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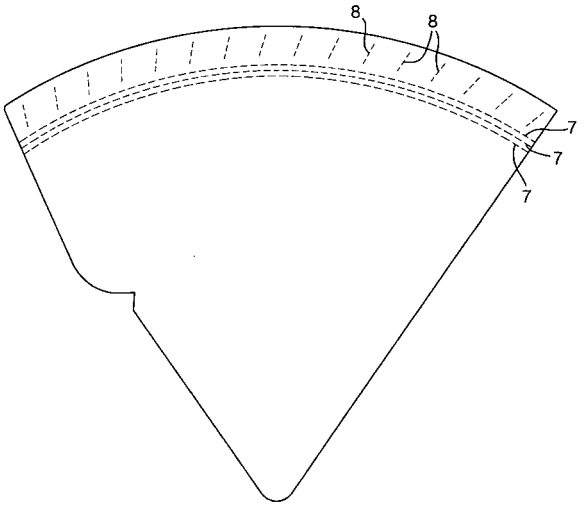
Remarks:
Amended claims in accordance with Rule 137(2) EPC.

(54) Packaging for ice cream cones

(57) A blank (1) for forming a sleeve (11) suitable for packaging ice cream cone products is provided, the blank (1) having an upper edge (4) which is curved at least in part, two side edges (2,3), and at least one circumferential line of weakness (7) located at a distance of from 1 mm to 30mm from and generally parallel to the upper edge (4) of the blank characterized in that the blank has a plurality of non-circumferential lines of weakness (8) located between the at least one circumferential line of weakness (7) and the upper edge (4) of the blank. Also provided are a sleeve (11) formed from the blank and a packaged product comprising the cone sleeve (11), a lid and a frozen confection.

Fig.3.



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Description

Technical Field of the Invention

[0001] The present invention relates to cone sleeves used for packaged ice cream cone-type desserts. In particular it relates to cone sleeves which are made from paper.

Background to the Invention

[0002] Packaged ice cream cone products, such as Cornetto™, are popular and well-known. Such products are typically individually wrapped in a cone-shaped sleeve which covers at least the cone portion of the product and which is sealed with a lid. The sleeve and lid provide structural protection for the cone during distribution and sale. The sleeves are commonly made from paper, metal (e.g. aluminium) foil or paper / foil laminates. Typically a blank is produced in the form of an approximately 60° section of a circle. The sleeve is formed by rolling the blank into a cone shape having a tip at one end and being open at the other end.

[0003] The product is typically assembled as follows. Wafer cones are placed into the cone-shaped sleeve. To prevent the wafer from becoming soggy by absorbing water from the ice cream, the inside of the cone is usually sprayed with a chocolate-like couverture to form a moisture barrier. Then the cone is filled with ice cream on top of which sauces or pieces of biscuit, nut or fruit are dispensed to provide an attractive appearance to the product. Next, the top of the sleeve is sealed with a lid. This may be conveniently achieved by crimping the open end of the sleeve onto the lid. Alternatively, the lid may be glued to the top of the sleeve. Crimping has the advantage of not requiring an adhesive, but places limitations on the type of material that can be used for the sleeve. Only materials such as metal foil which crimp easily, forming a tight, neat fold can be used. Sleeves which are made from paper are too stiff to crimp easily, resulting in an untidy appearance and a poor seal.

[0004] Cone sleeves having perforations which facilitate tearing so that the cone sleeve can be opened or removed are known, for example from EP 276 333, US 1 599 267, US 2005/156018 and WO 03/035484. These perforations are typically located at approximately at the middle of the cone sleeve, or in a spiral pattern over the whole height of the sleeve.

[0005] Spanish utility model ES291964U discloses a cone sleeve made from cardboard or similar material. The upper edge of the sleeve (i.e. at the open end of the cone) is in the form of a series of trapezoidal teeth. When the top of the cone sleeve is folded down onto the lid, the gaps between the teeth eliminate the overlap and folding of the sleeve onto itself. The absence of folds is said to improve the welding between the cone sleeve and the lid. Nonetheless, an adhesive is still required because the absence of folds means that there can be no crimping. Similarly, US 1 599 267 discloses a cover for an ice cream cone which has a plurality of slits extending inwards from its upper edge. The slits allow the upper edge to be folded down to cover and protect the cone, but again do not allow crimping, and moreover, a lid is not used.

[0006] Since metal foil is an expensive material, it would be desirable to replace it with paper which is also more environment-friendly, but without having to resort to using an adhesive to form the seal. Thus there remains a need for improved cone sleeves which do not suffer from these disadvantages.

Brief Description of the Invention

[0007] We have now found that cone sleeves made from materials other than metal foil can be crimped to form a neat tight fold and hence a good seal, provided that lines of weakness (such as perforations, scores or creases) are positioned in particular locations in the vicinity of the top of the sleeve.

