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(54) **DISPENSER OF PAPER MATERIAL IN ROLL FORM**

(57) A dispenser (1) of paper material (9) in the form of a roll (R), having a tubular core (2), comprising a box-like shell (10) which defines at least one compartment (11) for installing and housing a roll (R), means for unwinding the paper material (9) from the roll (R), means for withdrawing single sheets, separated from the paper material (9), by a user, a first arm (15) and a second arm (16), installed inside said compartment (11), for supporting the roll (R). The first arm (15) and the second arm (16) rotatably support a first flange (19) and a second flange (20), respectively, positioned inside said compartment (11), facing one another, so as to support the roll (R) with its horizontal, or substantially horizontal, axis of cylindrical symmetry (A). The first flange (19) comprises a peripheral element (43) comprising at least one branch (44) arranged radially; said branch (44) of said peripheral element (43) defines a respective inclined surface (45), flat or substantially flat, which forms a first acute angle (α_1) with the rotation axis (B) of said first flange (19).

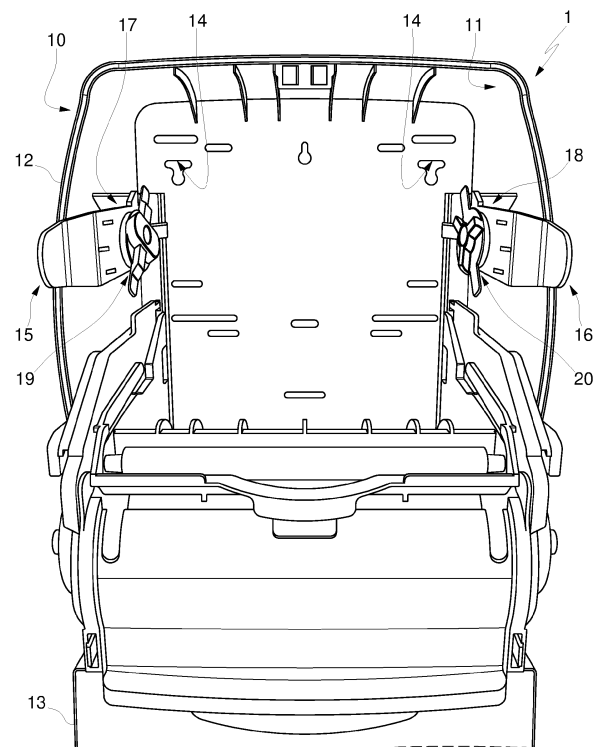


FIG. 1

Description

TECHNICAL FIELD OF THE INVENTION

[0001] The present invention relates to a dispenser of paper material in the form of a roll.

DESCRIPTION OF THE PRIOR ART

[0002] Various types of paper material dispensers are commonly found on the market, mainly for sanitary uses, in the form of rolls, from which sheets are typically separated which can be used individually (for example, towels, toilet paper, and the like).

[0003] These dispensers can be, for example, of the manual type, wherein the pulling action exerted by the user on the free end of material determines the separation of individual sheets from the roll (for example along the provided breaking lines), or of the automatic or semi-automatic type, wherein a cutting device is provided which, following a control given by the user, separates individual sheets.

[0004] A fundamental requirement for the producers of these goods is that they must be able to provide the customer with their own dispensers inseparably from their own rolls of paper, so as to prevent rolls made by competitors from being installed and used.

[0005] To achieve this important result, a solution used by many manufacturers is to create a forced mechanical coupling between the tubular core of the roll and the support arms of the same, with which all dispensers on the market are equipped.

[0006] More in detail, in a version on the market, the tubular core is made of extruded plastic, and its cross section comprises a plurality of ribs, arranged for example in a radial pattern, which define some sort of compartments, enclosed in a circular outline.

[0007] Correspondingly, the arms of the dispenser comprise respective end flanges each provided with raised parts or teeth shaped so as to engage in the above mentioned compartments of the tubular core.

[0008] Consequently, only the rolls that have the tubular core whose section is configured with the correct arrangement of compartments can be coupled with the flanges of the dispenser, while for all others such coupling is not possible, and their use is therefore precluded.

[0009] The solutions of the type described above, although very effective in terms of the technical effect obtained, are however disadvantageous in terms of the material used, since, as mentioned, the tubular core is made of plastic; in fact, many manufacturers are currently making considerable efforts to drop this material.

[0010] Currently, many manufacturers choose to produce rolls with a tubular core made of cardboard, which is the most traditional solution and which does not suffer from the aforementioned drawbacks relating to disposal of the material.

[0011] In some solutions with a tubular cardboard core,

to obtain the effect of forced coupling between the core of the roll and the support arms, the use of inserts (e.g. of plastic) is provided for insertion in the openings of the tubular core; these inserts are shaped in such a way as to couple to the flanges of the dispenser.

[0012] The drawback of these solutions mainly consists in the fact that the operator has to insert/remove the inserts from the openings of the tubular core every time a roll of paper material is installed/replaced.

[0013] Other manufacturers, in order to obtain the result described above of forced coupling between the core of the roll and the support arms, have come up with the solution of creating suitable seats in the core itself.

[0014] For example, the Italian patent application n. 102009901695791 describes a solution with a tubular cardboard core comprising, at both ends, notches arranged longitudinally (for example two for each end, diametrically opposite) of substantially rectangular shape, in which corresponding raised parts of the dispenser flange are inserted.

[0015] This solution has the drawback of requiring to cut the aforementioned notches in the tubular core before winding up the paper material on the core.

[0016] Clearly, this requires the development of a specially designed production cycle which includes the action of a machine which cuts the aforementioned notches before the tubular cores are fed to the winding station of the paper material.

[0017] In another solution, described in document US 2,380,644, in order to obtain the forced mechanical coupling between the flanges of the dispenser and the roll with a cardboard core, a cutting process is carried out in one of the bases of the latter, creating a diametrical groove, which involves both the core of the roll and part of the paper material wound on it.

[0018] This solution does not have the drawback of having to machine the cardboard core before winding the paper material.

[0019] However, as can be understood, this implies another notable drawback, i.e. the fact that the paper material is substantially altered with respect to its initial state, and the notches made in either base could affect the regular separation of the sheets one by one, and/or the use of the sheets after their separation.

[0020] In both the solutions described above, or in others of a similar type, the dispenser comprises two arms with end flanges that comprise raised elements which engage in the notches made in the tubular core, or along the entire base of the roll, depending on the specific solution adopted.

OBJECTS OF THE INVENTION

[0021] The technical aim of the present invention is to improve the state of the art in the field of dispensers of paper material in the form of rolls.

[0022] Within this technical aim, it is an object of the present invention to overcome the aforementioned draw-

backs.

[0023] Another object of the present invention is to provide a dispenser of paper material in the form of a roll, which allows a unique and forced mechanical coupling to be implemented with a specific roll provided with a cardboard core, or in any case, of other biodegradable material alternative to plastic.

[0024] A further object of the present invention is to make available a dispenser of paper material in the form of a roll which allows the aforementioned unique mechanical coupling to be obtained with a simple and economical construction solution.

[0025] Yet another object of the present invention is to create a dispenser of paper material in the form of a roll which allows the aforementioned unique mechanical coupling to be obtained without altering the integrity of the paper material.

[0026] This aim and these objects are all achieved by the dispenser of paper material in the form of a roll according to the attached claim 1.

[0027] The dispenser of paper material in the form of a roll, having a tubular core, comprises a box-like shell which defines at least one compartment for installing and accommodating a roll, means for unwinding the paper material of the roll, means for withdrawing single sheets, separated from the paper material, by a user, and also a first arm and a second arm, installed inside the aforementioned compartment, for supporting the roll.

[0028] The first arm and the second arm rotatably support a first flange and a second flange - respectively - positioned inside the compartment opposite each other, so as to support the roll with its cylindrical horizontal, or substantially horizontal, axis of symmetry.

[0029] According to the invention, the first flange of the first arm comprises a peripheral element comprising at least one radially arranged branch.

[0030] In a version of the invention of particular practical interest, the aforementioned peripheral element comprises two branches, arranged radially and diametrically opposite.

[0031] Furthermore, each of the two aforesaid branches of the peripheral element defines a respective inclined, flat or substantially flat surface, which forms a given acute angle with the axis of rotation of the first flange.

[0032] According to another aspect of the invention, the paper material dispenser further comprises a roll comprising a tubular core, with circular or substantially circular section, having a first end and a second opposite end, the respective first terminal edge and second terminal edge of which define a first opening and a second opening of the tubular core, and at least one tape of paper material wound on the tubular core. The first opening of the tubular core comprises a circular, or substantially circular, portion and two peripheral portions, substantially radial and diametrically opposite, arranged externally to the circular portion.

[0033] In particular, according to the invention, and in the configuration of use, the two branches of the first

flange engage in the aforementioned peripheral portions of the first opening of the tubular core.

[0034] The particular shape of the first flange, together with that of the first opening of the tubular core, complementary to it, allows the desired unique and forced mechanical coupling to be obtained between the dispenser and the roll.

