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A packaging unit having improved sealing properties

TECHNICAL FIELD

The present invention relates to a packaging unit for hygiene articles, the unit being

- 5 formed from a sheet of material, the sheet having an inner surface and an outer surface, the inner surface comprising an edge zone comprising an inner edge portion and an outer edge portion, the sheet having at least one folding axis, the folding axis dividing the sheet into a first region and a second region. The present invention also relates to a method of forming a packaging unit for hygiene articles from a sheet of material.

10 BACKGROUND OF THE INVENTION

Disposable hygiene articles, such as sanitary napkins and panty liners, are normally packaged individually in e.g. an easy wrap or a single wrap. Individual packages facilitate hygienic carrying of single articles for future use, e.g. in a handbag. The edges of the individual packages are often sealed by means of ultrasonic welding or heat welding.

- 15 Further, the packaging units are often used both as a means for packaging an unused article and for disposal of the used article.

It is desirable that used articles of this kind can be disposed of discretely and hygienically.

This may be particularly important when the user lacks possibility to dispose of the used article immediately after the used article has been replaced, e.g. when there is no waste

- 20 bin available in the toilet area. In this case, the user may need to put the used article in e.g. the handbag or backpack, which requires that the package is tightly sealed in order to avoid staining and odour.

The disposal problem has been an object of quite an intensive investigation, and several solutions have been suggested.

- 25 GB 2 153 779 discloses a wrapper sheet that may be provided with a pouch formed by overlaying at least a portion of the wrapper with a sheet of liquid impermeable material which is affixed to the wrapper on three sides. The pouch is used to receive the soiled article. Such a wrapper suffers from disadvantages of requiring an additional amount of material, and not being able to form a tight disposal package.

Another common solution for disposing of used hygiene articles is disclosed in e.g. WO 94/14396. This document discloses the fold and wrap package comprising a wrapper comprising a single strip of material having a flap panel, a central panel, and an end panel, and a tape tab for securing the wrapper in a disposal configuration. The major
5 disadvantage of such a wrapper is that it is not possible to form a tightly sealed package when the article is to be disposed of.

WO 88/10219 discloses a packaging unit which is formed by folding an elongated sheet of material provided along the mutually parallel edges thereof with a continuous or broken narrow coating of pressure-sensitive adhesive by means of which the container part is
10 held together, with adhesive surfaces lying against and bonding to adhesive surfaces. The packaging unit further comprises a lid coated at least partially with a pressure-sensitive adhesive so as to enable the lid to be refastened to the outside of the container part. Such a packaging unit thus has very strongly sealed side seams where the adhesive-coated
15 disposal package. However, since the adhesive-coated surfaces are in contact with each other, it is impossible to unfold the sheet completely for positioning of a used item, which thus has to be inserted into the rather limited container part. This may be a great disadvantage, since the used hygiene article often becomes more bulky than before use, making it difficult to insert it into the container part.

20 US H1454 discloses a reclosable sheet for packaging and disposal of hygiene articles. The sheet comprises edge adhesive strips positioned such that when the sheet is folded, the adhesive-coated areas do not come into contact with each other. In order to serve its purpose, the folding of the sheet has to be initiated from the adhesive-free transverse edge of the sheet. If the folding is initiated from the adhesive-coated transverse edge, two
25 layers of adhesive will overlap each other, and the adhesive-free transverse edge will be positioned at the outer position of the package, i.e. the package will not be tightly sealed.

A conventional type of packaging unit intended for packaging single articles comprises an elongated rectangular sheet of material which is folded to form a bag-like package with a folded-over lid, also called e-folding. These known packaging units are welded along the
30 edges by means of heat or ultrasound, and are opened by tearing along the welded seams at the edges, so that the package may be unfolded to expose the contents of the package.

The main drawback with welded packaging units of this kind is that they cannot be used satisfactorily as disposal bags, since once opened, the packages, cannot be resealed and therefore do not allow a used article to be packaged in an acceptable manner with regard to hygiene. Furthermore, the unfolded packaging sheet has an anaesthetic appearance,
5 since the broken welds are often uneven and frilly.

Hence there is a need for a packaging unit which can be used both for packaging a new hygiene article and for hygienic keeping and disposing of the used hygiene article, and which would be aesthetically appealing.

SUMMARY OF THE INVENTION

10 The present invention provides a packaging unit which can be used both for packaging a new hygiene article and for safe and hygienic disposing of the used hygiene article. The packaging unit of the present invention provides a possibility of forming a tight package both for a new and a used article, thus keeping the new article sanitary and clean prior to use, and eliminating the risk of staining and odour when a used article is packaged. The
15 packaging unit is easy to unfold and reseal, and is aesthetically appealing.

As used herein, the term "inner surface" refers to the surface of the packaging unit facing the product positioned inside the packaging unit, and the term "outer surface" refers to the surface opposite to the inner surface, i.e. the surface facing the ambient.

By the term "edge zone" is meant the portion of the packaging unit adjacent to the edges
20 of the packaging unit. The width of an edge zone may be varied.

The term "inner edge portion" refers to the portion of the edge zone positioned towards the centreline of the packaging unit.

The term "outer edge portion" refers to the portion of the edge zone positioned towards the edge of the packaging unit.

25 By the term "single ply" is meant a packaging unit comprising a single ply of a coherent material. The examples of a single ply packaging unit may be a plastic film, such as a polyethylene film, a nonwoven material, a metallic foil or the like. A single ply material may be a non-homogenous material such as a plastic film material comprising integrated layers or a nonwoven material having varying fibre composition in different parts of the

material. A single ply material as used herein does not comprise materials having separable layers.

By the term "laminate" is meant a packaging unit comprising at least two united separable plies of material that can be same or different. In the context of the present invention, the
5 laminate may for example be constituted of two separable plies of plastic film, a film and nonwoven, two plies of nonwoven or the like.

The present invention provides a packaging unit for hygiene articles and a method of forming a packaging unit, which substantially eliminate the drawbacks of the packaging units discussed above.

