the at least one of the first roller (6) and the counter roller means (7).

13) The dispenser assembly according to anyone of the claims 1 to 11, wherein the dispenser further comprises mechanical braking means (20) acting on the at least one of the first roller (6) and the counter roller means (7) for generating a resistance against the free rotation of the at least one of the
5 first roller (6) and the counter roller means (7).

14) The dispenser assembly according to anyone of the claims 1 to 10, wherein the roll of sheet material (3) is a tissue paper roll.

15) A roll of sheet material (3) comprising sheet material formed from two webs, each web having lines of weakness positioned transversely across
10 the web which allows the web to be separated into a plurality of sheets, the lines of weakness of one web being offset from those of the other, said roll of sheet material (3) being adapted to be dispensed by a dispenser assembly (1) according to anyone of the claims 1 to 14.

AMENDED CLAIMS

received by the International Bureau on 28 January 2014 (28.01.14)

1. A dispenser assembly system comprising a roll of sheet material (3) and a dispenser assembly (1) for tangentially dispensing a sheet (2) from the roll of sheet material (3), the roll of sheet material (3) comprising sheet material formed from two webs (101, 102), each web (101, 102) having lines of weakness (103, 104) positioned transversely across the web which allows the web (101, 102) to be separated into a plurality of sheets (2), the lines of weakness (103) of one web (101) being offset (105) from those (104) of the other web (102), the dispenser assembly (1) comprising:
- 10 - a base (4) arranged to hold the roll of sheet material (3) and to couple the dispenser assembly (1) with an environment structure (10);
- a first roller (6) and a counter roller means (7, 9) between which the sheet material is movable towards a dispensing outlet (8);
- characterized in that the dispenser assembly (1) further comprises a cradle (5)
- 15 arranged to support the roll of sheet material (3) and to unwind the sheet material towards the first roller (6) whatever a consumption level of the roll of sheet material (3);
- and in that the first roller (6) and the counter roller means (7, 9) are positioned relatively to each other spaced according to a fixed nip therebetween such as to
- 20 generate a braking force on the sheet material sufficient to break the line of weakness of the web at the dispensing outlet (8) or downstream the dispensing outlet (8).
2. The dispenser assembly system of claim 1, wherein the roll of sheet material (3) is further supported by the first roller (6).
3. The dispenser assembly system of claim 1 or 2, wherein the first roller (6) is
- 25 chosen among the group of rollers comprising a smooth roller, an embossing roller, a roller made of hard material, a roller made of steel, a roller made of a plastic material, a roller made of a flexible material, a roller made of elastomer, and a roller made of rubber.

4. The dispenser assembly system according to anyone of the claims 1 to 3, wherein the counter roller means (7, 9) is chosen among the group of counter roller means comprising a smooth flat wall, smooth curved wall, a smooth roller, an embossing roller, a roller made of hard material, a roller made of steel, a roller made of a plastic material, a roller made of a flexible material, a roller made of elastomer, a roller made of rubber, and a combination of at least two departed rollers.
5. The dispenser assembly system according to anyone of the claims 1 to 4, wherein the cradle (5) has a shape arranged to match the cylindrical shape of the roll of sheet material (3).
- 10 6. The dispenser assembly system according to anyone of the claims 1 to 5, wherein the cradle (5) is formed as a single part (5) or as multiple parts (5A, 5B).
7. The dispenser assembly system according to anyone of the claims 1 to 6, wherein the cradle (5) has a bottom part (25) positioned below a top part (26) of the first roller (6).
- 15 8. The dispenser assembly system according to anyone of the claims 1 to 7, wherein the cradle (5) is further arranged to position the roll of sheet material (3) against the first roller (6).
9. The dispenser assembly system according to anyone of the claims 1 to 8, wherein the dispenser assembly (1) further comprises at least one decoupling roller (11) positioned upstream the first roller (6), the free decoupling roller (11) being arranged to decouple a rotation of the roll of sheet material (3) from a rotation of the first roller (6) whatever a clockwise or counterclockwise unwinding direction of the roll of sheet material (3).
- 20 10. The dispenser assembly system according to anyone of the claims 1 to 9, wherein the dispenser assembly (1) includes a cover (14) coupled to the base (4), the first roller (6) being associated with the base (4), the counter roller means (7, 9) being associated with the cover.

11. The dispenser assembly system according to anyone of the claims 1 to 9, wherein the dispenser assembly (1) includes a cover (14) coupled to the base (4), the first roller (6) and the counter roller means (7, 9) being associated with the base (4).
12. The dispenser assembly system according to anyone of the claims 1 to 11, wherein the dispenser assembly (1) further comprises magnetic braking means (20) generating a magnetic field acting on the at least one of the first roller (6) and the counter roller means (7) for generating a resistance against the free rotation of the at least one of the first roller (6) and the counter roller means (7).
13. The dispenser assembly system according to anyone of the claims 1 to 11, wherein the dispenser assembly (1) further comprises mechanical braking means (20) acting on the at least one of the first roller (6) and the counter roller means (7) for generating a resistance against the free rotation of the at least one of the first roller (6) and the counter roller means (7).
14. The dispenser assembly system according to anyone of the claims 1 to 10, wherein the roll of sheet material (3) is a tissue paper roll.
15. A roll of sheet material (3) comprising sheet material formed from two webs, each web having lines of weakness positioned transversely across the web which allows the web to be separated into a plurality of sheets, the lines of weakness of one web being offset from those of the other, said roll of sheet material (3) being adapted to be dispensed by a dispenser assembly system according to anyone of the claims 1 to 14.