[0035] In particular, observing the first opening of the tubular core of the roll on a plane perpendicular to the axis of cylindrical symmetry of the core itself, i.e. at the base of the roll, a particular and innovative shape of its cross section is obtained, consisting of a circle with two substantially radial appendages, wherein the two branches of the first flange can be engaged.

[0036] The special shaping of the first opening of the tubular core can be obtained after the tape of paper material has been completely wound onto the core, therefore, no processing is required on the core before winding the paper tape.

[0037] Furthermore, there are no alterations of the paper material wound on the tubular core, which therefore will remain perfectly intact even in its very first windings, in the immediate vicinity of the core.

[0038] Dependent claims refer to advantageous embodiments of the invention.

BRIEF DESCRIPTION OF DRAWINGS.

[0039] These and further advantages will be better understood by any person skilled in the art from the following description and the accompanying drawings, provided by way of non-limiting example, in which:

figure 1 is a perspective front view of a dispenser according to the invention;
figure 2 is a perspective front view of the dispenser, with a roll of paper material installed in the compartment;
figure 3 is a front view of the first arm of the dispenser;
figure 4 is a top view of the first arm;
figure 5 is a cross section of the first arm taken along the plane V-V of figure 3;
figure 6 is a side view of the first arm;
figure 7 is a rear view of the first arm;
figure 8 is a front view of the second arm of the dispenser;
figure 9 is a top view of the second arm;
figure 10 is a cross section of the second arm taken along the plane X-X of figure 8;
figure 11 is a side view of the second arm;
figure 12 is a rear view of the second arm;
figure 13 is a front view of the first flange of the dispenser;
figure 14 is a cross section of the first flange, taken along the plane XIV-XIV of figure 13;
figure 15 is a side view of the first flange;
figure 16 is a cross section of the first flange, taken along the plane XVI-XVI of figure 13;

figure 17 is a rear view of the first flange;
 figure 18 is an axonometric view of the first flange;
 figure 19 is a front view of the second flange of the dispenser;
 figure 20 is a top view of the second flange;
 figure 21 is a side view of the second flange;
 figure 22 is a cross section of the second flange, taken along the plane XXII-XXII of figure 19;
 figure 23 is a rear view of the second flange;
 figure 24 is an axonometric view of the second flange;
 figure 25 is an axonometric view of a roll of paper material to be installed in the dispenser according to the invention;
 figure 26 is a diametrical cross section of the roll of figure 25;
 figure 27 is a plan view of the roll of figure 25;
 figure 28 is a detail of figure 27.

EMBODIMENTS OF THE INVENTION.

[0040] With particular reference to figure 1, the reference number 1 generally indicates a dispenser of paper material in the form of a roll R according to the present invention. The roll of paper material can be, for example, a roll of towels, or of toilet paper, or of yet another type, without limitations.

[0041] The dispenser 1 which is the object of the present invention can be, indifferently, of the manual type, wherein the pulling action exerted by the user on the free end of the roll R determines the separation of individual sheets from it (for example, along the provided breaking lines), or of the automatic or semi-automatic type, wherein a cutting device is provided which, following a control given by the user, separates individual sheets of the roll R.

[0042] The dispenser 1 can be for example (but not exclusively) of the wall-hanging type, with the sheet dispensing opening provided in its lower part.

[0043] The roll R (figures 25-28) comprises a tubular core 2.

[0044] In an embodiment of the invention of particular practical interest, the tubular core 2 is made of cardboard, or the like.

[0045] The tubular core 2 has a circular or substantially circular section.

[0046] The tubular core 2 comprises two opposite ends 3,4; more in detail, the tubular core 2 comprises a first end 3 and a second opposite end 4.

[0047] The first end 3 comprises a first terminal edge 5; the first terminal edge 5 defines a first opening 6 of the tubular core 2.

[0048] Similarly, the second end 4 comprises a second terminal edge 7; the second terminal edge 7 defines a second opening 8 of the tubular core 2.

[0049] The roll R also comprises a tape of paper material 9; the tape of paper material 9 is wound onto the tubular core 2, so as to assume a cylindrical or substan-

tially cylindrical reel configuration.

[0050] The dispenser 1 comprises a box-like shell 10, which defines at least one compartment 11, for installing and housing a roll R.

[0051] Furthermore, the dispenser 1 comprises means for unwinding the paper material 9 from the roll R, and/or means for withdrawing single sheets, separated from the aforementioned paper material 9, by a user.

[0052] The dispenser 1 can also comprise, in addition to the preceding ones, means for cutting/separating individual sheets from the tape of paper material 9.

[0053] The aforesaid means can be of any type, without limitations for the purposes of the present invention.

[0054] In use, the roll R is installed, and housed, inside the compartment 11, with its cylindrical axis of symmetry A (figure 26) horizontal, or substantially horizontal. The box-like shell 10 comprises a first half-shell 12 and a second half-shell 13, coupled to each other.

[0055] The first half-shell 12 and the second half-shell 13 are removably coupled, so as to allow access to the interior of the compartment 11 to house/remove the roll R. More in detail, and in the configuration of use, the first half-shell 12 is in a rear position, while the second half-shell 13 is in a front or forward position.

[0056] The first half-shell 12 can be provided with holes or openings 14 for the insertion of plugs or the like, suitable for fixing the dispenser 1 to a vertical wall.

[0057] The second half-shell 13 can be coupled to the first half-shell 12, for example, by means of hinges, or the like (not shown in the figures), which allow the box-like shell 10 to be opened, as needed, to access the compartment 11.

[0058] The first half-shell 12 and the second half-shell 13 can have any shapes and dimensions, in relation to the specific application requirements, and also in relation to the method of use/operation of the dispenser 1.

[0059] The first half-shell 12 and the second half-shell 13 can also be made of any materials; for example, any one of them can be made of polymeric materials, metals, or others. In particular, the second half-shell 13 can also be made of a transparent or semitransparent material, to be able to view the roll R inside the compartment 11 (for example, to check the residual amount of paper material 9 on the roll R).

[0060] The first half-shell 12 and the second half-shell 13 can each be made in a single piece; alternatively, each of them can be made in several pieces, or parts, connected to each other, also in a removable way (for construction or functional reasons). The dispenser 1 comprises a first arm 15 and a second arm 16, for supporting the roll R.

[0061] The first arm 15 and the second arm 16 are installed inside the compartment 11. For example, the first arm 15 and the second arm 16 can be installed inside a first seat 17 and a second seat 18 - respectively.

[0062] The first seat 17 and the second seat 18 are provided inside the compartment 11. More precisely, the first seat 17 and the second seat 18 are provided in the

internal surface of the first half-shell 12.

[0063] The first seat 17 and the second seat 18 are arranged, with respect to each other, so that the first arm 15 and the second arm 16 are positioned opposite to each other, so as to support the roll R with its horizontal A, or substantially horizontal, cylindrical axis of symmetry (with reference to the configuration of use).

[0064] The first seat 17 and the second seat 18 can have any shape and size, for example in relation to the characteristics and/or dimensions of the roll R which must be supported by the first arm 15 and by the second arm 16.

[0065] The first arm 15 and the second arm 16 can be installed inside the first seat 17 and the second seat 18 - respectively, in a removable way; this allows, if necessary, to remove the first arm 15 and/or the second arm 16, for example, to carry out maintenance and/or replacements on them.

[0066] The first arm 15 comprises a first flange 19.

[0067] Moreover, the second arm 16 comprises a second flange 20.

[0068] In the configuration of use, the first flange 19 and the second flange 20 are positioned, inside the compartment 11, facing each other, so as to support the roll R with its horizontal A, or substantially horizontal, cylindrical axis of symmetry. The first flange 19 is intended for coupling with the first opening 6 of the tubular core 2 of the roll R; the second flange 20 is, on the other hand, intended for coupling with the second opening 8 of the tubular core 2 of the roll R.

[0069] According to an aspect of the invention, the first flange 19 and the second flange 20 have different shapes and configurations.

[0070] As clarified below, this allows the unique and non-interchangeable coupling to be obtained between the aforementioned flanges 19, 20 and the respective openings 6, 8 of the tubular core 2, notwithstanding their different shaping/configurations.

[0071] The first flange 19 can be coupled to the first arm 15 in a removable way, to carry out replacements/maintenance; the second flange 20 can also be coupled to the second arm 16 in a removable way.

[0072] In terms of shape, the first arm 15 and the second arm 16 are constructively similar. Hereinafter, therefore, reference will be made generically to the arm 15, 16, and the characteristics described belong to both the first arm 15 and the second arm 16. The arm 15, 16 comprises a first portion 21, for engagement in the first seat 17 (or in the second seat 18) of the dispenser 1.

[0073] Furthermore, the arm 15, 16 comprises a second portion 22, integral with the first portion 21, to which the first flange 19 (or the second flange 20) is associated in a freely rotatable manner.

[0074] The first portion 21 comprises coupling elements 23, 24, configured to engage inside the first seat 17 (or second seat 18).

