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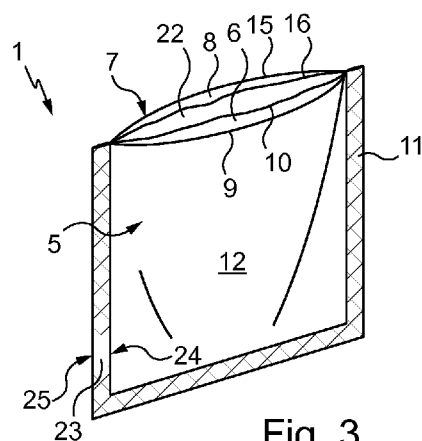


Fig. 3

(57) Abstract: The invention relates to a unit package (1) comprising first/second sachets (5, 7) provided with first/second external sheets (9, 15) situated opposite first/second internal sheets (10, 16) and sealed by first/second external peripheral edges (11, 17) to first/second internal peripheral edges (13, 19) so as to form first/second compartments (6, 8) for receiving given products; said first internal sheet is located opposite said second internal sheet of said second sachet and is at least partially sealed by its first internal peripheral edge to said second internal peripheral edge of said second internal sheet, so as to form an empty space (22) devoid of given product between said first and second internal sheets; said package having closed/open states in which said first/second compartments are closed/open such that said products are separated/mixed.



Unit package for the extemporaneous mixing of given products, and
method for manufacturing such package

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FIELD OF THE INVENTION

The invention relates to unit packages for the extemporaneous mixing of given products, notably of the pharmaceutical and/or food and/or agri-food and/or functional food and/or cosmetic type, or else for products of the paint, solvent, oil, etc. type.

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The invention also relates to the methods for manufacturing such unit packages.

TECHNOLOGICAL BACKGROUND

French patent application FR 2 915 739 discloses a multi-compartment sachet formed by two parallel films and by a separating wall interposed between these two films. The two films and the wall are made of a flexible material and are sealed together by their peripheral edges so as to delimit an internal volume defined by two separate compartments.

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That French patent application FR 2 915 739 describes, in a variant, a sachet provided with two partition walls so as to form, with the two films, an internal volume divided into three separate compartments rather than two.

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Each of the the two or three compartments is intended to contain a dose of product intended to be mixed extemporaneously.

SUBJECT OF THE INVENTION

The invention proposes providing a unit package for the extemporaneous mixing of given products, notably of the pharmaceutical and/or food and/or agri-food and/or functional food and/or cosmetic type, or else for products of the paint, solvent, oil, etc. type, of a similar kind, but which is simple, economical and convenient both to use and to manufacture.

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Thus, in a first aspect, the subject of the invention is a unit package for the extemporaneous mixing of given products, comprising a first compartment configured to hold at least one given product and a second compartment configured to hold at least one other given product, said unit package being made

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of a flexible or at least partially flexible material, characterized in that said unit package comprises:

- a first sachet provided with a first external sheet and a first internal sheet situated opposite said first external sheet and sealed by a first internal peripheral edge to a first external peripheral edge of said first external sheet so as to form said first compartment;

- a second sachet provided with a second external sheet and a second internal sheet situated opposite said second external sheet and sealed by a second internal peripheral edge to a second external peripheral edge of said second external sheet so as to form said second compartment;

where said first internal sheet of said first sachet is located opposite said second internal sheet of said second sachet and is at least partially sealed by its first internal peripheral edge to said second internal peripheral edge of said second internal sheet of said second sachet such that an empty space, which is devoid of given product, is formed between said first and second internal sheets;

and where said unit package exhibits a closed state in which said first and second compartments are each closed such that said given products are separated and cannot be mixed, and an open state in which said first and second compartments are each open such that said given products can be mixed.

The multi-compartment unit package according to the invention having separate compartments is particularly simple and economical on account of the combination of the first and second sachets, which are assembled by superposition and at least partial sealing of the first and second internal edges of the first and second internal sheets, respectively, of the first and second sachets, respectively.

It will be noted that, in contrast to the first and second compartments formed initially and in the first and second sachets, respectively, the empty space formed between the first and second internal sheets of the first and second sachets, respectively, combined is not configured and intended to receive a given product but, on the contrary, is devoid thereof.

The package according to the invention is moreover particularly convenient for the extemporaneous mixing of given products that are stored

separately in the compartments, since it is configured to prevent the first compartment from being able to be opened without the second compartment also being opened, and vice versa.

Thus, the taking for example of a pharmaceutical product, an agri-food
5 product, a food product or a product of the functional food type, or the application of a cosmetic product or a product of the paint, solvent or oil type, contained in one of the compartments without the given product contained in the other compartment is normally impossible and at the very least avoided.

It will be noted that the unit package may comprise two products of the
10 same type or different types, for example a food or agri-food product and a pharmaceutical product, in these compartments.

It will be noted that the need to have several compartments for storing and conserving different given products is due to their incompatibility, while the need to mix them during the taking or application of these products is due to the
15 obtaining of a desired reaction, for example a chemical reaction, which is particularly effective for the patient taking or applying the product.

According to preferred, simple, convenient and economical features of the package according to the invention:

- the package is provided with at least one vent hole that leads at a
20 first end into said empty space and at a second end, away from said first end, out of said package;
- said at least one vent hole is formed between a first free portion formed in said first internal peripheral edge of said first internal sheet of said first sachet and a second free portion formed in said second internal peripheral edge
25 of said second internal sheet of said second sachet;
- said first compartment is delimited by a first seal, said second compartment is delimited by a second seal, and said empty space is delimited by a third seal which is different from said first seal and said second seal;
- said third seal has a first simple pattern and at least one of said first
30 and second seals has a complex pattern formed by the superposition of said first simple pattern and a second simple pattern;

- said first simple pattern is configured to ensure at least the joint between said first internal peripheral edge of said first internal sheet of said first sachet and said second internal peripheral edge of said second internal sheet of said second sachet; while said complex pattern is configured to ensure the joint and impermeability between said first internal peripheral edge of said first internal sheet and said first external peripheral edge of said first external sheet of said first sachet and/or between said second internal peripheral edge of said second internal sheet and said second external peripheral edge of said second external sheet of said second sachet;
- said first external and internal sheets of said first sachet are sealed together by welding, said second external and internal sheets of said second sachet are sealed together by welding, and said first and second internal sheets of said first and second sachets, respectively, are at least partially sealed together by welding;
- the package is provided with at least one breakable portion formed both in said first sachet and in said second sachet, at least at said first external and internal peripheral edges and said second external and internal peripheral edges; and/or
- said at least one breakable portion is formed by a thinning, a precut or a cut made in said first external and internal peripheral edges and in said second external and internal peripheral edges.