10 The packaging unit for hygiene articles according to the present invention is formed from a sheet of material having an inner surface and an outer surface, the inner surface comprising an edge zone comprising an inner edge portion and an outer edge portion. The sheet has at least one folding axis, the folding axis dividing the sheet into a first region and a second region. The packaging unit according to the present invention is
15 characterized in that one of the inner edge portion and the outer edge portion of the edge zone of the first region is provided with adhesive, and the other of the inner edge portion and the outer edge portion of the edge zone of the first region is adhesive-free. Further, the essential feature of the present invention is that one of the inner edge portion and the outer edge portion of the edge zone of the second region is provided with adhesive, and
20 the other of the inner edge portion and the outer edge portion of the edge zone of the second region is adhesive-free in a complementary manner to the edge zone of the first region. In other words, when the sheet is folded about the folding axis, the edge portions carrying adhesive in the first region are brought in contact with the adhesive-free edge portions in the second region, and the edge portions carrying adhesive in the second
25 region are brought in contact with the adhesive-free edge portions in the first region.

A suitable adhesive to be used with the packaging unit of the present invention is pressure-sensitive hotmelt adhesive having an unlimited open time, meaning that the adhesive can bond to another substrate at any time.

The pressure-sensitive adhesive used with the packaging unit is one which has a very
30 high self-adhesion but which can be readily separated or released from other materials, such as plastic materials or paper which has been treated with a release agent. A major advantage of the packaging unit according to the present invention is that it can be

completely unfolded when a new hygiene article is about to be taken out. In contrast thereto, prior art packages having adhesively sealed edges with adhesive-coated edge portions being in contact with each other has too high adhesive strength of the adhesively sealed edges, and any attempt to completely unfold the package would lead to tearing and breakage of the packaging unit, making it unusable for discrete and hygienic disposal of the used article. As the adhesive-coated edge portions of the packaging unit of the present invention are not in contact with each other when the packaging unit is folded, the packaging unit can be readily opened and resealed, providing a tight disposal package. At the same time, the tensile strength of the adhesively sealed edges of the packaging unit using the adhesive pattern of the present invention is sufficient to provide a tight package for both a new and a used article, and low enough to provide a readily-opened package.

The geometrical shape of the sheet can vary depending on the type of the hygiene article to be packaged. The sheet may be circular, triangular, square, rectangular, or any other shape suitable for the hygiene article to be packaged. It is desirable, however, that the sheet has at least one symmetry axis.

As mentioned above, the packaging unit comprises at least one folding axis. The number of folding axes may vary depending on how the packaging unit is intended to be folded. It is preferred that the packaging unit comprises between one and three folding axes.

The prevailing shape of the sheet of material for forming a packaging unit is square or rectangular. Such a sheet according to the present invention has side edges, referred to herein as longitudinal edges, transverse edges and corner portions, the edge zones of the first and second regions of the sheet of material being arranged along the longitudinal edges. The edge portions covered with adhesive and adhesive-free portions are thus going to be positioned along the longitudinal edges. In order to avoid that the edges of the sheet curl up or crinkle when the packaging unit is open, the adhesive provided on the outer edge portions may be positioned at a distance from the longitudinal edges. This distance may be between 0.5-5 mm, preferably between 1-3 mm.

The width of the adhesive-covered edge portions may be varied depending on the adhesive strength desired. The wider the adhesive-covered edge zones, the stronger the sealing. The width of the adhesive-covered edge portions may be same or different in the different regions.

The length of the adhesive-covered edge portions in each region may be equal to the length of each region, or may be 0.1-1 millimetres shorter than the length of each region. Preferably, the length of the adhesive-covered edge portions in each region is equal to the length of each region.

- 5 Further, at least one of the transverse edges of the packaging unit according to the present invention is preferably provided with adhesive. In order to facilitate opening, at least one of the corner portions may be free from adhesive such that a gripping tab is formed.

As mentioned above, one of the most common folding patterns for individually wrapped
10 hygiene products is so called e-folding. In this case the sheet has two folding axes, dividing the sheet into a first region, a second region and a third region. The packaging unit may then be formed, wherein the sheet is folded along the folding axes with the first, second and third regions in an overlapping configuration.

According to the present invention, when the sheet has two folding axes dividing the sheet
15 into a first, a second and a third region, and the packaging unit is formed by e-folding, the edge portion of the edge zone of the third region being provided with adhesive corresponds to the edge portion of the edge zone of the first region being provided with adhesive, and is complementary to the edge portion of the edge zone of the second region being provided with adhesive. Thus, a chessboard pattern of adhesive is formed
20 along each of the longitudinal edge zones.

The sheet for forming a packaging unit may be a single ply sheet of any suitable material known to the person skilled in the art, such as polyethylene film or nonwoven. The sheet may also be a laminate comprising at least two distinct layers. Laminates suitable for packaging of hygiene articles are assumed to be known to the person skilled in the art,
25 and are not in any way limiting for the present invention.

If desired, the sheet for forming a packaging unit according to the present invention may be opaque in order to disguise the contents of the packaging unit, which is particularly important if the used article wrapped into the packaging unit of the present invention cannot be disposed immediately after replacement. Further, the sheet may comprise print,
30 which may be beneficial for attracting the user's attention and improving the user's mood.

The sheet of material forming a packaging unit according to the present invention may comprise an odour-inhibiting or odour-neutralising substance. Such a substance may be applied in any suitable manner known to the person skilled in the art, e.g. as coating, activatable microcapsules, impregnated patches or the like.

- 5 It is conceivable that the sheet for forming a packaging unit according to the present invention may be stretchable or expandable, which may be advantageous if the hygiene article is greatly deformed during use, and may thus be difficult to wrap without deforming the packaging unit.

The adhesive used in the present invention may be a pressure-sensitive hotmelt
10 adhesive, such as Lunatack® D656 BD 19 available from H. B. Fuller.

The packaging unit for hygiene articles according to the present invention is formed by a method comprising the steps of:

- 15 ⇒ providing a sheet having an inner surface and an outer surface, the inner surface comprising an edge zone comprising an inner edge portion and an outer edge portion, the sheet having at least one folding axis, the folding axis dividing the sheet into a first region and a second region;
- 20 ⇒ providing one of the inner edge portion and the outer edge portion of the edge zone of the first region with adhesive, such that the other of the inner edge portion and the outer edge portion of the edge zone of the first region is adhesive-free;
- 25 ⇒ providing one of the inner edge portion and the outer edge portion of the edge zone of the second region with adhesive, such that the other of the inner edge portion and the outer edge portion of the edge zone of the second region is adhesive-free in a complementary manner to the edge zone of the first region;
- ⇒ folding the sheet about the folding axis, such that the edge portions carrying adhesive in the first region are brought in contact with the adhesive-free edge portions in the second region, and the edge portions carrying adhesive in the second region are brought in contact with the adhesive-free edge portions at the first region.