[0075] More in detail, the first portion 21 comprises first coupling elements 23, configured to preferably abut on

the edge of the first seat 17 (or second seat 18).

[0076] Furthermore, the first portion 21 comprises second coupling elements 24.

[0077] The second coupling elements 24 are configured to engage in further parts of the first seat 17 (or second seat 18).

[0078] For example, the second coupling elements 24 can engage inside a suitable recess or opening - not shown in the figures - provided in the bottom of the first seat 17 (or second seat 18).

[0079] The first, second coupling elements 23, 24 comprise respective elongated appendages, which branch off a central area 25 of the first portion 21.

[0080] The aforesaid elongated appendages end with respective teeth 26, configured to abut on the respective parts of the first seat 17 (or second seat 18).

[0081] The first, second coupling elements 23, 24 are in a mirror-like arrangement to the longitudinal symmetry axis of the arm 15, 16.

[0082] More particularly, the first coupling elements 23 extend to the sides of the central area 25; the second coupling elements 24, on the other hand, constitute a sort of extension of the central area 25 itself.

[0083] The second coupling elements 24 are smaller than the first coupling elements 23, and are closer together, since they must abut on a recess or opening of smaller dimensions than the edge of the first seat 17 (or second seat 18).

[0084] Thanks to their shaping, the first coupling elements 23 and the second coupling elements 24 can bend with respect to the central area 25, to obtain the engagement of the arm 15, 16 in the first seat 17 (or second seat 18), with a forced coupling, which helps frictional retention.

[0085] The first portion 21 and the second portion 22 of the arm 15, 16 are made integral by means of a connecting portion 27.

[0086] Viewing the arm 15, 16 from the front, the connecting portion 27 has a smaller width than the second portion 22.

[0087] Viewing laterally the arm 15, 16 (figures 5, 6, 10, 11), the connecting portion 27 has a curved shape; thanks to this, the first portion 21 and the second portion 22 are located on different (and parallel) planes.

[0088] The second portion 22 comprises a support member 28 of the first, second flange 19, 20.

[0089] The support member 28 comprises a stem 29, integral with the second portion 22; the stem 29 is perpendicular, or substantially perpendicular, to the plane on which the second portion 22 of the arm 15, 16 lies.

[0090] The stem 29 comprises a head 30, configured to engage, in a freely rotatable way, in a corresponding central housing 31 of the first, second flange 19, 20.

[0091] The head 30 comprises two half-portions 32, separated by a notch 33; the two half-portions 32 are elastically flexible, so as to be able to snap-engage into the housing 31.

[0092] Each of the half-portions 32 of the head 30 com-

prises a respective raised edge 34, configured to engage in a respective counter-edge 35 of the housing 31 of the first, second flange 15, 16.

[0093] The support member 28 also comprises a circular raised part 36, which surrounds the stem 29, and which facilitates the centring of the first, second flange 19, 20 on the respective arm 15, 16.

[0094] The second portion 22 of the arm 15, 16 comprises an end portion 37, which lies substantially in the same plane as the first portion 21.

[0095] The end portion 37 constitutes an easy manual gripping area, which allows the operator to bend the arm 15, 16 outwards when it is necessary to insert/remove a roll R in/from the dispenser 1.

[0096] The arm 15, 16 may comprise further elements intended to abut, in use, on the corresponding base surface of the roll R, for example to offer some resistance to the unwinding of the roll R, i.e. in other words braking it, to prevent it from spinning uncontrollably.

[0097] In particular, the arm 15, 16 can comprise an elastic type abutment element 38 (e.g. a tab associated with a spring, or the like).

[0098] The arm 15, 16 can also comprise sharp projections 39, integral with the second portion 22, having the function of deterring against the installation of rolls R not supplied by the manufacturer.

[0099] In some versions of the invention, the first portion 21 of the arm 15, 16 can comprise a projection 40, shaped for example in a "U" shape (when the arm 15, 16 is viewed at its external surface, in use); the projection 40 can comprise/define an abutment surface inside the first seat 17 (or second seat 18).

[0100] The first flange 19 (figures 13-18) comprises a central element 41, configured to abut on the internal cylindrical surface of the tubular core 2.

[0101] The central element 41 comprises, in the centre, the through-housing 31 - intended to receive the stem 29 of the arm 15, 16, via a freely rotatable coupling.

[0102] The central element 41 has an elongated and diametrical shaping, with radiused ends 42.

[0103] The radiused ends 42 of the central element 41 are configured to engage inside the first opening 6 of the roll R (in particular, to abut on its internal cylindrical surface). Furthermore, the first flange 19 comprises a peripheral element 43.

[0104] The peripheral element 43 has an elongated and diametrical shaping, and it is perpendicular to the central element 41.

[0105] The peripheral element 43 comprises, in more detail, at least one branch 44, arranged radially.

[0106] In a preferred version of the invention, the peripheral element 43 comprises two branches 44.

[0107] The two branches 44 are arranged radially and diametrically opposite.

[0108] In other embodiments of the invention, the peripheral element 43 could comprise a number of branches 44 greater than two (for example three, four, or more), and/or with a different arrangement with respect to each

other.

[0109] The two branches 44 of the peripheral element 43, together with the central element 41, form a substantially cross-shaped structure.

[0110] Each of the two branches 44 of the peripheral element 43 comprises a respective inclined surface 45, which forms a first acute angle α_1 with the axis of rotation B of the first flange 19; in more detail, the inclined surface 45 forms a first acute angle α_1 with the axis of the housing 31.

[0111] In other words, the aforementioned inclined surface 45 is flat, or substantially flat, and the axis of rotation B of the first flange 19 (i.e. the axis of the housing 31) is incident to the plane on which said inclined surface 45 lies.

[0112] The two branches 44 of the peripheral element 43 are each substantially stepped; the inclined surface 45 of each of the two branches 44 is comprised between two plane-parallel surfaces 46, 47.

[0113] The first flange 19 also comprises a substantially discoidal body 48, integral with the central element 41 and with the peripheral element 43.

[0114] With reference to the axis of rotation B of the first flange 19, the central element 41 has an extension, in the axial direction, greater than that of the peripheral element 43, to ensure a safe and stable support of the roll R.

[0115] The second flange 20 (figures 19-24) also comprises a substantially discoidal body 48, provided with two peripheral appendages 49 diametrically opposite. Furthermore, the second flange 20 comprises a central raised part 50, substantially star-shaped.

[0116] The central raised part 50 comprises a given number of arms 51, arranged radially. For example, the central raised part 50 can comprise e.g. three arms 51, arranged radially and angularly spaced by 120° one from the other.

[0117] Each of the arms 51 comprises a respective end surface 52, which is a cylindrical or substantially cylindrical surface portion.

[0118] The central raised part 50 has, in the centre, the housing 31 - suitable for receiving the stem 29 of the second arm 16, via a freely rotatable coupling.

[0119] The central raised part 50 is shaped to abut on the internal surface of the tubular core 2, at the second opening 8.

[0120] The first arm 15, the second arm 16, the first flange 19 and the second flange 20 can be made of polymeric material, or a material of another type, suitable for this application (for example metals or metal alloys).

[0121] With reference, again, to the roll R which can be installed in the dispenser 1, and according to another aspect of the invention, the first opening 6 of the tubular core 2 comprises a circular 53, or substantially circular portion, and two peripheral portions 54, substantially radial and diametrically opposite, arranged externally to the circular portion 53.

[0122] Therefore - as further clarified below - the shap-

ing of the section of the first opening 6 - at the first end 3 of the tubular core 2 - is modified/altere/deformed, with respect to the normal circular section, in order to be suitable for the unique and forced mechanical coupling with the first flange 19 of the first arm 15 of the dispenser 1. The corresponding branches 44 of the peripheral element 43 of the first flange 19 of the first arm 15 can, indeed, engage in the peripheral portions 54 of the section of the first opening 6.

[0123] More in detail, each of the peripheral portions 54 is defined by a respective rectilinear 55 (or substantially rectilinear) portion, of the first terminal edge 5 of the first opening 6 of the tubular core 2.

[0124] In particular, in the first end 3, the material of the tubular core 2 is fractured, at each one of the straight portions 55, along two respective parallel breaking lines 56, so that each rectilinear portion 55 is arranged at the outer periphery of said first terminal edge 5 of said first opening 6.

[0125] In more detail, each peripheral portion 54 is defined by a respective flat 57 or substantially flat portion of the internal surface of the tubular core 2, which is inclined by a given second acute angle α_2 with respect to the cylindrical axis of symmetry A of the tubular core 2, when observed on a plane of diametrical section, of the same tubular core 2, which goes through it; in other words, each flat portion 57 is spread outwards - i.e. with a divergent orientation - with respect to the cylindrical surface of the tubular core 2.

[0126] The second acute angle α_2 can have the same value as the first acute angle α_1 . According to another aspect of the invention, each rectilinear portion 55 of the first terminal edge 5 when observed on a plane perpendicular to the cylindrical axis of symmetry A of the roll R, has an angular extension between 1° and 90° . Preferably, each rectilinear portion 55 has an angular extension comprised between 20° and 30° .

