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(54) **CONTAINER FOR POURABLE PRODUCTS AND METHOD FOR PRODUCING CONTAINERS FOR POURABLE PRODUCTS**

(57) A method for producing without waste containers for pourable products comprising the steps of:

- providing a continuous web (N) of packaging material, comprising: two longitudinal edges (B1, B2) parallel to each other, and a plurality of zones (Z1, Z2) consecutive to each other along the extension of the web (N), each being intended to form a container (1);
- making first crease lines (7, 8) on the web (N), in order to define, in each zone (Z1, Z2): a first portion (70) intended to form the rear wall (50) of the container (1), a second portion (80) intended to form the front wall (5) of the container (1); and a third portion (90), interposed between the first portion (70) and the second portion (80), intended to form the top wall (3) of the container (1);
- folding the web (N) on itself and filling the continuous tube (I) with a pourable product;
- sealing the continuous tube (I) and separating the formed packages by cutting the continuous tube (I) perpendicularly to the longitudinal edges (B1, B2);
- defining the final shape of each container (1), by folding the corresponding package at the first crease lines (7, 8).

In particular, the first crease lines (7, 8) are made in such a way that the first portion (70) and the second portion (80) of each zone (Z1, Z2) are trapezoidal in shape.

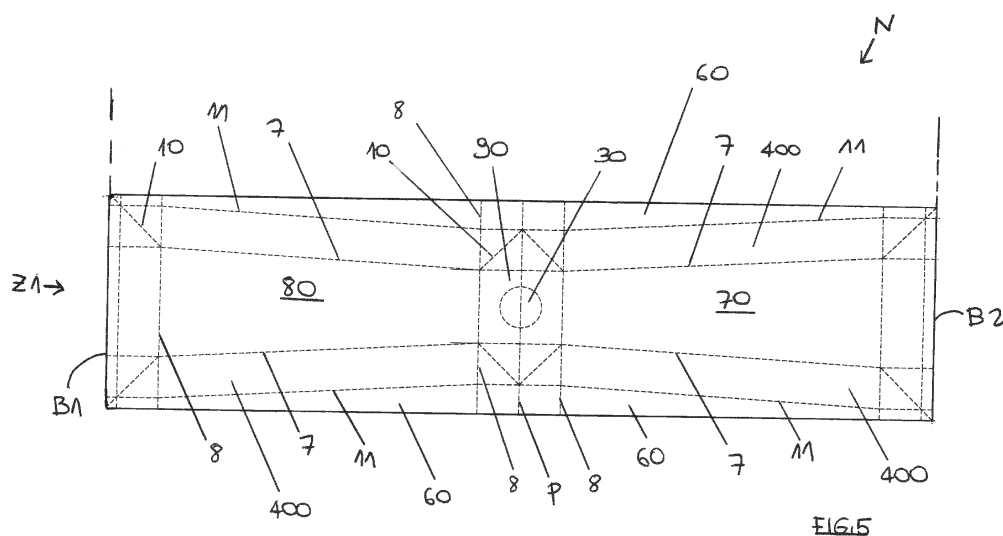


FIG. 5

Description

[0001] This invention addresses the technical field of containers for pourable food products. More in detail, the invention relates to a method for the production, without waste, of non-parallelepiped shaped containers for pourable products from a single continuous web of packaging material, and to a container obtained with this method.

[0002] Known in the prior art are containers for pourable food products, obtained from a single continuous web of packaging material. These containers are generally used to contain milk, fruit juices, sauces or beverages of other kinds.

[0003] The web of packaging material from which the containers are formed are composed of a plurality of layers of different materials coupled to each other (generally paper, aluminium, and heat-sealable plastic material such as polyethylene, for example).

[0004] The web of packaging material is processed in a dedicated automatic machine which comprises, in cascade, different stations through which the web is conveyed until single, filled and sealed containers are obtained.

[0005] These containers obtained from a continuous web of material generally have the shape of a parallelepiped. Containers having this shape, however, may be unergonomic for consumers and/or may not guarantee optimum pourability of the product from the container itself.

[0006] Containers with shapes different from parallelepipeds are, instead, usually obtained from corresponding blanks which are individually folded, filled and sealed, and are thus not obtained from a continuous web of material. In effect, making containers of a shape other than parallelepiped from a web of packaging material involves creating waste material, even in significant amounts, with all the costs associated therewith.

[0007] This invention has for an aim to overcome the drawbacks described above.