It should be noted that when a packaging unit comprising at least two folding axes, i.e. at
30 least three regions, is folded, the adhesive-covered edge portions of the first region are brought into contact with the adhesive-free portions of the second region, and the

adhesive-covered portions of the second region are brought into contact with the adhesive-free portions of the first region. The subsequently folded third region is folded over the outer surface of the first region forming a lid, and the adhesive-covered edge portions of the third region are thus brought into contact with the adhesive-free outer surface of the first region. In this particular case, the folding order may be reversed, i.e. the adhesive-covered edge portions of the second region are brought in contact with the adhesive-free portions of the third region, and the adhesive-covered portions of the third region are brought in contact with the adhesive-free portions of the second region. The lid would be formed by folding the first region over the outer surface of the third region. The adhesive pattern according to the present invention thus has the advantage of giving the user a possibility to fold the packaging unit in any order, and still obtain a liquid- and odour-tight package, ensuring that the used article is disposed in a discrete and hygienic manner. Further, when the packaging unit of the present invention is used for disposal, the user may choose to roll the packaging unit instead of folding.

15 BRIEF DESCRIPTION OF THE DRAWINGS

Embodiments of the invention will now be described by way of example with reference to the accompanying drawings, of which:

Fig. 1 shows a packaging unit according to the present invention having one folding axis;

Fig. 2 shows the packaging unit depicted in Fig. 1 in a folded state;

20 Fig. 3 shows a circular packaging unit according to the present invention;

Fig. 4 shows the packaging unit depicted in Fig. 3 in a folded state;

Fig. 5 shows a packaging unit according to the present invention having two folding axes;

Fig. 6 shows the method of folding the packaging unit depicted in Fig. 5;

Fig. 7 shows a packaging unit according to the present invention having adhesive-covered portions of different widths;

Fig. 8 shows the method of folding the packaging unit depicted in Fig. 7;

Fig. 9 shows a packaging unit according to the present invention having adhesive-covered transverse edge portions; and

Fig. 10 shows the packaging unit depicted in Fig. 9 in a folded state.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

5 Fig. 1 depicts a packaging unit 1 for hygiene articles according to the present invention. The packaging unit is formed from a sheet of material having an inner surface 2 and an outer surface 3, the inner surface comprising an edge zone 4 comprising an inner edge portion 5, 8 and an outer edge portion 6, 7. The packaging unit 1 also comprises a transverse edge portions 4' and 4''. The sheet has a folding axis 9, wherein the folding
10 axis divides the sheet into a first region 10 and a second region 11. As shown in Fig. 1, the outer edge portion 6 of the edge zone 4 of the first region 10 is provided with adhesive 12, while the inner edge portion 5 of the edge zone 4 of the first region 10 is adhesive-free. Further, the inner edge portion 8 of the edge zone 4 of the second region 11 is provided with adhesive 12, while the outer edge portion 7 of the edge zone 4 of the
15 second region 11 is adhesive-free. Also, the transverse edge portion 4' of the first region 10 is provided with adhesive 12, while the transverse edge portion 4'' of the second region 11 is adhesive-free. Thus, the adhesive pattern in the first region 10 is complementary to the adhesive pattern of the second region 11. This in turn means that, when the sheet is folded about the folding axis 9 as shown in Fig. 2, the edge portions 6 carrying adhesive
20 in the first region 10 are brought in contact with the adhesive-free edge portions 7 in the second region 11, the edge portions 8 carrying adhesive 12 in the second region 11 are brought in contact with the adhesive-free edge portions 5 in the first region 10, and the transverse edge portion 4' carrying adhesive 12 in the first region 10 is brought in contact with the adhesive-free transverse edge portion 4'' in the second region 11. As can be
25 seen from Fig. 2, the width of the sealing area corresponds to the sum of the widths of the adhesive portions 6, 8. Such a sealing ensures a tight package for both a new and a disposed article.

Fig. 3 depicts a packaging unit 101 for hygiene articles according to the present invention. The packaging unit is formed from a sheet of material having an inner surface 102 and an
30 outer surface 103, the inner surface comprising an edge zone 104 comprising an inner edge portion 105, 108 and an outer edge portion 106, 107. The packaging unit 101 also comprises a transverse edge portions 104', 104* and 104'', 104**. The sheet has a folding

axis 109, wherein the folding axis divides the sheet into a first region 110 and a second region 111. As shown in Fig. 3, the outer edge portion 106 of the edge zone 104 of the first region 110 is provided with adhesive 12, while the inner edge portion 105 of the edge zone 104 of the first region 110 is adhesive-free. Further, the inner edge portion 108 of the edge zone 104 of the second region 111 is provided with adhesive 12, while the outer edge portion 107 of the edge zone 104 of the second region 111 is adhesive-free. Also, the transverse edge portion 104' of the first region 110 is provided with adhesive 12, while the transverse edge portion 104* of the first region 110 is adhesive-free. Further, the transverse edge portion 104** of the second region 111 is provided with adhesive 12, while the transverse edge portion 104'' of the second region 111 is adhesive-free. Thus, the adhesive pattern in the first region 110 is complementary to the adhesive pattern of the second region 111. This in turn means that, when the sheet is folded about the folding axis 109 as shown in Fig. 4, the edge portions 106 carrying adhesive in the first region 110 are brought in contact with the adhesive-free edge portions 107 in the second region 111, the edge portions 108 carrying adhesive 12 in the second region 111 are brought in contact with the adhesive-free edge portions 105 in the first region 110, the transverse edge portion 104' carrying adhesive 12 in the first region 110 is brought in contact with the adhesive-free transverse edge portion 104'' in the second region 111, and the transverse edge portion 104** carrying adhesive 12 in the second region 111 is brought in contact with the adhesive-free transverse edge portion 104* in the first region 110. As can be seen from Fig. 4, the width of the sealing area along the longitudinal edges corresponds to the sum of the widths of the adhesive edge portions 106, 108, and the length of sealing area along the transverse edges corresponds to the sum of the lengths of the adhesive portions 104' and 104**. Such a sealing ensures a tight package for both a new and a disposed article.