[0127] In order to install the roll R inside the compartment 11 of the dispenser 1, the first arm 15 (bearing the first flange 19) and the second arm 16 (bearing the second flange 20) are slightly spread apart, i.e. they are moved away from each other, being elastically flexible.

[0128] This allows the roll R to be inserted between the two arms 15, 16, and the first flange 19 and the second flange 20, respectively, to be brought to the first opening 6 and the second opening 8 of the tubular core 2.

[0129] At this point, by releasing the arms 15, 16, it is possible to engage the first flange 19 in the first opening 6, and the second flange 20 in the second opening 8 - respectively. More in detail, the end surfaces 52 of the arms 51 of the second flange 20 abut on the cylindrical internal surface of the tubular core 2 (at the second end 4); while the peripheral appendages 49 abut on the base of the roll R.

[0130] At the first end 3 of the tubular core 2, the two branches 44 of the peripheral element 43 of the first flange 19 engage instead in the two peripheral portions 54 of the first opening 6 - respectively.

[0131] The two inclined surfaces 45 of the two branches 44 abut precisely on the two diametrically opposed flat portions 57 of the tubular core 2, while the outermost of the flat-parallel surfaces 47 abut on the other base of the roll R.

[0132] This is thanks to the complementary shaping of the branches 44 and the peripheral portions 54, and in particular thanks to the fact that the first acute angle α_1 and the second acute angle α_2 have the same value, or substantially the same value, or in any case values that are very close.

[0133] In particular, at the first end 3 of the tubular core 2, a unique and forced mechanical coupling is thus obtained between the second flange 19 and the tubular core 2, in its first opening 6.

[0134] This unique coupling allows the exclusive installation of rolls R wherein the first opening 6 comprises the two peripheral portions 54 having the shaping described above, and no other type.

[0135] To remove the roll R from the compartment 11 of the dispenser 1, the same operating steps should obviously be carried out in reverse order.

[0136] This invention design enables to obtain important technical advantages.

[0137] The proposed solution allows a unique and forced mechanical coupling to be implemented between the roll and the flanges of the arms of the dispenser, so that only the roll supplied by the manufacturer, and no others, can be installed in that particular dispenser.

[0138] This solution makes it possible to use ecological materials such as cardboard for the core of the roll.

[0139] The proposed solution is constructively very simple and economical, since with a modification carried out on the roll, of limited extent compared to traditional solutions (i.e. the deformation of the section of the first opening, and of the first opening only), it is possible to obtain the aforementioned unique and forced mechanical coupling between the roll and the dispenser.

[0140] Furthermore, the paper material of the roll is absolutely not altered, and can be unwound normally until the roll is used up.

[0141] It has thus been seen how the invention achieves the intended purposes.

[0142] The present invention has been described according to preferred embodiments, but equivalent variants can still be conceived without departing from the scope of the appended claims.

Claims

1. A dispenser (1) of paper material (9) in the form of a roll (R) having a tubular core (2), comprising a box-like shell (10) which defines at least one compartment (11) for installing and housing a roll (R), means for unwinding the paper material (9) from the roll (R), and/or means for withdrawing single sheets, separated from the paper material (9), by a user, a first

- arm (15) and a second arm (16), installed inside said compartment (11), for supporting the roll (R), said first arm (15) and second arm (16) supporting rotatably a first flange (19) and a second flange (20), respectively, positioned inside said compartment (11), facing one another, so as to support the roll (R) with its horizontal, or substantially horizontal, axis of cylindrical symmetry (A), **characterised in that** said first flange (19) comprises a peripheral element (43) comprising at least one branch (44) arranged radially, **and in that** said branch (44) of said peripheral element (43) defines a respective inclined surface (45), flat or substantially flat, which forms a first acute angle (α_1) with the rotation axis (B) of said first flange (19).
2. A dispenser (1) according to claim 1, wherein said first flange (19) comprises a central element (41), configured to abut on the internal cylindrical surface of the tubular core (2) of the roll (R).
 3. A dispenser (1) according to claim 2, wherein, with reference to said axis of rotation (B) of said first flange (19), said central element (41) has an axial extension greater than that of said peripheral element (43), to ensure secure and stable support for the roll (R).
 4. A dispenser (1) according to one of the preceding claims, wherein said second flange (20) comprises a central raised part (50), substantially star-shaped, comprising a given number of arms (51) arranged radially, each of said arms (51) comprising a respective end surface (52) which is a cylindrical, or substantially cylindrical, surface portion.
 5. A dispenser (1) according to one of the preceding claims, wherein said first arm (15) and second arm (16) are installed inside a first seat (17) and a second seat (18), respectively, provided inside said compartment (11), each of said first, second arm (15, 16) comprising a first portion (21) for engagement in said first seat (17) or in said second seat (18), and a second portion (22), integral with said first portion (21), to which said first flange (19) or said second flange (20) is associated in a freely rotatable manner.
 6. A dispenser (1) according to one of the preceding claims, wherein said central element (41) comprises at least two branches (44) arranged radially and diametrically opposite.
 7. A dispenser (1) according to one of the preceding claims, comprising a roll (R) of paper material (9) comprising a tubular core (2), of circular or substantially circular section, having a first end (3) and a second end (4) opposite one another, whose respective first terminal edge (5) and second terminal edge (7) define a first opening (6) and a second opening (8) of said tubular core (2), and at least one tape of paper material (9) wound on said tubular core (2), said first opening (6) of said tubular core (2) comprising a circular (53), or substantially circular portion, and two peripheral portions (54), substantially radial and diametrically opposite, arranged externally to said circular portion (53).
 8. A dispenser (1) according to claim 7 when dependent on claim 6, wherein, in the configuration of use, said branches (44) of said first flange (19) engage in said peripheral portions (54) of said first opening (6) of said tubular core (2).
 9. A dispenser (1) according to claim 8, wherein said first tubular core (2) is made of cardboard or similar materials.
 10. A dispenser (1) according to claim 8 or 9, wherein each of said peripheral portions (54) is defined by a rectilinear (55), or substantially rectilinear, portion of said first terminal edge (5).
 11. A dispenser (1) according to claim 10, wherein, at said first end (3), the material of said tubular core (2) is fractured, at each of said straight portions (55), along two respective parallel breaking lines (56), so that each rectilinear portion (55) is arranged at the outer periphery of said first terminal edge (5) of said first opening (6).
 12. A dispenser (1) according to claim 10 or 11, wherein each of said peripheral portions (54) is defined by a respective flat (57), or substantially flat, portion of the internal surface of said tubular core (2), which is inclined by a second acute angle (α_2) with respect to the axis of cylindrical symmetry (A) of said tubular core (2), when observed in a plane of diametrical section of said tubular core (2), which goes across it.
 13. A dispenser (1) according to claim 12, wherein said first acute angle (α_1) and second acute angle (α_2) have the same value, or substantially the same value.
 14. A dispenser (1) according to one of claims 10-13, wherein said rectilinear portion (55), when observed in a plane perpendicular to the cylindrical axis of symmetry (A) of said roll (R), has an angular extension between 1° and 90° .
 15. A roll (R) of paper material (9), which can be installed in the dispenser (1) according to one of claims 1-6, comprising a tubular core (2), of circular or substantially circular section, having a first end (3) and a second end (4) opposite one another, whose respective first terminal edge (5) and second terminal edge

(7) define a first opening (6) and a second opening (8) of said tubular core (2), and at least one tape of paper material (9) wound on said tubular core (2), said first opening (6) of said tubular core (2) comprising a circular, or substantially circular portion (53), and two peripheral portions (54), substantially radial and diametrically opposite, arranged externally to said circular portion (53).