According to further preferred, simple, convenient and economical features of the package according to the invention, each of said first and second sachets is formed from one or more films made of flexible or at least partially flexible material, for example of polyethylene terephthalate (PET), and/or of polyethylene (PE) and/or of polypropylene (PP) and/or of aluminium (ALU) and/or of paper (PAP).

For example, said external sheet and said internal sheet of each said sachet may have a laminated structure formed of several films, the structure having, from the outside to the inside of said sachet, polyethylene (PE), polyethylene terephthalate (PET), aluminium (ALU) and polyethylene (PE), or

polypropylene (PP), aluminium (ALU) and polypropylene (PP), or else polyethylene (PE), paper (PAP), aluminium (ALU) and polyethylene (PE).

A further subject of the invention is also the use of the package as described above for the storage of given products for the extemporaneous mixing thereof. In particular the products may be pharmaceutical products and/or food
5 or agri-food products and/or products of the functional food type.

For example, said first compartment of said package as described above may comprise a first predetermined volume of ferroquine and artefenomel mixed together and said second compartment may comprise a second
10 predetermined volume of one or more nutritional supplements, such as milk powder.

In a variant, the products may also be cosmetic products, or else products of the paint, solvent, oil, etc. type.

In a second aspect, the subject of the invention is also a method for
15 manufacturing a unit package as described above, comprising the steps of:

- providing a first sachet provided with a first internal sheet having a first internal peripheral edge and a first external sheet situated opposite said first internal sheet and having a first external peripheral edge opposite said first internal peripheral edge so as to form a first compartment; and a second sachet
20 provided with a second internal sheet having a second internal peripheral edge and a second external sheet situated opposite said second internal sheet and having a second external peripheral edge opposite said second internal peripheral edge so as to form a second compartment separate from said first compartment;
- 25 - positioning said first internal sheet of said first sachet opposite said second internal sheet of said second sachet;
- at least partially sealing said first internal peripheral edge of said first internal sheet of said first sachet to said second internal peripheral edge of said second internal sheet of said second sachet so as to form an empty space,
30 devoid of given product, between said first and second internal sheets of said first and second sachets, respectively.

The manufacture of such a package is particularly convenient and simple to implement.

According to preferred, simple, convenient and economical features of the method according to the invention:

- 5 - the method comprises the step of filling said first compartment of said first sachet with at least one given product and said second compartment of said second sachet with at least one other given product;
- the method comprises, before or simultaneously with the step of sealing said first internal sheet of said first sachet to said second internal sheet
10 of said second sachet, the step of sealing said first internal peripheral edge of said first internal sheet of said first sachet to said first external peripheral edge of said first external sheet of said first sachet; and sealing said second internal peripheral edge of said second internal sheet of said second sachet to said second external peripheral edge of said second external sheet of said second
15 sachet;
- said step of sealing said first internal sheet of said first sachet to said second internal sheet of said second sachet is carried out by welding in a first simple pattern, and said steps of sealing said first external and internal sheets of said first sachet and of sealing said second external and internal sheets of said
20 second sachet are each carried out by welding in a second simple pattern which is similar to or distinct from said first simple pattern;
- said step of positioning said first internal sheet of said first sachet opposite said second internal sheet of said second sachet is carried out by positioning said first and second sachets which are separate from one another
25 opposite one another; and/or
- said step of positioning said first internal sheet of said first sachet opposite said second internal sheet of said second sachet is carried out by folding said first and second sachets which are joined to one another.

BRIEF DESCRIPTION OF THE DRAWINGS

- 30 The exposition of the invention will now be continued with the description of an exemplary embodiment, given below in an illustrative and non-limiting manner, with reference to the appended drawings, in which:

- Figures 1 and 2 schematically illustrate perspective views at two different viewing angles of a unit package for the extemporaneous mixing of given products, according to one embodiment of the invention, in this case in a closed state;
- 5 - Figures 3 and 4 are similar views to those in the respective Figures 1 and 2, showing the unit package in an open state;
- Figure 5 is a schematic view in cross section, represented by V-V in Figure 1, of a peripheral portion of the unit package;
- Figures 6 and 7 show respective enlargements of a part of the unit
10 package illustrated in Figures 1, 3 and 2, 4, where a vent hole is formed;
- Figure 8 is a view similar to that in Figure 6, showing a variant embodiment of the vent hole formed in the unit package;
- Figure 9 is a block diagram illustrating a method for manufacturing the unit package illustrated in Figures 1 to 8;
- 15 - Figure 10 illustrates a first tool for implementing the method illustrated in Figure 9 and in particular for sealing a unit package produced from a first sachet and a second sachet separate from the first sachet;
- Figure 11 illustrates a unit package with first and second sachets which are joined to one another; and
- 20 - Figure 12 illustrates a second tool for implementing the method illustrated in Figure 9 and in particular for sealing the unit package produced from a first sachet and a second sachet joined to the first sachet.

DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS

25 Figures 1 to 4 schematically illustrate perspective views at different viewing angles and in distinct states of a unit package 1 for the extemporaneous mixing of given products, notably of the pharmaceutical and/or food and/or agri-food and/or functional food and/or cosmetic type, or else for products of the paint, solvent, oil, etc. type (not shown).

30 In Figures 1 and 2, the unit package 1 is in a closed state while in Figures 3 and 4, the unit package 1 is in an open state.

In its closed state, the unit package 1 in this case has a rectangular overall shape and is provided with a sealed peripheral portion 2 which delimits a central storage portion 3 configured to hold several given products.