Fig. 5 illustrates a packaging unit 201 for hygiene articles according to the present invention. The packaging unit is formed from a sheet of material having an inner surface 202 and an outer surface 203, the inner surface comprising an edge zone 204 comprising an inner edge portion 205, 208 and an outer edge portion 206, 207. The packaging unit 201 also comprises a transverse edge portions 204', 204* and 204'', 204**. The sheet has a folding axis 209, wherein the folding axis divides the sheet into a first region 210 and a second region 211. As shown in Fig. 3, the outer edge portion 206 of the edge zone 204 of the first region 210 is provided with adhesive 12, while the inner edge portion 205 of the edge zone 204 of the first region 210 is adhesive-free. Further, the inner edge portion 208 of the edge zone 204 of the second region 211 is provided with adhesive 12, while the

outer edge portion 207 of the edge zone 204 of the second region 211 is adhesive-free. Also, the transverse edge portion 204' of the first region 210 is provided with adhesive 12, while the transverse edge portion 204* of the first region 210 is adhesive-free. Further, the transverse edge portion 204** of the second region 211 is provided with adhesive 12, while the transverse edge portion 204'' of the second region 211 is adhesive-free. Thus, the adhesive pattern in the first region 210 is complementary to the adhesive pattern of the second region 211. This in turn means that, when the sheet is folded about the folding axis 209 as shown in Fig. 6, the edge portions 206 carrying adhesive in the first region 210 are brought in contact with the adhesive-free edge portions 207 in the second region 211, the edge portions 208 carrying adhesive 12 in the second region 211 are brought in contact with the adhesive-free edge portions 205 in the first region 210, the transverse edge portion 204' carrying adhesive 12 in the first region 210 is brought in contact with the adhesive-free transverse edge portion 204'' in the second region 211, and the transverse edge portion 204** carrying adhesive 12 in the second region 211 is brought in contact with the adhesive-free transverse edge portion 204* in the first region 210. As can be seen from Fig. 6, the width of the sealing area along the longitudinal edges corresponds to the sum of the widths of the adhesive portions 206 and 208, and the width of the sealing area along the transverse edges corresponds to the sum of the widths of the adhesive portions 204' and 204**. Such a sealing ensures a tight package for both a new and a disposed article.

Fig. 7 illustrates a packaging unit 13 having a circular shape. Such a packaging unit may be used for absorbent articles that are packaged by rolling rather than folding, such as tampons or breast pads. The packaging unit 13 has a folding axis 20 dividing the packaging unit 13 into a first region 14 and a second region 15. Each of the regions comprises an inner edge portion 16, 19 and an outer edge portion 17, 18. As shown in Fig. 7, the inner edge portion 16 of the first region 14 and the outer edge portion 18 of the second region 15 are provided with adhesive 12, while the outer edge portion 17 of the first region 14 and the inner edge portion 19 of the second region 15 are adhesive-free. Thus, the adhesive pattern in the first region 14 is complementary to the adhesive pattern of the second region 15. This in turn means that, when the sheet is folded about the folding axis 20 as shown in Fig. 8, the edge portions 16 carrying adhesive in the first region 14 are brought in contact with the adhesive-free edge portions 19 in the second region 15, and the edge portions 18 carrying adhesive 12 in the second region 15 are brought in contact with the adhesive-free edge portions 17 in the first region 14. As can be

seen from Fig. 8, the width of the sealing area corresponds to the sum of the widths of the adhesive portions 16, 18.

The most common packaging unit for individual packaging of absorbent articles is a rectangular sheet comprising two folding axes, longitudinal edges and transverse edges.

- 5 Such an embodiment is illustrated in Fig. 9. The packaging unit 301 is a rectangular sheet comprising two folding axes 309, 309' dividing the packaging unit into a first region 310, a second region 311 and a third region 312. Each of the regions comprises an inner edge portion 305, 305', 308 and an outer edge portion 306, 306', 307. As shown in Fig. 9, the outer edge portions 306, 307 of the first and third regions respectively are provided with
10 adhesive 12, while the inner edge portions 305, 308 of the first and third regions respectively are adhesive-free. The adhesive pattern of the second region 311 is complementary to the adhesive pattern of the first and third regions 310, 312, thus forming a chessboard pattern. In other words, the outer edge portion 306' of the second region 311 is adhesive-free, and the inner edge portion 305' of the second region 311 is
15 provided with adhesive. This in turn means that, when the sheet is e-folded about the folding axes 309, 309' as shown in Fig. 6, the outer edge portions 306 of the first region 310 or the outer edge portions 307 of the third region 312 carrying adhesive 12 are brought in contact with the adhesive-free outer edge portions 306' in the second region 311, depending on which of the first and the third regions 310, 312 is brought in contact
20 with the second region 311. Consequently, the inner edge portions 305' carrying adhesive 12 in the second region 311 are brought into contact with the adhesive-free inner edge portions 305 of the first region 310 or the adhesive-free inner edge portions 308 of the third region 312. As can be seen from Fig. 10, the width of the sealing area corresponds to the sum of the widths of the adhesive portions 306, 305'. It should be noted that the
25 order in which the packaging unit is folded is irrelevant. For example, the packaging unit may be folded around the second folding axis 309', bringing the third region 312 in contact with the second region 311, sealing the outer edge portions 307, 306' and the inner edge portions 308, 305'. The packaging unit is subsequently folded around the first folding axis 309', bringing the first region 310 in contact with the outer surface of the third region 312,
30 thus sealing the packaging unit (Fig. 10). The folding order may also be reversed. This is a great advantage, since when the packaging unit of the present invention is used for disposal, the user does not have to fold the packaging unit in any particular order to be able to obtain a tightly sealed package. The packaging unit will provide a tight and hygienic package regardless of the folding order.

In order to obtain a tight package, the transverse edges 304' and 304** of the packaging unit 301 are provided with adhesive 12. When both transverse edges 304' and 304** are provided with adhesive, the folding order is irrelevant, as described above. It is also conceivable to provide only one of the transverse edges with adhesive. In this case, the
5 folding must be initiated around the folding axis being positioned closest to the adhesive-free transverse edge, such that the region comprising the adhesive-covered transverse edge portion forms a lid and the adhesive positioned at the transverse edge portion seals the packaging unit.

