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(54) Cone-shaped cardboard container with opening tape, machine and method applying the tape

(57) A container is described, particularly for leavened products, such as panettone, pandoro and the like, with a truncated cone shape comprising a side wall (2) closed at the bottom by a base (3) and at the top by a lid (4), there being disposed inside said side wall (2) and level with its lower part a plastic material tape (6), preferably encompassing the whole of an inside perimeter thereof and having one end constrained to a pull tab (7) cut in the cardboard of said side wall (2) so that by pulling said tab (7) guided tearing of a cardboard strip (8) of said side wall of a width corresponding substantially to that of the inside tape of plastic material (6) is caused.

The invention also concerns a machine for applying said adhesive tape (6) to a blank (23) forming the side wall (2) of the container (1), a machine which comprises feeding means for the tape (6) and an application head (12) movable along a circular path on an underlying blank (23) to cause adhesion of the tape (6) to the blank along a portion of circumference by means of a presser means.

The invention also concerns a method for applying said adhesive tape (6) to a blank (23) forming the side wall (2) of said container (1).

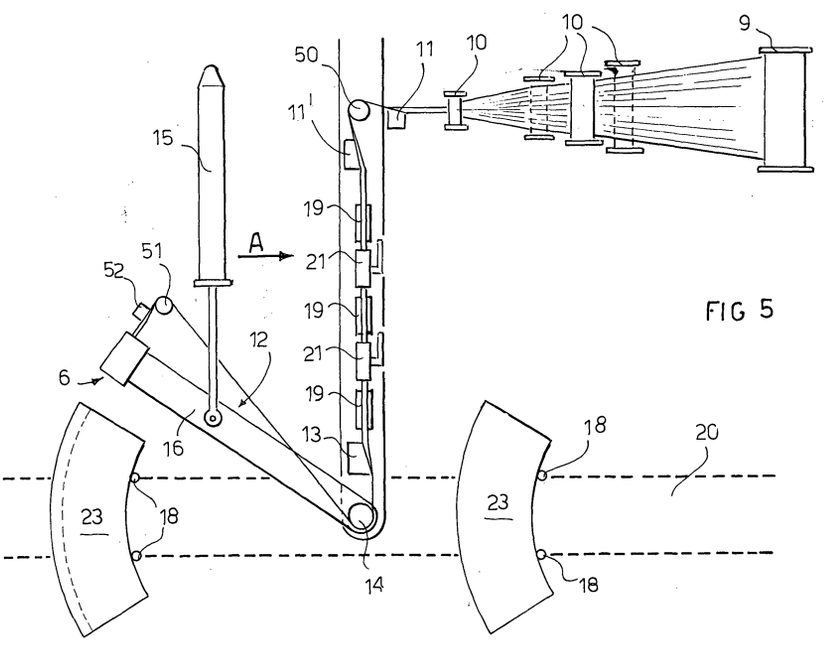


FIG 5

EP 1 431 195 A1

Description

[0001] The present invention concerns the field of cardboard packaging and in particular it concerns a container provided with at least one conical, truncated cone-shaped or truncated pyramid-shaped portion provided with an improved opening system.

[0002] The invention further concerns a process and a machine for making the above opening system.

[0003] Cardboard containers and in particular cardboard containers having a truncated conical shape, such as, for example, those used for packaging panettone, pandoro and similar products, currently have a knock-out opening system disposed on the bottom.

[0004] In detail, said systems have lines of weakness or pre-cutting which define a removable portion of said container, removal of which forms a sufficiently large opening in the package to allow access to the contents of the container for removal thereof.

[0005] In this case opening is very awkward in that the container must be turned upside down.

[0006] Alternatively, the lines of weakness or pre-breaking define a strip of cardboard, removal of which allows the container to be divided into two parts, usually a top and a bottom part.

[0007] The removable portion or dividing strip therefore has a protruding tab or strip, connected to the lines of weakness, on which the consumer acts by pulling to cause removal of the above portion.

[0008] During tear-off removal of the removable portion or the dividing strip, it is possible for tearing of the carton not to proceed along the lines of weakness, but to proceed in a direction of its own, especially as the distance between the point of application of the pulling force (tongue) and the point instantly affected by the tear increases.

[0009] In this case, a smaller tear than necessary in the removable portion or premature breaking of the separating strip can occur; in both cases it is necessary to intervene on the container again to be able to access the content thereof.

[0010] Furthermore, provision of the tear-off strip makes the shape of the container more complex and therefore requires more costly cardboards.

[0011] The object of the present invention is to solve the problems of the prior art by proposing a container provided with an improved opening system that allows opening thereof in any condition.

[0012] Another object of the present invention is to provide an improved opening system that is simple and intuitive for any user to use and allows the product to be presented upright, ready for use on the supporting base.

[0013] Yet another object of the present invention is to provide such an opening system that is cheap to make and reliable.

[0014] Another object of the present invention is to provide a machine to produce such an opening system that is cheap and simple to make.

[0015] The container according to the invention has the characteristics claimed in appended independent claim 1.

[0016] Advantageous embodiments of the container according to the invention are apparent from dependent claims 2 to 6.

[0017] The machine for making the opening system according to the invention has the characteristics of appended independent claim 8.

[0018] Advantageous embodiments of said machine are apparent from the dependent claims.