The unit package 1 is also provided with a breakable portion 4 which
5 is formed in this case by a notch cut into the sealed peripheral portion 2 and is configured to make it easier to open the unit package 1 and thus to take it from its closed state into its open state by tearing an access zone 21 formed in a part, referred to here as the upper part, of the unit package 1.

The unit package 1 comprises a first sachet 5 provided with a first
10 compartment 6 configured to hold at least one given product, and a second sachet 7 provided with a second compartment 8 configured to hold at least one other given product.

Each of the first and second sachets 5 and 7 is formed from one or more films made of flexible or at least partially flexible material, for example of
15 polyethylene terephthalate (PET), and/or of polyethylene (PE) and/or of polypropylene (PP) and/or of aluminium (ALU) and/or of paper (PAP).

For example, the first compartment 6 may comprise a first predetermined volume of ferroquine and artefenomel mixed together (given pharmaceutical products) while the second compartment 8 may comprise a
20 second predetermined volume of one or more nutritional supplements, such as milk powder (given food products).

It will be noted that, even if the first and second compartments 6 and 8 have similar internal volumes, the first and second predetermined volumes of given products may for their part be distinct.

25 The first sachet 5 is provided with a first external sheet 9 and a first internal sheet 10 situated opposite the first external sheet 9.

The first external sheet 9 has a first external peripheral edge 11 which delimits a first external central portion 12.

The first internal sheet 10 has a first internal peripheral edge 13 which
30 delimits a first internal central portion (not shown).

The second sachet 7 is provided with a second external sheet 15 and a second internal sheet 16 situated opposite the second external sheet 15.

The second external sheet 15 has a second external peripheral edge 17 which delimits a second external central portion 18.

The second internal sheet 16 has a second internal peripheral edge 19 which delimits a second internal central portion (not shown).

5 It will be noted that the first and second sachets 5 and 7 are in this case substantially identical and each have a substantially rectangular overall shape.

 It will also be noted that the external sheet and the internal sheet of each sachet can have a laminated structure formed of several films, the structure
10 having, from the outside to the inside of said sachet, polyethylene (PE), polyethylene terephthalate (PET), aluminium (ALU) and polyethylene (PE).

 In a variant, the structure can have a structure of polypropylene (PP), aluminium (ALU) and polypropylene (PP), or, in a further variant, polyethylene (PE), paper (PAP), aluminium (ALU) and polyethylene (PE).

15 The unit package 1 also comprises an empty space 22 formed between the first and second compartments 6 and 8 of the first and second sachets 5 and 7, and also a vent hole 23 that leads at a first end 24 into the empty space 22 and at a second end 25, away from the first end 24, out of the unit package 1.

20 With reference notably to Figures 3, 4 and 5, the first external peripheral edge 11 and first internal peripheral edge 13 of the first external sheet 9 and first internal sheet 10, respectively, of the first sachet 5 are opposite one another and sealed together along their entire length, so as to form the first compartment 6 holding a given product.

25 The second external peripheral edge 17 and second internal peripheral edge 19 of the second external sheet 15 and second internal sheet 16, respectively, of the second sachet 7 are opposite one another and sealed together, likewise along their entire length, so as to form the second compartment 8 holding another given product.

30 The first internal sheet 10 of the first sachet 5 is located opposite the second internal sheet 16 of the second sachet 7.

The first internal peripheral edge 13 of the first internal sheet 10 of the first sachet 5 is opposite the second internal peripheral edge 19 of the second internal sheet 16 of the second sachet 7.

5 These first and second internal peripheral edges 13 and 16 are sealed together so as to form the empty space 22 which is devoid of given product and which is formed between the first and second internal sheets 10 and 16 of the first and second sachets 5 and 7, respectively.

10 In this case, the first compartment 6 is delimited by a first seal 29, the second compartment 8 is delimited by a second seal 30, and the empty space 22 is delimited by a third seal 31.

The first and second seals 29 and 30 are in this case identical, while the third seal 31 is in this case different from these first and second seals 29 and 30.

15 The third seal 31 in this case has a first simple pattern, while the first and second seals 29 and 30 in this case have a complex pattern formed by the superposition of the first simple pattern and a second simple pattern.

The second simple pattern on the first and second seals 29 and 30 is generated when the first and second sachets 5 and 7 are formed and at least partially closed.

20 The first simple pattern on the third seal 31 and also on the first and second seals 29 and 30 is generated when the first and second sachets 5 and 7 are assembled and sealed together so as to form the empty space 22.

25 The complex pattern is thus generated only on the first and second seals 29 and 30 by the combination of the first and second simple patterns, and not on the third seal 31.

The first simple pattern of the third seal 31 is in this case configured to ensure at least the joint between the first internal peripheral edge 13 of the first internal sheet 10 of the first sachet 5 and the second internal peripheral edge 19 of the second internal sheet 16 of the second sachet 7.

30 The complex pattern of the first and second seals 29 and 30, and in particular the second simple pattern that it comprises, is configured to ensure the joint and impermeability between the first internal peripheral edge 13 of the first

internal sheet 10 and the first external peripheral edge 11 of the first external sheet 9 of the first sachet 5 and also between the second internal peripheral edge 19 of the second internal sheet 16 and the second external peripheral edge 17 of the second external sheet 15 of the second sachet 7.

5 The second simple pattern of the first seal 29 for securing the first external sheet 9 and first internal sheet 10 of the first sachet 5 and the second seal 30 for securing the second external sheet 15 and second internal sheet 16 of the second sachet 7 are produced in this case by welding.

10 The first simple pattern of the third seal 31 for at least partially securing the first and second internal sheets 10 and 16 of the first and second sachets 5 and 7, respectively, is likewise produced by welding.

 The first simple pattern is also produced by welding in an inherent manner on the first and second external sheets 9 and 15 so as to form the complex pattern.

15 The notch cut 4 is formed in this case in the first external peripheral edge 11 and first internal peripheral edge 13 of the first external sheet 9 and first internal sheet 10, respectively, of the first sachet 5 and also in the second external peripheral edge 17 and second internal peripheral edge 19 of the second external sheet 15 and second internal sheet 16, respectively, of the second sachet 7.