[0008] This aim is achieved by proposing a method for the production, without waste, of non-parallelepiped shaped containers for pourable products from a single continuous web of packaging material, and to a container obtained with this method, according to the accompanying claims.

[0009] Advantageously, this invention allows using a continuous web of packaging material for producing containers for pourable products, without waste, where such containers are ergonomic and have a shape different from the shape of a parallelepiped.

[0010] Specific embodiments of the invention will be made more evident in this specification with the aid of the accompanying drawings, in which:

- Figure 1 is a perspective view of a container made according to the method of the invention;
- Figure 2 is a side view of the container of Figure 1;
- Figure 3 is a partial view of a continuous web of ma-

terial during a step of the method according to the invention;

- Figure 4 is a partial view schematically representing a step of the method according to the invention following the step of Figure 3;
- Figure 5 shows an enlarged view of a detail from Figure 3.

[0011] To make clearer the description of the method according to the invention, a container 1 obtained with this method and illustrated by way of example in Figures 1 and 2 will be described first.

[0012] The container 1, obtained without waste from a continuous web N of packaging material (as will become clearer as this specification continues); has a longitudinal axis of extension H and comprises: a bottom wall 2 (intended to be rested, for example, on a flat surface) transverse to the axis of extension H and a top wall 3, opposite to the bottom wall 2, where the dispensing of the pourable product occurs. More in detail, the top wall 3 may be provided with dispensing means 30, such as a spout and cap or a hole for a straw (see Figure 1).

[0013] The container 1 comprises: two side walls 4, 40, opposite to each other and transverse to the top wall 3 and the bottom wall 2; a front wall 5 and a rear wall 50 disposed between the two side walls 4, 40 and connected to the side walls by means of corresponding perimetral edges 54, 540. The container 1 also comprises two side seals 6 (only one of which is shown in the drawings), each positioned at a corresponding side wall 4, 40. In the case illustrated, the container 1 has, on each side wall 4, 40, two first fold lines S (only one of which is shown in Figures 1 and 2). The first two fold lines S are formed when the side seals 6 are made by the sealers usually present in dedicated automatic machines. In Figures 1 and 2, the first fold line S illustrated is located at the centre line of the corresponding side wall 4.

[0014] In the container 1 according to the invention, the front wall 5 and the rear wall 50 each have, in particular, a trapezoidal shape. In other words, the perimetral edges 54, 540 are inclined with respect to the axis of extension H of the container 1.

[0015] Further, the side seals 6 are inclined with respect to the perimetral edges 54, 540 (and also with respect to the axis of extension H).

[0016] Owing to the trapezoidal shape of the front wall 5 and of the rear wall 50, the top wall 3 and the bottom wall 2 of the container 1 clearly differ in size. In the preferred embodiment of the invention, the top wall 3 is smaller than the bottom wall 2, that is to say, the minor bases of the trapeziums of the front wall 5 and rear wall 50 are connected to the top wall 3, while the major bases of the trapeziums of the front wall 5 and rear wall 50 are connected to the bottom wall 2 of the container 1. This preferred embodiment facilitates dispensing of the product, which is conveyed towards the part of the container 1 with the smaller cross section, that is, the top wall 3, where suitable dispensing means 30 are provided to al-

low pouring the product out.

[0017] On its top wall 3, the container 1 has a second fold line P created by the process by which the container 1 itself is formed, as will become clearer in the description of the method which follows.

[0018] In a first variant, the top wall 3 and the bottom wall 2 of the container are both rectangular in shape. For example, the top wall 3 is square and the bottom wall 2 is rectangular (as in the case illustrated in the drawings).

[0019] In a different alternative, the top wall 3 and the bottom wall 2 of the container 1 are both trapezoidal in shape.

[0020] In a further variant, the top wall 3 is trapezoidal in shape and the bottom wall 2 is rectangular, or vice versa.

[0021] As illustrated in the drawings, the side seals 6 on the side walls 4, 40 of the container 1 do not run along the centre line of the corresponding side wall 4, 40 but, instead, are proximal to one of the perimetral edges 54, 540. Advantageously, this aspect increases the size of the printable surface of the side walls 4, 40 compared to prior art containers in which the side seals are located centrally of the side walls of the containers.