[0019] Essentially, the container according to the invention has a truncated cone or truncated pyramid shape comprising a side wall closed at the bottom by a base and at the top by a lid and is provided on the inside with a single adhesive tape of plastic material applied to a perimeter thereof and constrained to a pull tab cut in the cardboard of said side wall, so that pulling on said tab causes guided tearing of a strip of said side wall with a width substantially corresponding to the width of said inner tape.

[0020] The machine for applying the tape of plastic material to a blank shaped as a section of circular crown forming said side wall of the container substantially comprises an application head for said tape that can be moved along a circular path to apply said tape, by means of a presser member, to said blank along a portion of circumference parallel to the portions of circumference of the section of circular crown of which said blank is made up.

[0021] Further objects and advantages of the present invention will be made clearer following the present description made purely by way of non-limiting illustration with reference to the attached drawings, in which:

- Figure 1 is an axonometric top view of a container for panettone or pandoro according to the present invention, with a cup-shaped bottom;
- Figure 1a is an axonometric bottom view of a container for panettone or pandoro according to the present invention, with a recessed bottom;
- Figure 2 is a view like that of Figure 1, showing the container in the opening stage;
- Figure 3 is a development of the truncated cone-shaped side surface of the container of Figure 1 or 1a, seen from the outside;
- Figure 4 is a development of the truncated cone-shaped surface of the container of Figure 1 or 1a, seen from the inside;
- Figure 5 is a diagrammatic plan view of the machine for making the opening system according to the present invention; and
- Figure 6 is a diagrammatic view of the portion of machine visible from the arrow A of Figure 5.

[0022] In Figures 1, 1a and 2 a cardboard container 1 particularly for leavened products such as panettone, pandoro and the like according to the present invention

is illustrated.

[0023] The term cardboard, used in the present description, must be understood in the broad sense and also comprises multiply materials having at least one cardboard layer.

[0024] The container 1 has a truncated cone-shaped or truncated pyramid-shaped side wall 2, closed at the bottom by a base 3 and at the top by a lid 4.

[0025] The base 3 can have a tray shape which protrudes at the bottom from the side wall 2 of the container (Figure 1), as illustrated in the figures, or can have a flat shape and be recessed into the side wall 2 (Figure 1a). It is fixed by gluing or bonding (welding) to the side wall 2 by means of an edge folded to the inside thereof, in a per se known manner. In a likewise known manner, the lid 4 can be made from the same blank as the side wall 2, or from a separate blank, as in the embodiment shown in the appended figures.

[0026] During assembly of the container, the lid 4 is fixed by gluing or bonding, to the truncated cone-shaped side wall 2. The side wall 2 is made from a blank 23, which, developed in plan view, as shown in Figures 3 and 4, is shaped as a sector of circular crown and is provided, at one end thereof, with a flap 40 defined by a scored line 5. The flap 40, during assembly of the container 1, is superimposed on the other end of the blank 23 and glued or bonded thereon to bring the blank 23 to its truncated cone-shaped condition.

[0027] In the bottom part, the truncated cone-shaped side wall 2 has an improved opening system according to the present invention.

[0028] Said opening system consists of a thin tape 6 of plastic material, sufficiently strong, adhesive on only on side, which is applied firmly to the truncated cone-shaped wall 2 of the container 1 so as to encompass the entire circumference thereof.

[0029] Thanks to its adhesive side, the tape 6 is made to adhere by gluing to the truncated cone-shaped portion 2.

[0030] Suitable tapes for the present invention are polyester or polypropylene tapes which have a width in the range of 1 to 4 mm. The tape 6 preferably has a width of about 3 mm.

[0031] The crosswise measurement of the tape 6, that is to say its width, is chosen within the above range to give a good mechanical strength thereto and allow application thereof to the cardboard of the container following a curved path substantially without folds or creases.

[0032] The tape 6 is disposed at a fixed distance from the lower edge of the truncated cone-shaped side wall so as to run along the entire length thereof. At the end, opposite said flap 40, the tape 6 is connected to a tab 7 made on the blank 23 of the truncated cone-shaped wall 2 of the container. The tab 7 which protrudes slightly from the blank 23 is defined by two curved side incisions or cuts 70 made on the blank 23, and represents a gripping means for the user.

[0033] The user, by acting on the tab 7, and in particular by pulling it perpendicularly and away from the side surface of the truncated cone-shaped wall 2, causes a "scissor effect". In other words, as can be seen in Figure 2, a guided tear is caused in the truncated cone-shaped wall.

[0034] In particular, a cardboard strip 8 whereon the tape 6 of plastic material is applied is removed by tearing from the truncated cone-shaped wall 2. The removed strip 8 has substantially the same width as the tape 6 of plastic material.

[0035] The tearing with consequent removal of the strip of cardboard 8 continues until the tape of plastic material has run along the entire circumference of the truncated cone-shaped side wall 2 whereon it is applied, causing separation of the top part and of the bottom part of the container 1.

[0036] Of course, the tear can be stopped before the occurrence of complete detachment of said two parts of the container, which remain attached for a portion, but in any case determining such an opening as to allow the product to be removed from beneath. In this case the container can be closed again in the event of partial consumption of the product.