20 The structural arrangement of the first and second sachets 5 and 7, individually and one with respect to the other, allows the unit package 1, in its closed state, to prevent the mixing of the given products accommodated in the first and second compartments 6 and 8 which are then closed and separated and, in its open state, to no longer prevent or to allow the mixing of these given
25 products accommodated in these compartments 6 and 8.

 It will be noted that the first and second internal peripheral edges 13 and 16 are in this case only partially sealed together, that is to say not along their entire length, so as to form the vent hole 23 (see below with reference to Figures 6 to 8).

30 As can be seen better in Figures 6 and 7, the vent hole 23 is thus formed between a first free portion 26 formed in the first internal peripheral edge 13 of the first internal sheet 10 of the first sachet 5 and a second free portion 27

formed in the second internal peripheral edge 19 of the second internal sheet 16 of the second sachet 7.

The first and second free portions 26 and 27 correspond to portions of the first and second internal peripheral edges 13 and 16, respectively, that are not sealed together, such that air present in the empty space 22 can escape through the vent hole 23.

It will be noted that there is no reciprocal fluidic communication between the empty space 22 and the outside of the unit package 1, and so even if the first and second free portions 26 and 27 are in a pressed-together state, the fact that there is no impermeable connection in this region of the first and second internal peripheral edges 13 and 16 is sufficient for air to be able to escape from the empty space 22.

In a variant, as illustrated in Figure 8, the vent hole 23 can comprise a tube 28 that is interposed between the first and second free portions 26 and 27 and leads both into the empty space 22 at the first end 24 of the vent hole 23 and out of the unit package 1 at the second end 25 of the vent hole 23.

This tube 28 is mechanically secured to the peripheral portion 2 of the unit package 1 by clamping brought about by the first and second internal peripheral edges 13 and 16 or by being sealed to the first and second free portions 26 and 27.

The multi-compartment unit package 1 having separate compartments is in this case particularly simple and economical on account of the combination of the first and second sachets 5 and 7, which are assembled by superposition and at least partial sealing of the first and second internal edges 13 and 19 of the first and second internal sheets 10 and 16, respectively, of the first and second sachets 5 and 7, respectively.

The unit package 1 is moreover particularly convenient for the extemporaneous mixing of the given products stored separately in the first and second compartments 6 and 8, since it is configured to prevent the first compartment 6 from being able to be opened without the second compartment 8 also being opened, and vice versa.

Thus, the taking or application of a given product contained in one of the compartments 6 or 8 without the given product contained in the other compartment 8 or 6 is normally impossible and at the very least avoided.

The need to have several compartments 6 and 8 for storing and
5 conserving different given products is due to their incompatibility, while the need to mix them during the taking or application of these products is due to the obtaining of a desired reaction, for example a chemical reaction, which is particularly effective for the patient taking or applying the product.

The method for manufacturing the unit package 1 described above will
10 now be described.

This method comprises the step 100 of providing the first sachet 5 and the second sachet 7, each one being in an unfilled open state.

The unfilled open state of the first and second sachets 5 and 7 is defined in that they each have first and second unsealed sides (not shown) at
15 first and second peripheral portions 32 and 33 (visible in Figures 10 to 12).

It will be noted that the first and second sachets 5 and 7 can be separate from one another (Figure 10) or that they can be joined to one another (Figure 11).

The method also comprises the steps 200 of filling the first
20 compartment 6 of the first sachet 5 with at least one given product and filling the second compartment 8 of the second sachet 7 with at least one other given product, then of closing the first and second compartments 6 and 8.

The closure of these compartments 6 and 8 is carried out by sealing at least the first and second unsealed sides of the first and second sachets 5 and
25 7, respectively, such that the first internal peripheral edges 13 and 19 of the first internal sheets 10 and 16, respectively, of the first and second sachets 5 and 7 are sealed to the first external peripheral edges 11 and 17, respectively, of the first external sheets 9 and 15, respectively, of the first and second sachets 5 and 7, along the entire length of the first and second respective peripheral portions 32
30 and 33.

The method also comprises the steps 300 of positioning the first internal sheet 10 of the first sachet 5 opposite the second internal sheet 16 of the

second sachet 7, then of at least partially sealing the first internal peripheral edge 13 of the first internal sheet 10 of the first sachet 5 to the second internal peripheral edge 19 of the second internal sheet 16 of the second sachet 7, thereby forming the empty space 22, devoid of given product, between the first and second internal sheets 10 and 16 of the first and second sachets 5 and 7, respectively.

It will be noted that the step of positioning the first internal sheet 10 of the first sachet 5 opposite the second internal sheet 16 of the second sachet 7 is carried out by positioning the first and second sachets 5 and 7 opposite one another when they are separate from one another, whereas it is carried out by folding the first and second sachets 5 and 7 about a conjoint part 34 of the respective peripheral portions 32 and 33 when they are joined to one another.

The step of sealing the first internal sheet 10 of the first sachet 5 to the second internal sheet 16 of the second sachet 7 is carried out by welding in the first simple pattern.

The steps of sealing the first external sheet 9 and first internal sheet 10 of the first sachet 5 and of sealing the second external sheet 15 and second internal sheet 16 of the second sachet 7 are each carried out by welding in the second simple pattern.

These steps make it possible to form the first, second and third seals 29, 30 and 31 described above.

It will be noted that the steps of sealing in order to close the first and second compartments 6 and 8 and of sealing in order to secure the first and second sachets 5 and 7 can be carried out successively or simultaneously.

It will also be noted that the steps of providing, filling and sealing each first and second sachet can be carried out at the same place or at different places.

Furthermore, this also means that the steps of positioning and sealing the first and second sachets together can be carried out, or not, at the place where the sachets are filled.

In a variant, the first and second sachets 5 and 7 can be provided in an already filled state.

In a further variant, the first and second sachets 5 and 7 can be provided with the first and second external and internal sheets not sealed together at all.

In a further variant, the compartments 6 and 8 can be filled and then
5 closed after the step of positioning the sachets 5 and 7 in order to be secured.