In order to facilitate the opening of the package, the adhesive-covered portions are
10 positioned such that at least one of the corner portions 21 of the packaging unit 301 is adhesive-free, thus forming a gripping tab that is gripped by the user upon opening the package. Moreover, the adhesive-free corner portion 21 serves as an evacuation opening when the packaging unit is sealed (Fig. 10).

As has been explained above, the width of the sealing area is the sum of the widths of the
15 adhesive-covered portions of the first and second region. It may be desirable to minimize the amount of adhesive and the width of the wrapping material for various reasons. This may be achieved if the width of the adhesive-covered portions in two of the adjacent regions is diminished in a way shown in Fig. 11. The packaging unit 401 has two folding axes 409, 409' dividing the packaging unit into a first region 410, a second region 411 and
20 a third region 412. As can be seen from Fig. 11, the width of the adhesive-covered portions 405' and 407 of two of adjacent regions, in this case the second and the third region 411, 412, corresponds to half of the width of the adhesive-covered portion of the remaining region, in this case the first region 410. It is essential that the adhesive-covered portion 405' of the second region 411 is complementary to the adhesive-covered portion
25 407 of the third region 412. If the adhesive pattern is as depicted in Figs. 11 and 12, the folding has to be initiated around the folding axis positioned between the regions having dimidiate adhesive-covered portions if the packaging unit is intended to be re-opened, i.e. when an unused article is packed. Otherwise, the adhesive-covered portion 406 of the first region 410 would come in contact with the adhesive-covered portion 405' of the
30 second region 411, thus ruling out the possibility of re-opening the packaging unit.

It should be noted that when the packaging unit according to the present invention is used for disposal, the user can choose to roll the packaging unit and the soiled article positioned on it rather than folding it.

Although the present invention has been described with reference to various embodiments, those skilled in the art will recognise that changes may be made without departing from the scope of the invention. It is intended that the detailed description be regarded as illustrative and that the appended claims including all the equivalents are
5 intended to define the scope of the invention.

CLAIMS

1. A packaging unit for hygiene articles, the unit being formed from a sheet of material, said sheet having an inner surface and an outer surface, said inner surface comprising an edge zone comprising an inner edge portion and an outer edge portion, said sheet having at least one folding axis, said folding axis dividing said sheet into a first region and a second region, *characterized in* that one of said inner edge portion and said outer edge portion of said edge zone of said first region being provided with adhesive, and the other of said inner edge portion and said outer edge portion of said edge zone of said first region being adhesive-free; in that one of said inner edge portion and said outer edge portion of said edge zone of said second region being provided with adhesive, and the other of said inner edge portion and said outer edge portion of said edge zone of said second region being adhesive-free in a complementary manner to said edge zone of said first region, such that when said sheet is folded about said folding axis, said edge portions carrying adhesive in said first region are brought in contact with said adhesive-free edge portions in said second region, and said edge portions carrying adhesive in said second region are brought in contact with said adhesive-free edge portions in said first region.
2. A packaging unit according to claim 1, wherein said sheet of material is of substantially rectangular shape and comprises longitudinal edges, transverse edges and corner portions, said edge zones of said first and second regions of said sheet of material being arranged along said longitudinal edges.
3. The packaging unit according to claim 2, wherein said sheet of material comprises transverse edge zones and wherein at least a portion of one of said transverse edge zones is provided with adhesive.
4. The packaging unit according to claim 2, wherein a portion of said transverse edge zone of said first region is provided with adhesive, while a remaining portion of said transverse edge zone of said first region is adhesive-free, and a portion of said transverse edge zone of said second region is provided with adhesive, while a remaining portion of said transverse edge zone of said second region is adhesive-free in a complementary manner to said transverse edge zone of said first region such that when said sheet is folded about said folding axis, said

transverse edge portions carrying adhesive in said first region are brought in contact with said adhesive-free transverse edge portions in said second region, and said transverse edge portions carrying adhesive in said second region are brought in contact with said adhesive-free transverse edge portions in said first region.

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5. The packaging unit according to claims 2-4, wherein at least one of said corner portions is free from adhesive such that a gripping tab is formed.

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6. The packaging unit according to claim 2, wherein said sheet has two folding axes, dividing said sheet into a first region, a second region and a third region.

7. The packaging unit according to claim 6, wherein said sheet is folded along said folding axes with said first, second and third regions in an overlapping configuration.

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8. The packaging unit according to claim 6 or 7, wherein the edge portion of said edge zone of said third region being provided with adhesive corresponds to the edge portion of said edge zone of said first region being provided with adhesive, and is complementary to the edge portion of said edge zone of said second region being provided with adhesive, such that a chessboard pattern of adhesive is formed along each of said longitudinal edges.

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9. The packaging unit according to claim 8, wherein the width of the adhesive-covered edge portions of two adjacent regions is diminished compared to the width of the adhesive-covered portion of the remaining region.

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10. The packaging unit according to claims 6-9, wherein at least a portion of one of said transverse edge zones is provided with adhesive.

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11. The packaging unit according to any one of the preceding claims, wherein said sheet is opaque and/or comprises print.

12. The packaging unit according to any one of the preceding claims, wherein said adhesive is a pressure-sensitive hotmelt adhesive with unlimited open time.

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13. The packaging unit according to any one of the preceding claims, wherein said packaging unit is reclosable.

