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(54) TOWEL DISPENSER

(57) The present invention relates to a paper towel dispenser (1). The paper towel dispenser (1) includes a housing (3) having an interior chamber (14) for receiving a roll of paper towel (T). A control member (17) defines a dispensing aperture (13) through which the paper towel is dispensed. The control member (17) is deformable to alter the size of the dispensing aperture (13). The paper towel dispenser (1) may also include an adjustment means (15) for controllably deforming the control member (17) to adjust the size of the dispensing aperture (13).

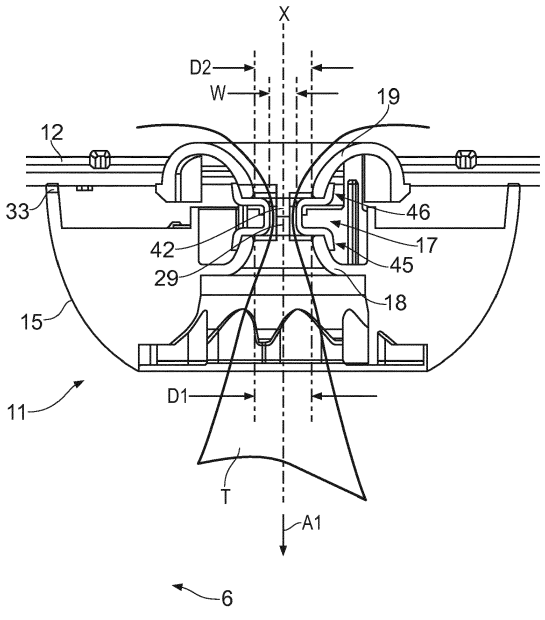

FIG. 6

EP 3 040 005 A1

Description

TECHNICAL FIELD

[0001] The present disclosure relates to a towel dispenser; and to a dispensing nozzle for a towel dispenser.

BACKGROUND

[0002] CA 2638184 A1 discloses a towel dispenser. The user pulls on the towel to dispense a length of towel stored in a housing of the dispenser. The dispenser comprises a housing for a roll of towel and an iris-shaped opening for dispensing the towels. The dispenser further comprises a pivotally mounted arm accessible from the inside of the housing. The arm is pivoted to adjust the cross sectional area of the iris-shaped opening to set the tension of the towel as it is pulled through the opening. The pivoting motion of the arm alters the shape of the iris-shaped opening and can form an acute angle in which the towel could become wedged, resulting in tearing of the towel proximal to the iris-shaped opening. The tearing of the towel in this region is undesirable since it may be difficult subsequently to grip the end of the towel.

[0003] At least in certain embodiments, the present invention sets out to overcome or ameliorate at least some of the problems associated with known towel dispensers.

SUMMARY OF THE INVENTION

[0004] Aspects of the present invention relate to a paper towel dispenser; and to a dispensing nozzle for a paper towel dispenser.

[0005] According to a further aspect of the present invention there is provided a paper towel dispenser comprising:

a housing having an interior chamber for receiving a roll of paper towel; and

a control member defining a dispensing aperture through which the paper towel is dispensed;

wherein the control member is deformable to alter the size of the dispensing aperture. The control member is suitable for controlling the dispensing of paper towel from the dispenser. In use, the paper towel is pulled through the dispensing aperture by the user. The paper towel is impeded by the control member and the towel is placed under tension as it is pulled through the dispensing aperture by the user. The tension in the towel facilitates tearing by a user once a suitable length of towel has been dispensed. However, different papers have different properties which can affect the function of the dispensing aperture. By controllably adjusting the effective size of the dispensing aperture, the paper towel dispenser described herein can be configured to suit different types of paper towel, for example different types and/or grades of paper towel. At least in certain embodiments, the control member enables a progressive change in size of the aperture.

[0006] The control member can comprise a first engaging member for engaging paper towel dispensed through the dispensing aperture. The control member can comprise a second engaging member for engaging paper towel dispensed through the dispensing aperture. The towel can be dispensed between said first and second engaging members. The relative position of said first and second engaging members can be adjusted to alter the size of the dispensing aperture. For example, a width of the dispensing aperture can be altered.

[0007] The first and second engaging members can be hingedly connected to each other. The first and second engaging members each have a first end and a second end. The first ends of said first and second engaging members can be hingedly connected to each other by a hinge. The hinge can comprise a cavity which opens into a region between said first and second engaging members. The cavity can extend substantially parallel to a hinge axis. At least in certain embodiments, the cavity can reduce the likelihood of the towel becoming trapped proximal to the hinge. The cavity can be part-cylindrical in shape.

[0008] The hinge can be a live hinge formed integrally with the first and second engaging members.

[0009] The control member can be formed from a resilient material or a flexible material. The control member can, for example, be moulded from an elastomeric material. The control member can be a resilient member which is deformable to adjust the effective size of the dispensing aperture. The resilient member can form said first and second engaging members. The first and second engaging members can be resiliently biased towards each other.

[0010] The deformation of the control member can be selectively controlled. The paper towel dispenser can comprise adjustment means for controllably deforming the control member to adjust the size of the dispensing aperture. The adjustment means can adjust a dimension of the dispensing aperture in a first direction and/or a second direction. The adjustment means can adjust a width of the dispensing aperture. The adjustment means can be configured to set the size of the dispensing aperture. The adjustment means can be configured to set a maximum size and/or a minimum size of the dispensing aperture. In certain embodiments, the adjustment means can set the size of the dispensing aperture by adjusting the relative positioning of the first engaging member and/or the second engaging member. The adjustment means can be connected to the first engaging member and/or the second engaging member; or can engage the first engaging member and/or the second engaging member.

[0011] The adjustment means could comprise a pivotably mounted member or a slidably mounted member for cooperating with the control member. Alternatively, the

adjustment means can comprise a rotatable member for cooperating with the control member. The rotatable member could be in the form of an offset cam for engaging the control member to adjust the size of the dispensing aperture. Alternatively, the rotatable member can comprise an annular member extending around the control member. The adjustment means can, for example, controllably adjust the relative positioning of the first and second engaging members.

[0012] The rotatable member can comprise a projection for engaging the control member. The projection can be adapted to deform the control member when the rotatable member is rotated. The projection can be configured to engage one of the first and second engagement members to adjust the size of the dispensing aperture. For example, rotation of the rotatable member can cause the projection to engage and to displace the first engagement member relative to the second engagement member. The housing can comprise retention means for retaining the control member in position. For example, a stop member can be provided to prevent rotation of the control member.