A first tool 35 configured to carry out the step of sealing the first and second sachets 5 and 7 when they are separate from one another will now be described with reference to Figure 10.

This first tool 35 comprises two jaws 36 and 37 which each have a
10 sealing face 38 on which a plurality of protruding weld lines 39 that are substantially parallel to one another are formed.

These weld lines 39 are in this case lines referred to as broken lines in that they are formed by a succession of peaks and valleys (not shown).

It will be noted that these weld lines 39 make it possible to form the
15 first simple pattern notably of the third seal 31 delimiting the empty space 22 once the first and second sachets 5 and 7 have been secured.

The securing of the two sachets is in this case ensured notably by the polyethylene (PE) films in the laminated structure of the respective internal sheets
10 and 16.

A groove 40 is also formed in the sealing face 38, said groove 40
20 interrupting the weld lines so as to form the (unsealed) free portions 26 and 27 and thus the vent hole 23.

The first tool 35 is configured such that the sealing faces 38 of the jaws 36 and 37 are pressed respectively against the first and second peripheral
25 portions 32 and 33 of the first and second sachets 5 and 7, and in particular against the first and second external peripheral edges 11 and 17 of the first and second external sheets 9 and 15 of the first and second sachets 5 and 7, so as to at least partially heat-weld the first and second internal peripheral edges 13 and 19 of the first and second internal sheets 10 and 16 of the first and second
30 sachets 5 and 7.

A similar tool to the first tool 35 can be used for at least partially sealing the external and internal sheets of the respective sachets together.

Figure 11 illustrates the first and second sachets 5 and 7 when they are joined to one another, and Figure 12 shows a second tool 41 configured to carry out the step of sealing such first and second sachets 5 and 7.

This second tool 41 is similar to the first tool 35 in that it comprises two
5 jaws 42 and 43 which have respective sealing faces 44 and 45 on which protruding weld lines (not shown) that are substantially parallel to one another and also a groove (not shown) are formed.

The second tool 41 is configured such that the sealing faces 44 and 45 of the jaws 42 and 43 are pressed respectively against the first and second
10 peripheral portions 32 and 33, including the folded conjoint part 34, of the first and second sachets 5 and 7, and in particular against the first and second external peripheral edges 11 and 17 of the first and second external sheets 9 and 15 of the first and second sachets 5 and 7, so as to at least partially heat-weld the first and second internal peripheral edges 13 and 19 of the first and second
15 internal sheets 10 and 16 of the first and second sachets 5 and 7.

A similar tool to the second tool 41 can be used for at least partially sealing the external and internal sheets of the respective sachets together.

In variants which are not illustrated:

- the first and second sachets each have an oblong shape rather than
20 a rectangular shape;
- the unit package comprises a plurality of vent holes which can be formed in the manner described above or in some other manner, for example one vent hole can be located at the access zone, or, by contrast, it is possible for the package not to have a vent hole;
- 25 - the package may comprise a valve disposed in the vent hole, for example of the non-return type;
- the package may comprise a plurality of breakable portions or, by contrast, not have any thereof;
- the breakable portion may be formed by a thinning or a precut rather
30 than a cut in the form of a notch; and/or
- the package may comprise more than two sachets, for example three or four sachets combined in the manner described above so as to define

as many compartments as there are sachets, each of the compartments holding a given product, and also so as to define an empty space devoid of given product between each pair of adjacent compartments.

It will be noted more generally that the invention is not limited to the
5 examples described and shown.

CLAIMS

1. Unit package for the extemporaneous mixing of given products, comprising a first compartment (6) configured to hold at least one given product
5 and a second compartment (8) configured to hold at least one other given product, said unit package (1) being made of a flexible or at least partially flexible material, characterized in that said unit package (1) comprises:

- a first sachet (5) provided with a first external sheet (9) and a first internal sheet (10) situated opposite said first external sheet (9) and sealed by a
10 first internal peripheral edge (13) to a first external peripheral edge (11) of said first external sheet (9) so as to form said first compartment (6);

- a second sachet (7) provided with a second external sheet (15) and a second internal sheet (16) situated opposite said second external sheet (15) and sealed by a second internal peripheral edge (19) to a second external
15 peripheral edge (17) of said second external sheet (15) so as to form said second compartment (8);

where said first internal sheet (10) of said first sachet (5) is located opposite said second internal sheet (16) of said second sachet (7) and is at least partially sealed by its first internal peripheral edge (11) to said second internal peripheral
20 edge (19) of said second internal sheet (16) of said second sachet (7) such that an empty space (22), which is devoid of given product, is formed between said first and second internal sheets (10, 16);

and where said unit package (1) exhibits a closed state in which said first and second compartments (6, 8) are each closed such that said given products are
25 separated and cannot be mixed, and an open state in which said first and second compartments (6, 8) are each open such that said given products can be mixed.

2. Package according to Claim 1, characterized in that it is provided with at least one vent hole (23) that leads at a first end (24) into said empty space (22) and at a second end (25), away from said first end (24), out of said unit
30 package (1).

3. Package according to Claim 2, characterized in that said at least one vent hole (23) is formed between a first free portion (26) formed in said first

internal peripheral edge (13) of said first internal sheet (10) of said first sachet (5) and a second free portion (27) formed in said second internal peripheral edge (19) of said second internal sheet (16) of said second sachet (7).

4. Package according to any one of Claims 1 to 3, characterized in that
5 said first compartment (6) is delimited by a first seal (29), said second compartment (8) is delimited by a second seal (30), and said empty space (22) is delimited by a third seal (31) which is different from said first seal (29) and said second seal (30).

5. Package according to Claim 4, characterized in that said third seal
10 (31) has a first simple pattern and at least one of said first and second seals (29, 30) has a complex pattern formed by the superposition of said first simple pattern and a second simple pattern.

6. Package according to Claim 5, characterized in that said first simple
15 pattern is configured to ensure at least the joint between said first internal peripheral edge (13) of said first internal sheet (10) of said first sachet (5) and said second internal peripheral edge (19) of said second internal sheet (16) of said second sachet (7); while said complex pattern is configured to ensure the joint and impermeability between said first internal peripheral edge (13) of said first internal sheet (10) and said first external peripheral edge (11) of said first
20 external sheet (9) of said first sachet (5) and/or between said second internal peripheral edge (19) of said second internal sheet (16) and said second external peripheral edge (17) of said second external sheet (15) of said second sachet (7).