[0037] According to an alternative embodiment, not shown, the blank 23 could advantageously have two parallel lines of weakness coinciding with the area of application of the tape 6. In particular, it could have an upper and a lower line of weakness which run along the entire circumference of the truncated cone-shaped wall and are placed at a reciprocal distance substantially equal to the width of the tape 6. In this case, the tape 6 is applied to the truncated cone-shaped wall between the two lines of weakness. Application of the single adhesive tape 6 to the truncated cone-shaped wall 2, that is along a curve, which represents the essential characteristic of the opening system of the container according to the invention, is not a simple operation.

[0038] For this purpose, a special machine which also forms the subject matter of the present invention has been designed.

[0039] The machine for performing application of the tape 6, shown diagrammatically in Figure 5, comprises an unwinding reel 9 for the adhesive tape 6 and a series of rollers 10 for conveying and aligning the tape, made of Teflon® to reduce friction with the adhesive side of the tape 6. Downstream of the conveying rollers there is a straightening guide 10, able to rotate the orientation of the tape 6 by 90°, to send it to idle roller 50, also of Teflon®, which deflects the path thereof by 90°.

[0040] Downstream of the roller 50 there is provided a second straightening guide 11', which sends the tape to a series of guide rollers 19, 21, with horizontal axes, two of which 21 are dancing rollers, to keep the tape always at the right tension.

[0041] Downstream of the guide rollers 19, 21, the tape 6 undergoes a further rotation around its direction of travel by means of a straightening guide 13, to be sent

to a second idle roller 14 which returns it, through a third idle roller 51 and a further straightening guide 52, to an application head 12, wherein means are disposed for drawing of the tape 6 and application thereof to the blank 23.

[0042] The application head 12 is carried by a rocking arm 16 hinged around a centre of rotation coinciding with the axis of the roller 14 and moved in rotation by an actuator, such as a cylinder-piston assembly 15. The free end of the arm 16, which during the stroke of the arm describes an arc of circumference equal to the curved path of application of the tape 6, has a pressure element responsible, during the stroke of the arm 16, for adhesion of the tape 6 to the blank 23.

[0043] The blank 23, in the open condition, that is to say in the condition shown in Figures 3 and 4, is brought level with the application head 12 of the tape 6 by means of a step by step conveyor chain 20 and is drawn by means of a pair of pusher nibs 18.

[0044] The blank 23, coming from a special store, not shown, is disposed on the conveyor chain 20 transversally to the direction of travel F, as shown in Figure 5.

[0045] The conveyor chain 20 is disposed so that the midline thereof passes through the centre of rotation 14 of the rocking arm 16.

[0046] The cylinder-piston assembly 15 and the conveyor chain 20 are synchronised so that the latter stops for the time necessary for application of the tape 6, when the blank 23 arrives under the application head 12.

[0047] Many modifications and variants can be made to the aforesaid machine without departing from the scope of protection thereof. By way of example, it would be possible to keep the application head 12 fixed and provide for rotation of the blank 23 around a centre of rotation coinciding with the centre of the circle to which the sector of circular crown forming the blank 23 belongs, so that the presser element of the application head 12 likewise exerts its function, that is to say makes the tape 6 adhere to the blank 23 along a curved path.

[0048] Downstream of the application machine 12, there may be a system for collecting the blanks and assembling the container.

[0049] The invention is not limited to the particular embodiment described previously and illustrated in the appended drawings, but numerous modifications of detail within the reach of a person skilled in the art can be made thereto, without thereby departing from the scope of said invention, as set forth by the appended claims.

Claims

1. A cardboard container for confectionery products, in particular leavened products, such as panettone, pandoro and the like, having a truncated cone-shaped or truncated pyramid-shaped side wall (2) closed at the bottom by a base (3) and at the top by a lid (4), **characterised in that** on the inside of said side wall (2) there is applied a tape of plastic material (6), encompassing at least one portion of the perimeter of said side portion and which can be gripped at one end by means of a pull tab (7) cut in said side portion (2), so that by pulling said pull tab (7) guided tearing of a strip of cardboard (8) of said side portion (2), encompassed on the inside by said tape (6), is caused.

2. A container according to claim 1, **characterised in that** said tape (6) of plastic material is applied to the lower part of said side wall (2) and encompasses the entire inside perimeter thereof, at the height at which it is disposed.

3. A container according to claim 1 or 2, **characterised in that** said tape (6) has a width comprised between 1 and 4 mm, advantageously 3 mm.

4. A container according to any one of the preceding claims, **characterised in that** said tape (6) is adhesive on only one side and is applied to said side wall (2) on the inside by gluing.

5. A container according to any one of the preceding claims, **characterised in that** said tape (6) is delimited by at least one line of weakness of said side wall (2), running along a respective edge thereof.

6. A container according to any one of the preceding claims, wherein said tape of plastic material (6) is disposed on a blank (23) forming said side wall (2), shaped as a sector of circular crown.

7. An opening system for containers (1) of the truncated cone-shaped or truncated pyramid-shaped type, comprising a side wall (2) closed at the bottom by a base (3) and at the top by a lid (4), **characterised in that** said opening system consists of a single adhesive tape (6) of plastic material, applied to said side wall (2) on the inside, encompassing the respective perimeter entirely or partially at the height at which it is disposed, and having one end constrained to a pull tab (7) cut in the cardboard of said side wall (2), so that by pulling said tab (7) guided tearing of a strip (8) of cardboard of said side wall (2) of a width substantially corresponding to that of said tape (6) is caused, and hence opening of the container (1).