16. A roll according to claim 15, wherein said first tubular core (2) is made of cardboard or similar materials.

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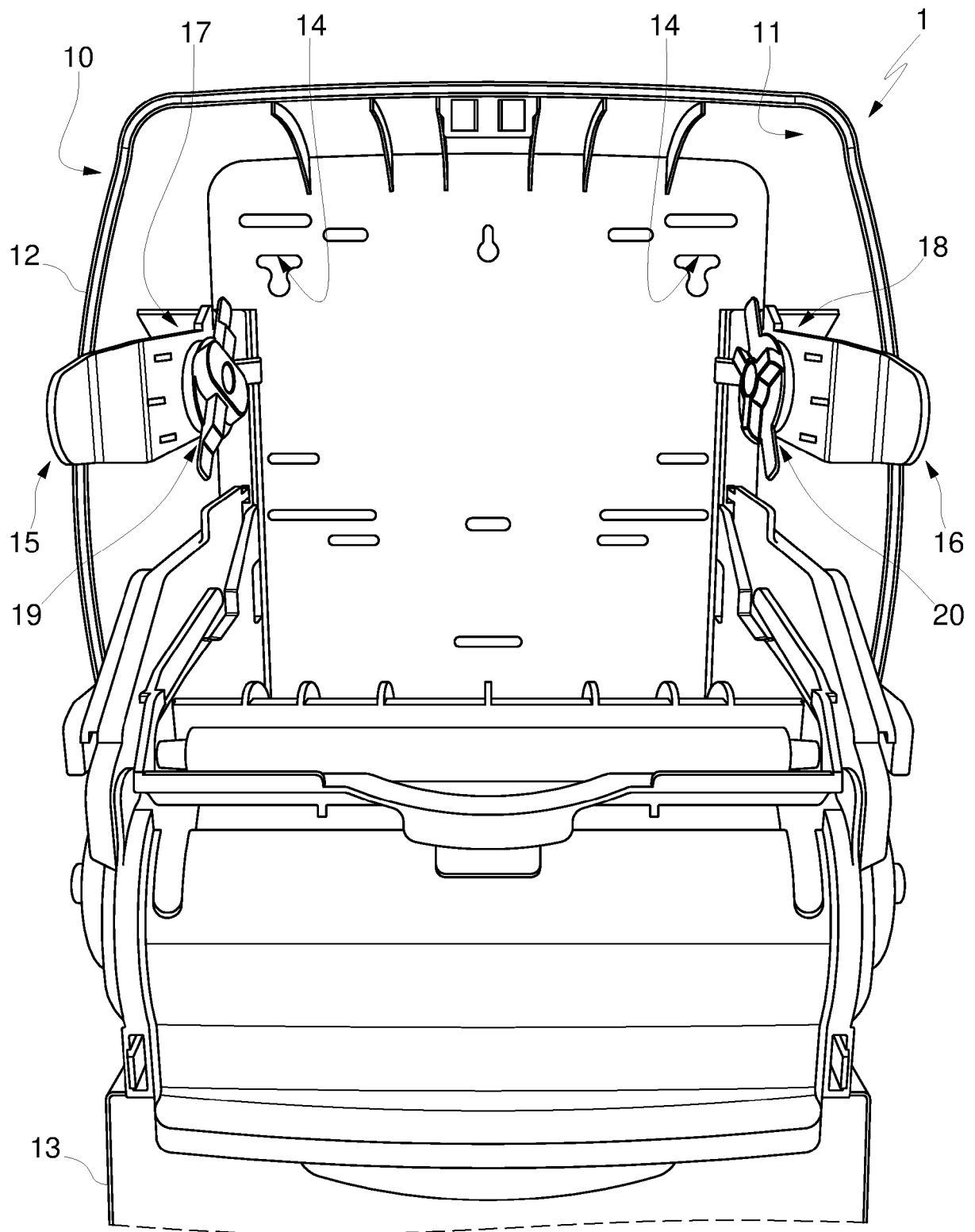