[0013] The towel dispenser can comprise a dispensing nozzle. The adjustment means can be incorporated into the dispensing nozzle. For example, the adjustment means can comprise a rotatable member defining an outer portion of the dispensing nozzle.

[0014] The dispensing nozzle can comprise a first guide member for guiding the towel dispensed through the dispensing aperture. The first guide member can be a first funnel. The dispensing nozzle can comprise a first funnel for guiding the towel dispensed through the dispensing aperture. The control member can cooperate with said first funnel. The dispensing nozzle can comprise a second guide member for guiding the towel from the roll into the dispensing aperture. The second guide member can be a second funnel. The control member can be disposed between said first and second guide members.

[0015] The adjustment means can be moveable between a plurality of predetermined stop positions. The predetermined stop positions can each correspond to a predetermined size of dispensing aperture defined by said control member. When disposed in each predetermined stop position, the adjustment means can deform the control member such that the dispensing aperture has a corresponding predetermined size. Alternatively, the position of the adjustment means may be continuously variable to enable continuous (infinite) adjustment of the size of the dispensing aperture.

[0016] The rotatable member can be rotatable between a plurality of predetermined positions. The effective size of the aperture can be determined in dependence on the selected one of said predetermined positions. The towel dispenser can comprise retention means for retaining the rotatable member in each of said predetermined positions. The retentions means can be in the form of a detent, for example.

[0017] According to a further aspect of the present invention there is provided a dispensing nozzle for a paper towel dispenser, the dispensing nozzle comprising:

a control member defining a dispensing aperture through which the paper towel is dispensed;
wherein the control member is deformable to alter the size of the dispensing aperture. The deformation of the control member can be selectively controlled. The paper towel dispenser can comprise adjustment means for controllably deforming the control member to adjust the size of the dispensing aperture.

[0018] According to a further aspect of the present invention there is provided a paper towel dispenser comprising:

a housing having an interior chamber for receiving a roll of paper towel;
first and second engaging members defining a dispensing aperture for dispensing paper towel from said roll; and
a first guide member for guiding the paper towel into the dispensing aperture and/or a second guide member for guiding the paper towel out of the dispensing aperture;
wherein said first and second engaging members are pivotally connected to each other to enable the size of the dispensing aperture to be adjusted. The first and second engaging members can be pivoted relative to each other to adjust the size of the dispensing aperture. The paper towel dispenser can comprise adjustment means for controllably pivoting the first and second engaging members relative to each other. The first and second engaging members can be rigid (inflexible) members. The adjustment means can comprise a rotatable member for cooperating with the control member.

[0019] The paper towel dispenser can comprise a dispensing nozzle. The dispensing nozzle can comprise a first guide member for guiding the towel dispensed through the dispensing aperture. The first guide member can be a first funnel. The dispensing nozzle can comprise a second guide member for guiding the towel from the roll into the dispensing aperture. The second guide member can be a second funnel. The first and second engaging members can be offset from the first guide member and/or the second guide member. For example, the first and second engaging members can be disposed between the first guide member and the second guide member.

[0020] According to a still further aspect of the present invention there is provided a dispensing nozzle for a paper towel dispenser, the dispensing nozzle comprising:

first and second engaging members defining a dispensing aperture through which paper towel is dispensed; and

a first guide member for guiding the paper towel into the dispensing aperture and/or a second guide member for guiding the paper towel out of the dispensing aperture;

wherein said first and second engaging members are pivotally connected to each other to enable the size of the dispensing aperture to be adjusted.

[0021] Within the scope of this application it is expressly intended that the various aspects, embodiments, examples and alternatives set out in the preceding paragraphs, in the claims and/or in the following description and drawings, and in particular the individual features thereof, may be taken independently or in any combination. That is, all embodiments and/or features of any embodiment can be combined in any way and/or combination, unless such features are incompatible. The applicant reserves the right to change any originally filed claim or file any new claim accordingly, including the right to amend any originally filed claim to depend from and/or incorporate any feature of any other claim although not originally claimed in that manner.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] One or more embodiments of the present invention will now be described, by way of example only, with reference to the accompanying Figures, in which:

Figure 1A shows a perspective view of a towel dispenser in accordance with an embodiment of the present invention;

Figure 1B shows the towel dispenser of Figure 1A, the front cover being omitted;

Figure 2 shows an exploded view of a dispensing nozzle of the towel dispenser;

Figure 3A shows a top view of an outer member of the towel dispenser;

Figure 3B shows a bottom view of the outer member of Figure 3A;

Figure 4A shows a top view of an inner member of the towel dispenser;

Figure 4B shows a bottom view of the inner member of Figure 4A;

Figure 5A shows a perspective view of a control member of the towel dispenser;

Figure 5B shows a top view of the control member of Figure 5A;

Figure 5C shows a cross-sectional view of the control member of Figure 5A;

Figure 6 shows a cross sectional view of a dispensing nozzle of the towel dispenser; and

Figure 7 shows a view of an underside of the towel dispenser.

DETAILED DESCRIPTION

[0023] A towel dispenser 1 in accordance with an embodiment of the present invention will now be described with reference to the accompanying Figures. The towel dispenser 1 is a centre-pull towel dispenser for dispensing paper towel from a roll. As described herein, the towel dispenser 1 is configured to adjust the tension applied to the paper as it dispensed.

[0024] The towel dispenser 1 comprises a housing 3 for receiving a roll (not shown) of towel. The roll of towel is of the centre-pull type consisting of a length of towel wound into a roll. A series of perforations are formed in the towel to promote tearing at predetermined intervals to form sheets when the towel is pulled through the dispensing nozzle 11. The housing 3 comprises a mounting frame 4, a front cover 5 and a base plate assembly 6. The mounting frame 4 comprises a back plate 7, and left and right side panels 8, 9. The back plate 7 comprises a plurality of apertures 10 for receiving mechanical fasteners to mount the towel dispenser 1 to a wall (not shown). The front cover 5 is removably mounted to the mounting frame 4 and secured in place by a lock mechanism (not shown). The base plate assembly 6 comprises a dispensing nozzle 11 disposed centrally in a base plate 12. The dispensing nozzle 11 comprises a dispensing aperture 13 through which the towel is dispensed. The housing 3 defines an interior chamber 14 for receiving the roll of towel.