8. A machine for application of a single adhesive tape 6 to the truncated cone-shaped side wall (2), in the form of a blank (23), of a container 1 according to any one of claims 1 to 6, comprising means of feeding said tape (6) in web form to an application head (12), means of feeding said blanks (23) step by step, so as to prepare them sequentially beneath said application head (12), means of causing a rel-

ative rotation along an arc of circumference between said blank (23) and said application head (12), so that during said rotation a presser member of the application head (12) causes adhesion of said adhesive tape (6) along the corresponding portion of circumference of the blank (23).

9. A machine according to claim 8, wherein said feeding means for the tape (6) comprise an unwinding reel (9), a series of tape conveying and aligning rollers (10), a series of guide rollers (19, 21), idle rollers (50, 14, 51), straightening guides (11, 11', 13, 52), able to rotate the orientation of the tape (6) by 90°, as well as drawing means for the tape (6) disposed in said application head (12).

10. A machine according to claim 8 or 9, **characterised in that** said tape application head (12) is mounted on a rocking arm (16) hinged in the centre of the circle to which the sector of circular crown of said blank (23) belongs when it is in the tape application position, so that rocking of said arm (16) causes application of the tape (6) along said arc of circumference.

11. A machine according to claim 10, **characterised in that** said rocking arm (16) is driven by an actuator, such as a cylinder-piston assembly (15).

12. A machine according to claim 8, wherein said feeding means for the blanks (23) comprise a step by step conveyor chain (20), bearing, at regular distances, pairs of pusher nibs (18) for said blanks (23).

13. A method of applying a single adhesive tape (6) to cardboard blanks (23) in the form of sectors of a circular crown, forming the side wall (2) of a container (1) according to any one of claims 1 to 6, comprising the following stages:

- picking up of each blank (23) from a store and positioning thereof on a conveyor chain (20);
- step by step feeding of the blank (23) to position it under a head (12) for application of said single adhesive tape (6);
- driving of said application head (12) along a circular path such as to apply the tape (6) to the blank (23) along an arc of circumference parallel to the arcs of circumference delimiting said sector of circular crown forming the blank (23).

