(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 4 212 443 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
19.07.2023 Bulletin 2023/29

(21) Application number: **22151982.0**

(22) Date of filing: **18.01.2022**

(51) International Patent Classification (IPC):
B65D 1/26 *(2006.01)* ***B65D 25/36*** *(2006.01)*

(52) Cooperative Patent Classification (CPC):
B65D 25/36; B65D 1/26

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

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(54) BLANK FOR A PACKAGING SHELL OF A CUP PACKAGING, CUP PACKAGING HAVING A PACKAGING SHELL, AND METHOD FOR SEPARATING THE CUP PACKAGING AND THE PACKAGING SHELL

(57) Blank for a packaging shell of a cup packaging, the cup packaging having a base, a rim opposite the base and a wall between the base and the rim, the blank being suitable for encasing the wall in order to form the packaging shell; the blank having:

• a planar carrier material having a first periphery and diametrically opposite a second periphery, as well as an upper periphery and diametrically opposite a lower periphery, wherein the peripheries at least substantially delimit the carrier material;

• a first connection portion assigned to the first periphery and disposed between the upper periphery and the lower periphery;

• a second connection portion assigned to the second periphery and disposed between the upper periphery and the lower periphery, provided for connecting to the first connection portion;

• a perforation disposed between the connection portions and generally extending in a direction that points from the lower periphery to the upper periphery, the perforation having a plurality of incisions in and/or through the carrier material;

• wherein the incisions are at least substantially and/or in portions lined up in sequence and by way of mutual spacing configure predetermined separation portions.

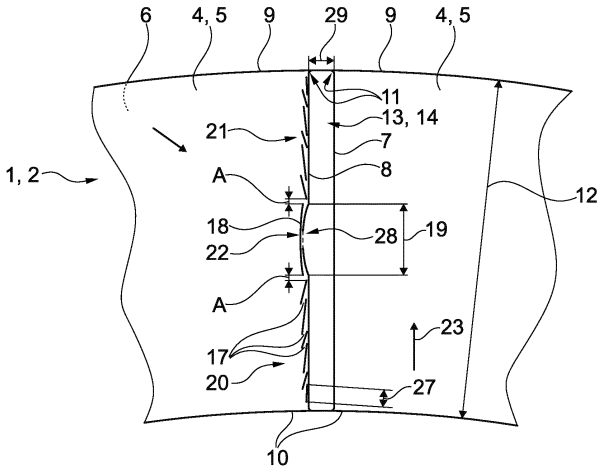

Fig. 2

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Description

[0001] The invention relates to a blank for a packaging shell of a cup packaging. The invention likewise relates to a cup packaging having a packaging shell. The invention furthermore relates to a method for separating a cup packaging from a packaging shell.

[0002] A blank according to the prior art such as WO 2020/245148 has a perforation having a plurality of incisions and a plurality of predetermined separation portions substantially from the lower periphery up to the upper periphery. The perforation can be considered to have three perforation portions. The central perforation portion has an engagement incision by way of which the entire perforation at the predetermined separation portions thereof can be manually split, in particular when the blank is attached to or disposed on, respectively, a cup packaging. WO 2020/245148 especially suggests that the incisions of the three perforation portions are configured so as to overlap along the height of the cup packaging because this is intended to facilitate the engagement incision being accessed from below.

[0003] It is disadvantageous in the prior art that there is an increased complexity in terms of production because the overlaps of the incisions have to be precisely manufactured. There is furthermore the risk that the perforation is too easily and/or unintentionally split because the overlap in the region of the engagement incision already leads to a strong notching effect in the carrier material even upon simple contact, for example during the transportation of the cup packaging.

[0004] Against this background the invention is based on the object of proposing a blank for a packaging shell of a cup packaging, as well as a cup packaging having a packaging shell produced from a blank, wherein a perforation is provided which in comparison to the prior art is configured so as to be more reliable and nevertheless readily releasable and cost-effective in terms of production. The invention is furthermore based on the object of developing a method by way of which a packaging shell from a blank on a cup packaging can be easily separated from the cup packaging.

[0005] This object is achieved by the blank according to Claim 1, as well as by the cup packaging according to Claim 11, as well as by the method according to Claim 13. Advantageous embodiments are set forth in the dependent claims and the description hereunder.

[0006] According to the invention, the wherein the perforation is considered to have

- a central perforation portion and
- an upper perforation portion arranged above the central perforation portion between the central perforation portion and the upper periphery and
- a lower perforation portion arranged below the central perforation portion between the central perforation portion and the lower periphery

[0007] Each of the central perforation portion, the upper perforation portion and the lower perforation portion has at least one of the incisions, whereby the engagement incision is assigned to a central perforation portion.The engagement incision has an upper end arranged closer to the upper perforation portion than to the lower perforation portion, whereby the upper perforation portion has a bottom incision that is arranged closest to the engagement incision, said bottom incision having a lower end. The engagement incision has a lower end arranged closer to the lower perforation portion than to the upper perforation portion, whereby the lower perforation portion has an upper incision that is arranged closest to the engagement incision, said upper incision having an upper end.

[0008] According to the invention the upper end of the engagement incision is arranged spaced apart from and lower than the lower end of the bottom incision and/or the lower end of the engagement incision is arranged spaced apart from and above than the upper end of the upper incision.

[0009] In other words, at least the central perforation portion, in particular the engagement incision or engagement incisions, does/do not overlap with the next or adjacent, respectively, perforation portions or incisions thereto, respectively. It is thus effected that the tearing open of the perforation by way of the engagement incision takes place so as to be based on a moderate notching effect so that the perforation is able to last longer through the service life. Since the carrier material is in most instances composed of recycled low-strength material anyway, moderate or slight notching effects, respectively, also do not particularly impede the tearing open.

[0010] The cup packagings addressed by the invention are typically thermo-formed products from plastics material, equipped with a closed base, an open rim opposite. The rim may be designed as a flange, preferably a radially protruding flange. The flange may be used for closing with a lid. Between the rim and the base a closed, encircling wall is provided that is suitable to be encased or covered, respectively, by way of a packaging shell. The base and/or the rim can radially project in an encircling manner, while the wall can represent a recess for receiving the blank or the packaging shell, respectively.

[0011] The packaging shell can be formed from a blank which is typically wound around the wall. Ends of the blank can be adhesively bonded in or at, respectively, connection portions and/or to the wall.

[0012] The blank for the packaging shell preferably has a planar carrier material which may be produced at least from pulp, cellulose, cardboard, paper, recycled material, wastepaper, plastics material, metal and/or similar, or combinations therefrom, respectively. The carrier material can be coated and/or be produced in layers and/or from various materials/primary products. The carrier material along the face thereof can also in regions/portions have various materials/primary products and/or layers; in particular, at least one connection portion (or else both)

can be configured in a manner different from that of the remaining carrier material.

[0013] The blank is preferably at least substantially quadrangular. In the case of conical, i.e. frustoconical, cup packagings the blank can alternatively or additionally be in the shape of an annular portion. The blank is typically configured so as to be planar, able to be spread out in a planar manner and/or able to be spread out in planes.

[0014] The blank is preferably configured so as to be integral. The primary material for the blank is typically present in the form of sheets and/or wound on rolls, wherein the blank is preferably punched and/or cut out from said primary material.