[0025] As shown in Figure 2, the dispensing nozzle 11 comprises an outer member 15, an inner member 16 and a control member 17. The control member 17 is configured to control the dispensing of towel from the towel dispenser 1. The control member 17 defines the dispensing aperture 13 through which the towel is dispensed. The control member 17 engages the towel as it is pulled through the dispensing aperture 13 by a user. The forces applied to the towel can be controlled by adjusting the size of the dispensing aperture 13, for example to suit different types and/or grades of paper towel. In the present embodiment, the control member 17 is in the form of a resilient member which is deformable to adjust the effective size of the dispensing aperture 13. The outer member 15 defines a first funnel 18; and the inner member 16 defines a second funnel 19. The first and second funnels 18, 19 are arranged to guide the towel as it is dispensed from the dispensing nozzle 11 through the dispensing aperture 13.

[0026] The control member 17 comprises first and second jaws 20, 21 hingedly connected to each other by a hinge 22. The first and second jaws 20, 21 define respective first and second contact surfaces S1, S2 for contacting the towel as it is dispensed through the dispensing nozzle 11. The first and second contact surfaces S1, S2 each have a concave profile in plan form. In the present embodiment, the control member 17 is moulded from a resilient material, such as an elastomer. The hinge 22 is a live hinge moulded integrally at a first end of the first and second jaws 20, 21. The hinge 22 has a part-circular profile which introduces a first offset G1 between the first and second jaws 20, 21 at said first end. A part-cylindrical

cavity is formed within the hinge 22 at the first end of said first and second jaws 20, 21. The first and second jaws 20, 21 are not connected to each other at a second end (arranged opposite to the first end) to enable them to pivot relative to each other. By varying the relative position of the first and second jaws 20, 21, a width W of the dispensing aperture 13 can be adjusted which, in use, changes the frictional engagement of the towel as it is dispensed.

[0027] The outer member 15 is operable to controllably adjust the position of the first and second jaws 20, 21 relative to each other, thereby adjusting the size of the dispensing aperture 13. In the present embodiment the outer member 15 functions as adjustment means for controllably deforming the control member 17 to adjust the size of the dispensing aperture 13. The outer member 15 is moulded from a plastics material, such as polypropylene. As shown in Figures 3A and 3B, the outer member 15 is generally annular in shape and comprises a first orifice 23 having a first diameter D1. The first funnel 18 provides a convex surface extending outwardly from the first orifice 23 to guide the towel. The outer member 15 is rotatable about a rotational axis X. With reference to Figure 3A, a cylindrical member 24 is formed inside the outer member 15. A longitudinal axis of the cylindrical member 24 is arranged substantially parallel to the rotational axis X of the outer member 15. First and second mounting tabs 25, 26 project from the cylindrical member 24 to rotatably mount the outer member 15 to the base plate 12. The first and second mounting tabs 25, 26 comprise respective first and second engaging surfaces 27, 28 for engaging an upper surface of the base plate 12. A first projection 29 extends from the cylindrical member 24 to engage the control member 17, as described herein. A plurality of reinforcing ribs 30 is formed inside the outer member 15 to support the cylindrical member 24.

[0028] With reference to Figure 3B, the outer member 15 comprises a sidewall 31 having a curved profile. A series of notches 32A-E are formed in a radially outer edge of the sidewall 31. The notches 32A-E are arranged to cooperate with a protuberance 33 formed on a lower surface of the base plate 12. In use, the protuberance 33 locates in one of said notches 32A-E to inhibit rotation of the outer member 15. The continued application of torque to the outer member 15 releases the protuberance 33 and permits continued rotation of the outer member 15. The notches 32A-E and the protuberance 33 thereby cooperate to form a series of predetermined rotational stop positions for the outer member 15. In the present embodiment, there are five (5) notches 32A-E, but the outer member 15 could comprise less than or more than five (5) notches 32A-E. The outer sidewall 28 also comprises three (3) radial projections 34 to facilitate gripping of the outer member 15.

[0029] As shown in Figure 3B, a plurality of curved walls 35 is formed circumferentially around the first funnel 18. The curved walls 35 are generally U-shaped and overlap the curved profiled of the first funnel 18. A series of tapered channels 36 are formed between the curved walls 35 to grip the towel as it is dispensed through the dispensing aperture 13. In the present embodiment, there are nine (9) curved walls 35.

[0030] The inner member 16 is moulded from a plastics material, such as polypropylene. As shown in Figures 4A and 4B, the inner member 16 is generally annular in shape and comprises a second orifice 37 having a second diameter D2. The second funnel 19 provides a convex surface extending inwardly towards the second orifice 37 to guide the towel. The inner member 16 comprises first and second locking tabs 38, 39 disposed diametrically opposed from each other. The first and second locking tabs 38, 39 are configured to locate within corresponding first and second recesses 40, 41 formed in the base plate 12 and to engage an underside of the base plate 12. The first and second locking tabs 38, 39 are operative to fixedly mount the inner member 16 to the base plate 12. An underside of the inner member 16 is shown in Figure 4B. A second projection 42 projects outwardly from the inner member 16. The second projection 42 comprises a radial portion 43 and a tangential portion 44 arranged in a T-shaped configuration.

[0031] A perspective view of the control member 17 is shown in Figure 5A; and plan and side elevations are shown in Figures 5B and 5C. The control member 17 comprises a lower connecting portion 45 configured to engage the first funnel 18; and an upper connecting portion 46 configured to engage the second funnel 19. The upper and lower connecting portions 45, 46 comprise respective upper and lower part-cylindrical walls 47, 48 sized to match the first and second diameters D1, D2. As shown in Figure 5B, a second offset G2 is formed between the second ends of the first and second jaws 20, 21. The second offset G2 is substantially the same size as the first offset G1 such that the first and second jaws 20, 21 are arranged substantially symmetrically about a diameter of the control member 17 when in a neutral (unloaded) state. The first and second projections 29, 42 of the outer member 15 and the inner member 16 locate within the second offset G2. The dispensing aperture 13 is defined between the first and second jaws 20, 21 and the width W of the dispensing aperture 13 corresponds to the distance between the first and second contact surfaces S1, S2. As shown most clearly in Figure 5C, the first and second jaws 20, 21 are inset from the lower connecting portion 45 and the upper connecting portion 46 such that the width W of the dispensing aperture 13 is smaller than the first and second diameters D1, D2 of the first and second orifices 23, 37.