7. Package according to any one of Claims 1 to 6, characterized in
25 that said first external and internal sheets (9, 10) of said first sachet (5) are sealed together by welding, said second external and internal sheets (15, 16) of said second sachet (6) are sealed together by welding, and said first and second internal sheets (10, 16) of said first and second sachets (5, 7), respectively, are at least partially sealed together by welding.

30 8. Package according to any one of Claims 1 to 7, characterized in that it is provided with at least one breakable portion (4) formed both in said first sachet (5) and in said second sachet (7), at least at said first external and internal

peripheral edges (11, 13) and said second external and internal peripheral edges (17, 19).

9. Package according to Claim 8, characterized in that said at least one breakable portion (4) is formed by a thinning, a precut or a cut made in said
5 first external and internal peripheral edges (11, 13) and in said second external and internal peripheral edges (17, 19).

10. Package according to any one of Claims 1 to 9, characterized in that each of said first and second sachets (5, 7) is formed from one or more films made of flexible or at least partially flexible material, for example of polyethylene
10 terephthalate, and/or of polyethylene and/or of polypropylene and/or of aluminium and/or of paper.

11. Package according to Claim 10, characterized in that said external sheet (9, 15) and said internal sheet (10, 16) of each said sachet (5, 7) have a laminated structure formed of several films, the laminated structure having, from
15 the outside to the inside of said sachet (5, 7), polyethylene, polyethylene terephthalate, aluminium and polyethylene, or polypropylene, aluminium and polypropylene, or else polyethylene, paper, aluminium and polyethylene.

12. Package according to any one of Claims 1 to 11, characterized in that said first compartment (6) comprises a first predetermined volume of
20 ferroquine and artefenomel mixed together and said second compartment (8) comprises a second predetermined volume of one or more nutritional supplements, such as milk powder.

13. Method for manufacturing a unit package (1) according to any one of Claims 1 to 12, characterized in that it comprises the steps of:
25 - providing a first sachet (5) provided with a first internal sheet (10) having a first internal peripheral edge (13) and a first external sheet (9) situated opposite said first internal sheet (10) and having a first external peripheral edge (11) opposite said first internal peripheral edge (13) so as to form a first compartment (6); and a second sachet (7) provided with a second internal sheet
30 (16) having a second internal peripheral edge (19) and a second external sheet (15) situated opposite said second internal sheet (16) and having a second external peripheral edge (17) opposite said second internal peripheral edge (19)

so as to form a second compartment (8) separate from said first compartment (6);

- positioning said first internal sheet (10) of said first sachet (5) opposite said second internal sheet (16) of said second sachet (7);

5 - at least partially sealing said first internal peripheral edge (13) of said first internal sheet (10) of said first sachet (5) to said second internal peripheral edge (19) of said second internal sheet (16) of said second sachet (7) so as to form an empty space (22), devoid of given product, between said first and second internal sheets (10, 16) of said first and second sachets (5, 7),
10 respectively.

14. Method according to Claim 13, characterized in that it comprises the step of filling said first compartment (6) of said first sachet (5) with at least one given product and said second compartment (8) of said second sachet (7) with at least one other given product.

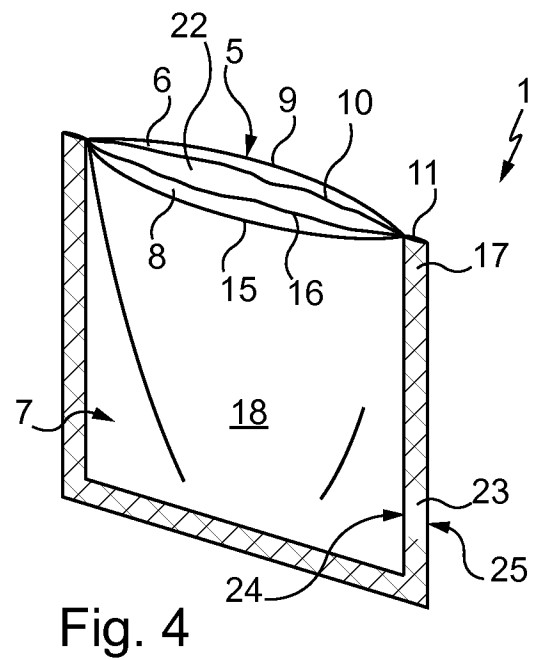
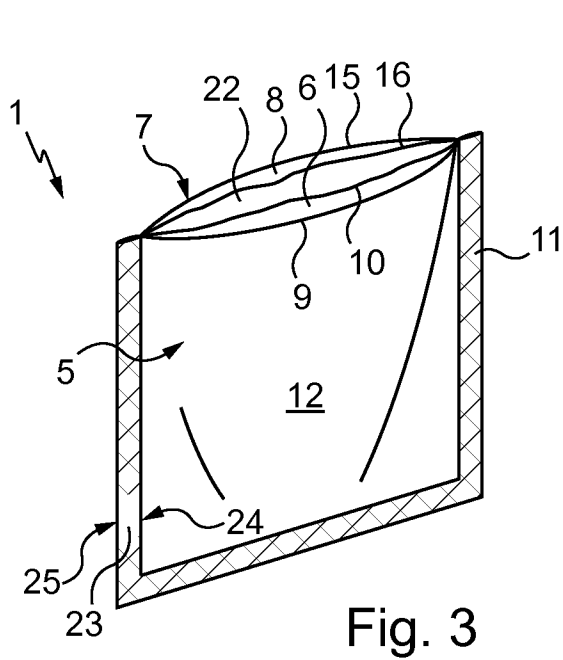
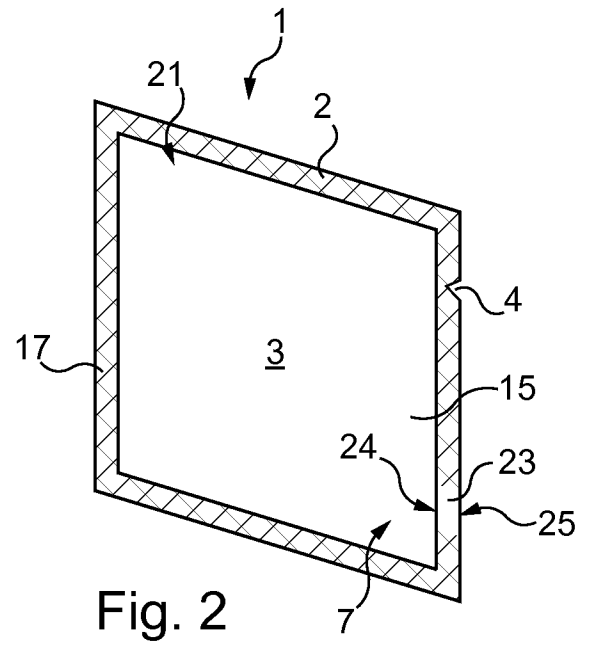
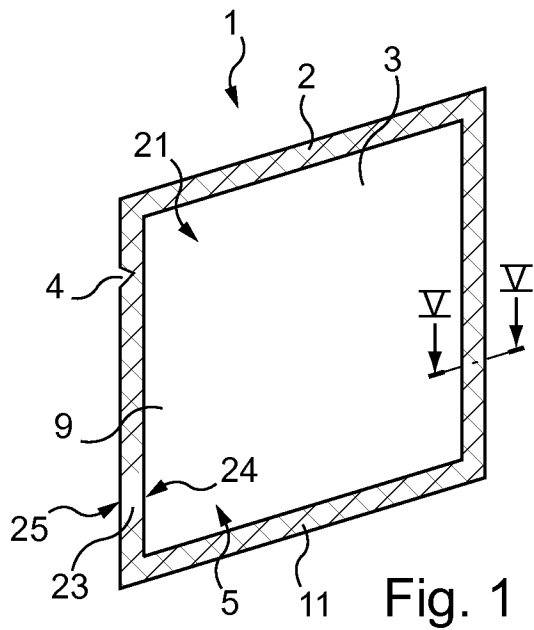
15 15. Method according to Claim 14, characterized in that it comprises, before or simultaneously with the step of sealing said first internal sheet (10) of said first sachet (5) to said second internal sheet (16) of said second sachet (7), the step of sealing said first internal peripheral edge (13) of said first internal sheet (10) of said first sachet (5) to said first external peripheral edge (11) of said first
20 external sheet (9) of said first sachet (5); and sealing said second internal peripheral edge (19) of said second internal sheet (16) of said second sachet (7) to said second external peripheral edge (17) of said second external sheet (15) of said second sachet (7).