[0015] The blank, besides at least or exactly four peripheries, typically has at least one or exactly one front side and one rear side. The peripheries, the front side and the rear side moreover typically entirely delimit the blank in terms of the volume of the latter. The peripheries preferably delimit the blank, or the carrier material, respectively, at least substantially in a planar manner. The peripheries are preferably, at least substantially and/or in portions, configured so as to be linear, curved, rectilinear and/or arcuate and/or in the transition to the respective next/preceding periphery have rounded corners, for example. In particular, two peripheries are at least substantially arcuate and two peripheries are at least substantially rectilinear, wherein one of the rectilinear peripheries, for example centrically, can contain an arcuate protrusion or a tab, respectively.

[0016] The first periphery on the carrier material is diametrically opposite the second periphery; the lower periphery on the carrier material is diametrically opposite the upper periphery. Diametrically opposite means that the peripheries in relation to the carrier material substantially represent external regions having the carrier material therebetween. In the preferred case, for example for a frustoconical cup packaging, the upper periphery is longer than the lower periphery, in particular also longer than the first and the second periphery.

[0017] These aforementioned features can minimize the risk of injury on the blank. Also, the blank is easy to stack or transport, respectively, as well as easy to feed to a machine and to be stored in the latter for attaching to a cup packaging.

[0018] The blank preferably has two or more connection portions. The connection portions have in each case one portion of the carrier material including corresponding parts of the front side and the rear side. In the simplest case, a connection portion is merely a theoretically delimited part of the carrier material including the front side and the rear side and not visible on the blank. The connection portions are preferably provided for connecting, for example in a planar manner, in particular for adhesively bonding to one another and/or to another item such as the cup packaging or the wall, respectively. Defined connection faces or adhesive-bonding faces, respectively, are provided by the connection portion. By way of example, the area to be printed can be conjointly delimited here, and printing costs can be saved. Moreover provided is a flexibility in terms of different diameters of cup packagings, for example in the case of variations resulting from the construction or from tolerances.

[0019] The first connection portion is assigned to the first periphery, i.e. in that said first connection portion is adjacent to said first periphery, for example. The second connection portion is assigned (or adjacent) to the second periphery. Both connection portions here are disposed between the upper periphery and the lower periphery and are preferably adjacent to the upper and/or the lower periphery. In other words, the connection portions on the carrier material are disposed so as to be diametrically opposite, as are the first and the second periphery. The connection portions transversely and/or orthogonally to the assigned/next periphery preferably have a width of 1 to 20 mm, preferably 2 to 15 mm, furthermore preferably 3 to 10 mm, in particular 7 +/- 2 mm, and/or a spacing from the assigned/next periphery and/or from the upper and/or the lower periphery of 1 to 5 mm, preferably 2 to 4 mm, furthermore preferably 3 +/- 0.5 mm.

[0020] The perforation is disposed between the connection portions as well as between the upper and the lower periphery. The perforation extends at least substantially from the from the lower periphery to the upper periphery. In other words, the perforation is disposed substantially along the height of the cup packaging having the packaging shell formed from the blank. This enables the perforation to be easily torn open and the packaging shell to be separated from the cup packaging in a defined, rapid manner.

[0021] The perforation has a plurality of incisions into the carrier material. An incision can be configured so as to be punctiform, linear and/or planar and/or as a cut, separation, a recess and/or a clearance of the originally planar carrier material. Predetermined separation portions are configured as a result of the incisions being lined up in sequence, for example, and/or being disposed close to one another, for example being mutually spaced apart at most by the length of said incisions per se. The predetermined separation portions may tear as a result of a notching effect which facilitates the tearing of the carrier material at one end of a linear incision, or at an adjacent punctiform or planar incision, respectively, when the carrier material is at least in part stressed for tension in a planar direction. The incisions form in particular local material weaknesses according to which the intervening predetermined separation portions can be exposed to greater forces than the surrounding uninterrupted planar carrier material when the carrier material is impinged with a force.

[0022] An incision preferably is linear, that is to say there are two ends (and/or a beginning and an end and/or a lower end and an upper end) on a continuous material separation of the carrier material. The incision can also be of an arbitrary shape. Alternatively or additionally, proceeding from the front side and/or the rear side, an incision has a continuous depth in the carrier material. When

an incision is configured so as to be not only linear but also rectilinear, the incision has an orientation or direction, respectively, that is fully defined by the two ends of the incision. When the incision is configured so as to be only partially rectilinear, said incision has an orientation or direction, respectively, in this part; this may be at one end or at both ends and/or between the ends.

[0023] When the incisions are lined up in sequence, this in a simple case means that individual, for example rectilinear, incisions are aligned so as to at least substantially follow a line and on this line typically are mutually spaced apart by the carrier material or predetermined separation portions, respectively. Lined up in sequence can alternatively or additionally mean that the incisions do not, or only partially, follow one or a plurality of lines, that the incisions are variably directed or designed, respectively, and/or that the incisions are disposed in an alternating manner beside one another and after one another in steps, for example. Independently of their orientation or design, respectively, incisions can therefore form predetermined separation portions around themselves or between themselves. Individual incisions can also be lined up in sequence in portions.

[0024] The engagement incision is distinguished by a comparatively large incision into the carrier material, by way of which a manual engagement in the incision, or in or through the carrier material, respectively, is possible. In a preferred embodiment the engagement incision is the largest incision in the carrier material. The intention of the engagement incision is to achieve a simple possibility for splitting the entire perforation, or all predetermined separation portions of the perforation, respectively. The engagement incision is in particular disposed in a central perforation portion between an upper and a lower perforation portion, or is assigned to said central perforation portion, respectively. The central perforation portion here can lie on an axis of symmetry on which the lower perforation portion is configured so as to be symmetrical to the upper perforation portion. Uniform tearing open of the perforation towards the top and towards the bottom is thus achieved so that the uppermost and the lowermost predetermined separation portions are ideally simultaneously torn open. As a result, the engagement portion and/or the cup packaging does not have to be gripped again, or be gripped twice, respectively.

[0025] In one preferred design embodiment of the invention the upper end of the engagement incision is arranged spaced apart from the lower end of the bottom incision by a spacing of at least 0.1 mm, preferably by 0.5 mm, furthermore preferably by 1 mm, in particular by 1.2 mm, and/or

the lower end of the engagement incision is arranged spaced apart from the upper end of the upper incision by a spacing of at least 0.1 mm, preferably by 0.5 mm, furthermore preferably by 1 mm, in particular by 1.2 mm.

[0026] The spacing will preferably be at most 10 mm, 5 mm, 4 mm, 3 mm or 2 mm +/- 0.5 mm. It is ensured by way of the spacing that the perforation cannot be too easily split, in particular cannot split or readily split in a self-acting manner during transportation. Nevertheless, the spacing ensures that the perforation overall can be split comparatively simply in a manual manner, or by hand, respectively. Likewise, the production is less prone to faults. It has proven particularly advantageous for only the tearing of the first two predetermined separation portions adjacent to the engagement incision to be more difficult to perform than the separation of the subsequent predetermined separation portions.

[0027] In a further preferred design embodiment of the invention it is provided that the rear side of the carrier material in the first connection portion is provided for adhesively bonding to the front side of the carrier material in the second connection portion; alternatively, a reversed adhesive bonding of the connection portions is also possible. For example, the front side and/or the rear side can be correspondingly pretreated for adhesive bonding (cleaned, degreased, napped, electrically charged, etc.) and/or comprise an adhesive. It is thus achieved that the blank can be easily fixed to a cup packaging so as to configure a packaging shell.