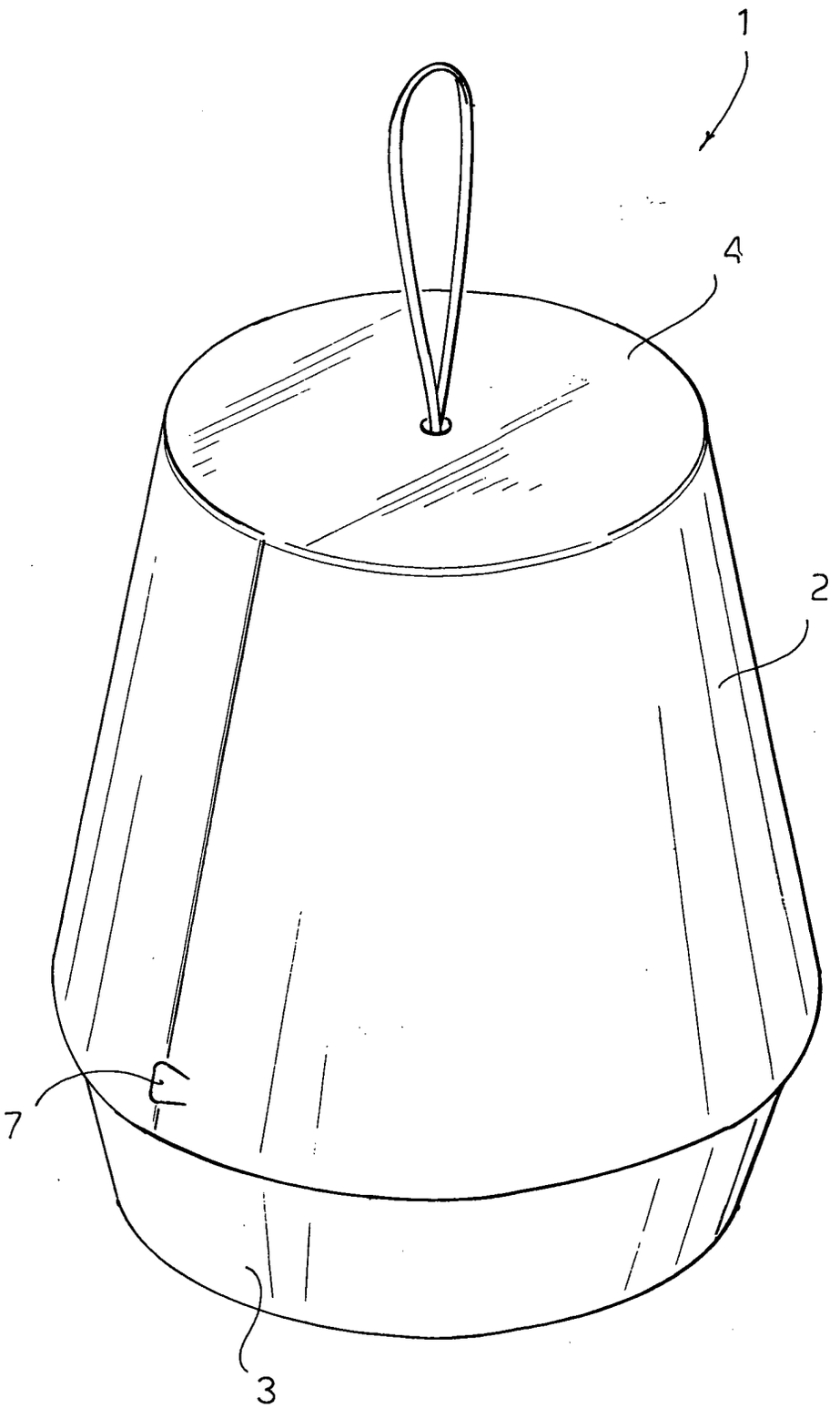


FIG.1

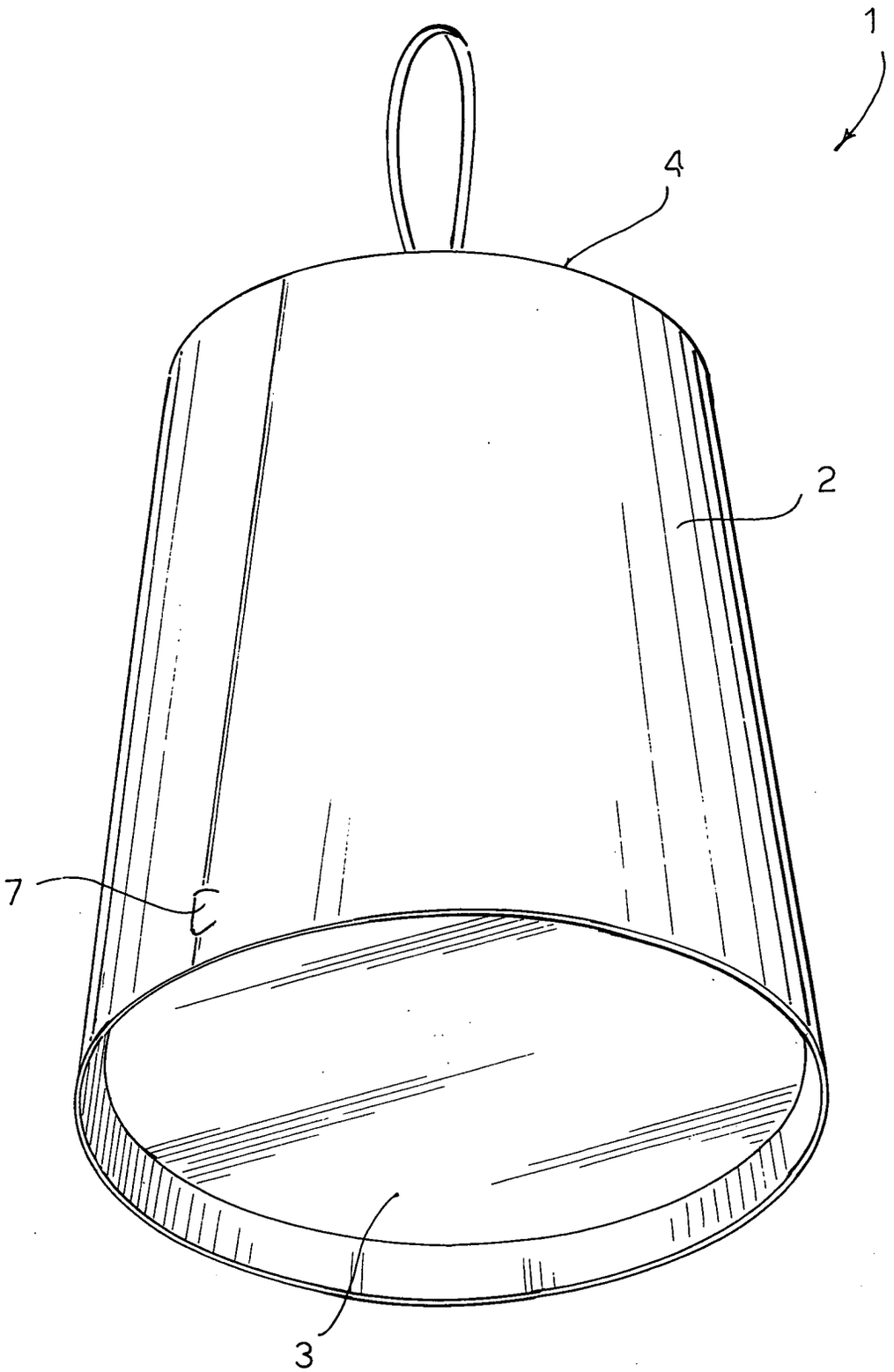


FIG. 1a