[0032] A sectional view through the dispensing nozzle 11 is shown in Figure 6 with a length of towel T illustrated schematically. As represented by a first arrow A1, a user grips a free end of the towel T and pulls downwardly to dispense a length of the towel T. The control member 17 is disposed between the outer and inner members 15, 16. In particular, the lower connecting portion 45 engages the outside of the first funnel 18, and the upper connecting

portion 46 engages the outside of the second funnel 19. The first and second jaws 20, 21 thereby define the dispensing aperture 13 of the paper towel dispenser 1. The first and second projections 29, 42 locate within the second offset G2 formed between the first and second jaws 20, 21. The first projection 29 is rotatable with the outer member 15, whereas the second projection 42 is fixed. Thus, the first and second projections 29, 42 are rotatable relative to each other by rotating the outer member 15 about the rotation axis X. The first and second projections 29, 42 cooperate with the first and second jaws 20, 21 causing them to pivot relative to each other when the outer member 15 is rotated. The width W of the dispensing aperture 13 can thereby be adjusted by rotating the outer member 15. The rotation of the outer member 15 in a first direction (clockwise in the illustrated arrangement) increases the width W of the dispensing aperture 13; and the rotation of the outer member 15 in a second direction (anticlockwise in the illustrated arrangement) decreases the width W of the dispensing aperture 13. The outer member 15 can thereby function as adjustment means for controllably adjusting the size of the dispensing aperture 13. The resilience of the control member 17 biases the first and second jaws 20, 21 towards each other so as to cooperate with the first and second projections 29, 42. The relative position of the first and second projections 29, 42 thereby determines the width W of the dispensing aperture 13 for controlling dispensing of the towel T. In the present embodiment the first and second jaws 20, 21 may be displaced outwardly away from the first and second projections 29, 42.

[0033] The rotation of the outer member 15 is illustrated in the plan view shown in Figure 7. The outer member 15 is rotatable relative to the base plate 12, as represented by a second arrow A2. The rotation of the outer member 15 causes the first projection 29 to rotate, thereby displacing the first jaw 20 relative to the second jaw 21. The inner member 16 is fixed in position and the second projection 42 functions as a stop to inhibit rotation of the control member 17. Depending on the direction of rotation, the outer member 15 can be actuated to displace the first and second jaws 20, 21 towards each other or away from each other. The resilience of the material forming the control member 17 biases the first and second jaws 20, 21 towards each other. The rotation of the outer member 15 causes the protuberance 33 formed in the base plate 12 to locate in the notches 32A-E. The notches 32A-E thereby define a plurality of discrete angular stop positions P1-5, as illustrated in Figure 7. The stop positions P1-5 can be defined to provide effective operation for particular grades or types of paper towel. By rotating the outer member 15 the towel dispenser 1 can be configured (or re-configured) for use with a particular grade or type of paper towel. The outer member 15 locates in one of said angular stop positions P1-5 and defines the position of the first and second jaws 20, 21 relative to each other. The angular position of the outer member 15 thereby sets the width W of the dispensing aperture 13.

[0034] Since the outer member 15 is disposed on an exterior of the housing 3, the control member 17 can be configured without removing the front cover 5. The ability to increase the width of the dispensing aperture 13 may also facilitate insertion of a length of towel through the dispensing nozzle 11 when a new roll of paper towel is loaded.

[0035] It will be appreciated that various changes and modifications could be made to the towel dispenser 1 described herein without departing from the scope of the present invention. For example, the control member 17 could have an annular configuration which can be squashed radially inwardly to reduce the effective width of the dispensing aperture 13. The control member 17 has been illustrated as having a generally circular configuration, but it will be appreciated that it could have a polygonal or elliptical configuration. The first projection 29 and/or the second projection 42 could be configured to positively engage the control member 17. For example, the first projection 29 could locate in a first locating aperture formed in the first jaw 20; and/or the second projection 42 could locate in a second locating aperture formed in the second jaw 21. A direct connection could thereby be established between the outer member 15 and the control member 17.

[0036] Furthermore, rather than define stop positions P1-5, the outer member 15 could be allowed to rotate continuously to provide a continuously (infinitely) variable dispensing aperture 13. A retardation device, such as a friction brake, could be provided to retard rotation of the outer member 15.

[0037] A lock mechanism could be provided selectively to inhibit rotation of the outer member 15. A key can be used by a service technician to operate the lock mechanism.

[0038] The second projection 42 has been described herein as having a fixed position. In a modified arrangement, the second projection 42 could also be movable. For example, the inner member 16 could be rotatable independently of the outer member 15. This arrangement could provide a larger range of relative movement of the first and second engagement members 20, 21, thereby increasing the range of sizes of the dispensing aperture 13.

Claims

1. A paper towel dispenser (1) comprising:

a housing (3) having an interior chamber (14) for receiving a roll of paper towel (T); and
a control member (17) defining a dispensing aperture (13) through which the paper towel (T) is dispensed;
wherein the control member (17) is deformable to alter the size of the dispensing aperture (13).

2. A paper towel dispenser (1) as claimed in claim 1, wherein the control member (17) comprises a first engaging member (20) for engaging paper towel dispensed through the dispensing aperture (13).

3. A paper towel dispenser (1) as claimed in claim 2, wherein the control member (17) comprises a second engaging member (21) for engaging paper towel (T) dispensed through the dispensing aperture (13).

4. A paper towel dispenser (1) as claimed in claim 3, wherein said first and second engaging members (20, 21) are hingedly connected to each other.

5. A paper towel dispenser (1) as claimed in any one of claims 1 to 4, the first and second engaging members (20, 21) each have a first end and a second end, wherein the first ends of said first and second engaging members (20, 21) are hingedly connected by a hinge (22).

6. A paper towel dispenser (1) as claimed in any one of the preceding claims, wherein the control member (17) is formed from a resilient material, such as an elastomeric material.

7. A paper towel dispenser (1) as claimed in any one of the preceding claims comprising adjustment means (15) for controllably deforming the control member (17) to adjust the size of the dispensing aperture (13).