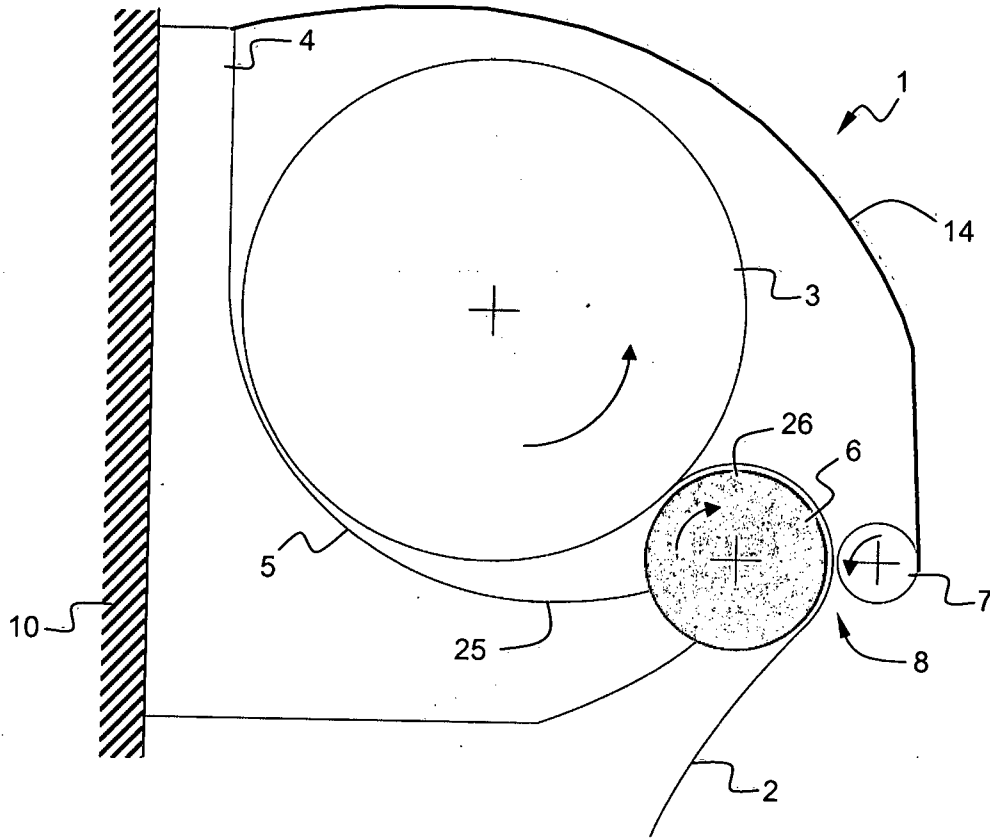


FIG. 1

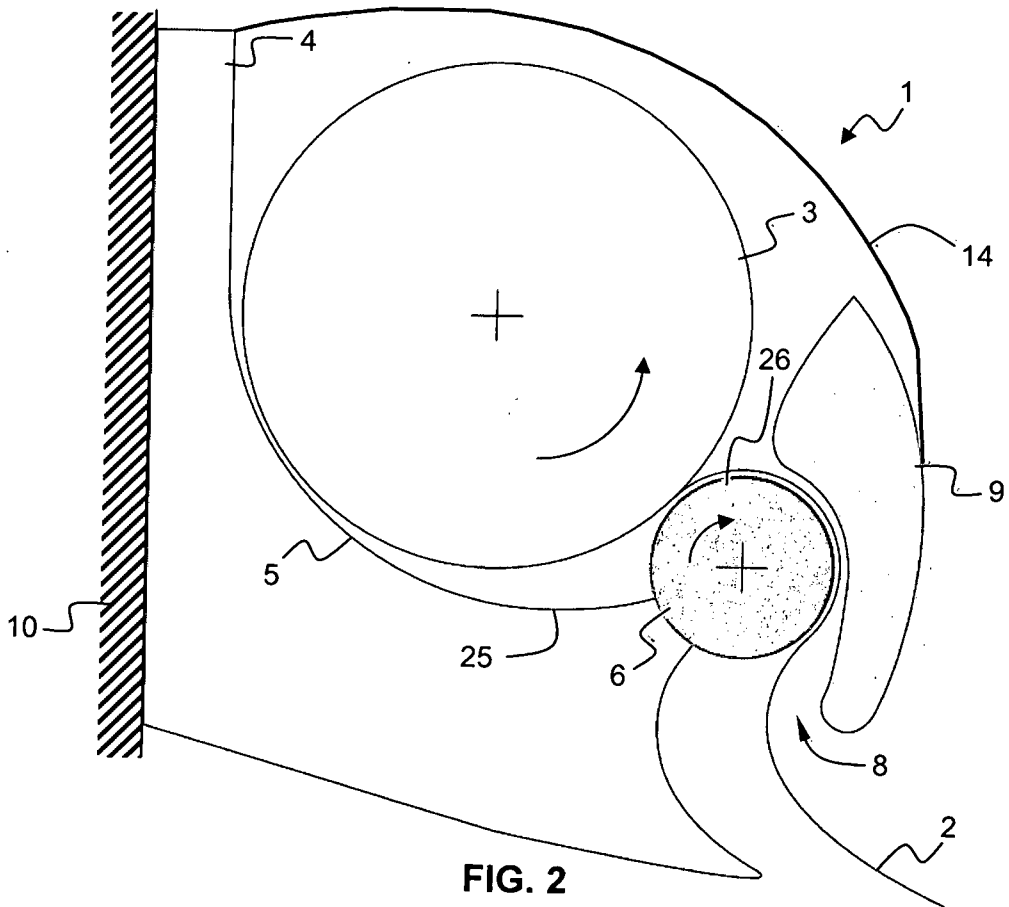


FIG. 2

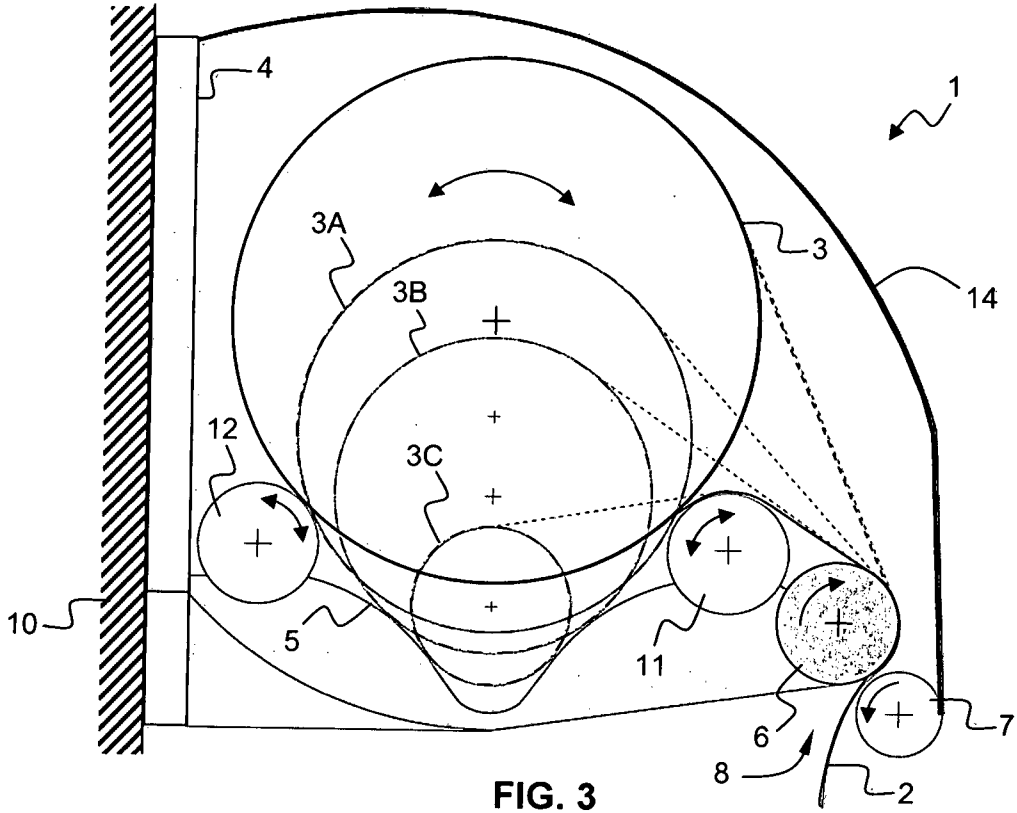


FIG. 3

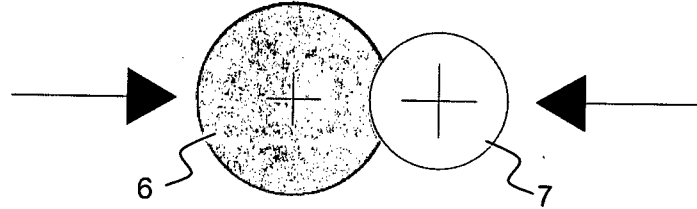


FIG. 4

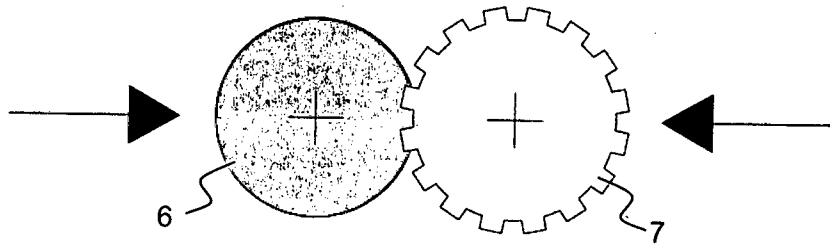


FIG. 5

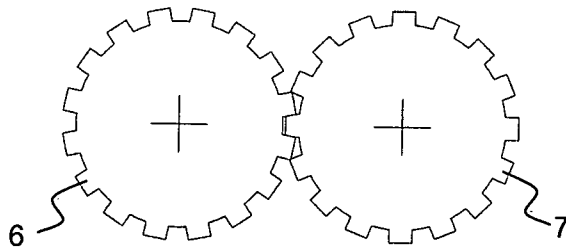


FIG. 6

3 / 7

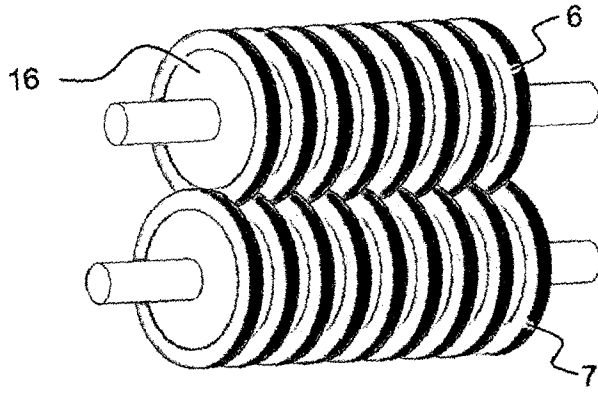


FIG. 7