FIG. 2

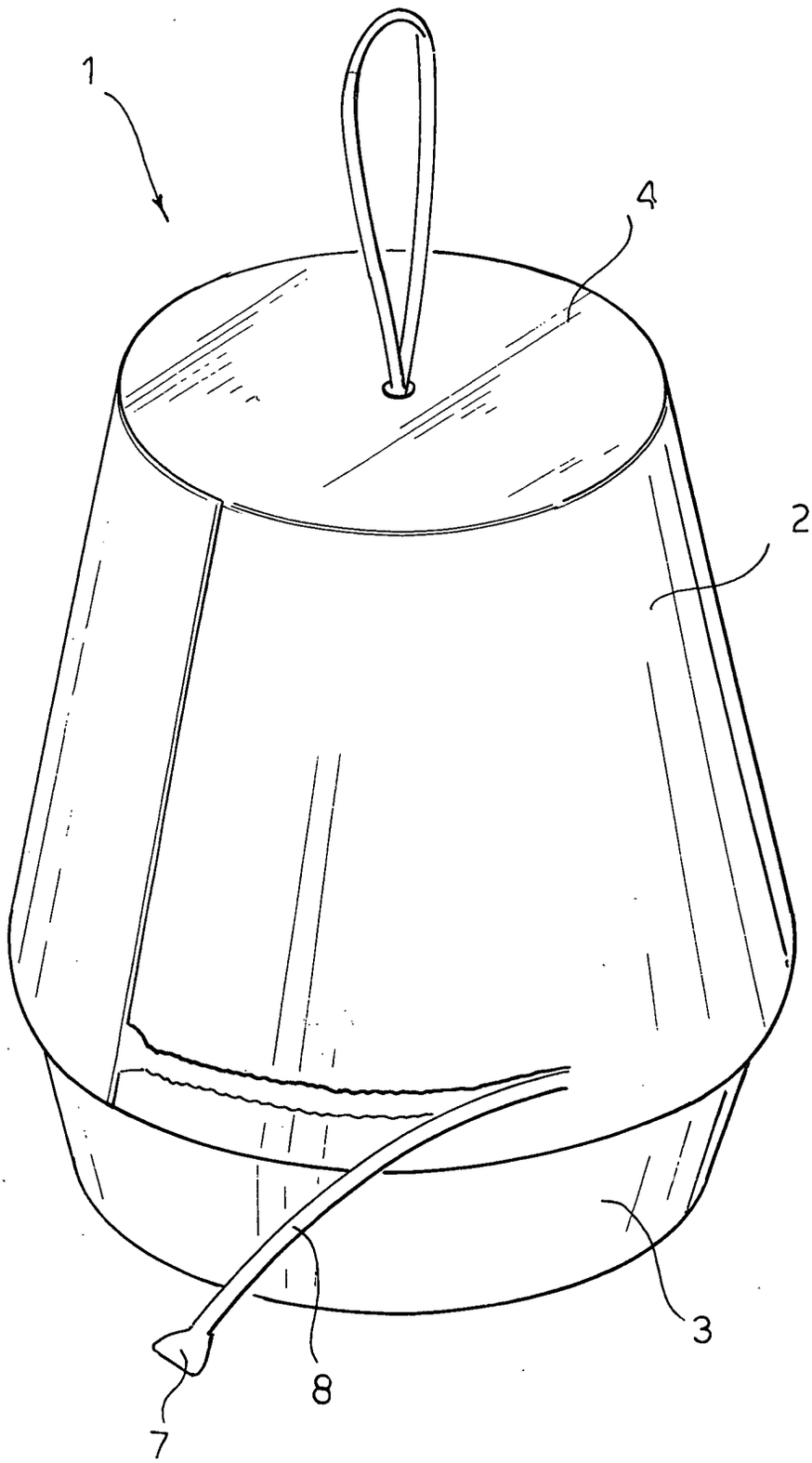


FIG. 3

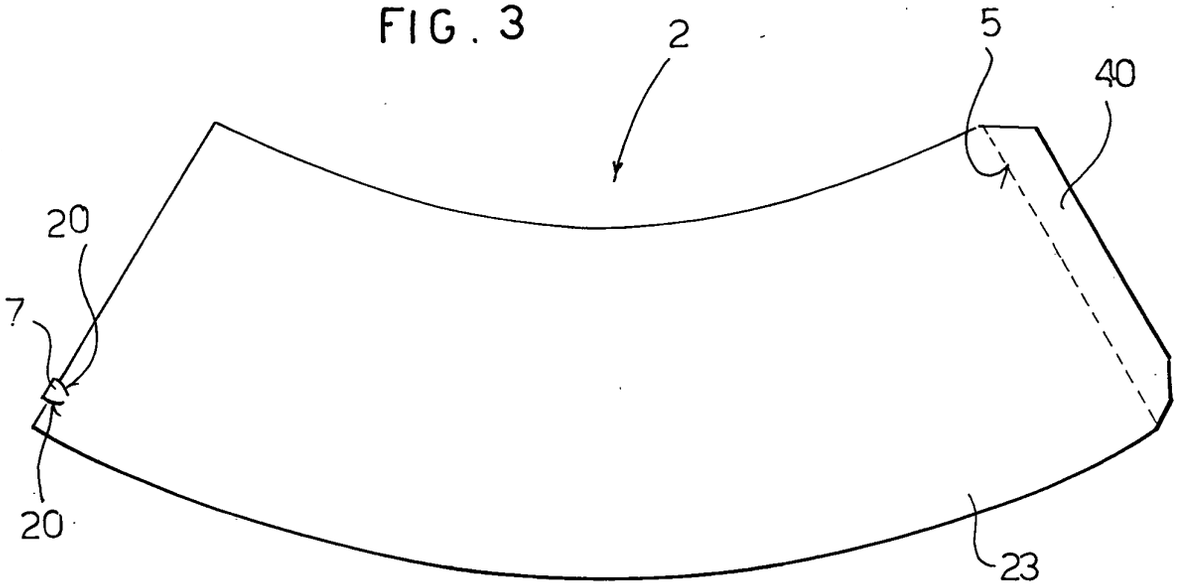