8. A paper towel dispenser (1) as claimed in claim 7, wherein the adjustment means comprises a rotatable member (15) for cooperating with the control member (17).

9. A paper towel dispenser (1) as claimed in claim 8, wherein the rotatable member (15) comprises a projection (29) for engaging the control member (17), the projection (29) being adapted to deform the control member (17) when the rotatable member (15) is rotated.

10. A paper towel dispenser (1) as claimed in any one of claims 7, 8 or 9 comprising a dispensing nozzle (11), wherein the rotatable member (15) forms an outer portion of the dispensing nozzle (11).

11. A paper towel dispenser (1) as claimed in claim 10, wherein the dispensing nozzle (11) comprises a first funnel (18) for guiding the paper towel (T) dispensed through the dispensing aperture (13); the control member (17) cooperating with said first funnel (18).

12. A paper towel dispenser (1) as claimed in any one of claims 8 to 11, wherein the rotatable member (15) is rotatable between a plurality of predetermined positions (P1-5).

13. A dispensing nozzle (11) for a paper towel dispenser (1), the dispensing nozzle (11) comprising:

a control member (17) defining a dispensing aperture (13) through which the paper towel (T) is dispensed,
wherein the control member (17) is deformable to alter the size of the dispensing aperture (13).

14. A dispensing nozzle (11) as claimed in claim 13 comprising adjustment means (15) for controllably deforming the control member (17) to adjust the size of the dispensing aperture (13).

15. A dispensing nozzle (11) as claimed in claim 14, wherein the adjustment means comprises a rotatable member for cooperating with the control member (17).

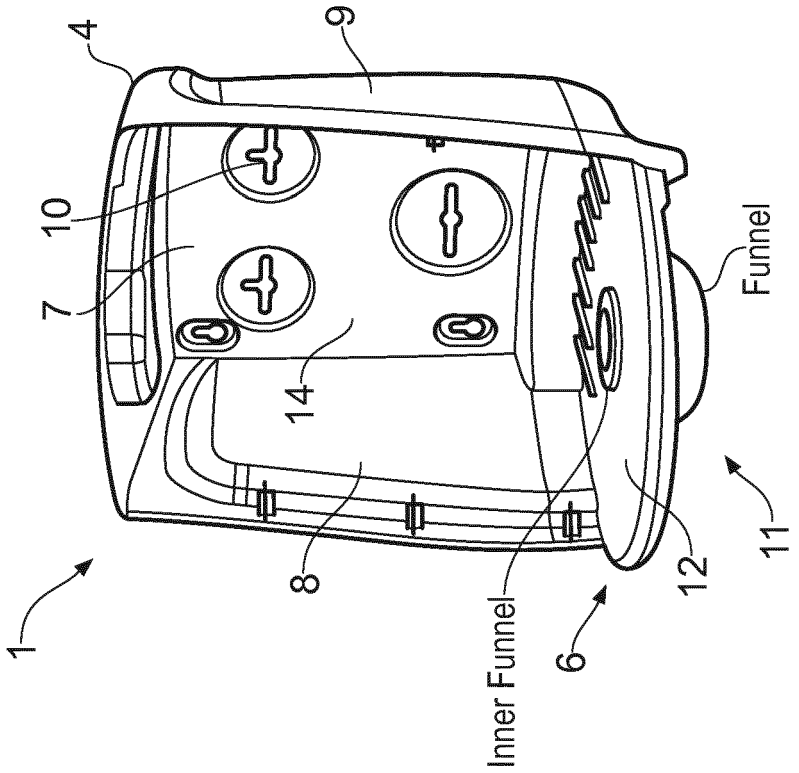
4
9
10
7
14
8
1
Inner Funnel
6
12
11
Funnel

FIG. 1B

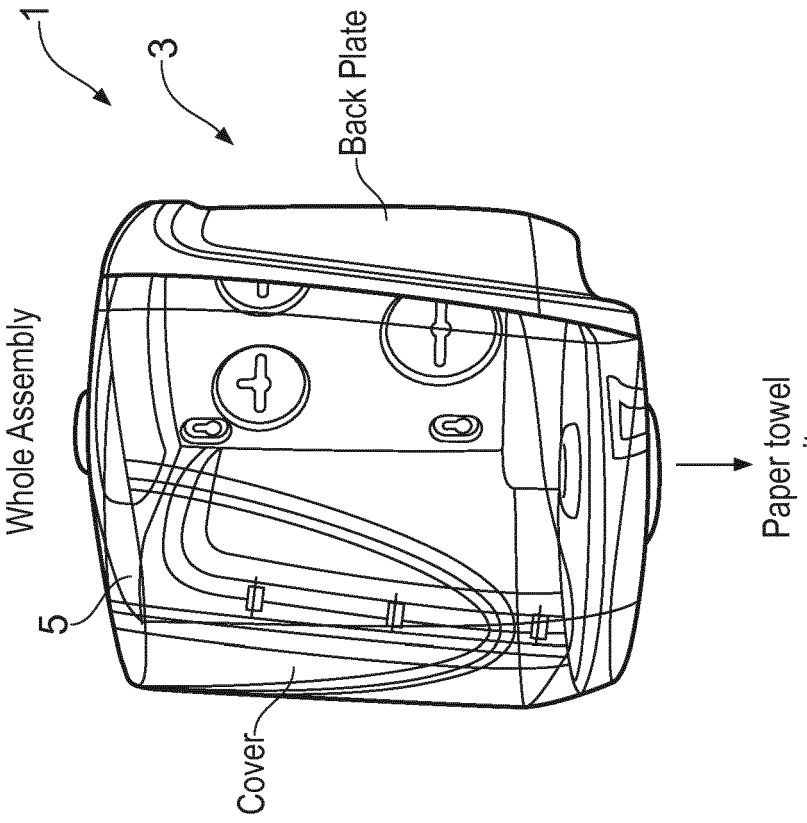
1
3
Back Plate
Whole Assembly
5
Cover
Paper towel exit