[0008] Accordingly, in a first aspect, the present invention provides a blank for forming a sleeve, suitable for packaging an ice cream cone product, the blank having an upper edge which is curved at least in part, two side edges, and at least one circumferential line of weakness located at a distance of from 1mm to 30mm from and generally parallel to the upper edge of the blank, characterized in that the blank has a plurality of non-circumferential lines of weakness located between the at least one circumferential line of weakness and the upper edge of the sleeve. We have found that the presence of non-circumferential (e.g. approximately radial) lines of weakness reduces the resistance to folding of the paper, and hence improves its ability to form a good, neat crimp which holds the lid in place and seals the package. Preferably the lines of weakness are perforations, creases, scores or embossed lines.

[0009] In a second aspect, the present invention provides a cone sleeve formed from the blank according to the first aspect of the invention.

[0010] In a third aspect, the present invention provides a packaged product comprising a frozen confection cone in the cone sleeve according to the second aspect of the invention and a lid onto which the open end of the sleeve is crimped.

Brief Description of the Drawings

[0011] The present invention will be further described with reference to the Figures wherein:

Figure 1 shows a conventional blank for a cone sleeve.

Figures 2 to 4 show blanks according to the invention.

Figure 5 shows a cone sleeve formed from the blank shown in Figure 3.

Figure 6 shows a finished product where the cone

sleeve has been crimped down over a lid placed on top of an ice cream cone product.

Detailed Description of the Invention

[0012] Figure 1 shows a conventional flat unrolled blank **1** for a cone sleeve. The blank has the general shape of a section of a circle, preferably a section of a circle subtending an angle of from 45 to 90°, typically about 60°. The blank has two side edges **2** and **3,** and an upper edge **4.** The side edges **2, 3** are generally straight lines, although one of the side edges **3** may have an indent **5** and/or a tab **6** which facilitate tearing of the sleeve so that the consumer can easily remove the product from the sleeve before or during consumption. The apex **9** formed where the side edges **2, 3** meet may be rounded to facilitate winding and forming the tip of the cone sleeve. The blank has a curved upper edge **4** which forms the circular upper edge of the sleeve when the blank has been assembled to form a cone. The open end of the cone sleeve extends above the top of the ice cream cone in order to protect it and to accommodate a lid. The upper edge is folded over onto the lid, thereby sealing the packaging. Typically, ice cream cone products are about 100-150ml in size, so the cone sleeve has a height of about 150mm and a top diameter of about 60 - 70 mm. However smaller and larger versions are also possible.

[0013] Figures 2, 3 and 4 show blanks for cone sleeves according to the invention, which are based on the blank shown in Figure 1. In order to facilitate folding of the paper, which because of its inherent stiffness would otherwise form an untidy fold and a poor seal, the blank is provided with at least one circumferential line of weakness **7,** located approximately parallel to and at a distance of between 1 and 30 mm from the upper edge. We have found that such a line results in significantly neater and tighter folding. The distance from the line to the upper edge is chosen according to the amount of overlap that is required between the cone sleeve and the lid. A minimum overlap of about 1 mm is usual in order to ensure that the crimped edge of the sleeve holds the lid in place. The overlap is less than 30mm, in order not to completely obscure the lid. Moreover, the greater the overlapping region, the greater the area of paper that is folded, which can make it harder to achieve a neatly crimped seal. Preferably the at least one circumferential line of weakness is located parallel to and at a distance of at least 2mm, more preferably at least 3mm, most preferably greater than 5mm; and preferably at most 20mm, more preferably at most 15mm, most preferably less than 12mm from the upper edge of the blank. For small cone sleeves, the lines of weakness are usually located close to the edge of the blank (e.g. at a distance of 1 - 10mm), whereas for large ones they may be further away (e.g. 15mm or more).

[0014] As shown in Figure 3, the blank preferably has at least two circumferential lines of weakness **7** generally parallel to its upper edge **4.** Most preferably the sleeve has three such circumferential lines. Having more than one line of weakness has the advantage of incorporating a tolerance to variations during production of the cone sleeve, so that a neat, tight crimped seal is achieved every time. Preferably the lines of weakness are closely spaced, e.g. < 3mm apart, more preferably < 2mm apart. For example, in one embodiment there are three lines located at 7mm, 8.5mm and 10mm from the upper edge of the blank.

[0015] As shown in Figures 2, 3 and 4, the blanks according to the invention also comprise a plurality of non-circumferential lines of weakness **8** located between the at least one circumferential line of weakness and the upper edge of the sleeve. We have found that the presence of non-circumferential (e.g. approximately radial) lines of weakness reduces the resistance to folding of the paper, and hence improves its ability to form a good, neat crimp which holds the lid in place and seals the package. Typically the non-circumferential lines are at an angle of at most 80°, preferably at most 70° to the radial direction. Preferably the non-circumferential lines are at an angle of less than 45° to the radial direction, preferably less than 30°. More preferably the lines are at an angle of from 5° to 25°, most preferably from 10° to 20°, such as about 15° to the radial direction.

[0016] The non-circumferential lines **8** may be substantially parallel to each other, as shown in Figures 2 and 3, or alternatively they may form a zig-zag pattern **8a, 8b** as shown in Figure 4.