FIG. 4

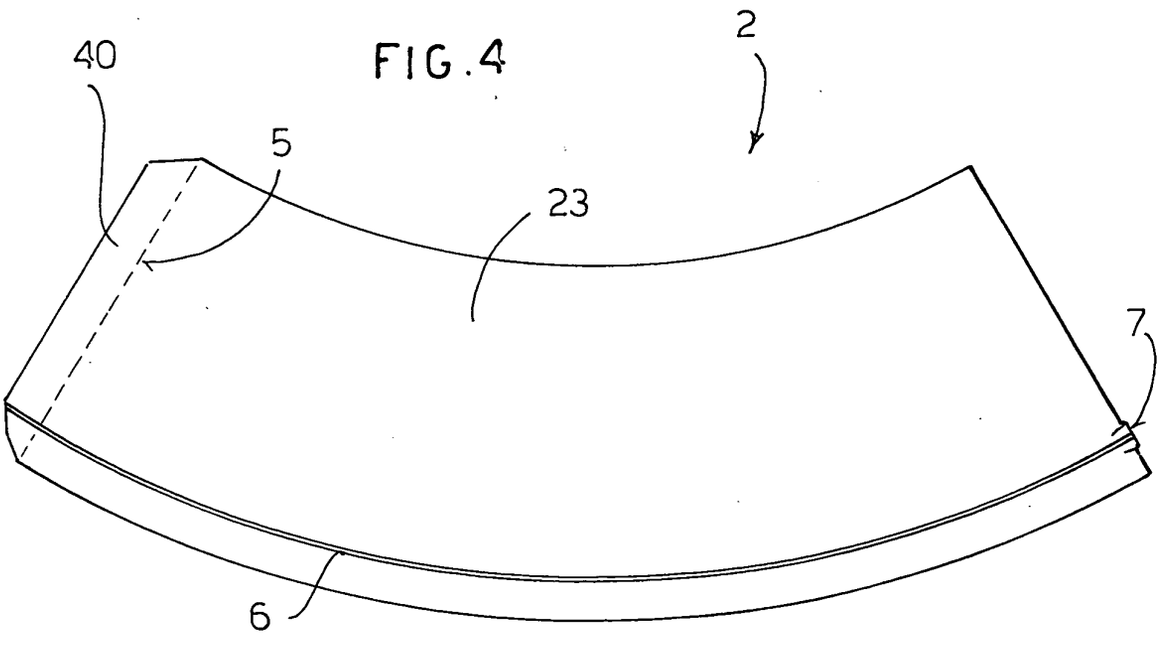
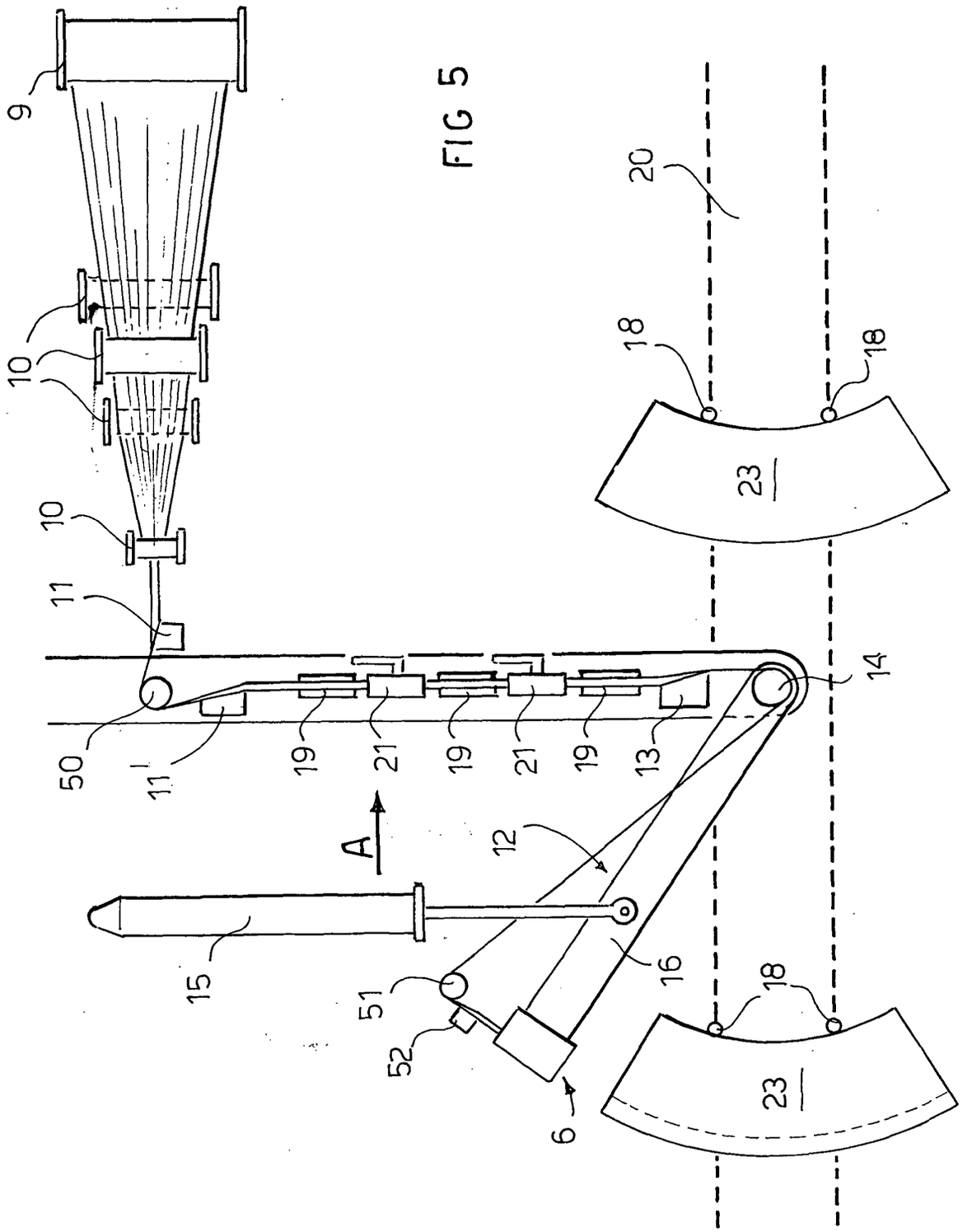