FIG. 1

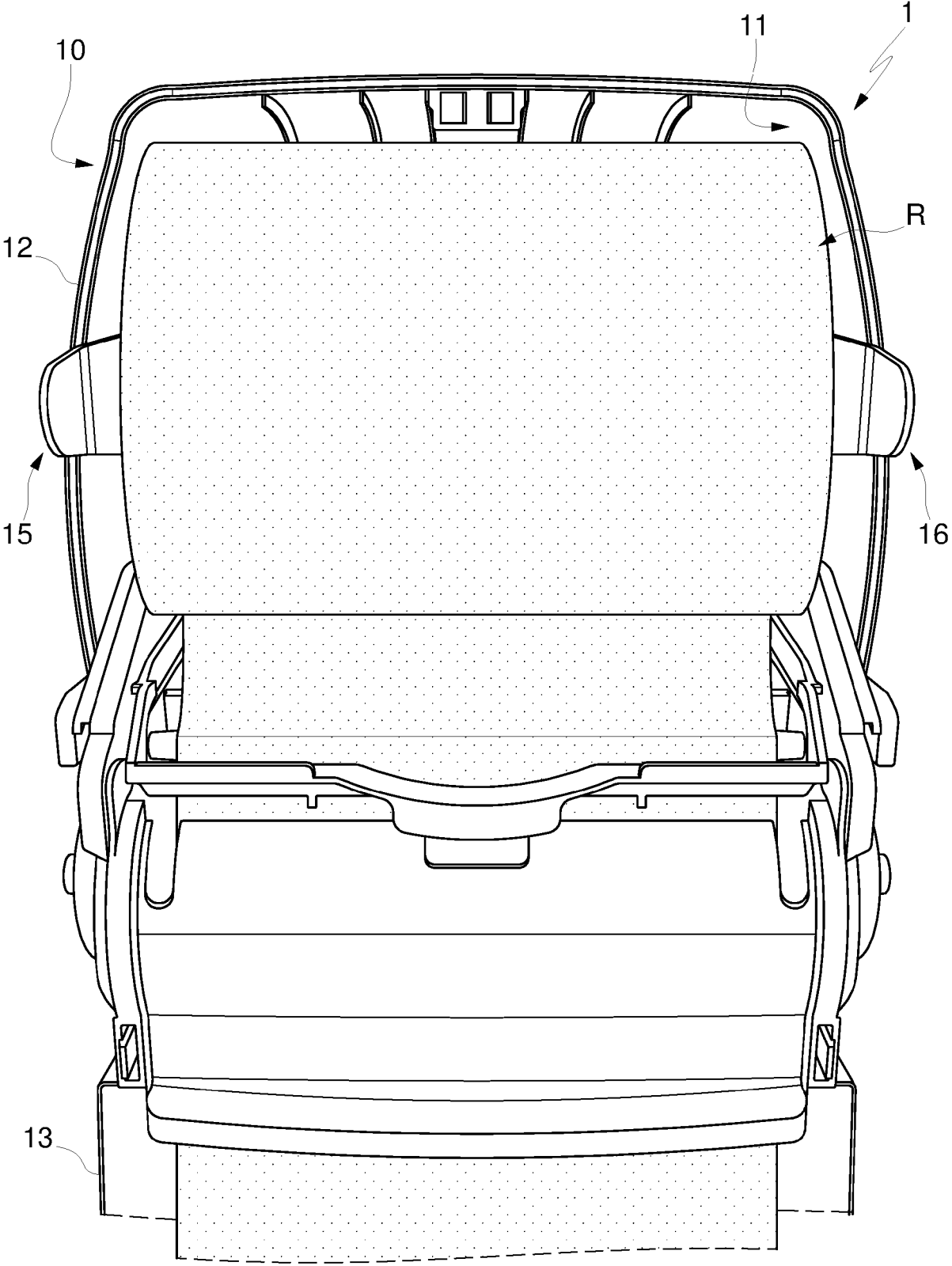
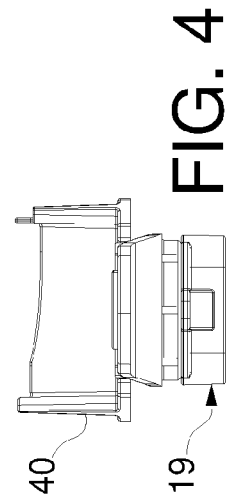
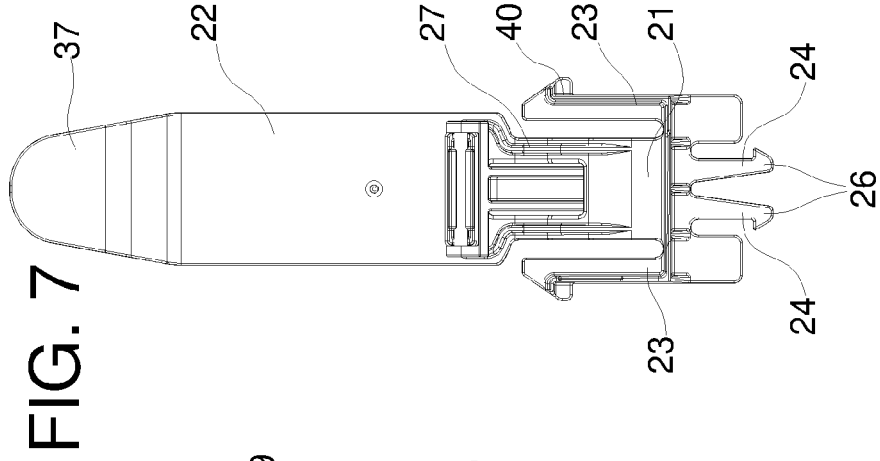
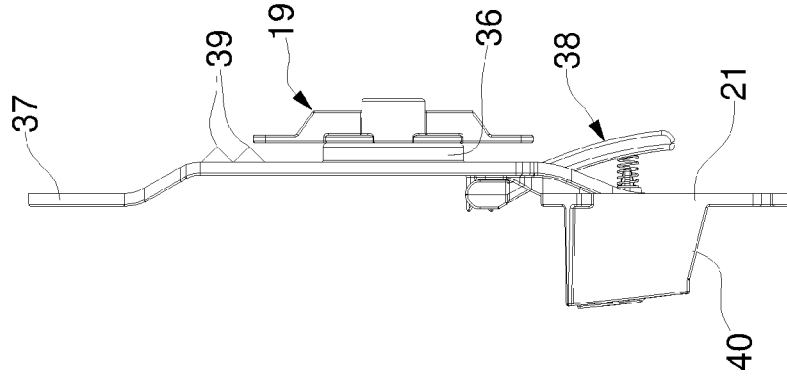
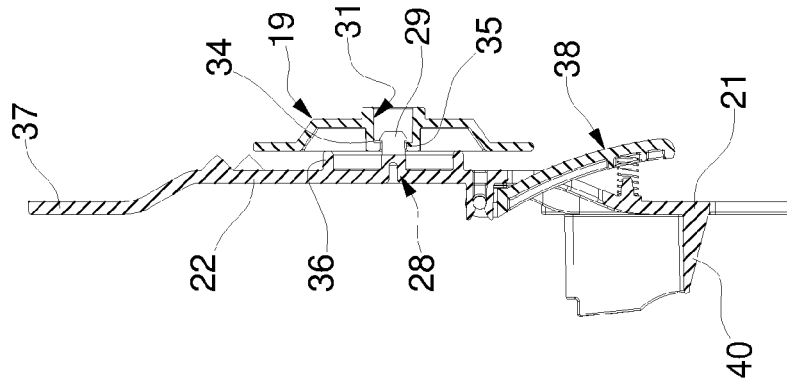
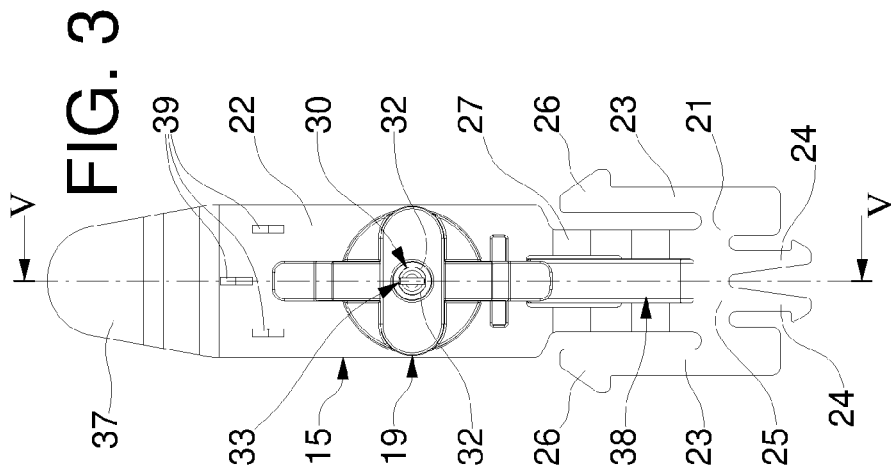
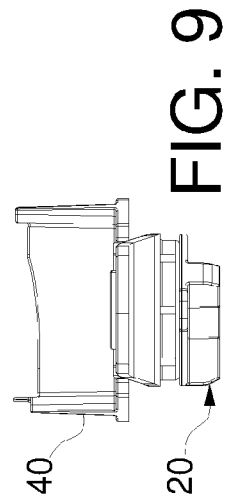
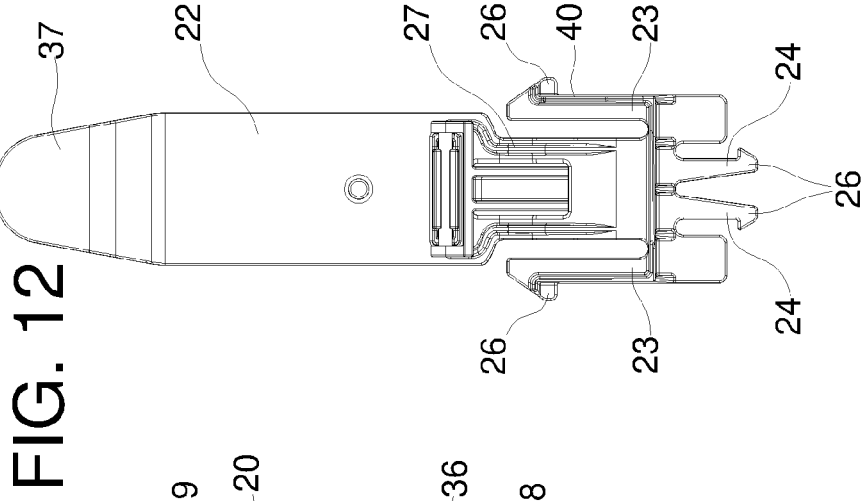