16. Method according to Claim 15, characterized in that said step of
25 sealing said first internal sheet (10) of said first sachet (5) to said second internal sheet (16) of said second sachet (7) is carried out by welding in a first simple pattern, and said steps of sealing said first external and internal sheets (9, 10) of said first sachet (5) and of sealing said second external and internal sheets (15, 16) of said second sachet (7) are each carried out by welding in a second simple
30 pattern which is similar to or distinct from said first simple pattern.

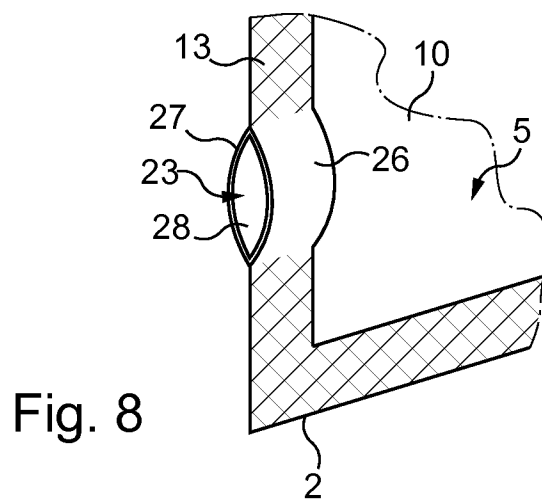
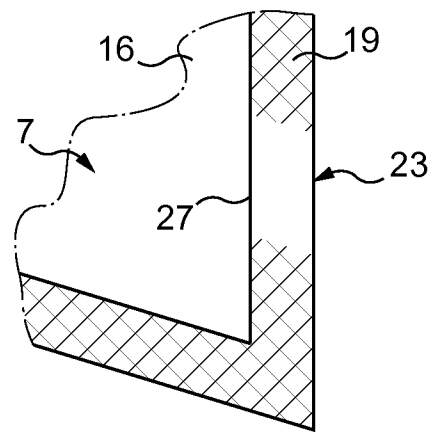
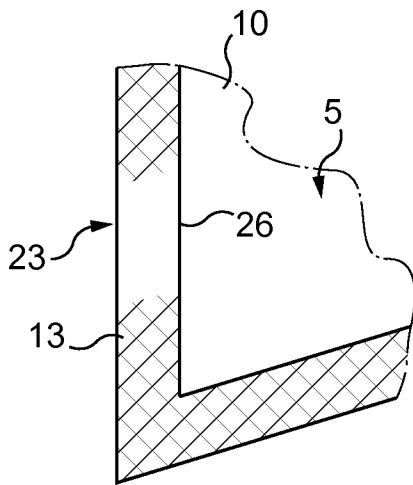
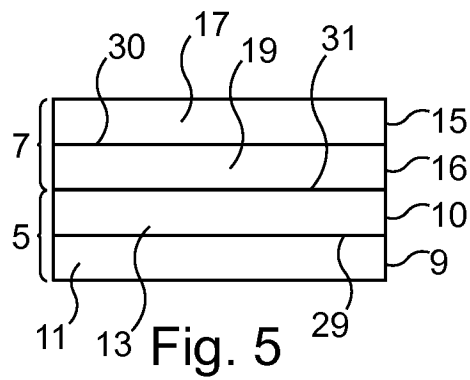
17. Method according to any one of Claims 13 to 16, characterized in that said step of positioning said first internal sheet (10) of said first sachet (5)

opposite said second internal sheet (16) of said second sachet (7) is carried out by positioning said first and second sachets (5, 7) which are separate from one another opposite one another.