[0022] The method according to the invention, used to make a container 1 like the one described above, comprises providing a continuous web N of packaging material extending mainly longitudinally and comprising (with reference in particular to Figure 3): two longitudinal edges B1, B2 parallel to each other, and a plurality of zones Z1, Z2 adjacent to each other and consecutive along the extension of the web N. The zones Z1, Z2 are perpendicular to the longitudinal edges B1, B2 and each is intended to form a container 1. That means each zone Z1, Z2 defines the length of web N used to form one container 1. The web N is, for example, unwound from a roll B, as shown by way of an example in Figure 3.

[0023] The method comprises the step of making first longitudinal and transverse crease lines 8 and 7 on the web N, in order to define, in each zone Z1, Z2, at least: a first portion 70 intended to form the rear wall 50 of the container 1 (once formed), a second portion 80 intended to form the front wall 5 of the container 1 (once formed); and a third portion 90, interposed between the first portion 70 and the second portion 80, intended to form the top wall 3 of the container 1 (once formed).

[0024] With reference to the processing of the web N in an automatic machine for the production of containers 1, it is clear that the step of making the first crease lines may be carried out before the web N is fed to the machine or after the web N is fed to the machine. In other words, the step of making the first crease lines may or may not be carried out by the same automatic machine which makes the containers 1.

[0025] The method further comprises the step of folding the web N on itself (specifically at the third portion of each zone Z1, Z2, that is, along the axis of extension of the web N), closing it (by sealing) in such a way as to form a continuous tube I that is open at one end (see

Figure 4). The step of folding the web N makes, on the formed containers 1, a second fold line P running along the top wall 3 (see Figure 1), specifically along the centre line of the top wall 3. For greater clarity, the second fold line P is also shown in Figure 4.

[0026] Next, the continuous tube I is filled with a pourable product (milk, fruit juice, etc.) and then sealed in such a way as to form closed and filled packages (not illustrated) adjacent to each other (and each coinciding with a zone Z1, Z2 of the web N). More in detail, Figure 4 schematically illustrates, by way of example, a filler pipe F used to fill the continuous tube I with the pourable product.

[0027] The packages, once filled and closed, are then separated by cutting the continuous tube I perpendicularly to the longitudinal edges B1, B2 of the web N. As is known, the cut by which each package is separated from the continuous tube I is made substantially half way along the sealed part so that a single seal closes two packages.

[0028] Looking in more detail, the web N is cut at the edges which delimit each zone Z1, Z2 from an adjacent zone Z1, Z2. In other words, the cutting lines T of the tube I coincide with the separating lines of the zones Z1, Z2 of the web N (see Figure 4).

[0029] The final shape of each container 1 is defined by folding each package at the first transverse and longitudinal crease lines 7 and 8 previously made on the web N of packaging material.

[0030] More specifically, the first transverse and longitudinal crease lines 7 and 8 on the web N are made in such a way that the first portion 70 and the second portion 80 of each zone Z1, Z2 have a trapezoidal shape.

[0031] In other words, the first transverse and longitudinal crease lines 7 and 8 define two trapezoidal shapes bilaterally with respect to the axis of extension of the web N. Considering each of the two trapeziums, the two respective non-parallel sides, which are inclined and convergent, will constitute the aforementioned perimetral edges 54, 540 (described above) of the container 1 when formed.

[0032] Since the transverse and longitudinal crease lines 7 and 8 on the web N are made in such a way that the first portion 70 and the second portion 80 of each zone Z1, Z2 have a trapezoidal shape, the perimetral edges 54, 540 of the container 1 obtained (that is, the side edges, that is, the transverse crease lines 7 themselves) will be inclined with respect to the line of cutting the web N and with respect to the side seals 6.

[0033] Advantageously, therefore, containers 1 which are not in the shape of parallelepipeds and which are thus ergonomic are made without producing any waste material. This is guaranteed by the fact that the cut is not shaped to make seals which are parallel to the perimetral edges of the container but is made perpendicularly to the longitudinal edges B1, B2 of the web N.

[0034] In the prior art, on the other hand, containers not shaped like parallelepipeds were obtained from corresponding blanks which were processed individually be-

cause making containers of a shape other than parallel-epiped from a web of packaging material involved huge amounts of waste material, with all the costs associated therewith.