[0028] In a likewise preferred embodiment of the invention it is provided that the perforation, in particular some or all perforation portions, is/are disposed next to the first connection portion. Next here preferably means that the spacing from the connection portions corresponds to at most twice the width of the connection portion, preferably to the single width or half the width of the connection portion, said width being in particular transverse to the first periphery. In particular when the perforation lies close to the first connection portion, a practical technical effect can be achieved as a result of the blank being connected to the packaging shell at both connection portions, wherein the packaging shell in this instance will be substantially cup-shaped. Specifically, the packaging shell in the region of the connection portions has substantially double the thickness of the single carrier material and is thus reinforced. Therefore, the packaging shell in the region of the connection portions does not adapt that much to the curvature of the wall. This has an effect on the directly surrounding carrier material, because a more intense curvature around the wall of the cup packaging has to be applied by said carrier material. When at least the central perforation portion is now also disposed in the directly surrounding carrier material, and in particular when the central perforation portion in the carrier material is disposed beside the first connection portion, the engagement incision is more intensely spread apart. This facilitates the manual engagement.

[0029] According to a further preferred design embodiment of the invention it is provided that the engagement incision is at least substantially, in portions or completely configured so as to be curved. A curvature aids in spreading apart the engagement incision when the blank is wound about a cup packaging. Therefore, the engagement incision in a central region, thus remote from the ends thereof, can in particular be configured so as to be

curved. The engagement incision is preferably curved in a monotonous manner, that is to say without a change of direction of the curvature, so as to improve the spreading apart. A curvature, in particular a monotonous curvature, readily adapts to one or a plurality of engaging fingers, this also minimizing the risk of injury.

[0030] According to a further preferred design embodiment of the invention it is provided that the incisions of the upper and/or of the lower perforation portion, are at least substantially, in portions, partially and/or completely configured so as to be rectilinear. Rectilinear incisions are easy to produce and lead to an intense notching effect away from the engagement incision, this significantly facilitating the tearing open of the perforation once tearing has started on the engagement incision.

[0031] According to a further preferred design embodiment of the invention it is provided that the incisions of the upper and/or of the lower perforation portion, in a direction pointing from the base to the flange and/or from the lower periphery to the upper periphery, are disposed so as to be lined up in sequence so as to overlap and/or so as to be mutually offset. In other words, the incisions are not exclusively disposed on one line, or so as to be at least approximately lined up in sequence one behind the other, but in the profile from the bottom to the top, or from the top to the bottom, respectively, are laterally offset and/or disposed in a zigzag shape. Additionally, an (upper) end of the one incision may then lie after the (lower) end of the subsequent/next incision so as to increase the notching effect on the predetermined separation portion in these perforation portions.

[0032] According to a further preferred design embodiment of the invention it is provided that the incisions of a perforation portion, at least in portions, in particular in an alternating and/or cycled manner, point in each case in one of at least two, three, four, five, six or more incision directions. The incision directions, thus ultimately the direction or orientation, respectively, of the incisions, can be substantially, partially and/or completely identical. For example, a small angle in relation to a reference line such as the first periphery and a large angle in relation to the reference line can be established, from which the individual incision directions in each case in groups deviate by only up to 1°, 2°, 3°, 4°, 5° or else up to 10°. For example, the incisions, for example in an alternating manner, can thus point in a first and in a second direction, or else in even more directions. Cycled here means that a pattern of, for example two directions 1 and 2, for example 1, 1, 2, 2, 1, 1, is provided along a perforation portion. In particular, this preferred design embodiment is advantageously provided for in each case individual perforation portions such as a/the upper and a/the lower perforation portion.

[0033] According to a further preferred design embodiment of the invention it is provided that the length of the incisions of the upper and/or of the lower perforation portion increases at least substantially and/or partially in the direction of the central perforation portion. For example, it is also possible for the length of only a few incisions and/or each second incision and/or each incision having a specific incision direction to increase. In particular, the incision of the central perforation portion and/or of the engagement incision has the longest length of all incisions of the perforation.

[0034] According to a further preferred design embodiment of the invention it is provided that the second connection portion has a projecting tab, wherein the tab is adapted to the contour or curvature, respectively, of the engagement incision and/or the central perforation portion and/or is configured for reinforcing or supporting, respectively, the central perforation portion when connection portions, for configuring the packaging shell, are adhesively bonded to one another. In other words, the second connection portion, or the second periphery, respectively, can be configured or contoured, respectively, in such a manner that a tab in the region of the central perforation portion is adjacent to the engagement incision or incisions, respectively, and/or at least approaches the latter, when the connection portions are adhesively bonded to one another. The tab can support the carrier material in or close to, respectively, the first connection portion and thus ensure that the engagement incision is more intensely spread apart when the connection portions are adhesively bonded to one another. A separation of the perforation can thus be simplified because the engagement portion does not have to be first spread apart by a fingernail in order to engage.

[0035] The object according to the invention is also solved in a cup packaging having a packaging shell which is disposed in an encircling manner on a wall of the cup packaging between a base and a flange is also achieved in that the packaging shell has a blank according to the invention. In particular, the packaging shell will at least be substantially formed from this blank in that the blank is placed in an encircling manner onto the wall and is adhesively bonded to itself. The advantages of the blank apply in an analogous manner to the cup packaging having the packaging shell from the blank. The cup packaging having the packaging shell can withstand even forceful contact during transportation without the perforation being released, and also be easily manually released from the packaging shell by means of the perforation. This is in particular by virtue of the central perforation portion being spaced apart from the next upper or lower perforation portions.

[0036] One preferred cup packaging has a height of the cup of 50 to 250 mm, preferably 75 to 200 mm, furthermore preferably 100 to 150 mm, in particular 125 +/- 20 mm. A height of 85 mm +/- 5 mm is also advantageous. The wall across the cup height, or along the direction, respectively, has a height of approx. 0.1 up to 10 mm less than the height of the cup, preferably approx. 2 mm.

[0037] A base protrusion on the base has a height of 0.1 up to 5 mm, and a flange protrusion on the encircling flange has a height of 0.1 up to 5 mm.

[0038] The base, in particular including the base pro-

trusion, has a diameter of 20 to 250 mm, preferably 30 to 200 mm, furthermore preferably 50 to 150 mm, in particular 100 +/-20 mm.

[0039] The flange, in particular including the flange protrusion, preferably has a diameter of 30 to 375 mm, preferably 45 to 300 mm, furthermore preferably 75 to 225 mm, in particular 150 +/- 30 mm.

[0040] The flange preferably has an internal diameter, or an opening in the flange preferably has a diameter, respectively, of 25 to 370 mm, preferably 40 to 295 mm, furthermore preferably 70 to 220 mm, in particular 145 +/- 30 mm.

[0041] In the simplest case of a substantially cylindrical cup packaging, the wall in relation to the base has an angle of 90°. In order for the cup packagings to be able to be inserted into one another, stacked and/or easy to handle, the wall is however preferably configured so as to be conical, i.e. said wall tapers from the top to the bottom, or from the flange to the base, respectively. This is achieved in that the wall is frustoconical. An angle between the wall and the base of preferably 70° up to 90°, furthermore preferably of 80° up to 88°, particularly preferably of 82° up to 86°, and in particular of 84° +/- 1 ° is provided.

[0042] The correlation between the aforementioned angle and the design embodiment of the cup is derived from the trigonometric consideration of the radial widening across the height of the wall and the height of the wall orthogonal in relation to the base. Accordingly, the tangent of the angle is equal to the height of the wall divided by the radial widening.