[0017] In order to achieve the best crimp, we have found that there are preferably at least 5, more preferably at least 10, most preferably at least 12; and preferably at most 25, more preferably at most 20, most preferably 18 or fewer non-circumferential lines. The optimum number of such lines depends on the size of the cone sleeve. For a standard cone sleeve (approximately 150mm in height when assembled), about 16 such lines gives excellent results. For mini-size cones sleeves (e.g. approximately 50-100 mm in height when assembled) a smaller number of lines, such as about 10, is preferred.

[0018] The non-circumferential lines are located between the at least one circumferential line and the upper edge of the sleeve and extend for a substantial part of the distance between them. Therefore the non-circumferential lines are typically between 1 and 30 mm in length, preferably at least 2mm, more preferably at least 3mm, most preferably greater than 5mm; and preferably at most 25mm, more preferably at most 20mm, most preferably less than 15mm in length, for example about 7-10mm in length. For small cone sleeves, the length of the lines is usually towards the lower end of this range. It is not essential that all of the non-circumferential lines are oriented at the same angle to the radial direction, or that they are of the same length, although this is convenient for production.

[0019] A particularly preferred embodiment has three circumferential lines of perforations located at 7mm, 8.5mm and 10mm from the upper edge, and sixteen non-

circumferential lines at an angle of 15° to the radial direction which are between 5mm and 7mm in length, as shown in Figure 3.

[0020] The blanks according to the invention are preferably made from paper or a paper-based material, such as paper with a metallised coating, metal-laminated paper, polymer-laminated paper, or paper coated with a barrier layer such as wax, clay or other barrier material. The outer surface of the blank may be printed with text and/or graphic designs. Paper has the advantage of being the cheapest and most environmentally-friendly material. Metallised paper is preferable over foil from an environmental perspective, and has benefits over ordinary paper, including a shiny, attractive appearance, improved barrier properties resulting in a longer shelf-life for the product, and better grease resistance (e.g. caused by the ice cream or the cone).

[0021] The lines of weakness (both circumferential and non-circumferential) may be formed by perforation, creasing, scoring, embossing or in any other suitable manner, but they should not be complete cuts or slits in the blank. For example, if the blank is made from a laminate structure comprising a paper layer and a foil or polymer layer, the lines of weakness may cut the paper layer without puncturing the foil / polymer layer. Preferably the lines of weakness are perforations because these result in the best crimping. Creasing, scoring and embossing minimise the risk of tearing that can occur with perforations but nonetheless weaken the paper sufficiently that good crimping and neat folding is achieved. The lines of weakness such as perforations and creases can be produced by a mechanical device e.g. a die cut tool. A serrated edge is used to make perforations, whereas a blunt rule is used for creasing. Alternatively, other means, such as a laser may be used.

[0022] The lines of weakness correspond to the locations where the top of the cone sleeve is curved. Thus when the cone has the usual circular opening, the lines are present around the whole circumference of the cone sleeve. However, if the top of the cone sleeve has straight portions (for example a square having rounded corners) it is not necessary for there to be lines at the straight portions, since there will be no overlaps when the cone sleeve is crimped onto the lid. Nonetheless, such lines may be present in the straight portions if desired.

[0023] In addition to the lines of weakness, the blank may be embossed (in whole or in part) with a pattern which can provide an attractive decorative appearance for the cone sleeve, and - when present in the upper part of the blank - can further aid crimping.

[0024] Figure 5 shows a cone sleeve **11** formed from the blank shown in Figure 3. The sleeve **11** has a lower closed end **19** and an opposite open upper end **14.** The sleeve may be formed by generally known methods of spiral winding the blank, for example by winding the blank around a conical mandrel. Once the blank has been formed into a cone-shaped sleeve, it is desirable to seal the sleeve along a side edge, e.g. with an adhesive. The circumferential **7** and non-circumferential **8** lines of weakness are visible since the upper edge of the cone sleeve has not yet been folded down over a lid. The cone sleeve shown in Figure 5 has a circular opening, as is usual for such cones. However, it could also be any other shape having curves, for example an ellipse, or a triangle or square having rounded corners. The lid corresponds in shape and size to the opening of the cone sleeve.

[0025] Tests were performed to evaluate the performance of the cone sleeves according to the invention. Ice cream cones were placed in conical sleeves formed from a metallised paper blank having three circumferential lines of perforations located at 7mm, 8.5mm and 10mm from the upper edge, and sixteen non-circumferential lines at an angle of 15° to the radial direction which were approximately 6mm in length, as shown in Figure 3. A circular lid was placed on top and the upper edge of the sleeve was folded down and crimped to form the seal. Aluminium foil sleeves (which crimp easily) and metallised paper sleeves without any lines of weakness (which crimp poorly) were used for comparison. Two different crimping forces were used. In each case, it was found that the aluminium foil and perforated metallised paper sleeves crimped tightly & neatly, as shown in Figure 6. However, the unperforated metallised paper sleeve resulted in an untidy fold and a poor seal (i.e. the edge of the sleeve did not stay in close contact with the lid). Moreover, the perforated metallised sleeve retained its good crimp even after storage for one month.