[0035] Obviously, further portions can be defined on the web N during the formation of the first transverse and longitudinal crease lines 7, 8, that is to say, second transverse and longitudinal crease lines 11 and 10 can be made on the web N (see detail of Figure 5). Some of the second crease lines 11, for example, are such as to define in each portion Z1, Z2 of the web N, side portions 400 adjacent to the first portion 70 and the second portion 80 along the direction of extension of the web N; again with reference to the drawings, the second transverse crease lines 11 are parallel to the first transverse crease lines 7. The side portions 400 thus defined can be intended to constitute the side walls 4, 40 of the container 1, once formed (see detail of Figure 5).

[0036] Further, once the aforesaid second transverse crease lines 11 have been formed, there is defined, between each second crease line 11 and each cutting line T (that is, each line along which the closed and filled packages are cut, as will become clearer below), a sealing zone 60 intended to be sealed (that is, to constitute the side seals 6 described previously).

[0037] For example, the second longitudinal crease lines 10 can define the fold lines for what will become the corners Z of the container 1.

[0038] As is known, after cutting the individual packages perpendicularly to the edges B1, B2 of the web N, the packages have a "pillow" shape. During the step of defining the final shape of the container 1, each corner of the individual "pillow" package is folded (for example, along the aforesaid second longitudinal crease lines 11) and sealed along one wall of the container 1 being formed. More in detail, two corners (not illustrated in the accompanying drawings) are folded and sealed for example on the bottom wall 2 of the container 1 and the other two corners Z (only one of which is shown in Figures 1 and 2) are folded and sealed along the side walls 4, 40 of the container 1.

[0039] The first transverse and longitudinal crease lines 7, 8 of each zone Z1, Z2 of the web N are shaped in such a way that once the corners of the corresponding package have been folded onto the side walls 4, 40 of the container 1, they do not protrude beyond the perimetral edges 5, 540. The inclination of the crease lines (hence of the perimetral edges) of the trapezoidal shapes is thus limited by this aspect.

Claims

1. A container (1) for pourable products, the container (1) being obtained without waste from a continuous web (N) of packaging material; the container (1) having a longitudinal axis of extension (H) and comprising: a bottom wall (2) transverse to the axis of extension

(H) and a top wall (3), opposite to the bottom wall (2), where the dispensing of the pourable product occurs; two side walls (4, 40), opposite to each other and transverse to the top wall (3) and the bottom wall (2); a front wall (5) and a rear wall (50) disposed between the side walls (4, 40) and connected to the two side walls by means of corresponding perimetral edges (54, 540); two side seals (6), each positioned at a corresponding side wall (4, 40); **characterized in that:** the front wall (5) and the rear wall (50) have a trapezoidal shape; and **in that:** the side seals (6) are inclined with respect to said perimetral edges (54, 540).

2. The container (1) according to the preceding claim, wherein the top wall (3) is smaller in size than the bottom wall (2).

3. The container (1) according to either of the preceding claims, wherein the top wall (3) and the bottom wall (2) are rectangular in shape.

4. The container according to claim 1 or 2, wherein the top wall and the bottom wall are trapezoidal in shape.

5. The container according to claim 1 or 2, wherein the top wall is trapezoidal in shape and the bottom wall is rectangular in shape, or vice versa.

6. The container (1) according to any one of the preceding claims, wherein the side seals (6) are offset from the centre line of the corresponding side wall (4, 40) and are in the vicinity of a perimetral edge (54, 540).

7. A method for producing without waste containers (1) for pourable products according to any one of the preceding claims, the process comprising the steps of:

- providing a continuous web (N) of packaging material, the web (N) extending mainly longitudinally and comprising: two longitudinal edges (B1, B2) parallel to each other, and a plurality of zones (Z1, Z2) adjacent to each other and consecutive along the extension of the web (N); said zones being perpendicular to the longitudinal edges (B1, B2) and each being intended to form a container (1);

- making first longitudinal and transverse crease lines (8, 7) on the web (N), in order to define, in each zone (Z1, Z2): a first portion (70) intended to form the rear wall (50) of the container (1), a second portion (80) intended to form the front wall (5) of the container (1); and a third portion (90), interposed between the first portion (70) and the second portion (80), intended to form the top wall (3) of the container (1);

- folding the web (N) on itself, closing it in such a way as to form a continuous tube (I) that is open at one end, and filling the continuous tube (I) with a pourable product;
- sealing the continuous tube (I) in order to form a plurality of closed and filled packages adjacent to each other; and separating the formed packages by cutting the continuous tube (I) perpendicularly to the longitudinal edges (B1, B2);
- defining the final shape of each container (1), by folding the corresponding package at the first transverse and longitudinal crease lines (7, 8) of the packaging material of the web (N);

the method being **characterized in that:** the first transverse and longitudinal crease lines (7, 8) are made in such a way that the first portion (70) and the second portion (80) of each zone (Z1, Z2) have a trapezoidal shape.