[0043] In an arcuate blank, the aforementioned angle is derived in a similar manner. Here, the tangent of the angle is equal to the height divided by the difference between the lengths of the upper periphery and of the lower periphery in relation to twice the number pi. The angle, but twice in terms of size, is likewise found between the first and the second periphery on the blank, as long as the peripheries extend in a rectilinear manner at least in portions.

[0044] The angle is also found with the aid of considering the centres of the circles of the upper and the lower peripheries. The centre of the circle of the upper periphery and/or of the lower periphery will moreover typically lie outside the blank, in particular wherein the lower periphery is disposed closer to the centre of the circle than the upper periphery. The upper periphery and the lower periphery typically have the same centre of the circle.

[0045] In one preferred design embodiment of the cup packaging it is provided that the blank is adhesively bonded to itself, that two connection faces and/or the connection portions of the blank are adhesively bonded to one another, and/or that the blank is fixed to the cup packaging at least substantially by way of a form-fit between the flange and the base and/or is not adhesively bonded to the cup packaging. The blank can thus be held on the cup packaging (only) in that the blank is adhesively bonded to one another in two mutually remote connection faces on the blank and/or the connection portions are adhesively bonded to one another. The adhesively bonded blank, in particular the packaging shell, can be fastened to the cup packaging solely by way of a form-fit, in particular because the flange and/or the base form(s) a protrusion, or the wall forms a recess, respectively. When the blank is adhesively bonded only to itself, or the packaging shell is not adhesively bonded to the cup packaging, respectively, the separation of the cup packaging and the packaging shell/blank can be very easily performed because the packaging shell/blank may already be released from the cup packaging in the case of an at least partially or completely split perforation. An adhesive bonding of the cup packaging and the blank/packaging shell would interfere here. Additionally, this saves resources because in this instance only one adhesive-bonding step instead of two adhesive bonding steps is required in the production of the cup packaging.

[0046] The object according to the invention is also achieved by a method for separating a cup packaging from a packaging shell, wherein the cup packaging has at least a base, a flange, a wall between the base and the flange, as well as the packaging shell, wherein the packaging shell is disposed in an encircling manner on the wall, and wherein the packaging shell has a perforation having incisions, predetermined separation portions and an engagement portion. It can be particularly advantageous for the packaging shell to be configured from a blank according to arbitrary features of one of Claims 1 to 10, and/or for the cup packaging to be configured according to arbitrary features of one of Claims 11 and 12. In addition, the method according to the invention in any case comprises the following steps a) and b): a) providing the cup packaging having the packaging shell disposed thereon, and at least one unseparated predetermined separation portion, and b) compressing, in particular crushing, the cup packaging having the packaging shell. The compressing or crushing, respectively, preferably takes place by way of at least two converged faces of a press, having the cup packaging disposed therebetween. The converged faces of the press need not be in direct contact with the respective surfaces of the cup packaging. Preferably, the compressing or crushing, respectively, can initiate, or initiates, respectively, splitting of the predetermined separation portions. To this end, the method or the press, respectively, has to be correspondingly configured and/or operated.

[0047] The method according to the invention is designed such that said method can already be carried out in an arbitrary waste collection vehicle of a public waste collection company. Presses having two convergeable faces are typically already in such waste collection vehicles. But the two convergeable faces of the press can also be the two hand surfaces of a human being or a table top and the handsurface of a human being. The presses need not be in a public waste collection vehicle, but could be in a waste plant. The two convergeable surfaces of the press could also be surfaces of neighboring

objects that simply by their weight or by weight of material placed further above them, converge, for example if the cup packaging according to the invention is in the bottom of a pile or is in a plastic sack together with other material. Moreover, the cup packaging does not mandatorily have to have, but preferably does have a blank with the features of Claim 1 but the generic blank is also sufficient, for example. It has been specifically recognized by the method according to the invention that the separation of the cup packaging and the packaging shell cannot only be carried out manually, for example by way of an engagement in an engagement portion of a perforation, but also in a mechanized manner by the compressing or crushing, respectively, as described. The design embodiment of the perforation and/or of the blank or other features is not necessarily relevant. For example, it is relevant that the perforation can burst when the cup packaging is deformed/compressed/crushed. It is also typically relevant that the packaging shell is not too firmly connected to the cup packaging, for example in that said packaging shell is not adhesively bonded to the cup packaging.

[0048] In a preferred refinement of the method it is provided that the cup packaging in step b. is at least partially, in particular at least substantially, compressed or crushed, respectively, in a/the direction from the base to the flange. In particular, the direction from the flange to the base should be aligned so as to be at least substantially orthogonal to the base and/or to the flange. When the crushing or compressing, respectively, of the cup packaging partially takes place in the direction of the height of the cup packaging, the packaging shell will specifically bulge outwards and tear open along the perforation.

[0049] The invention will be explained in more detail hereunder by means of a drawing which illustrates only exemplary embodiments of the invention and which in particular is only substantially or partially true to scale, respectively. In the drawing:

Fig. 1 shows a blank in a plan view of the front side thereof;

Fig. 2 shows the blank of Fig. 1 which at the connection portions thereof is connected so as to provide a packaging shell, in a fragmented plan view;

Fig. 3 shows a cup packaging according to the invention having the packaging shell of Fig. 2 in a lateral view;

Fig. 4A shows a first method according to the invention in a schematic view; and

Fig. 4B shows a second method according to the invention in a schematic view.

[0050] Depicted in Fig. 1 is a blank 1 for a packaging shell 2 of a frustoconical cup packaging 3, said blank 1 being according to the invention and substantially in the shape of a annular portion. The blank 1 has a planar carrier material 4 having a front side 5 and a rear side 6 which is parallel to the front side 5 (to the extent that the carrier material 4 is spread out in a planar manner, as is presently the case). The carrier material 4 presently is produced from pulp and printed, or able to be printed, on the front side, respectively. The blank 1 has four peripheries 7, 8, 9, 10: a first periphery 7 and, diametrically opposite thereto, a second periphery 8; moreover an upper periphery 9 and, diametrically opposite thereto, a lower periphery 10. The peripheries 7, 8, 9, 10 delimit the carrier material 4 in a planar manner. The peripheries 7, 8, 9, 10 at the four mutual transition points configure four vertices 11 which presently are rounded. The vertices 11 are in each case assigned to the first periphery 7 or to the second periphery 8, respectively. The blank 1 along the first periphery 7, or the second periphery 8, or transversely to the upper/lower periphery 9, 10, respectively, has a constant height 12 of 86 +/- 1 mm.

[0051] A first connection portion 13 is adjacent to the first periphery 7. A second connection portion 14 is adjacent to the second periphery 8. The connection portions 13, 14 are in principle disposed between the upper and the lower periphery 9, 10, wherein the connection portions 13, 14 extend in each case from the upper periphery 9 to the lower periphery 10. The connection portions 13, 14 have in each case the carrier material 4, including the front side 5 and the rear side 6. For the purpose of a simplified illustration, the connection portion 13, 14 in Fig. 1, in each case including the peripheries, is bordered by a chain-dotted line.

[0052] The carrier material 4, in a manner adjacent and next to the first connection portion 13, is penetrated or weakened, respectively, by a perforation 15. The perforation 15 extends from the lower periphery 10 up to the upper periphery 9 and thus across substantially the entire height 12. The perforation 15 here has thirteen incisions 16 through the carrier material 4, including through the front side 5 and the rear side 6. Accordingly, twelve predetermined separation portions 17 are configured between the thirteen mutually spaced apart incisions 16. However, one predetermined separation portion 17 is in each case also configured between the uppermost incision 16 and the upper periphery 9 as well as between the lowermost incision 16 and the lower periphery 10. All incisions 16 are lined up in sequence.