5 14. Method of forming a packaging unit for hygiene articles from a sheet of material, comprising the steps of:

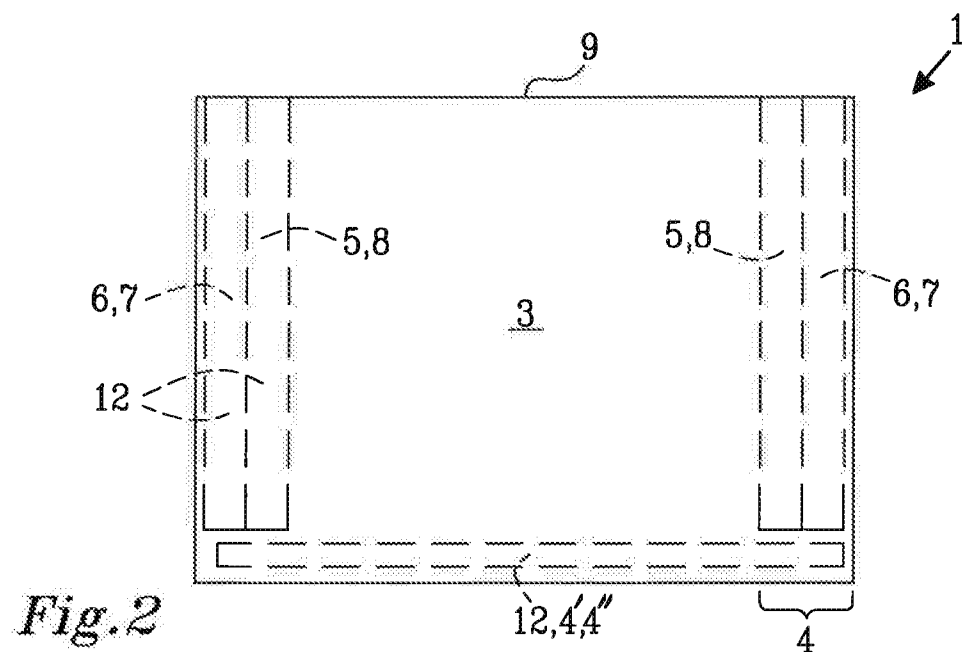
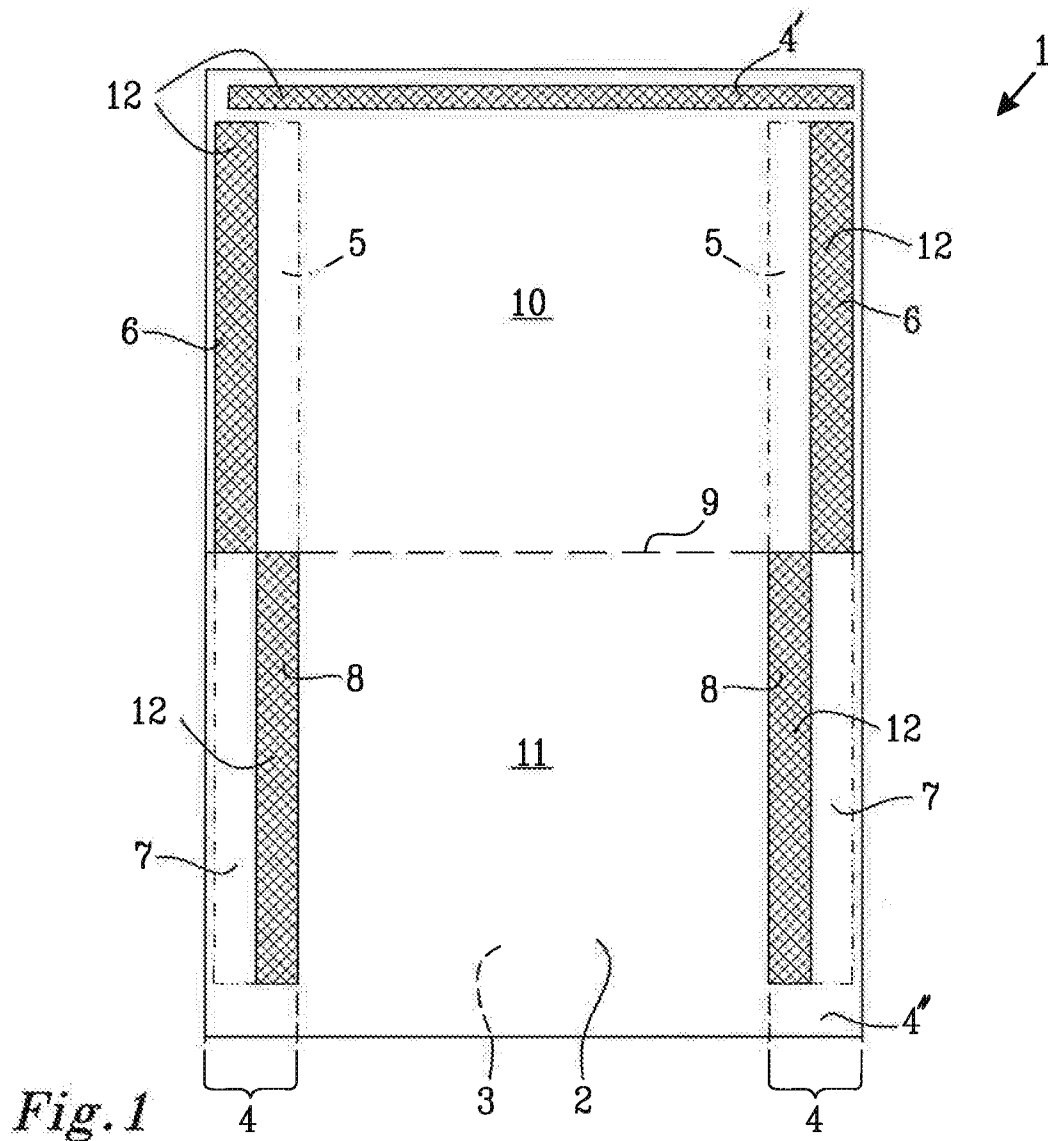
- 10 – providing a sheet having an inner surface and an outer surface, said inner surface comprising an edge zone comprising an inner edge portion and an outer edge portion, said sheet having at least one folding axis, said folding axis dividing said sheet into a first region and a second region;
- providing one of said inner edge portion and said outer edge portion of said edge zone of said first region with adhesive, such that the other of said inner edge portion and said outer edge portion of said edge zone of said first region is adhesive-free;
- 15 – providing one of said inner edge portion and said outer edge portion of said edge zone of said second region with adhesive, such that the other of said inner edge portion and said outer edge portion of said edge zone of said second region is adhesive-free in a complementary manner to said edge zone of said first region;
- 20 – folding the sheet about said folding axis, such that the edge portions carrying adhesive in said first region are brought in contact with the adhesive-free edge portions in said second region, and the edge portions carrying adhesive in said second region are brought in contact with the adhesive-free edge portions at said first region.