FIG. 1A

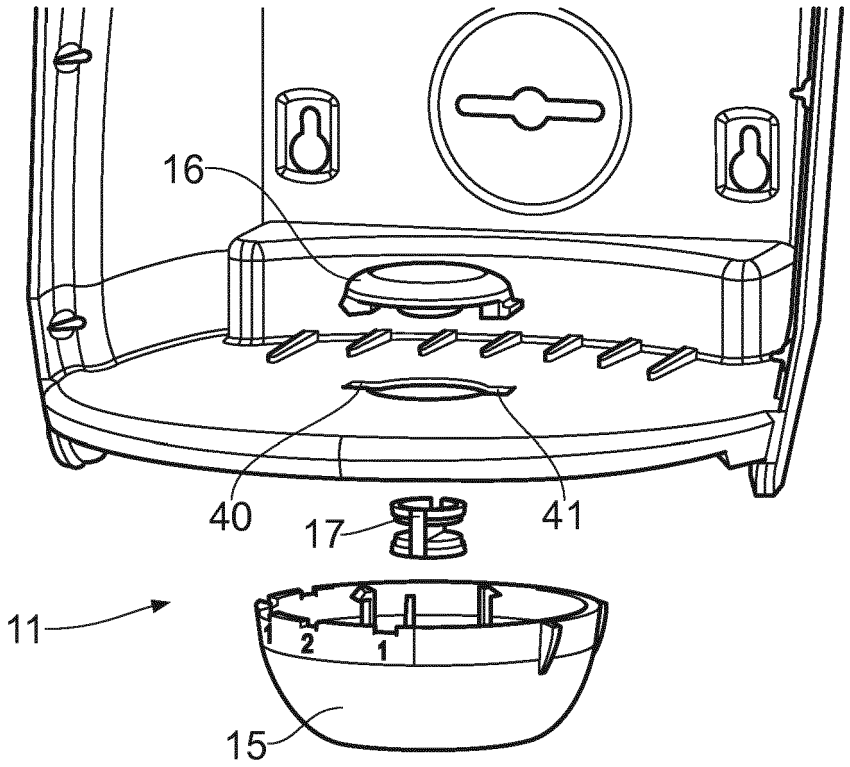

FIG. 2

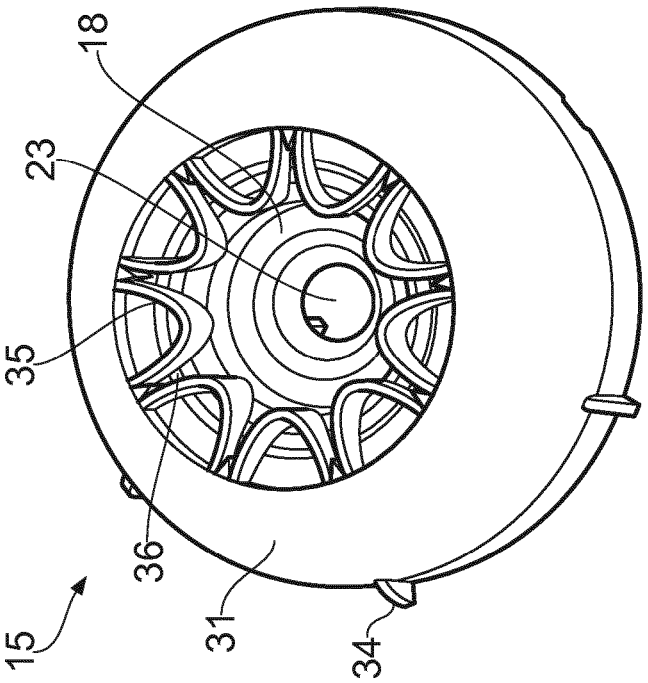

FIG. 3B

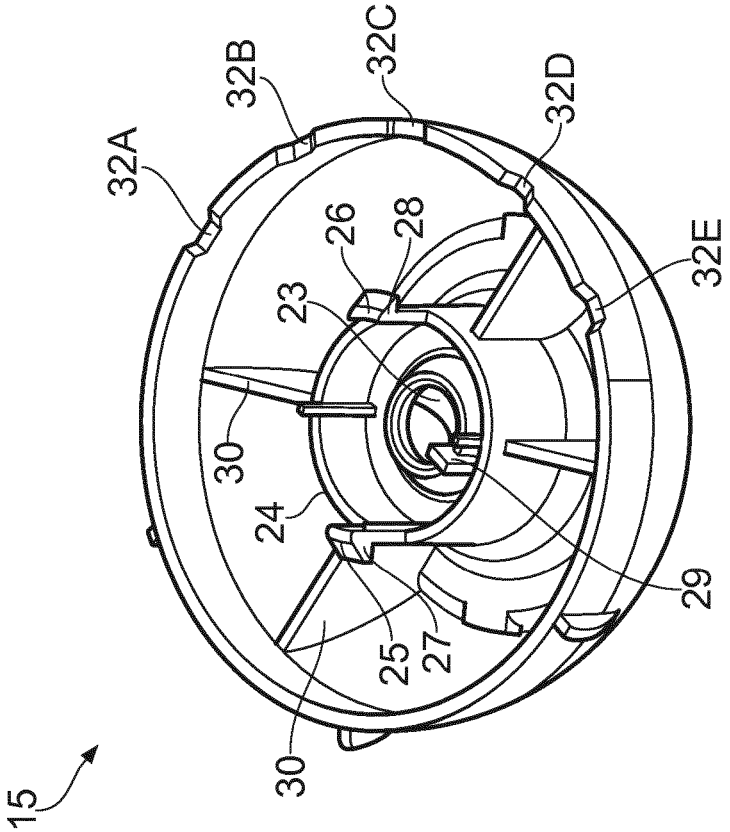

FIG. 3A

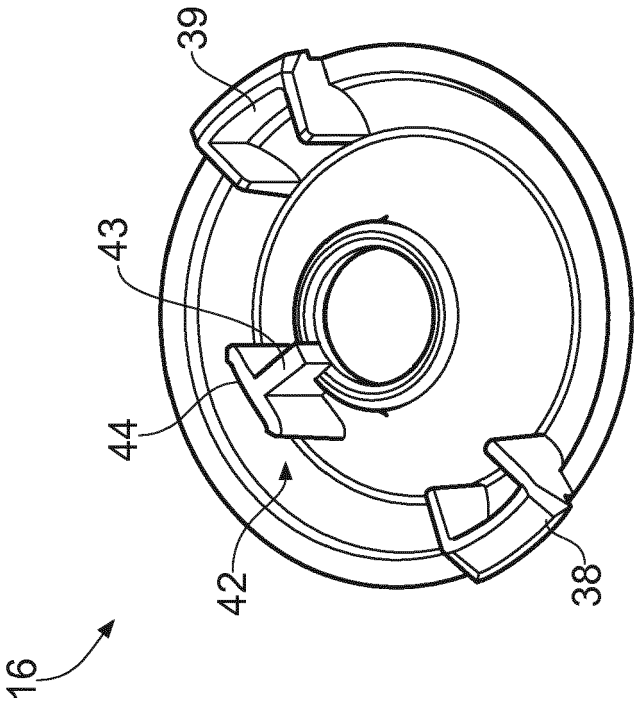

FIG. 4B

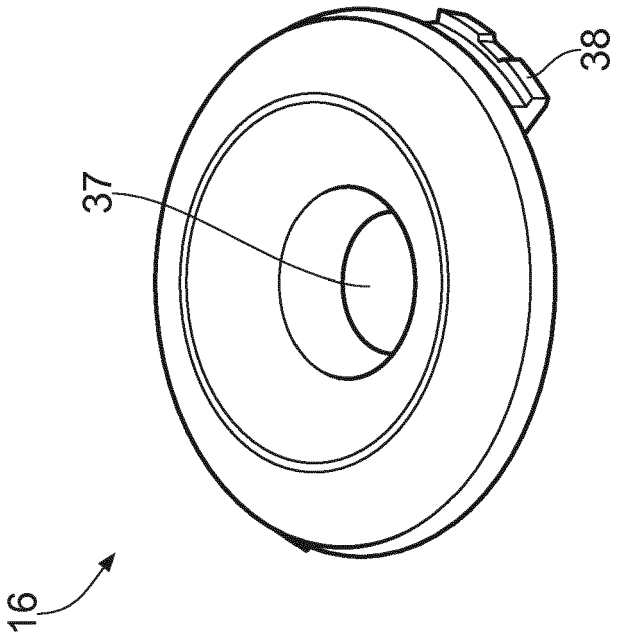

FIG. 4A

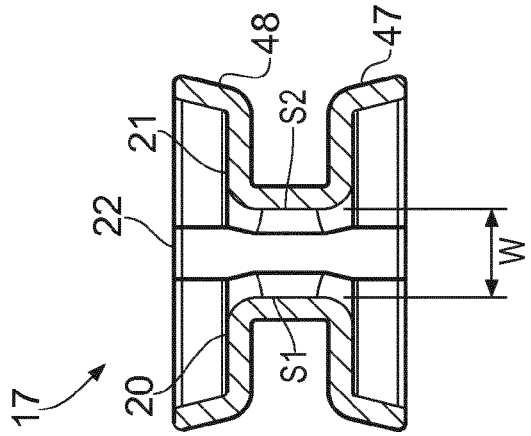

FIG. 5C

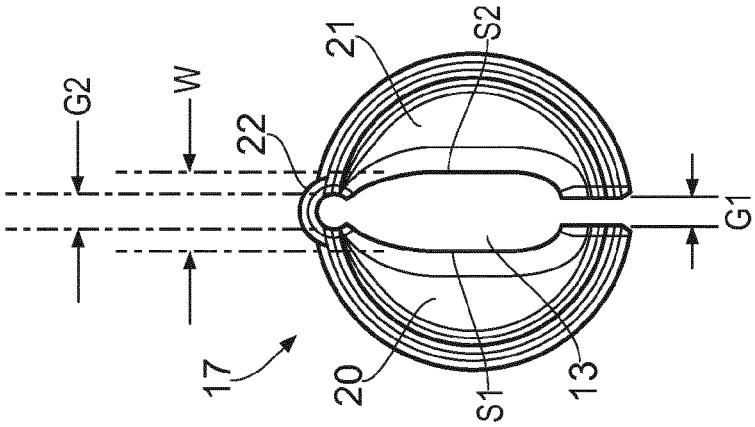

FIG. 5B

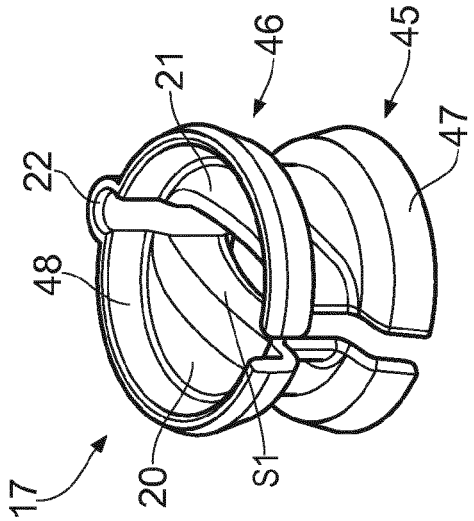

FIG. 5A

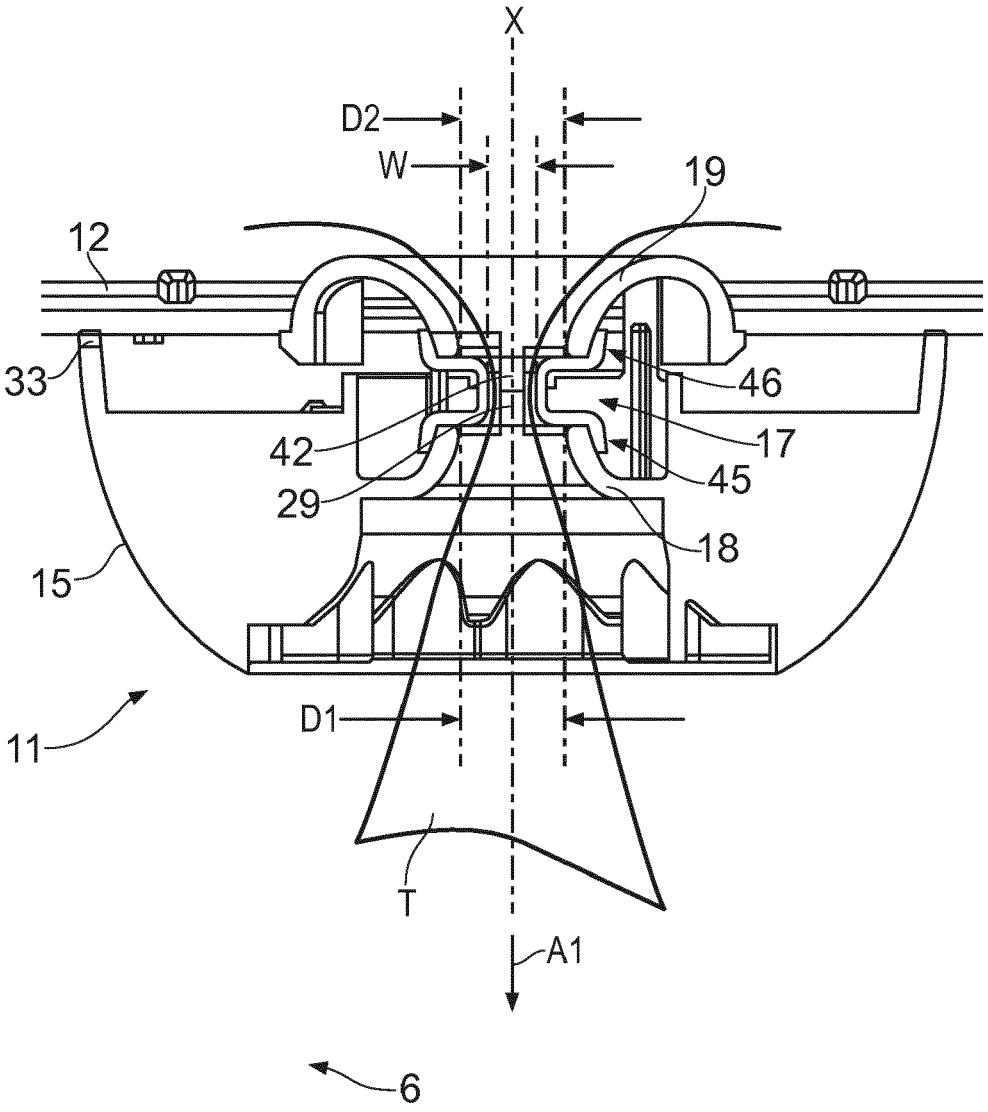

FIG. 6

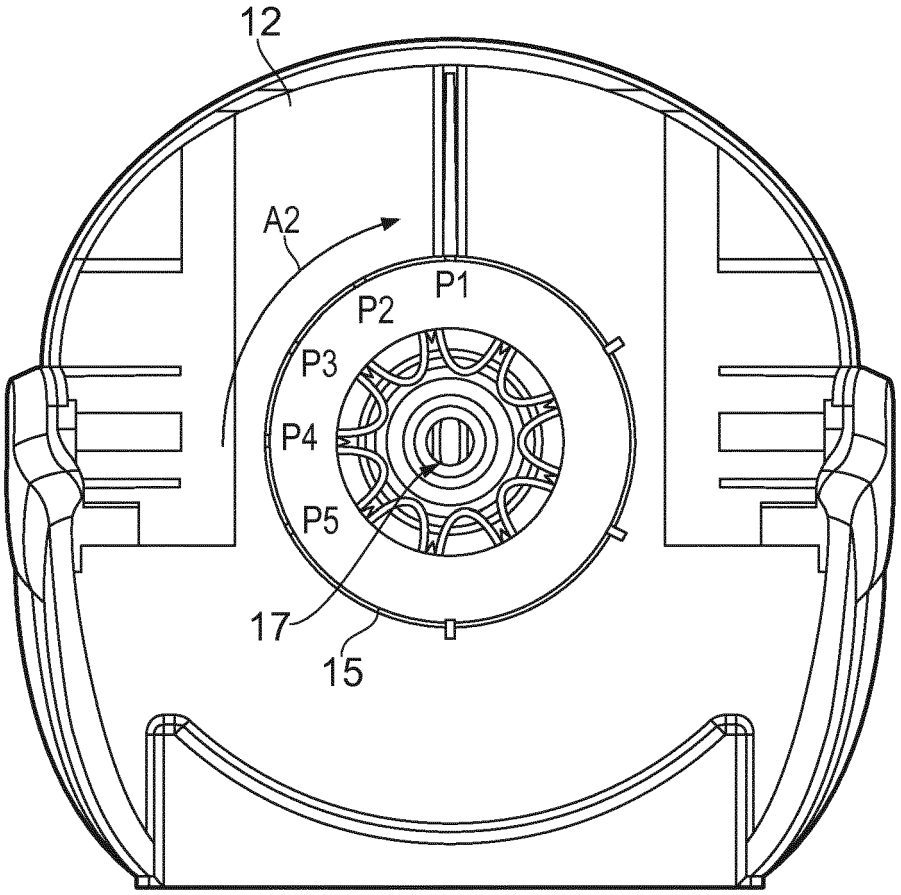

FIG. 7

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PARTIAL EUROPEAN SEARCH REPORT

under Rule 62a and/or 63 of the European Patent Convention. This report shall be considered, for the purposes of subsequent proceedings, as the European search report