[0053] One of the incisions 16, specifically the central incision 16, between six respective incisions 16 is configured as an engagement incision 18 for manually engaging through the carrier material 4 so as to split the perforation 15, presently in that the engagement incision 18 completely runs in a monotonous curved manner and is at least double the length of the other incisions 16. The engagement incision 18 in the direction 23 from the lower periphery up to the upper periphery presently has an en-

gagement height 19 of 18 +/- 2 mm. Moreover, the engagement height 19 is not to be confused with a/the length of an incision 27, because the engagement height 19 does not take into account the curvature which changes/enlarges the actual length 27.

[0054] The thirteen incisions 16 are divided into three perforation portions 20, 21, 22. A lower perforation portion 20 has the lower six, completely rectilinear incisions 16, and an upper perforation portion 21 has the upper six, completely rectilinear incisions 16. The remaining central incision 16, 18 which is completely curved in a monotonous manner is assigned to the central perforation portion 22. The central perforation portion 22 towards the top and towards the bottom, here pointing in an orthogonal direction 23 from the base 33 to the flange 30, or from the lower periphery 10 to the upper periphery 9, respectively, is disposed completely between, and spaced apart by the spacing A from, the next upper perforation portion 21 and the next lower perforation portion 20.

[0055] The incisions 16 of the upper and of the lower perforation portion 20, 21 are in each case configured so as to be completely rectilinear, and the engagement incision 18 of the central perforation portion 22 is configured so as to be completely curved. Moreover, the incisions 16 of the upper end of the lower perforation portion 20, 21 are disposed so as to be mutually laterally offset in the direction 23 and moreover lined up in sequence so as to overlap. In this overlap, the first incision 16 "terminates" in this direction 23 only once the subsequent/second incision 16 has "started" in a laterally offset manner. The lateral offset is designed so as to alternate in a monotonous manner. Despite a lateral offset, there is specifically no overlap in the transition to the central perforation portion 22. Specifically present is the spacing A from the central perforation portion 22.

[0056] The incisions 16 of the lower perforation portion 20 (but also those of the upper perforation portion 21) successively point in six different incision directions 24, wherein a type of "back and forth", or likewise a zigzag shape is present, respectively. This is achieved in that the angles 25, 26 of the incision directions 24, here in an exemplary manner relative to the first periphery 7, can be divided into two groups, specifically a group having small/minor angular values and a group having large/major angular values. The incisions 16 from the two groups are successively disposed in an alternating manner (minor, major, minor, major, minor, major). The three small angles 25 of the incision directions 24 of the one group are in the range from 5° up to 10°. The three large angles 26 of the incision directions 24 of the other group are in the range from 15° up to 20°. The difference between the small and the large angles 25, 26, or between the two groups (10° +/- 5°) ultimately defines the "back and forth" and the zigzagging of the incision directions 24 and has a very positive effect on the separation capability of the perforation 15, or the predetermined separation portions 17, respectively. In an exemplary embodiment not illustrated, based on the illustration, the angles 25, 26 may also be negative, for example in order to further modify the zigzag pattern.

[0057] The length 27 of the incisions 16 in the lower perforation portion 20 (but also in the upper perforation portion 21) substantially increases in the direction 23 of the central perforation portion. In principle, this presently is implemented in that the lowermost incision 16 (and also the uppermost incision 16) has a/the shortest length 27 and the respective incision 16 next to the central perforation portion 22 has a length 27 which is at least larger than the shortest length 27, even when said larger length 27 might not be the largest length 27 in the perforation portion 20 (21). The lengths 27 of the rectilinear incisions 16 presently are in the range from 4 mm up to 9 mm.

[0058] As detailed above, the upper perforation portion 21 is arranged above the central perforation portion 22 between the central perforation portion 22 and the upper periphery 9 and the lower perforation portion 20 arranged below the central perforation portion 22 between the central perforation portion 22 and the lower periphery 10. The engagement incision 18 has an upper end arranged closer to the upper perforation portion 21 than to the lower perforation portion 20. The upper perforation portion 21 has a bottom incision 16 that is arranged closest to the engagement incision 18. Said bottom incision 16 has a lower end. The upper end of the engagement incision 18 is arranged spaced apart from and lower than the lower end of the bottom incision 16. The upper end of the engagement incision 18 is arranged spaced apart from the lower end of the bottom incision 16 by a spacing A (see Fig. 2) of at least 0.1 mm, preferably by 0.5 mm, furthermore preferably by 1 mm, in particular by 1.2 mm,

[0059] The engagement incision 18 has a lower end arranged closer to the lower perforation portion 20 than to the upper perforation portion 21. The lower perforation portion 21 has an upper incision 16 that is arranged closest to the engagement incision 18. Said upper incision 16 has an upper end. The lower end of the engagement incision 18 is arranged spaced apart from and above the upper end of the upper incision 16. The lower end of the engagement incision 18 is arranged spaced apart from the upper end of the upper incision 16 by a spacing A (see Fig. 2) of at least 0.1 mm, preferably by 0.5 mm, furthermore preferably by 1 mm, in particular by 1.2 mm.

[0060] The second connection portion 14 has a projecting tab 28. The tab 28 is adapted to the contour, or the curvature, respectively, of the engagement incision 18. The tab 28 can support the central perforation portion 22 when the connection portions 13, 14 are adhesively bonded to one another. The first connection portion 13 by way of the rear side is provided for adhesively bonding to the front side 5 of the carrier material in the second connection portion 14. Accordingly, the front side 5 and the rear side 6 at least in these regions are suitable for an adhesive which is able to connect the carrier material 4, or the front side 5 and the rear side 6, respectively, to one another in a sufficiently firm and durable manner.

[0061] The blank 1 of Fig. 1 described above is illustrated in fragments in Fig. 2. The blank 1 is defined so as to form a packaging shell 2 in that the rear side 6 of the first connection portion 13 is connected, or adhesively bonded, respectively, to the front side 5 of the second connection portion 14. The second connection portion 14 having the tab 28 here is disposed below the first connection portion 13 and illustrated in an indicative manner by chain-dotted lines. The packaging shell 2 in the region of the overlap of the connection portions 13, 14 is reinforced and is not wound about the cup packaging 3 with the same radius as the remaining blank 1 remote from the connection portions 13, 14. The engagement incision 18 is thus spread apart. Fig. 2 furthermore shows the width 29 of the substantially rectangular connection portions 13, 14, the latter also overlapping on said width 29. The preceding description of the figures applies in an analogous manner.

[0062] In Fig. 3, the packaging shell 2 of Fig. 2 is attached to a cup packaging 3. The cup packaging 3 has a flange 30 having a round opening 31 for attaching a lid 32 (not illustrated), a base 33, as well as a wall 34 between the flange 30 and the base 33. The base 33 as well as the wall 34 are closed such that a fluid content can also be filled into the cup packaging 3 through the opening 31 and stored in the cup packaging 3. The blank 1 is disposed in an encircling manner on the wall 34. It is to be noted here that the perforation 15 conjointly with the first connection portion 13 is disposed radially on the cup packaging 3 so as to lie outside, or so as to lie above in relation to the first connection portion 13, respectively. As a result, the first connection portion 13 is reinforced by the second connection portion 14. Consequently, the first connection portion 13 does not adapt to the frustoconical, convex wall 34 in the same manner as the carrier material 4 between the connection portions 13, 14. As a result of the tab 28 lying close behind and on the engagement incision 18, the engagement incision 18 is slightly spread apart. This means that the carrier material 4 which was originally directly opposite the engagement portion 18 and separated at the latter is mutually diverged in portions, this resulting in a gap for easier engagement being configured.