Claims

1. A blank for forming a sleeve suitable for packaging an ice cream cone product, the blank having an upper edge which is curved at least in part, two side edges, and at least one circumferential line of weakness located at a distance of from 1 mm to 30mm from and generally parallel to the upper edge of the blank **characterized in that** the blank has a plurality of non-circumferential lines of weakness located between the at least one circumferential line of weakness and the upper edge of the sleeve.

2. A blank according to claim 1 which is made from paper or a paper-based material.

3. A blank according to claim 2 which is made from metal-laminated paper, polymer-laminated paper, paper with a metallised coating, wax-coated paper or clay-coated paper.

4. A blank according to any of claims 1 to 3 wherein the lines of weakness are perforations, creases, scores or embossed lines.

5. A blank according to any of claims 1 to 4 wherein the at least one circumferential line of weakness is

located parallel to and at a distance of from 2mm to 20mm from the upper edge of the blank.

6. A blank according to claim 5 wherein the at least one circumferential line of weakness is located at a distance of from 5mm to 12mm from the upper edge of the blank.

7. A blank according to any of claims 1 to 6 which has at least two circumferential lines of weakness.

8. A blank according to any of claims 1 to 7 wherein the non-circumferential lines are at an angle of less than 45° to the radial direction.

9. A blank according to claim 8 wherein the non-circumferential lines are at an angle of from 5° to 25° the radial direction.

10. A blank according to any of claims 1 to 9 which comprises from 5 to 25 non-circumferential lines.

11. A blank according to any of claims 1 to 10 wherein the non circumferential lines are from 1 to 30 mm in length.

12. A blank according to claim 11 wherein the non circumferential lines are from 5 to 15 mm in length.

13. A cone sleeve formed from the blank according to any of claims 1 to 12.

14. A packaged product comprising a cone sleeve according to claim 13 containing a frozen confection in a cone and a lid onto which the upper end of the sleeve is crimped.

Amended claims in accordance with Rule 137(2) EPC.

1. A blank (1) for forming a sleeve (11) suitable for packaging an ice cream cone product, the blank (1) having an upper edge (4) which is curved at least in part, two side edges (2,3), and at least one circumferential line of weakness (7) located at a distance of from 1mm to 30mm from and generally parallel to the upper edge (4) of the blank **characterized in that** the blank has a plurality of non-circumferential lines of weakness (8) located between the at least one circumferential line of weakness (7) and the upper edge (4) of the blank.

2. A blank (1) according to claim 1 which is made from paper or a paper-based material.

3. A blank (1) according to claim 2 which is made from metal-laminated paper, polymer-laminated paper, paper with a metallised coating, wax-coated paper or clay-coated paper.

4. A blank (1) according to any of claims 1 to 3 wherein the lines of weakness (7,8) are perforations, creases, scores or embossed lines.

5. A blank (1) according to any of claims 1 to 4 wherein the at least one circumferential line of weakness (7) is located parallel to and at a distance of from 2mm to 20mm from the upper edge (4) of the blank.

6. A blank (1) according to claim 5 wherein the at least one circumferential line of weakness (7) is located at a distance of from 5mm to 12mm from the upper edge (4) of the blank.

7. A blank (1) according to any of claims 1 to 6 which has at least two circumferential lines of weakness (7).

8. A blank (1) according to any of claims 1 to 7 wherein the non-circumferential lines (8) are at an angle of less than 45° to the radial direction.

9. A blank (1) according to claim 8 wherein the non-circumferential lines (8) are at an angle of from 5° to 25° the radial direction.

10. A blank (1) according to any of claims 1 to 9 which comprises from 5 to 25 non-circumferential lines (8).

11. A blank (1) according to any of claims 1 to 10 wherein the non circumferential lines (8) are from 1 to 30 mm in length.

12. A blank (1) according to claim 11 wherein the non circumferential lines (8) are from 5 to 15 mm in length.

13. A cone sleeve (11) formed from the blank (1) according to any of claims 1 to 12.

14. A packaged product comprising a cone sleeve (11) according to claim 13 containing a frozen confection in a cone and a lid (10) onto which the upper end of the sleeve is crimped.

Fig.1.