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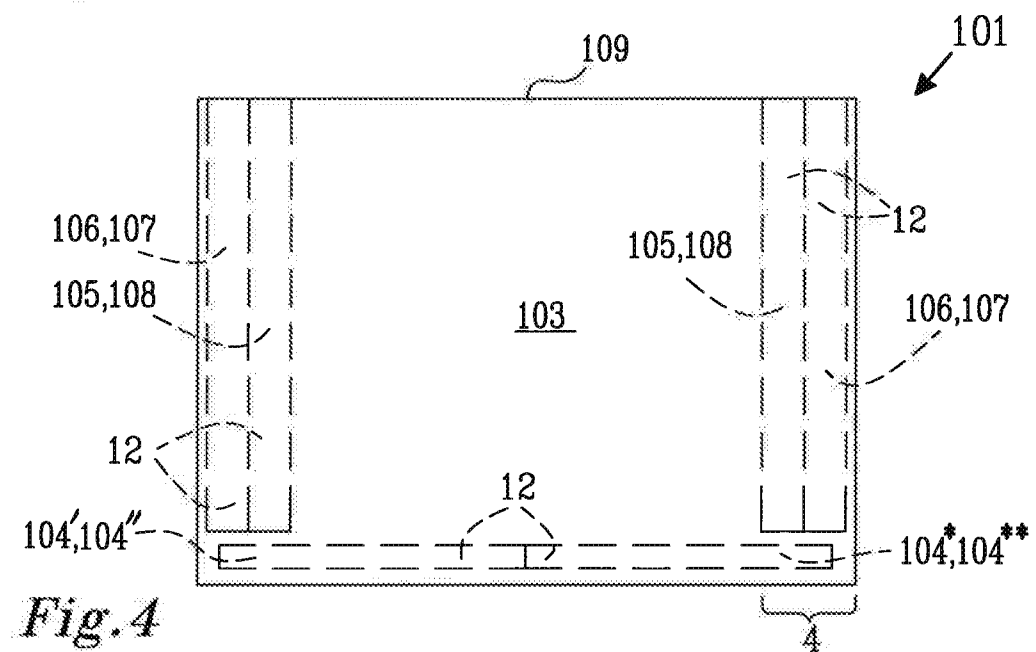
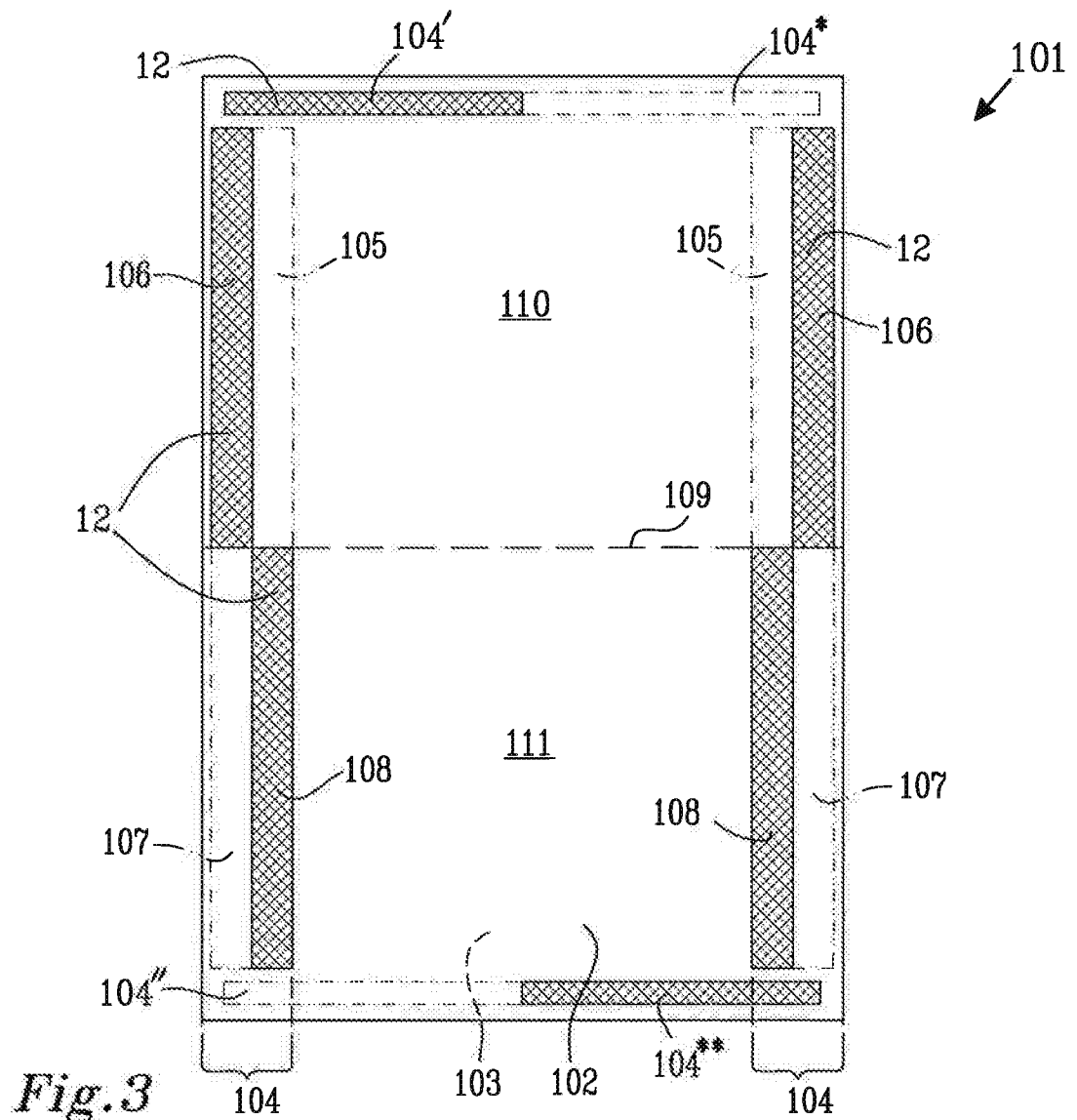
15. The method according to claim 13, wherein said sheet has two folding axes dividing said sheet into a first region, a second region and a third region, the method further comprising the steps of:

- providing a portion of said edge zone of said third region with adhesive;
- 30 – folding the sheet such that the inner surface of said third region is brought in contact with the outer surface of said first region.