[0063] Moreover, the packaging shell 2 is not adhesively bonded to the cup packaging 3. Rather, the blank 1 is adhesively bonded only to itself so as to configure the packaging shell 2. The packaging shell 2 is held on the cup packaging 3 by way of a form-fit because the wall 34 is radially recessed in relation to the periphery of the base 33, or a base protrusion 48, respectively, and the flange 30, or a flange protrusion 47, respectively, and because the packaging shell 2 is disposed so as to be tightly wound on/onto the wall 34. The packaging shell 2 is thus fixed between the flange 30 and the base 33 by way of a form-fit.

[0064] The cup packaging 3 of Fig. 3 has a height 35 of 90 mm. The wall 34 above the beaker height, or along the direction 23, respectively, has a height 36 of 86 mm. The base protrusion 48, or the base 33, respectively, has a height 37 of 2 mm, and the flange protrusion 47, or the flange 30, respectively has a height 38 of 2 mm. The base 33 has a diameter 39 of 56 mm including the (double) width 41 of the base protrusion 48 of 1 mm. Without the base protrusion 48, the base 33 has a diameter 45 of 54 mm. In relation to the base 33 the flange 30 has a "significantly" larger diameter 40 of 80 mm, this including the (double) width 42 of the flange protrusion 47 of 5 mm. Without the flange protrusion 47, and not taking into account the wall 34 which is only 0.2 mm thick, the flange 30 has an internal diameter, or the opening 31 in the flange 30 has a diameter 43, of 80 mm, respectively. The angle 44 of the wall in relation to the base in the exemplary embodiment is 84° +/-1°.

[0065] Fig. 4A shows a first method according to the invention shortly before a cup packaging 3 is compressed. It is illustrated that one upper face 49 of two faces 49, 50 of a press in a direction 52 can converge in parallel with the lower face 50, said direction 52 in principle corresponding to the direction 23, or being disposed parallel to the latter, respectively. The cup packaging 3 standing on the base 33 thereof is disposed between the two faces 49, 50, said cup packaging 3 moreover having a packaging shell 2. The packaging shell 2 is produced from a blank 1, has a perforation 15 and is not adhesively bonded to the cup packaging 3. By way of the method, the cup packaging 3 of Fig. 3 can be separated from the packaging shell 2 thereof in that the perforation 15, or all predetermined separation portions 17, respectively, is/are completely split because the perforation 15 "bursts" under a large deformation of the cup packaging 3.

[0066] Fig. 4B shows a second method according to the invention which substantially corresponds to the method of Fig. 4A. Deviating therefrom, the cup packaging 3 by way of the wall 34 thereof, or the packaging shell 2 disposed thereon, respectively, substantially bears on the lower face 50. In this method, the cup packaging 3 can only be partially compressed and crushed in one direction, thus only by way of one directional component along the direction 23, from the flange 30 towards the base 33, or from the base 33 towards the flange 30. Nevertheless, this method can also typically separate perforated packaging shells 2, and/or packaging shells 2 that are not adhesively bonded to the wall 34, respectively, from the wall 34 or from the cup packaging 3, respectively.

A	Spacing
1	Blank
2	Packaging shell
3	Cup packaging
4	Carrier material
5	Front side
6	Rear side
7	First periphery
8	Second periphery

9 Upper periphery
10 Lower periphery
11 Vertex
12 Height
13 First connection portion
14 Second connection portion
15 Perforation
16 Incision
17 Predetermined separation portion
18 Engagement incision, incision
19 Engagement height
20 Lower perforation portion
21 Upper perforation portion
22 Central perforation portion
23 Direction from the base to the flange, direction from the lower periphery to the upper periphery
24 Incision direction
25 Small angle
26 Large angle
27 Length of an incision
28 Tab
29 Width of a connection portion
30 Flange
31 Opening
32 Lid
33 Base
34 Wall
35 Height of the cup packaging
36 Height of the wall
37 Height of the base protrusion/base
38 Height of the flange protrusion/flange
39 Diameter of the base
40 Diameter of the flange
41 Width of the base protrusion
42 Width of the flange protrusion
43 Internal diameter of the flange, diameter of the opening
44 Angle of the wall in relation to the base
45 Diameter of the base without the flange protrusion
46 Arcuate portion angle of the blank
47 Flange protrusion
48 Base protrusion
49 Upper face
50 Lower face
51 Press
52 Direction

Claims

1. Blank (1) for a packaging shell (2) of a cup packaging (3), the cup packaging (3) having a base (33), a rim (30) opposite the base (33) and a wall (34) between the base (33) and the rim (30), the blank (1) being suitable for encasing the wall (34) in order to form the packaging shell (2); the blank (1) having:

• a planar carrier material (4) having a first periphery (7) and diametrically opposite a second periphery (8), as well as an upper periphery (9) and diametrically opposite a lower periphery (10), wherein the peripheries (7,8,9,10) at least substantially delimit the carrier material (4);
• a first connection portion (13) assigned to the first periphery (7) and disposed between the upper periphery (9) and the lower periphery (10);
• a second connection portion (14) assigned to the second periphery (8) and disposed between the upper periphery (9) and the lower periphery (10), provided for connecting to the first connection portion (13);
• a perforation (15) disposed between the connection portions (13, 14) and generally extending in a direction that points from the lower periphery (10) to the upper periphery (9), the perforation (15) having a plurality of incisions (16, 18) in and/or through the carrier material (4);
• wherein the incisions (16, 18) are at least substantially and/or in portions lined up in sequence and by way of mutual spacing configure predetermined separation portions (17);
• wherein at least one of the incisions (16, 18) is configured as an engagement incision (18) for manually engaging in or through the carrier material (4), respectively, so as to split the predetermined separation portions (17) ; and
• wherein the perforation (15) has

  • a central perforation portion (22) and
  • an upper perforation portion (21) arranged above the central perforation portion (22) between the central perforation portion (22) and the upper periphery (9) and
  • a lower perforation portion (20) arranged below the central perforation portion (22) between the central perforation portion (22) and the lower periphery (10)

• wherein each of the central perforation portion (22), the upper perforation portion (21) and the lower perforation portion (20) has at least one of the incisions (16, 18), whereby the engagement incision (18) is assigned to a central perforation portion (22),
• the engagement incision (18) has an upper end arranged closer to the upper perforation portion (21) than to the lower perforation portion (20), whereby the upper perforation portion (21) has a bottom incision (16) that is arranged closest to the engagement incision (18), said bottom incision (16) having a lower end,
• the engagement incision (18) has a lower end arranged closer to the lower perforation portion (20) than to the upper perforation portion (21), whereby the lower perforation portion (21) has an upper incision (16) that is arranged closest

to the engagement incision (18), said upper incision (16) having an upper end,

characterized in that
the upper end of the engagement incision (18) is arranged spaced apart from and lower than the lower end of the bottom incision (16)
and/or
the lower end of the engagement incision (18) is arranged spaced apart from and above the upper end of the upper incision (16).

2. Blank (1) according to Claim 1, **characterized in that** the upper end of the engagement incision (18) is arranged spaced apart from the lower end of the bottom incision (16) by a spacing (A) of at least 0.1 mm, preferably by 0.5 mm, furthermore preferably by 1 mm, in particular by 1.2 mm,
and/or
in that the lower end of the engagement incision (18) is arranged spaced apart from the upper end of the upper incision (16) by a spacing (A) of at least 0.1 mm, preferably by 0.5 mm, furthermore preferably by 1 mm, in particular by 1.2 mm.