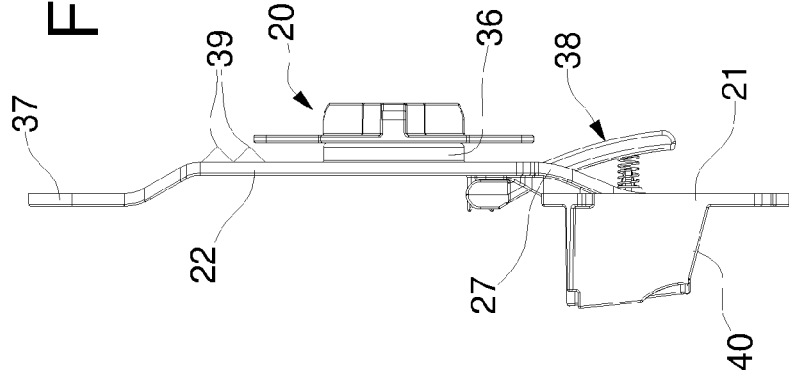
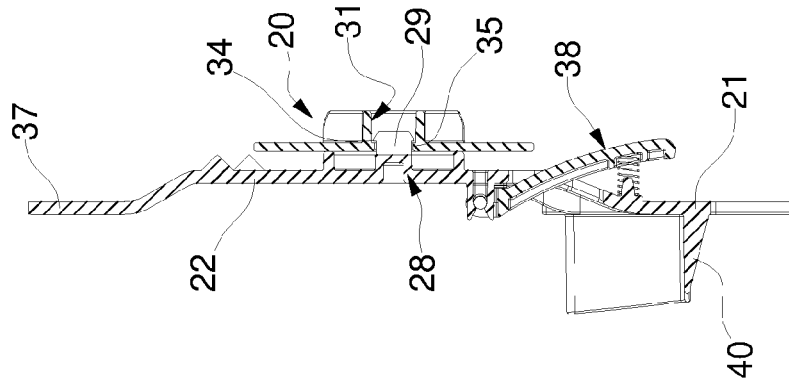
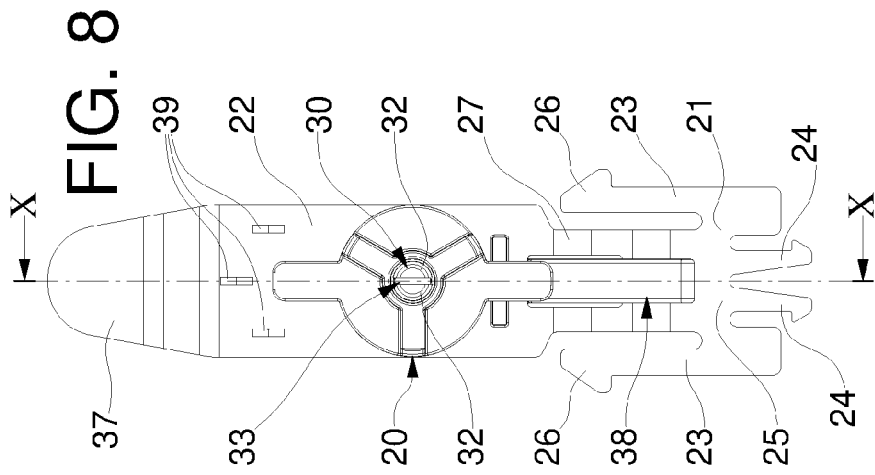
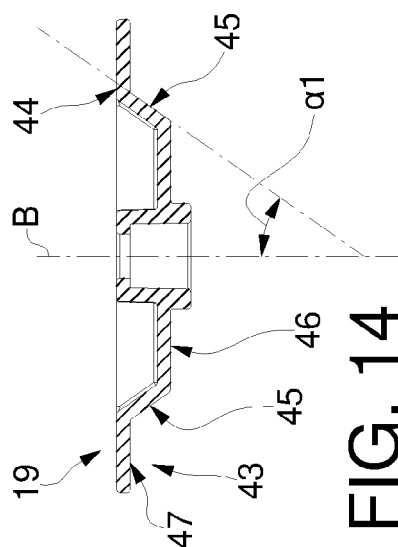
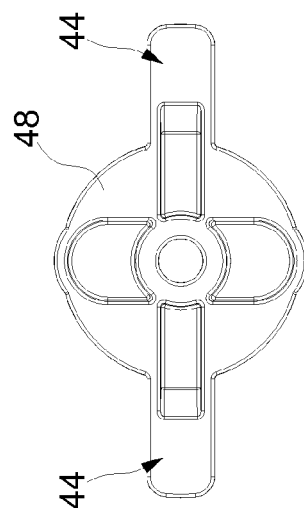
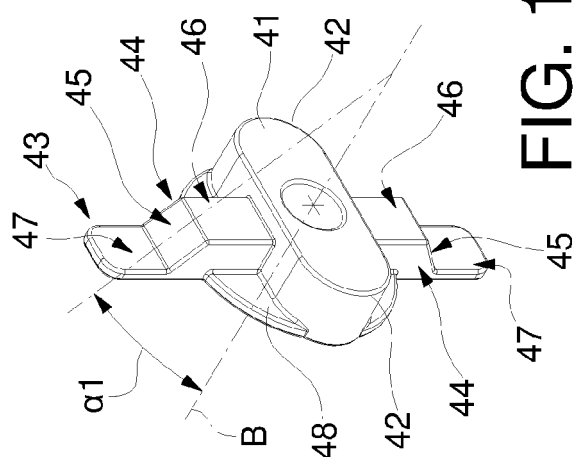
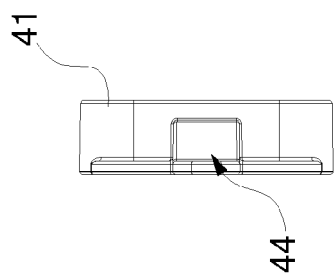
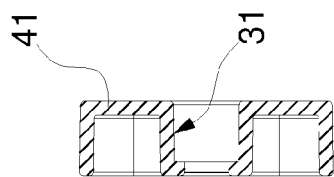
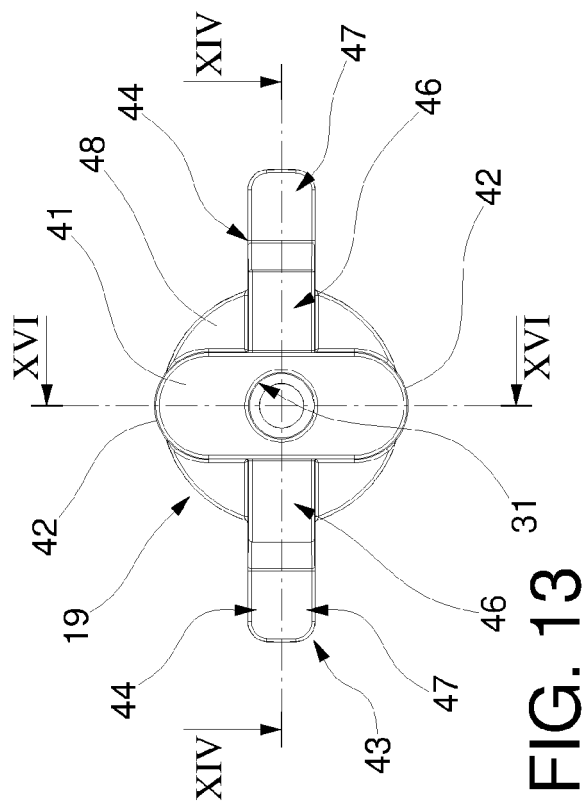