FIG 5



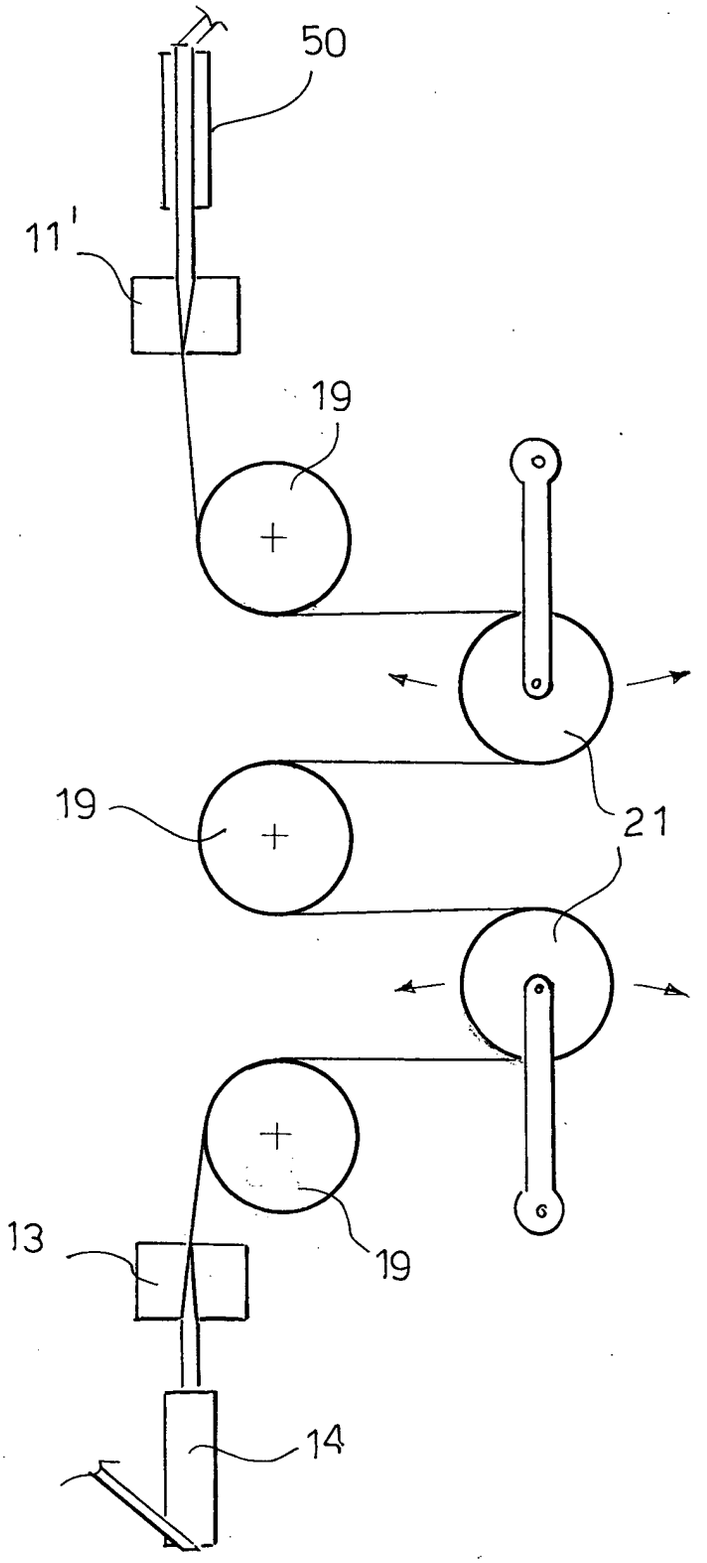


FIG. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 03 02 8057

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	30 January 2004	Appelt, L

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