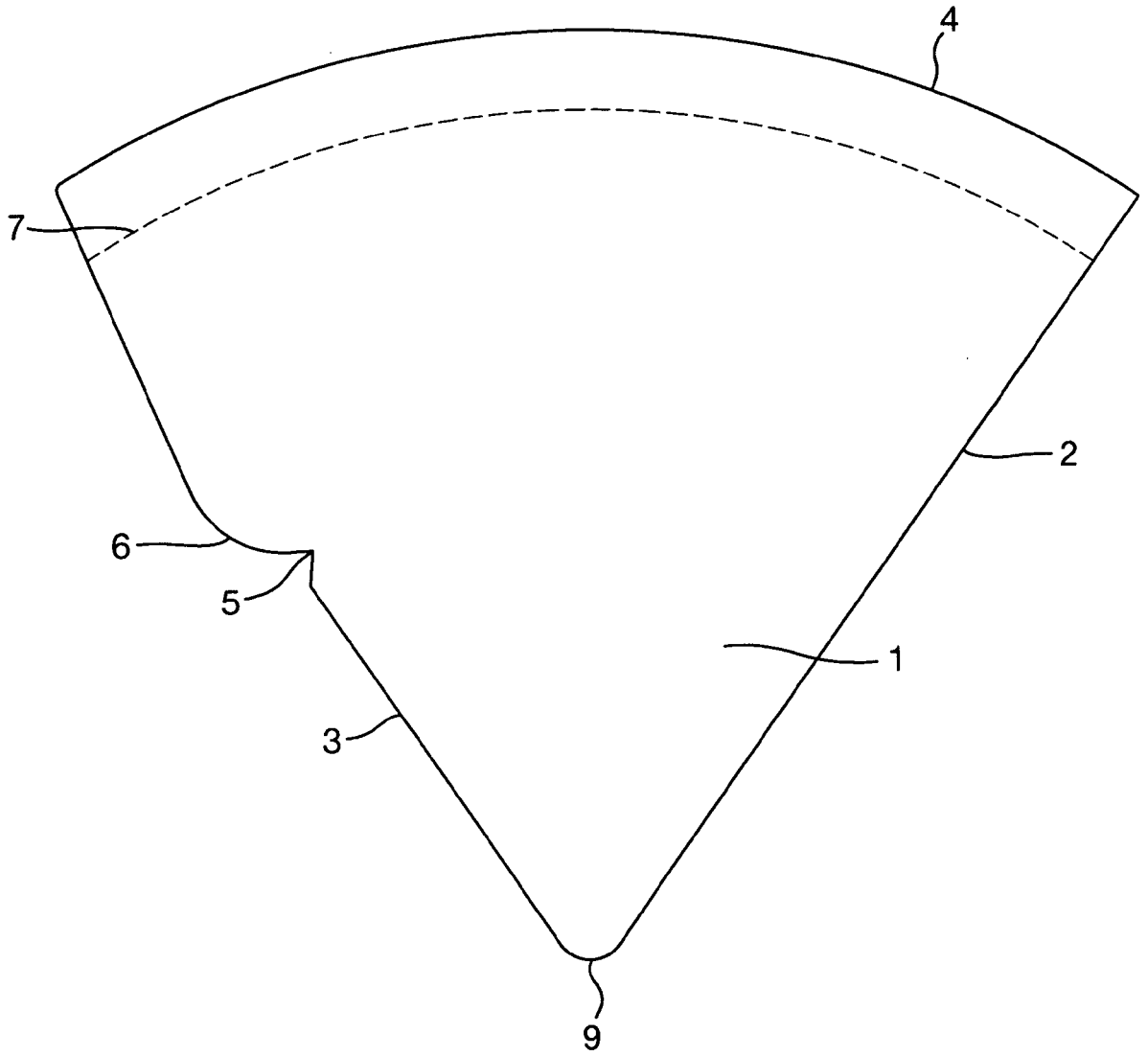


Fig.2.