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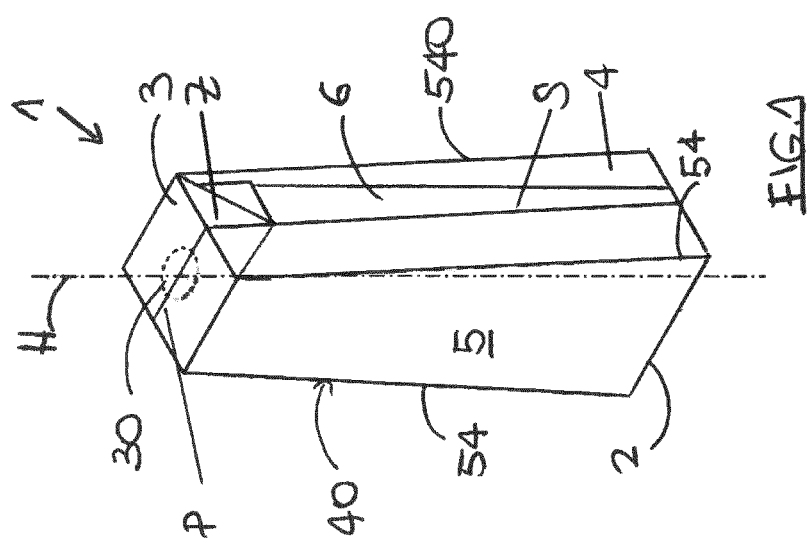
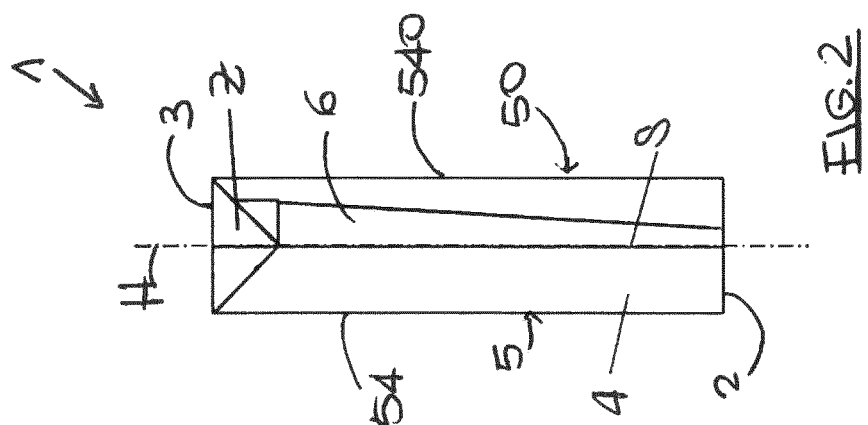
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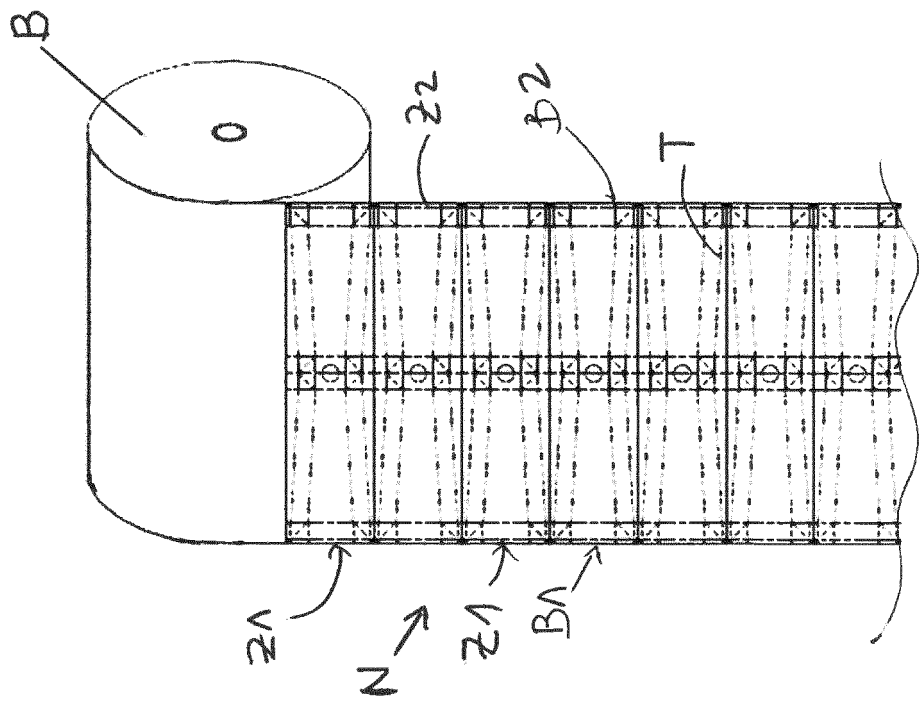