3. Blank (1) according to Claim 1 or 2, **characterized in that** the rear side (6) of the carrier material (4) in the first connection portion (13) is provided for adhesively bonding to the front side (5) of the carrier material (4) in the second connection portion (14).

4. Blank (1) according to one of the preceding claims, **characterized in that** the perforation (15), in particular the perforation portions (20, 21, 22) is/are disposed next to the first connection portion (13).

5. Blank according to one of the preceding claims, **characterized in that** the engagement incision (18) is at least substantially, in portions or completely configured so as to be curved.

6. Blank (1) according to one of the preceding claims, **characterized in that** the incisions (16) of the upper and/or of the lower perforation portion (20, 21) are at least substantially, in portions or completely configured so as to be rectilinear.

7. Blank (1) according to one of the preceding claims, **characterized in that** the incisions (16) of the upper and/or of the lower perforation portion (20, 21), in a direction pointing from the lower periphery (10) to the upper periphery (9), are disposed so as to be lined up in sequence so as to overlap and/or so as to be mutually offset.

8. Blank (1) according to one of the preceding claims, **characterized in that** the incisions (16, 18) of a perforation portion (20, 21, 22), at least in portions, in particular in an alternating and/or cycled manner, point in each case in one of at least two, three, four, five, six or more incision directions (24).

9. Blank (1) according to one of the preceding claims, **characterized in that** the length (27) of the incisions (16) of the upper and/or of the lower perforation portion (20, 21) increases at least substantially and/or partially in the direction of the central perforation portion (22).

10. Blank (1) according to one of the preceding claims, **characterized in that** the second connection portion (14) has a projecting tab (28), preferably wherein the tab (28) is adapted to the contour or curvature, respectively, of engagement incision (18) and/or is configured for reinforcing or supporting, respectively, the central perforation portion (22) when connection portions (13, 14), for configuring the packaging shell (2), are adhesively bonded to one another.

11. Cup packaging (3) having a base (33), a rim (30) opposite the base (33) and a wall (34) between the base (33) and the rim (30), and a packaging shell (2), wherein the packaging shell (2) is disposed in an encircling manner around the wall (34) between the base (33) and the rim (30), **characterized in that** the packaging shell (2) is made of a blank (1) according to one of the preceding claims.

12. Cup packaging (3) according to Claim 11, **characterized in that** the blank (1) is adhesively bonded to itself, **in that** two connection faces and/or the connection portions (13, 14) of the blank (1) are adhesively bonded to one another, and/or **in that** the blank (1) is fixed to the cup packaging (3) at least substantially by way of a form-fit between the flange (30) and the base (33) and/or is not adhesively bonded to the cup packaging (3).

13. Method for separating a cup packaging (3) from a packaging shell (2), wherein the cup packaging (3) has at least a base (33), a rim (30), a wall (34) between the base (33) and the rim (30), as well the packaging shell (2), wherein the packaging shell (2) is disposed in an encircling manner around the wall (34), wherein the packaging shell (2) has a perforation (15) having incisions (16), predetermined separation portions (17) and has an engagement portion (18), said method comprising the following steps:

a. providing the cup packaging (3) having the packaging shell (2) disposed thereon, and at least one unseparated predetermined separation portion (17); and
b. compressing, in particular crushing, the cup packaging (2) having the packaging shell (2);

wherein the compressing or crushing, respectively, preferably takes place by way of at least two converged faces (49, 50) of a press (51), having the cup packaging (3) disposed therebetween, and preferably initiates, or can initiate, respectively, splitting of the predetermined separation portions.

14. Method according to Claim 12, **characterized in that** the cup packaging (3) in step b. is at least partially, in particular at least substantially, compressed or crushed, respectively, along or parallel to, respectively, a direction (23) from the base (33) to the rim (30).

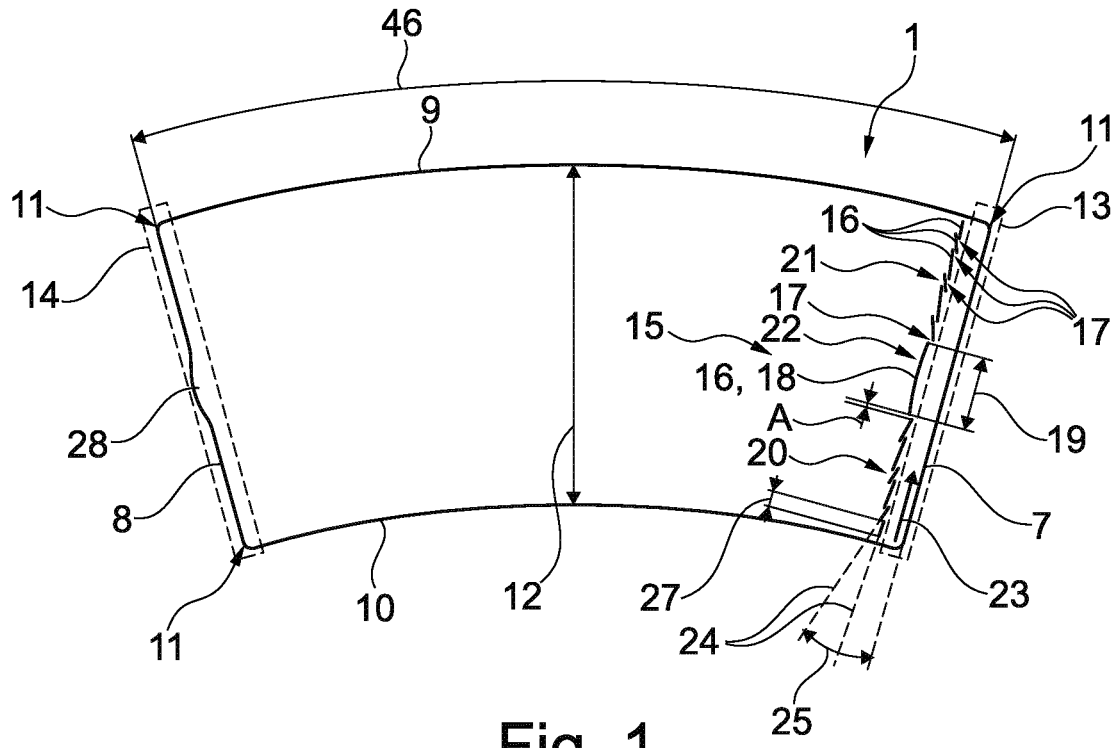
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Fig. 1