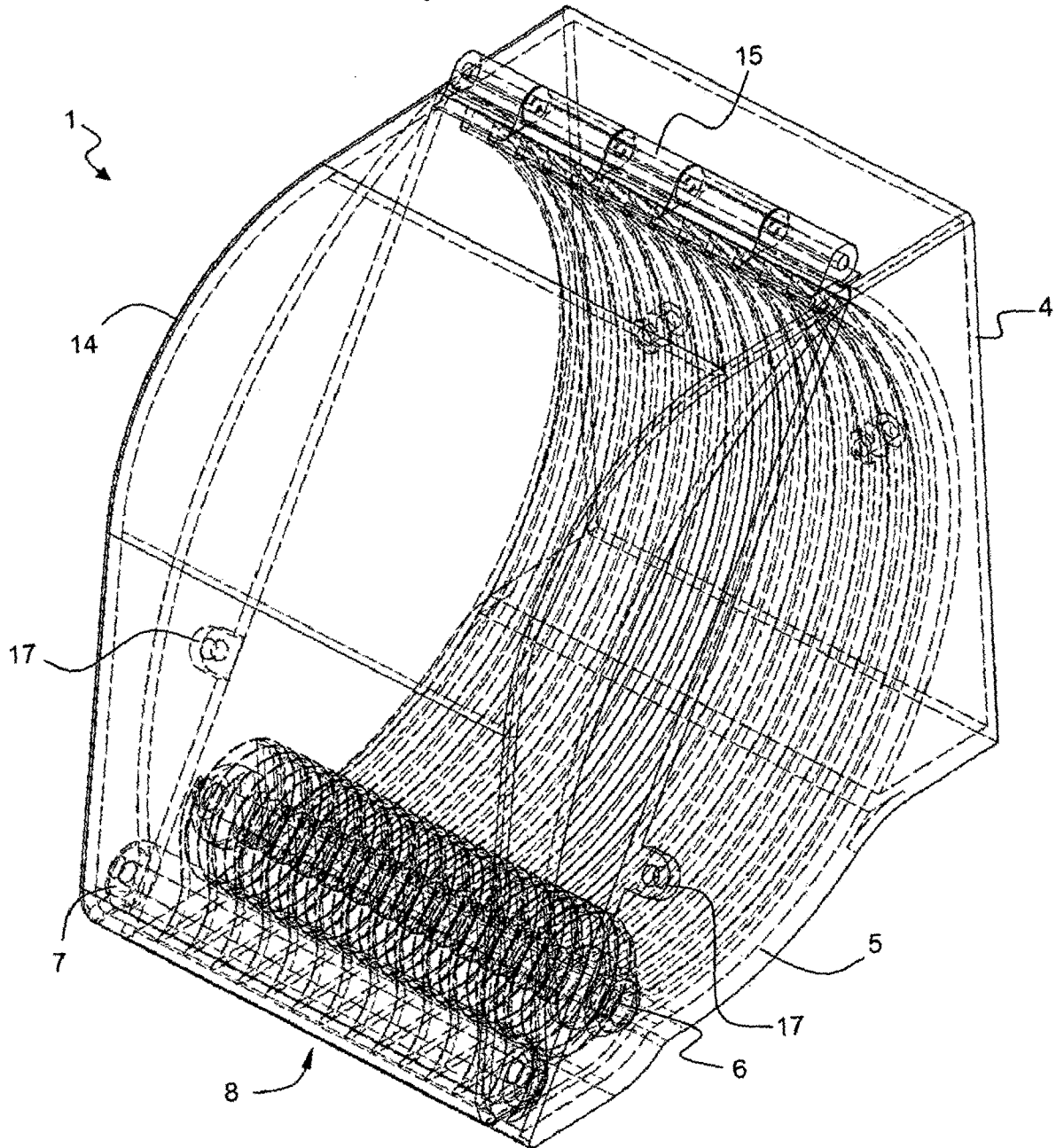


FIG. 8

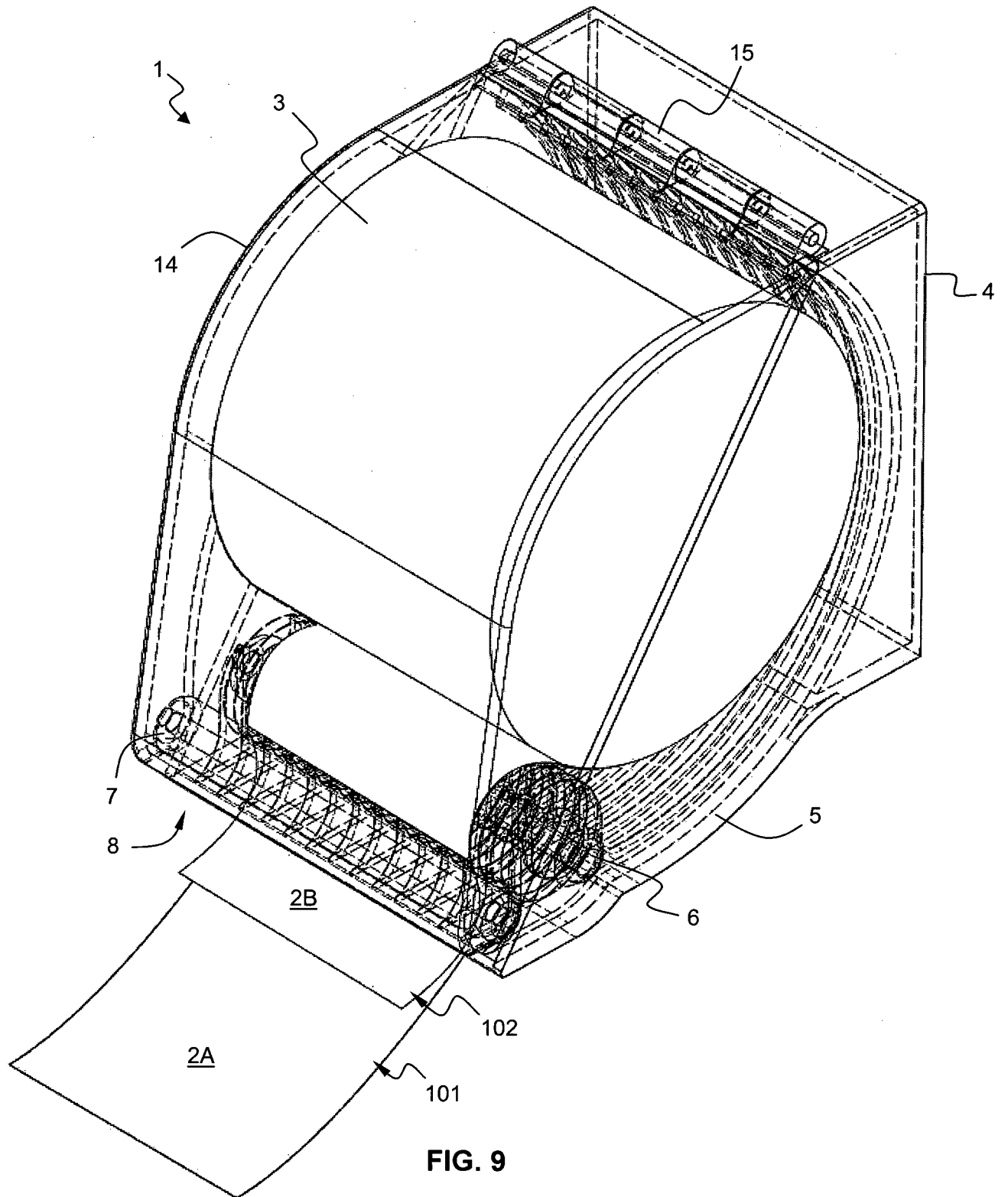


FIG. 9

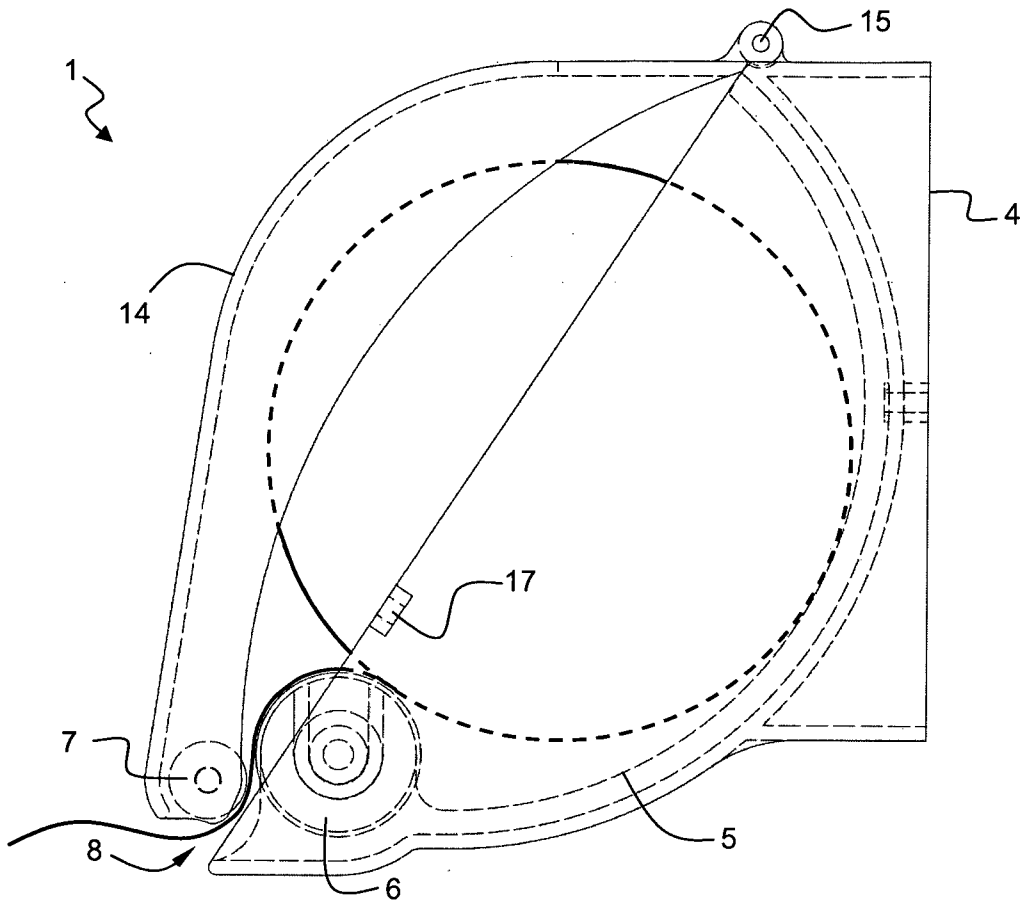


FIG. 10

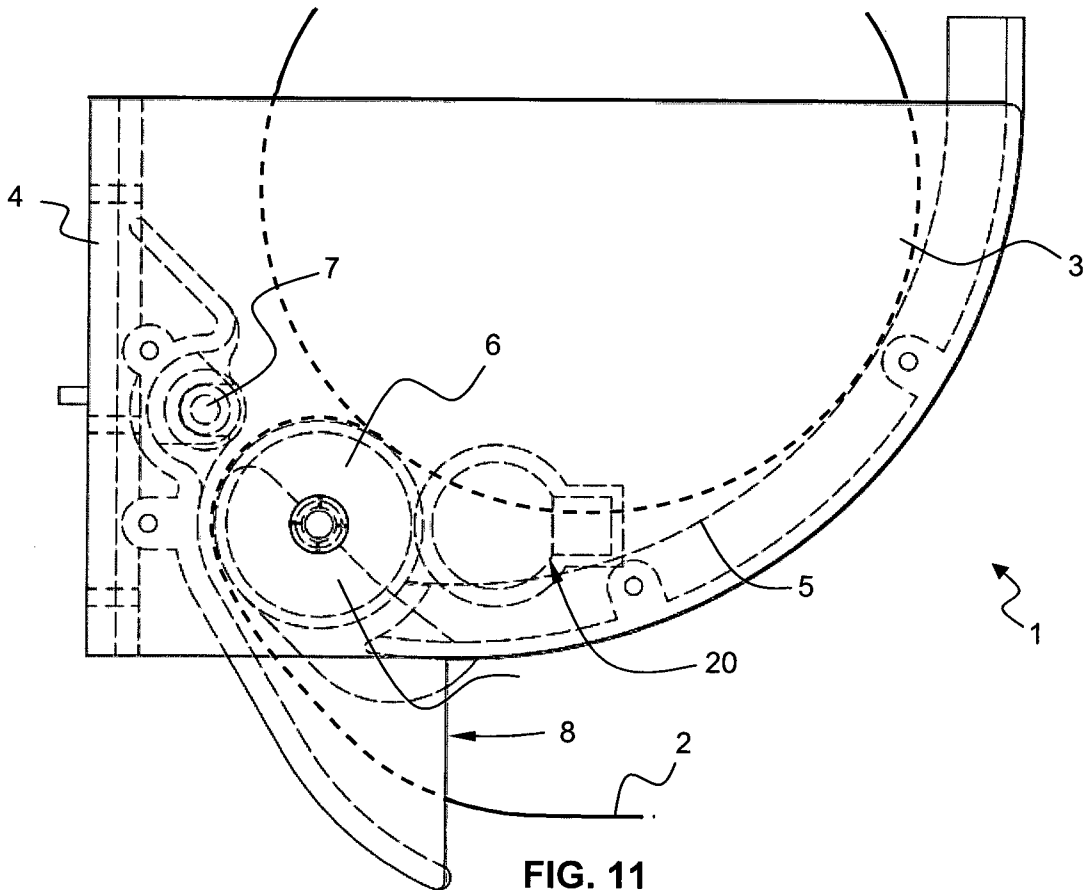


FIG. 11

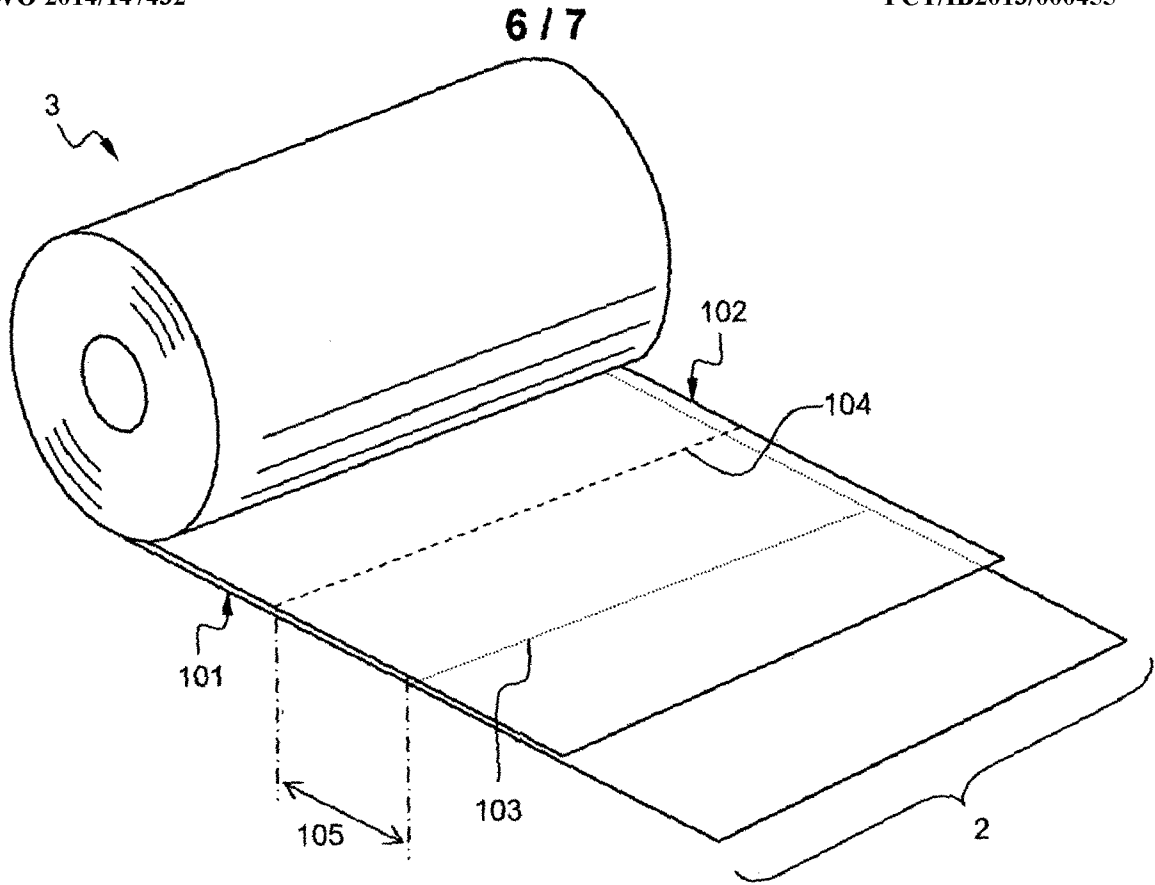


FIG. 12

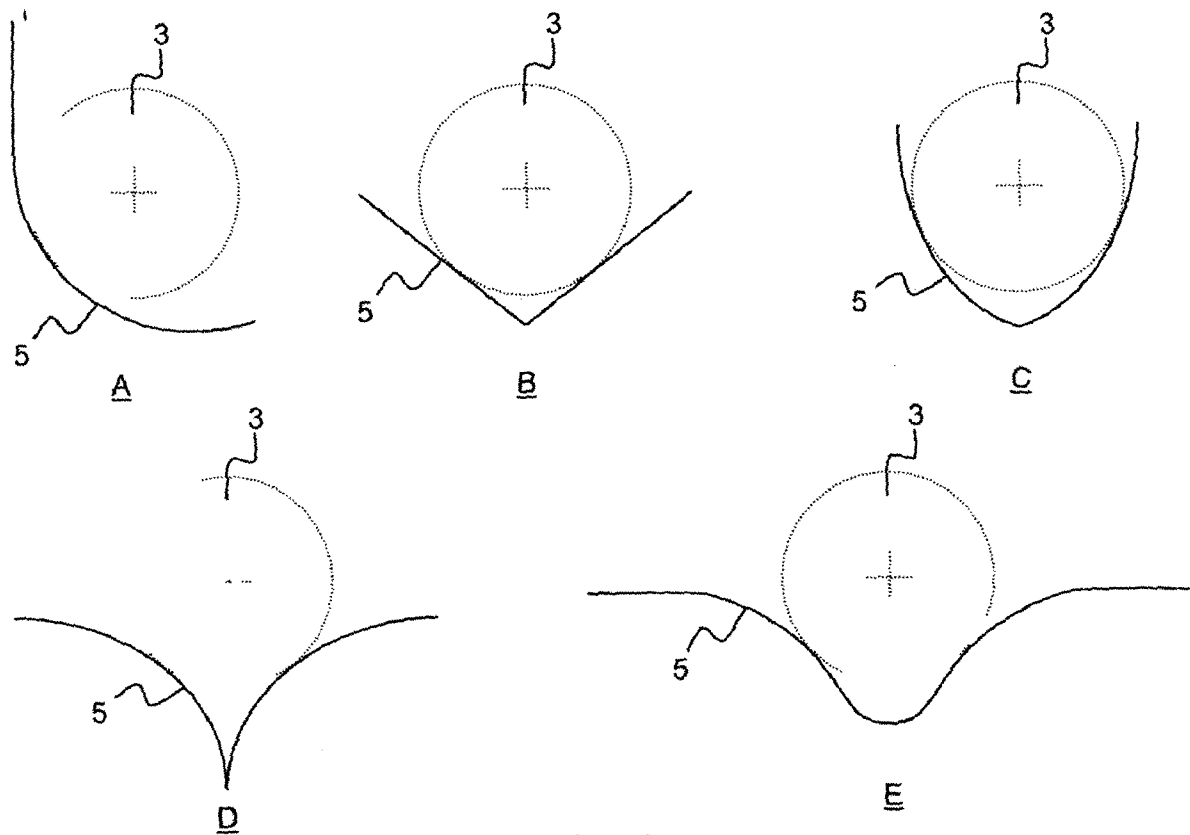


FIG. 13

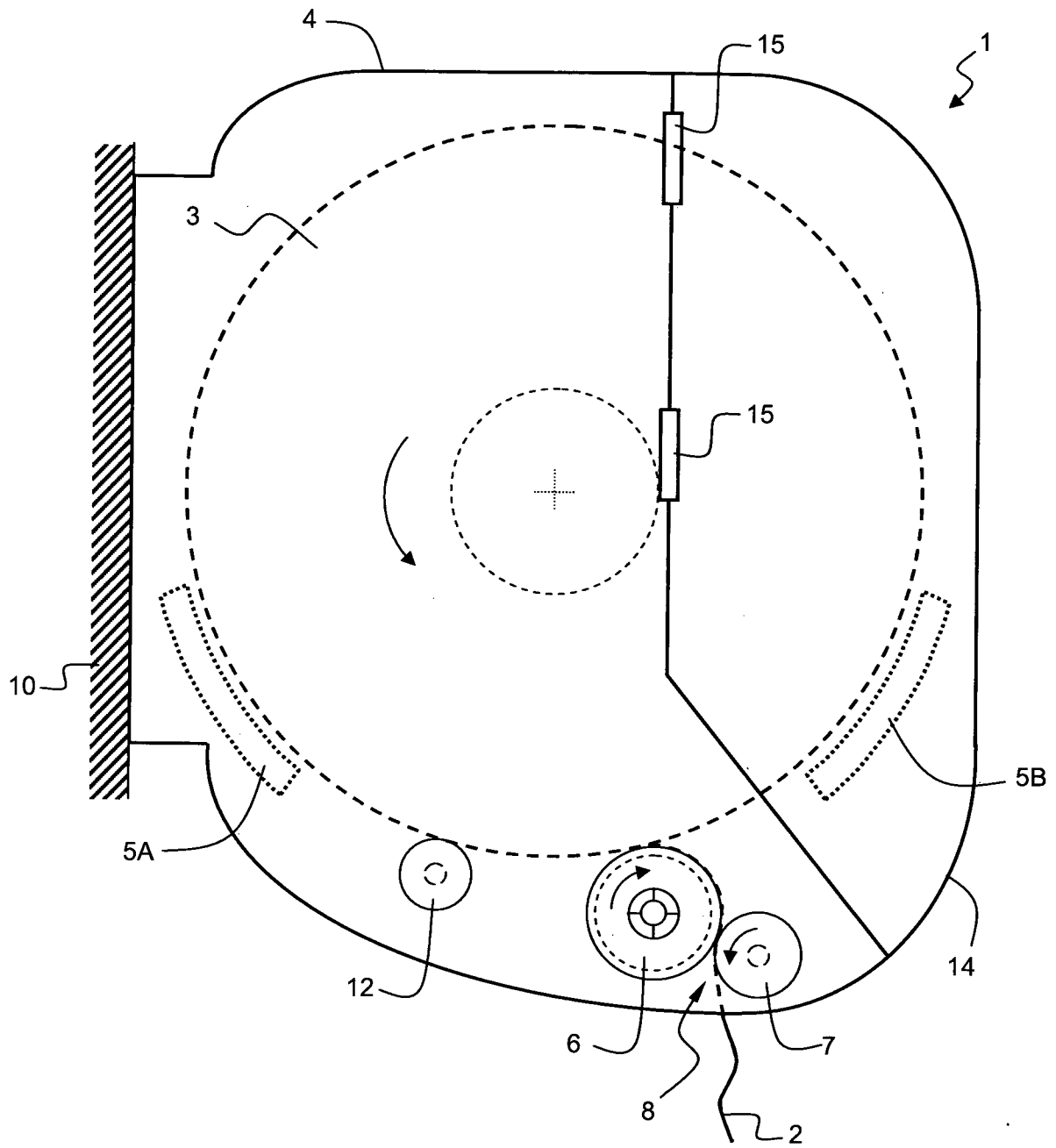


FIG. 14

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2013/000455