18. Method according to any one of Claims 13 to 16, characterized in
- 5 that said step of positioning said first internal sheet (10) of said first sachet (5) opposite said second internal sheet (16) of said second sachet (7) is carried out by folding said first and second sachets (5, 7) which are joined to one another.



2/3



3/3

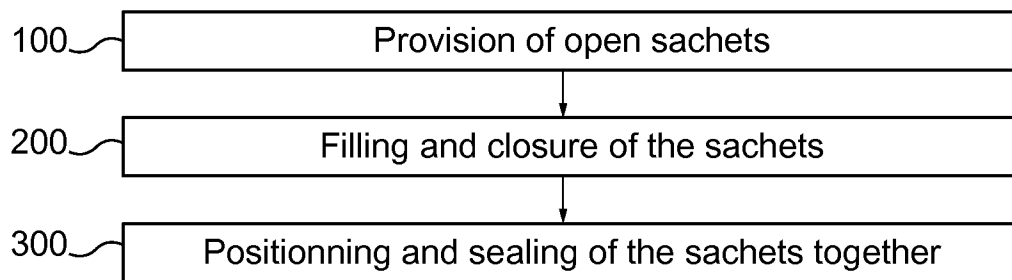


Fig. 9

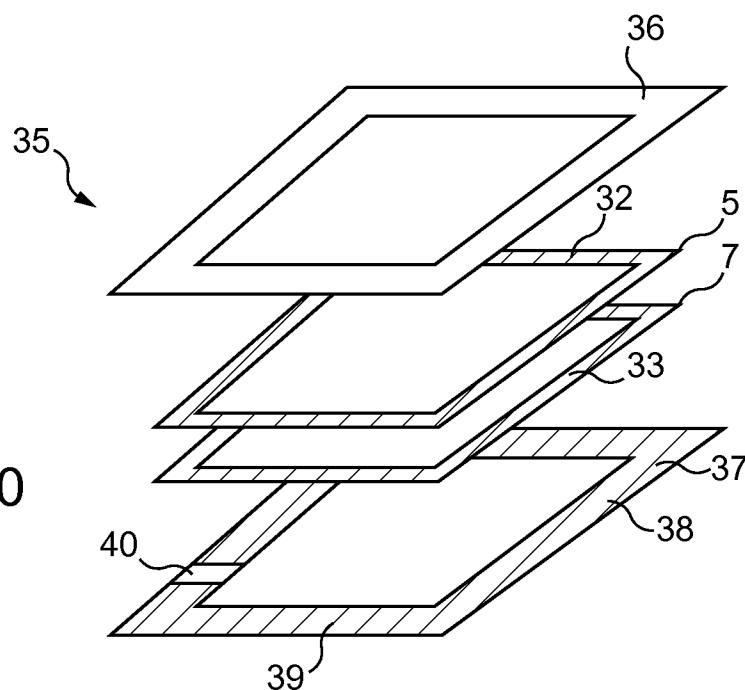


Fig. 10

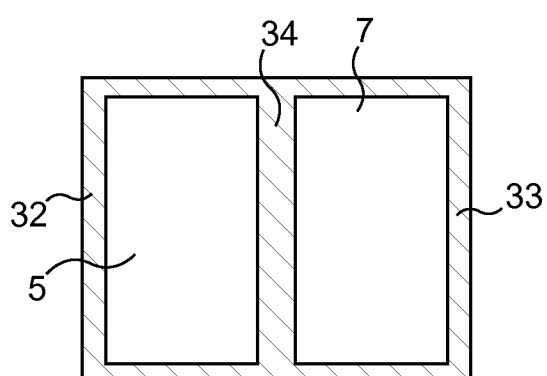


Fig. 11

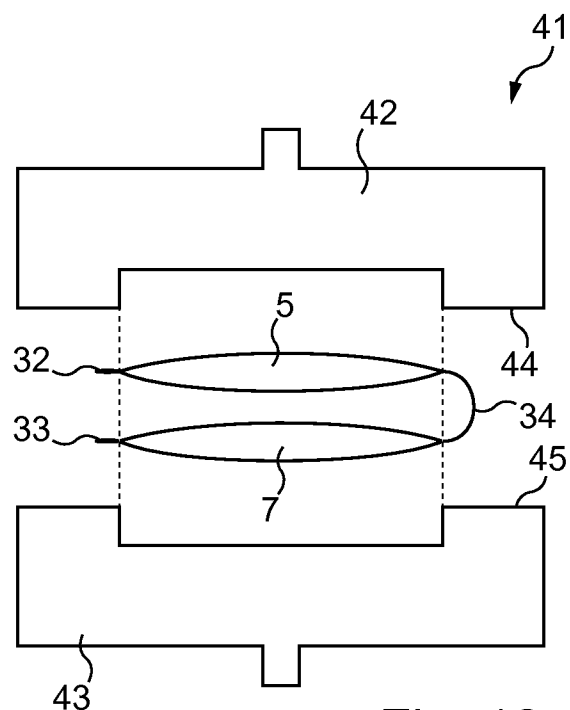


Fig. 12

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2017/068432

A. CLASSIFICATION OF SUBJECT MATTER
INV. B65D81/32
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B65D A61J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2015/336691 A1 (FOWLER JAMES [US] ET AL) 26 November 2015 (2015-11-26) paragraph [0040] paragraph [0073] - paragraph [0074] paragraph [0113] paragraph [0116] - paragraph [0119]; figures 1-8 -----	1-6, 12-17
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A		13
X	FR 2 175 792 A1 (HESSER AG MASCHF [DE]) 26 October 1973 (1973-10-26) pages 1-2; figure 1 ----- -/-	1,7,10, 14,18



Further documents are listed in the continuation of Box C.



See patent family annex.

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"P" document published prior to the international filing date but later than the priority date claimed

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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

13 September 2017

Date of mailing of the international search report

28/09/2017

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Authorized officer

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INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2017/068432

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2017/068432

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