FIG. 3

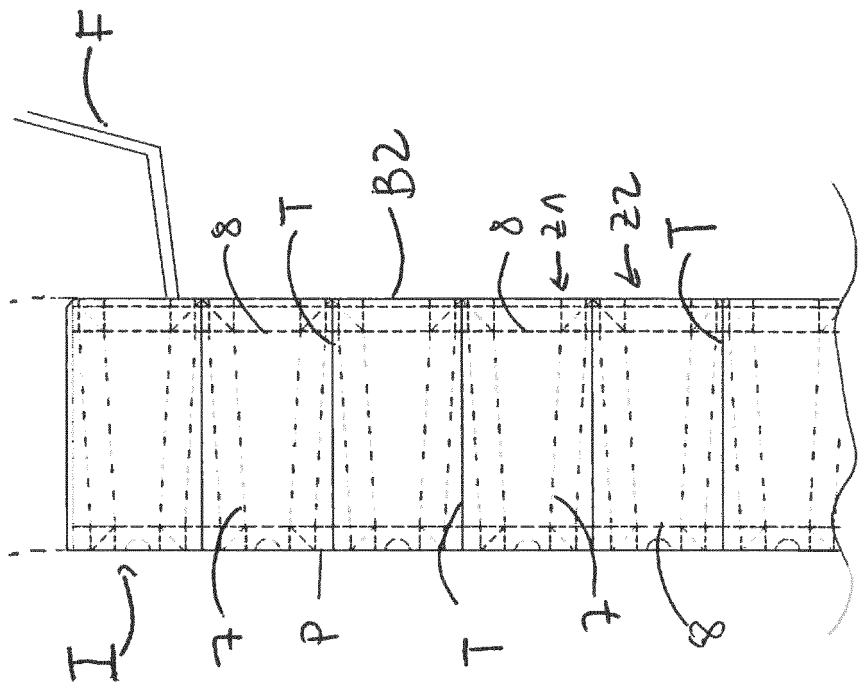
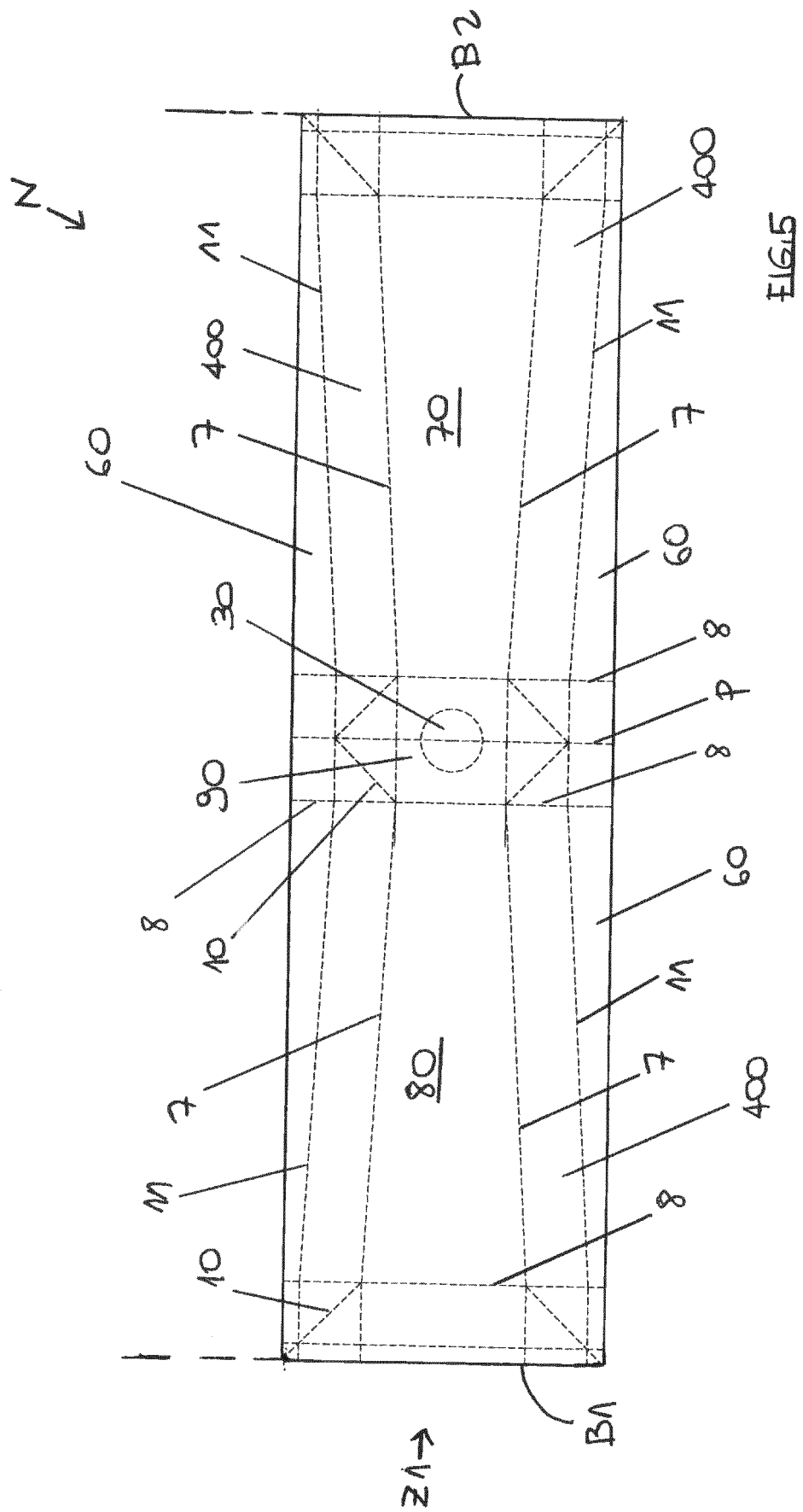