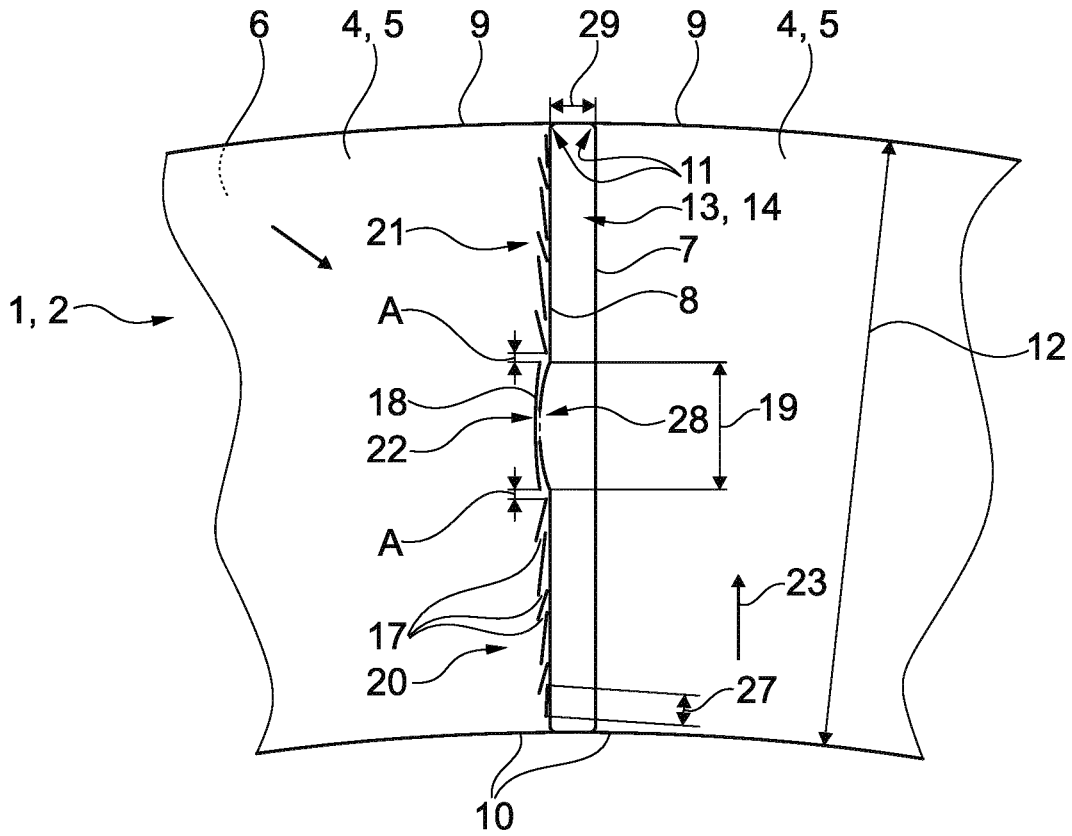
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Fig. 2

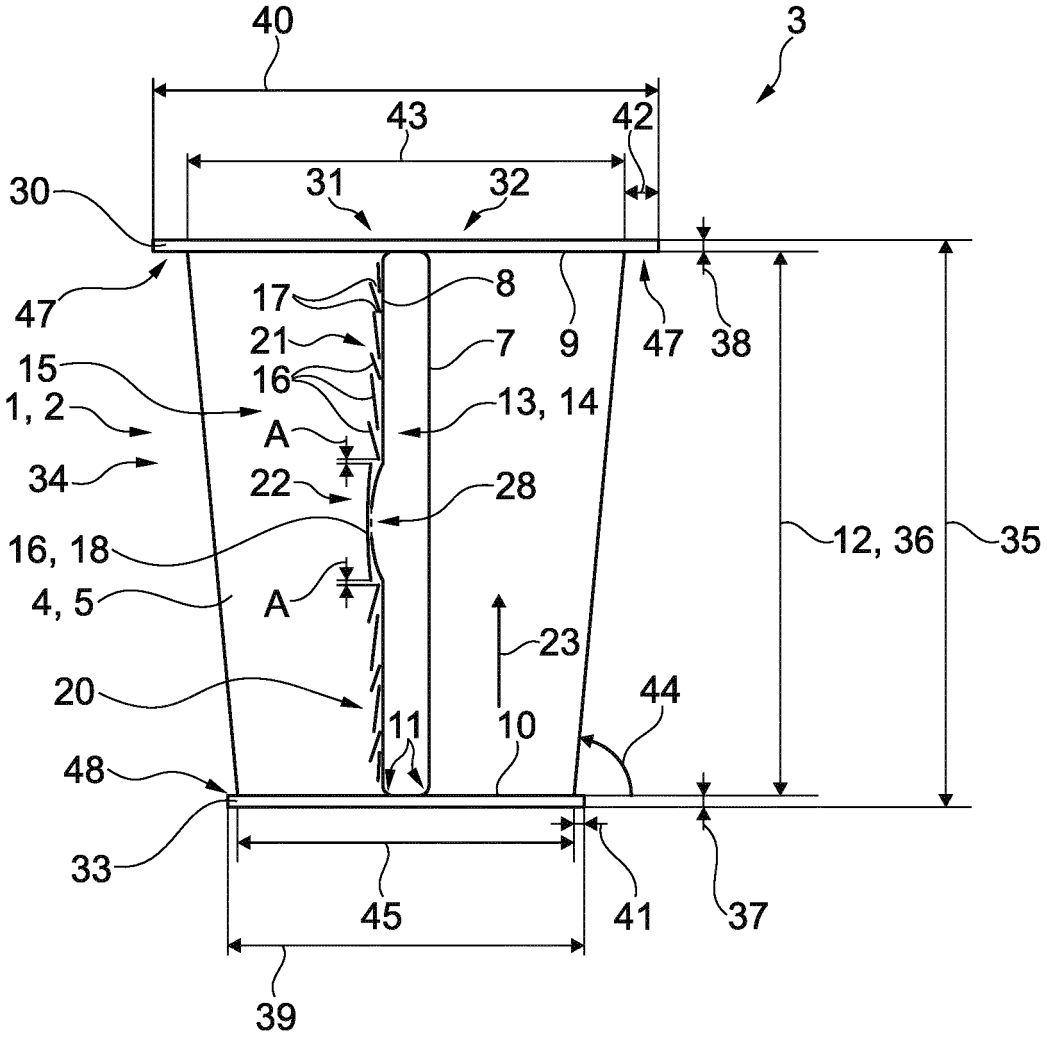

Fig. 3

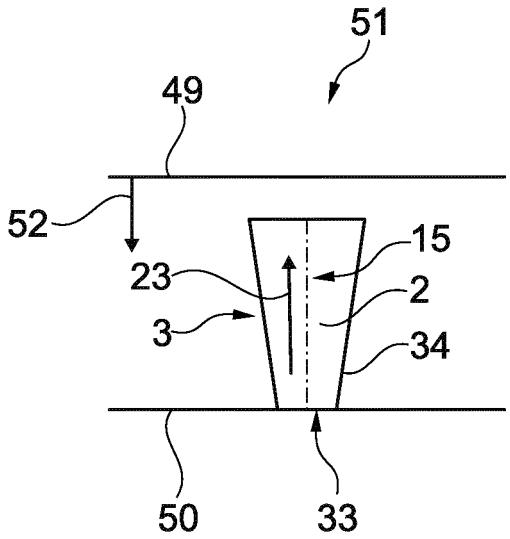

Fig. 4A

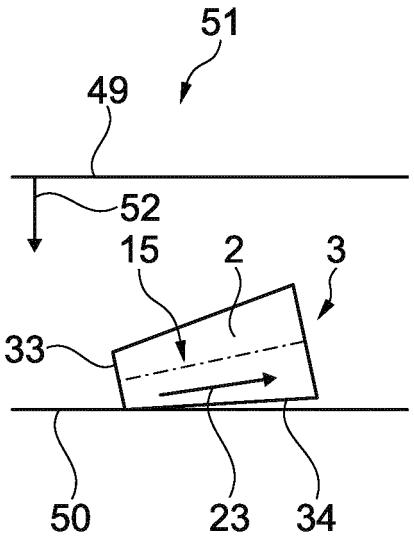

Fig. 4B

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EUROPEAN SEARCH REPORT

Application Number
EP 22 15 1982

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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	8 June 2022	Wimmer, Martin

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