Application Number
EP 15 02 0217

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2003/071102 A1 (HAEN WILLIAM G [US] ET AL) 17 April 2003 (2003-04-17) * paragraph [0051] - paragraph [0070]; figures 1-7b *	1-9,12	INV. A47K10/32 A47K10/38
X	US 5 263 607 A (TEMESVARY LOUIS [US] ET AL) 23 November 1993 (1993-11-23) * figures 1-4 *	1,2,6-12	
X	US 2003/111480 A1 (LEWIS RICHARD PAUL [US] ET AL) 19 June 2003 (2003-06-19) * figures 1-21 *	1-3,6-9, 12	

TECHNICAL FIELDS SEARCHED (IPC)

A47K

INCOMPLETE SEARCH

The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC so that only a partial search (R.62a, 63) has been carried out.

Claims searched completely :

Claims searched incompletely :

Claims not searched :

Reason for the limitation of the search:

see sheet C

Place of search	Date of completion of the search	Examiner
The Hague	1 June 2016	Zuurveld, Gerben

CATEGORY OF CITED DOCUMENTS

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INCOMPLETE SEARCH
SHEET C

Application Number
EP 15 02 0217

Claim(s) completely searchable:
1-12

Claim(s) not searched:
13-15

Reason for the limitation of the search:

The search has been restricted to the subject-matter indicated by the applicant in his letter of 22.04.2016 filed in reply to the invitation pursuant to Rule 62a(1), i.e. independent claim 1 and the claims dependent thereon.

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 15 02 0217

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01-06-2016

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