FIG. 4





EUROPEAN SEARCH REPORT

Application Number
EP 17 19 9237

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 2014/118813 A1 (IPI SRL [IT]) 7 August 2014 (2014-08-07) * page 4, line 25 - page 5, line 4 * * page 7, lines 7-12 * * page 8, lines 2-5 * * page 9, lines 27-29; figures 1-4 *	1-7	INV. B65D5/74 B65D5/00 B65D5/02 B65D5/06 B65D5/40
X	EP 2 650 223 A1 (TETRA LAVAL HOLDINGS & FINANCE [CH]) 16 October 2013 (2013-10-16) * figures 1-3, 6-8 *	1-7	
A	EP 1 316 508 A1 (TETRA LAVAL HOLDINGS & FINANCE [CH]) 4 June 2003 (2003-06-04) * figures 1-5 *	1-7	
A	DE 200 23 038 U1 (SIG COMBIBLOC SYS GMBH [DE]) 24 October 2002 (2002-10-24) * figures 1-12 *	1-7	
			TECHNICAL FIELDS SEARCHED (IPC)
			B65D
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 23 March 2018	Examiner Serbescu, Anca
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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ON EUROPEAN PATENT APPLICATION NO.**

EP 17 19 9237

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2014118813 A1	07-08-2014	EP 2951102 A1 WO 2014118813 A1	09-12-2015 07-08-2014
EP 2650223 A1	16-10-2013	BR 112013013796 A2 CN 103228542 A EP 2650223 A1 JP 5606428 B2 JP 2012136289 A MX 337224 B RU 2013131031 A US 2013276410 A1 WO 2012077594 A1	13-09-2016 31-07-2013 16-10-2013 15-10-2014 19-07-2012 18-02-2016 20-01-2015 24-10-2013 14-06-2012
EP 1316508 A1	04-06-2003	AT 295306 T AU 2002342914 A1 DE 60110816 D1 DE 60110816 T2 EP 1316508 A1 WO 03045794 A1	15-05-2005 10-06-2003 16-06-2005 23-02-2006 04-06-2003 05-06-2003
DE 20023038 U1	24-10-2002	NONE	