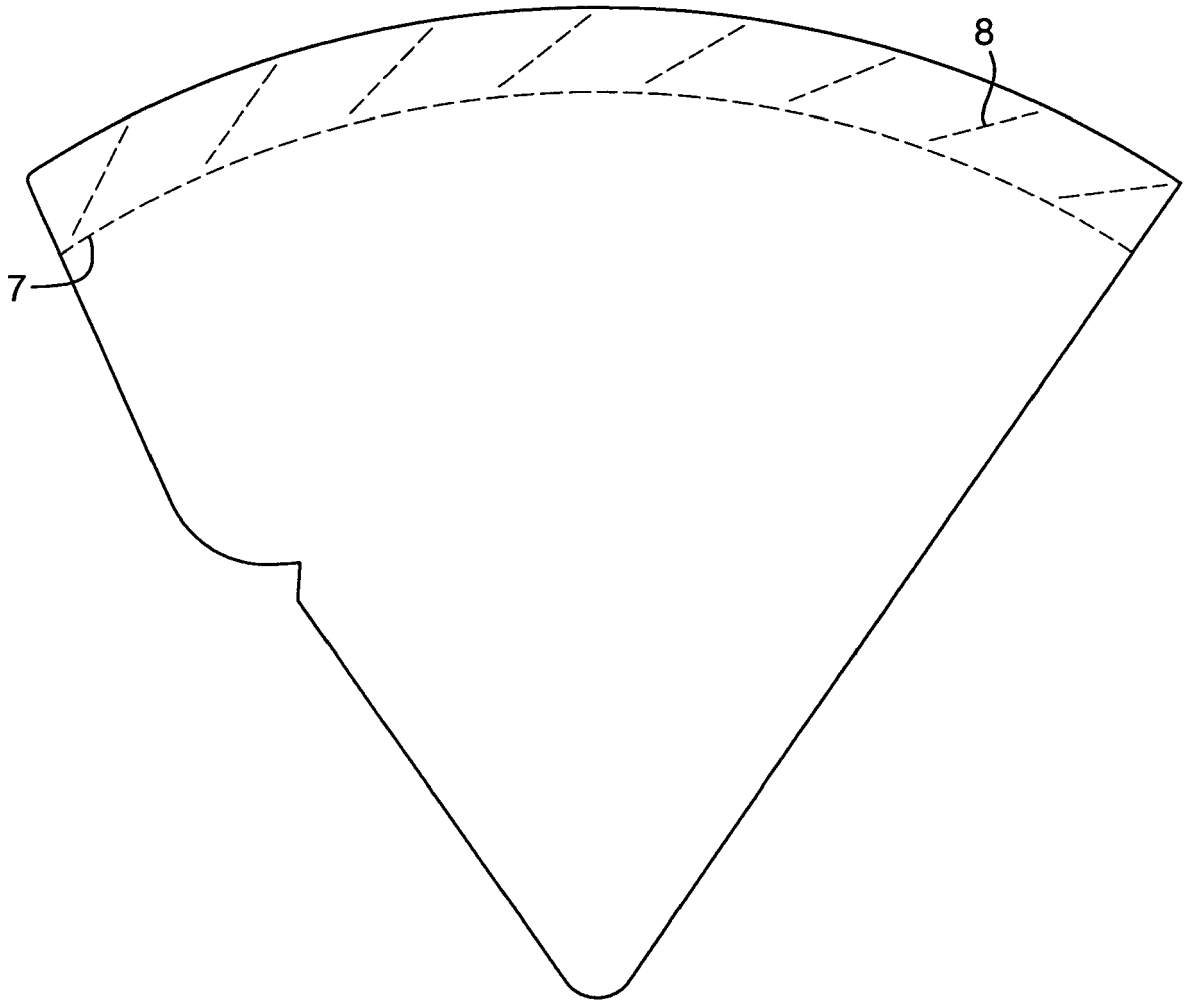


Fig.3.