FIG. 2







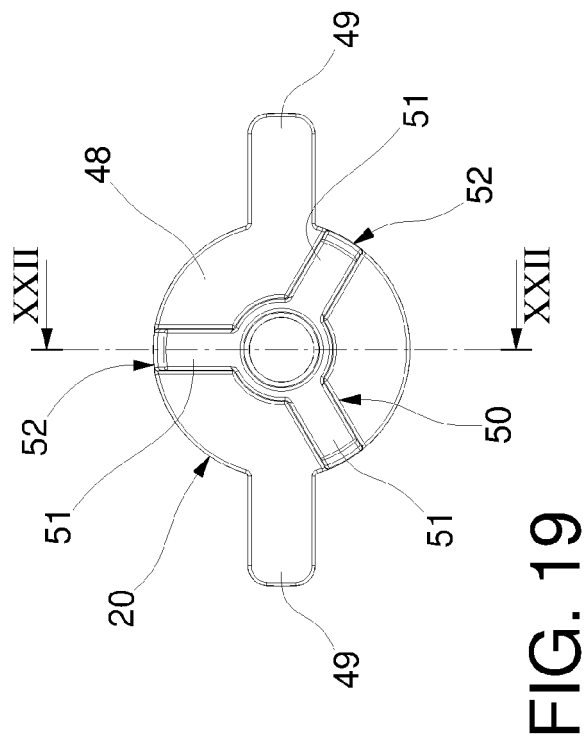


FIG. 19

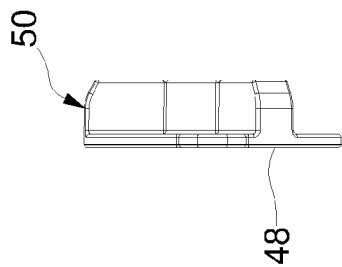


FIG. 21

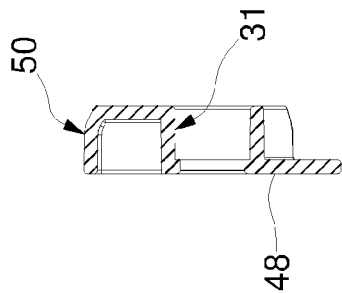


FIG. 22

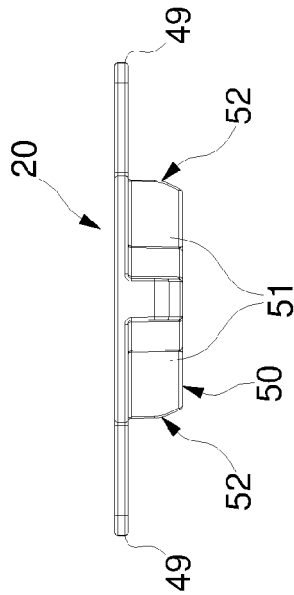


FIG. 20

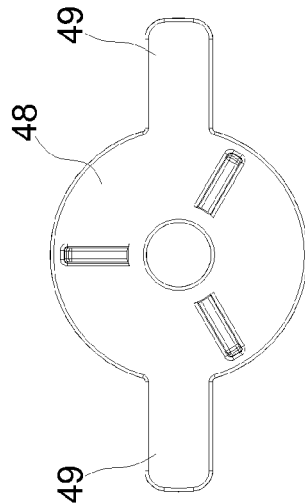


FIG. 23

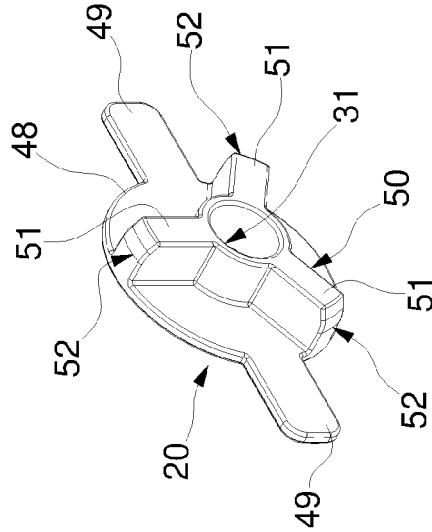


FIG. 24

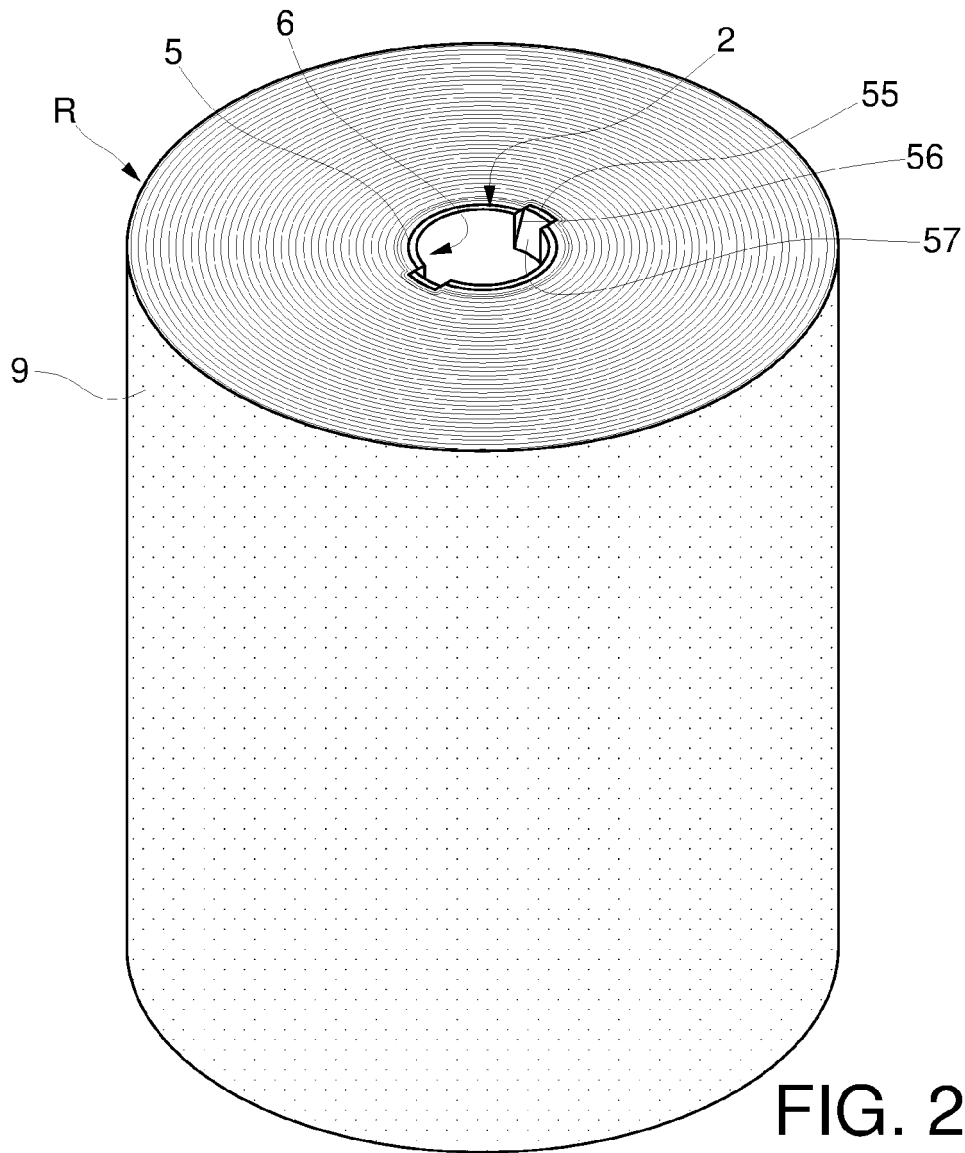


FIG. 25

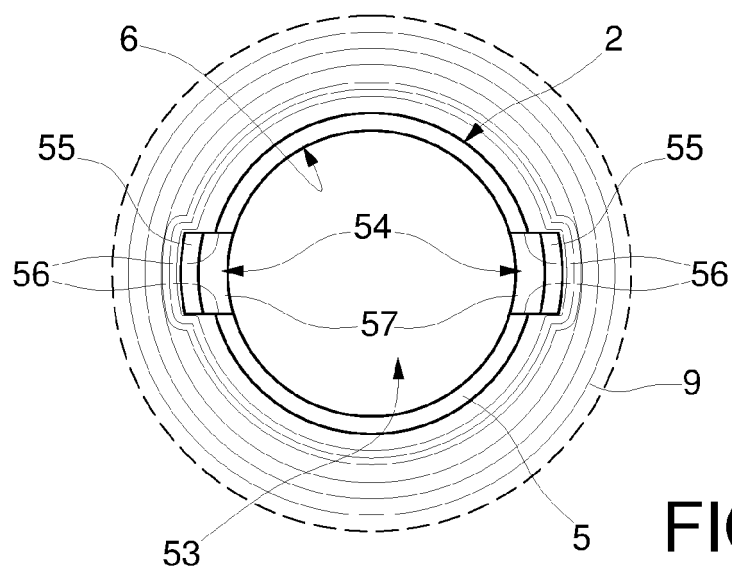


FIG. 28

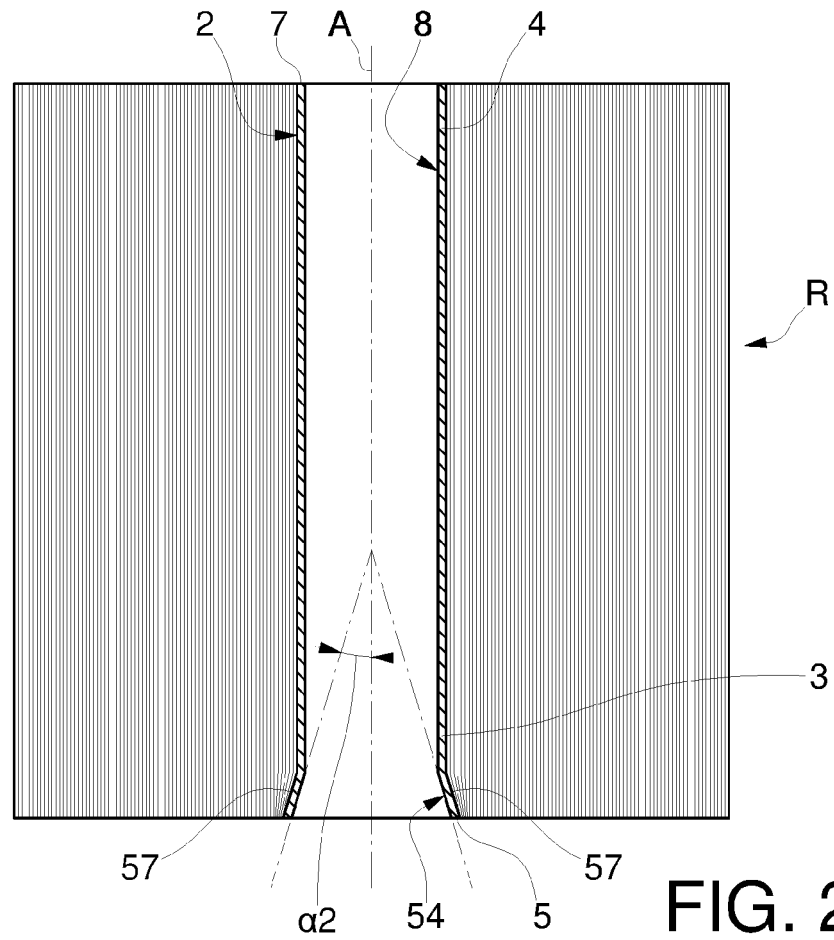


FIG. 26

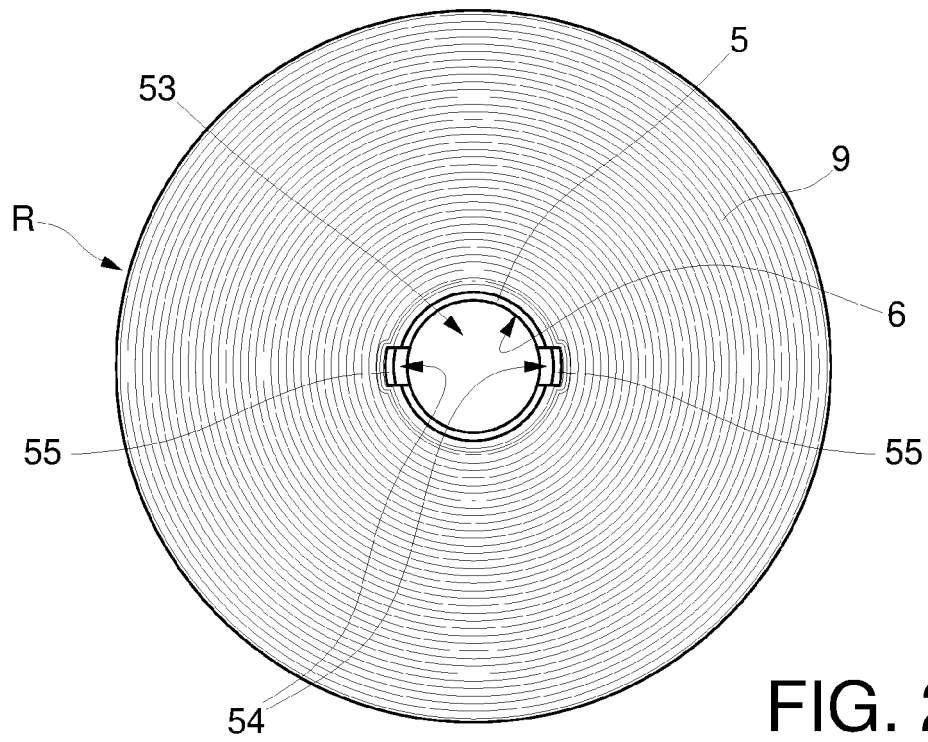


FIG. 27



EUROPEAN SEARCH REPORT

Application Number

EP 22 15 2800

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	IT FI20 090 009 A1 (DELICARTA SPA) 22 July 2010 (2010-07-22) * the whole document *	1, 15	INV. A47K10/16 A47K10/36 A47K10/38 B65H75/10
A,D	US 2 380 644 A (GRONDONA CHARLES A) 31 July 1945 (1945-07-31) * the whole document *	1, 15	
A	US 2004/104300 A1 (FRIESEN JED C [CA]) 3 June 2004 (2004-06-03) * the whole document *	1, 15	
X	US 2 693 321 A (BIRR RUDOLPH G) 2 November 1954 (1954-11-02) * the whole document *	15, 16	
			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		30 May 2022	Fordham, Alan
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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 22 15 2800

5

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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30-05-2022

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
IT FI20090009 A1	22-07-2010	-----	
US 2380644 A	31-07-1945	NONE	
-----		-----	
US 2004104300 A1	03-06-2004	NONE	
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US 2693321 A	02-11-1954	NONE	
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Patent documents cited in the description

- IT 102009901695791 [0014]
- US 2380644 A [0017]