A. CLASSIFICATION OF SUBJECT MATTER
INV. A47K10/38
ADD.

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

B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols)
A47K

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	WO 2007/068883 A1 (KIMBERLY CLARK CO [US]; GREEN JONATHAN [GB]; OLIVER PETER [GB]) 21 June 2007 (2007-06-21) cited in the application	1-4,6-8, 10,11, 13-15
Y	page 1, line 6 - line 18 page 19, line 18 - page 35, line 23; figures 1-16	1,2,14
X	----- EP 0 404 066 A1 (INAX CORP [JP]; BAN KAZU [JP]) 27 December 1990 (1990-12-27) column 3, line 9 - column 5, line 11; figures ----- -/--	1-4,6-8, 10,11, 13,14

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
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- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

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

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search 25 November 2013	Date of mailing of the international search report 03/12/2013
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Fajarnés Jessen, A
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INTERNATIONAL SEARCH REPORT

International application No

PCT/IB2013/000455

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2011/253762 A1 (WANG KE-TA [TW]) 20 October 2011 (2011-10-20)	1,3-7, 10,11, 13,14
Y	page 1, paragraph 25 - page 2, paragraph 33; figures 1-7	1,2,14

X	US 2 957 738 A (MARCUSE MOSES M) 25 October 1960 (1960-10-25)	1-4,6-8, 10,11,14
Y	column 2, line 10 - line 48; figure 1	1,2,14

X	US 3 770 172 A (NYSTRAND E ET AL) 6 November 1973 (1973-11-06)	1-4,6-8, 11,13-15
Y	column 2, line 5 - line 9 column 3, line 49 - column 4, line 24; figures 1,3-5	1,2,14

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2013/000455

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			WO 2007068883 A1 21-06-2007

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