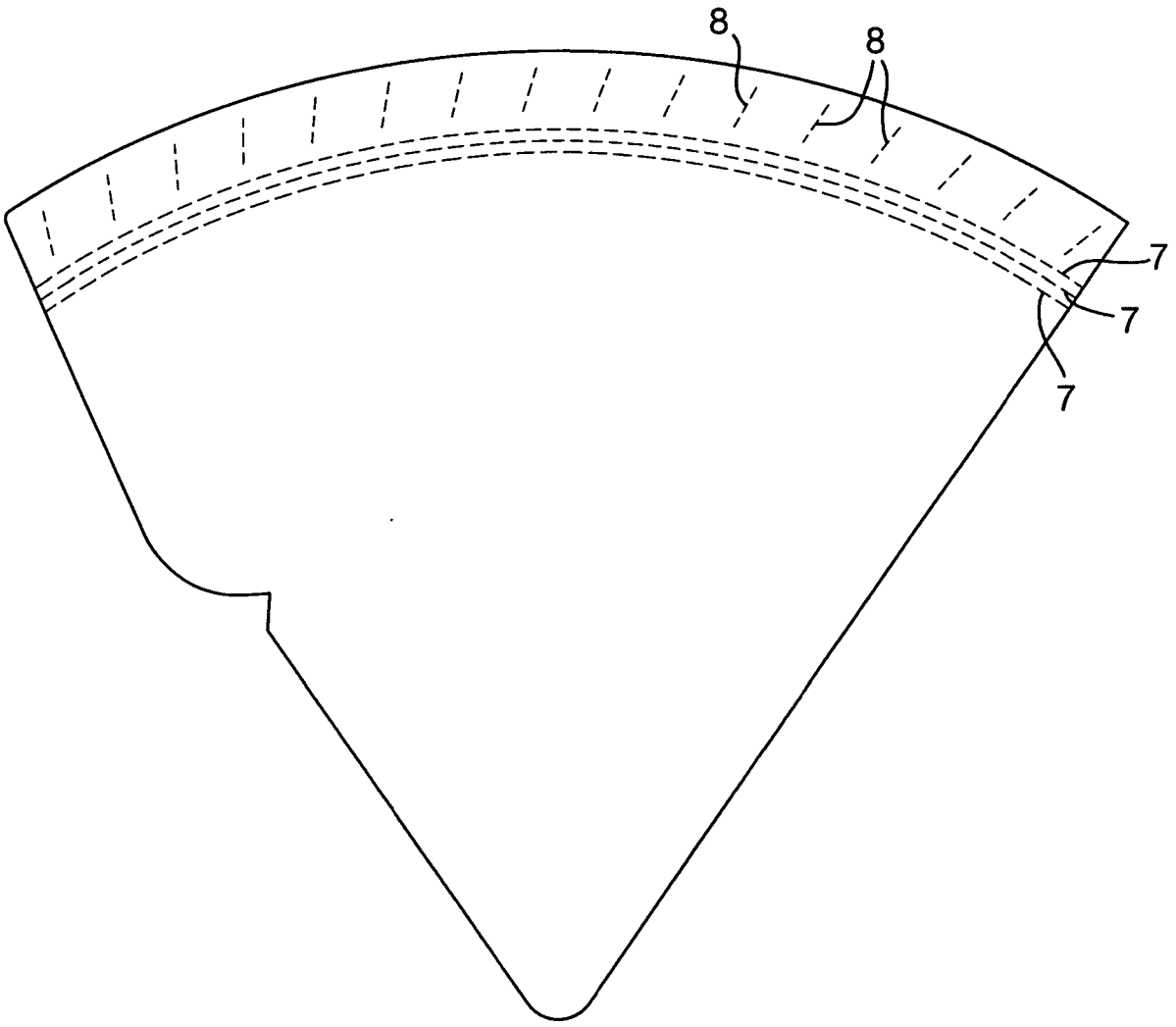


Fig.4.

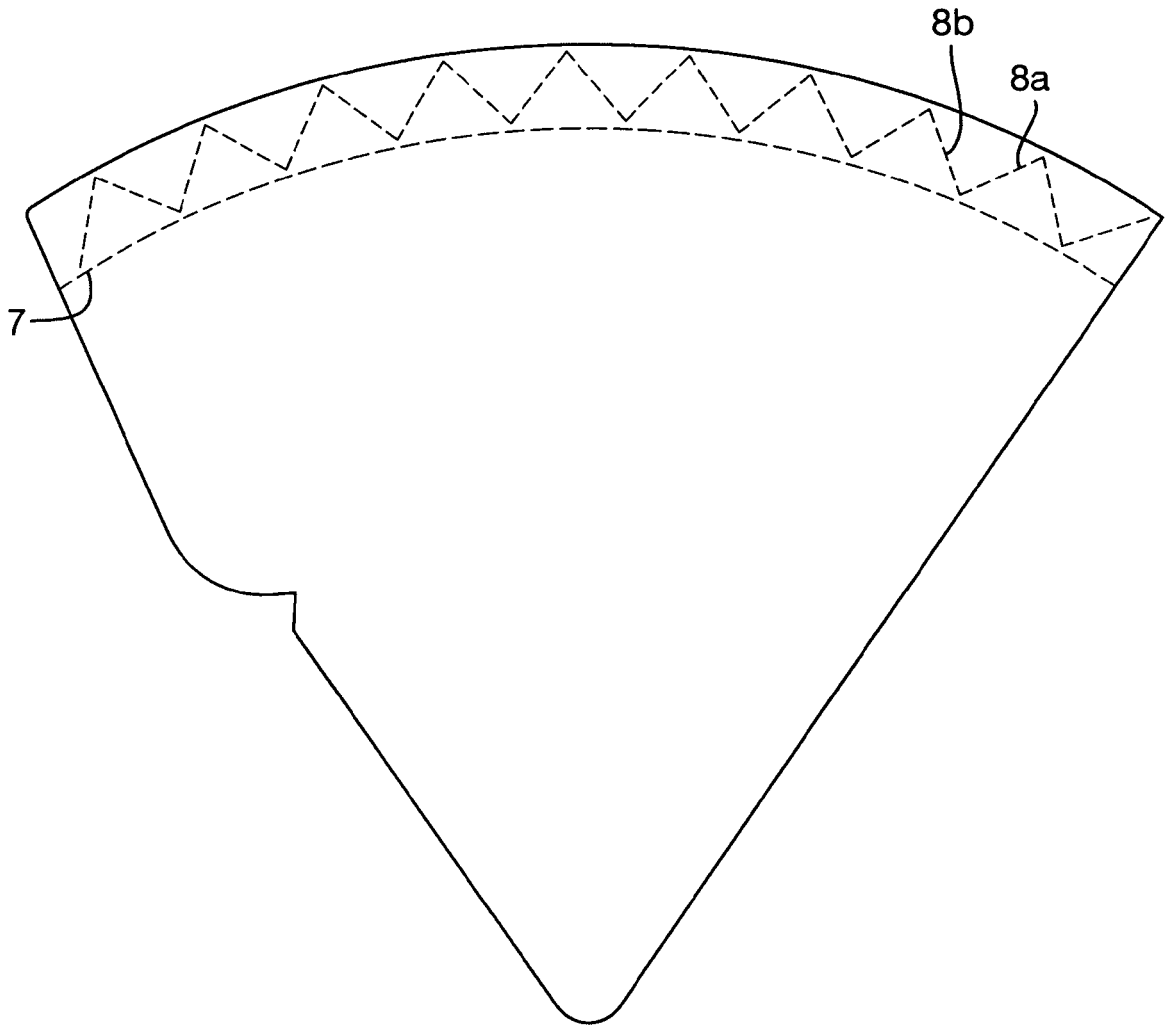


Fig.5.

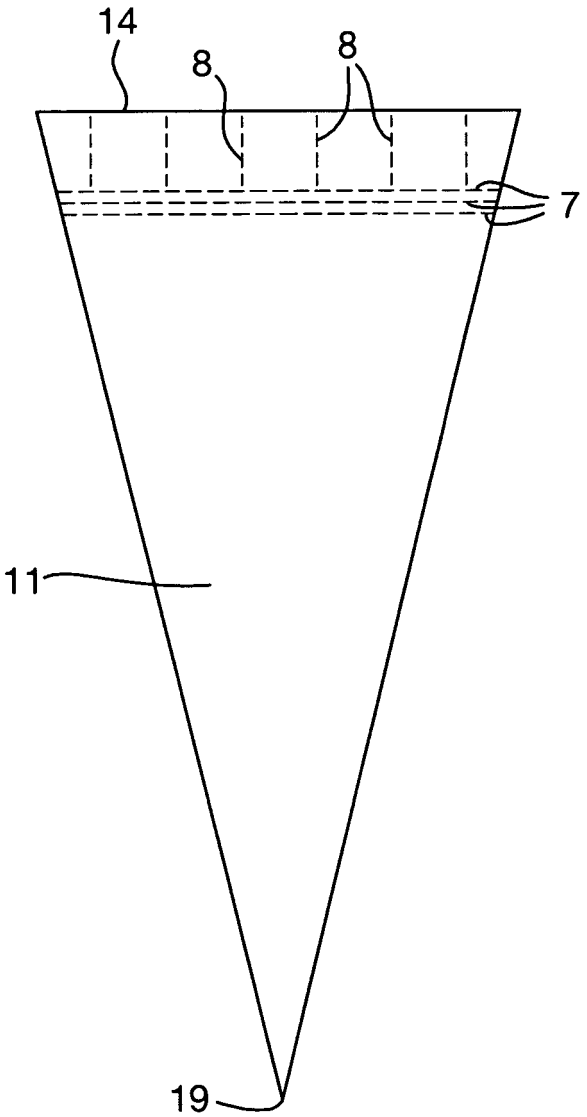
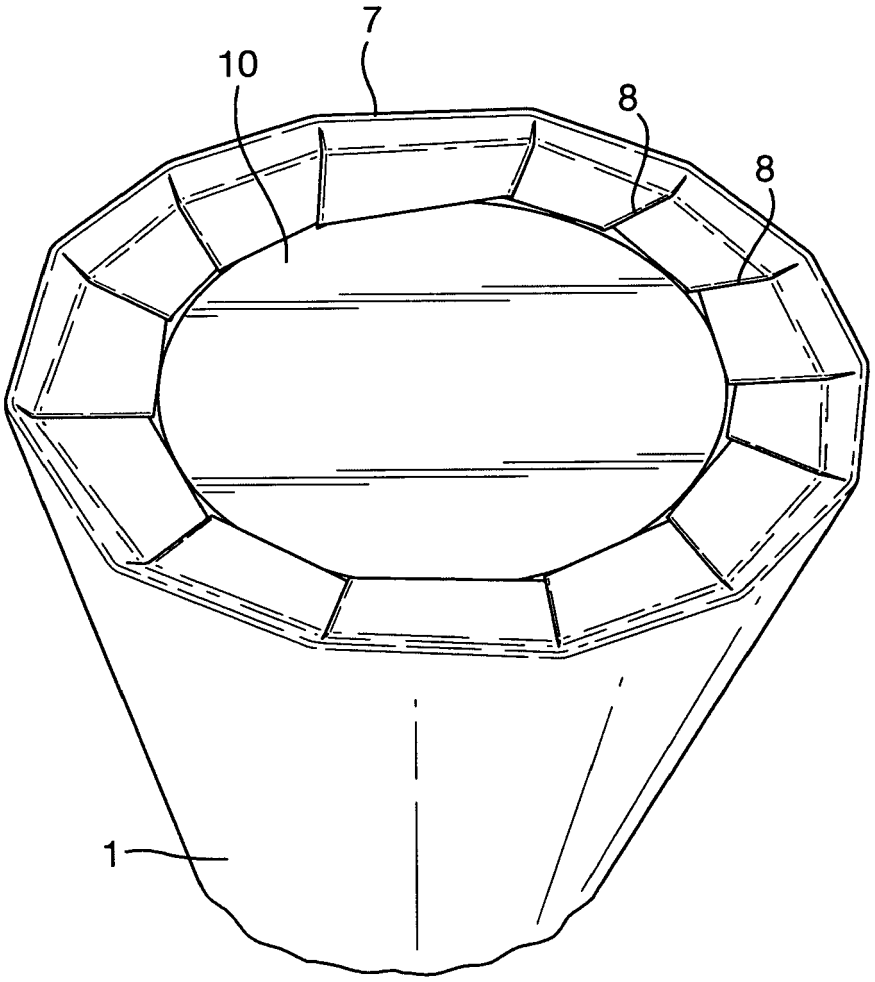


Fig.6.



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EUROPEAN SEARCH REPORT

Application Number
EP 10 16 3381

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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A	NL 8 801 866 A (UNILEVER NV) 16 February 1990 (1990-02-16) * figure 1 * -----	1-14	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	15 July 2010	Segerer, Heiko

CATEGORY OF CITED DOCUMENTS

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