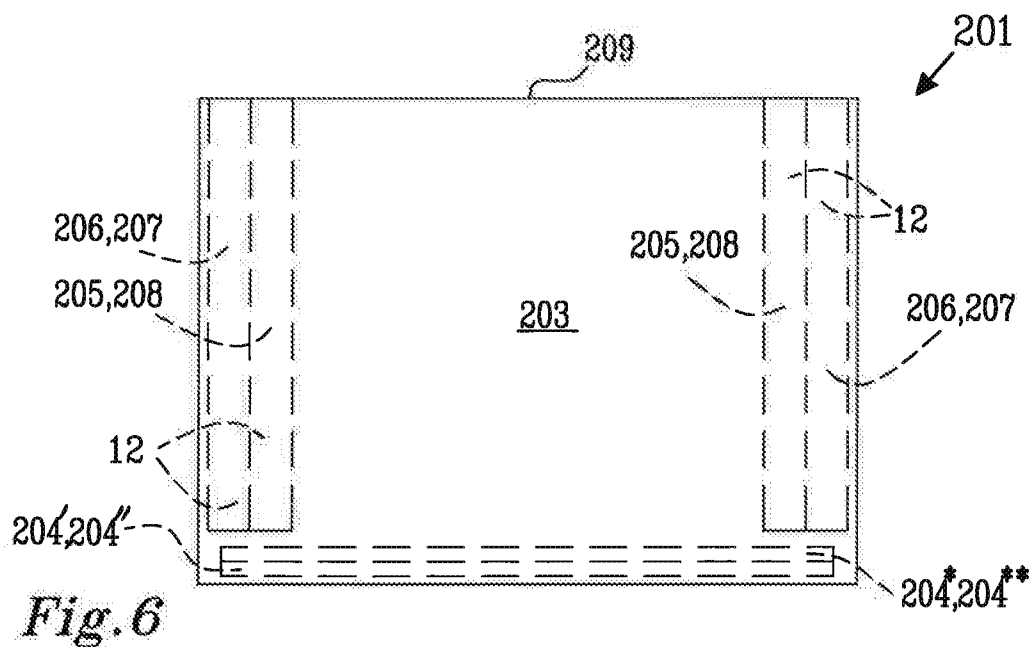
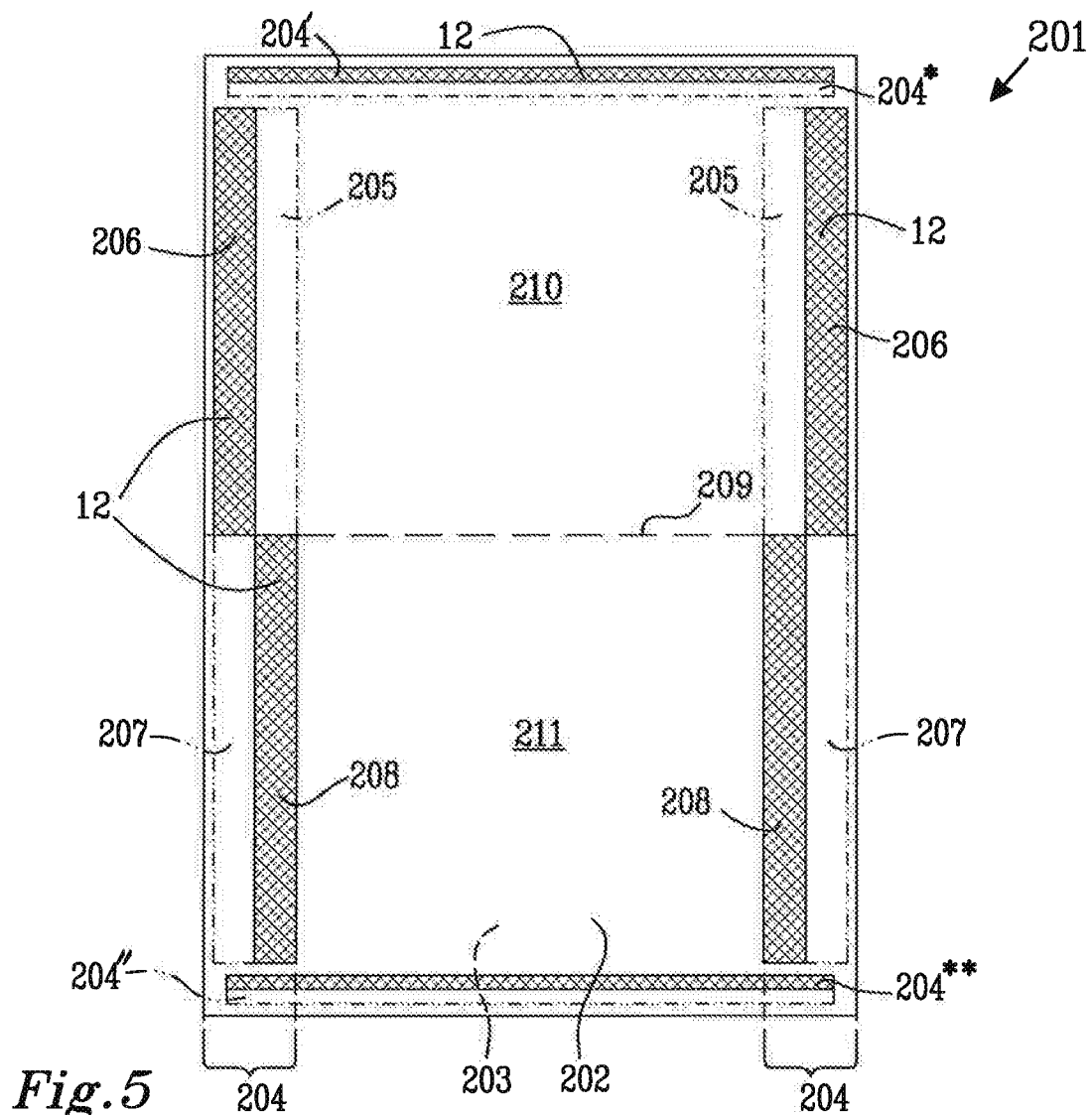
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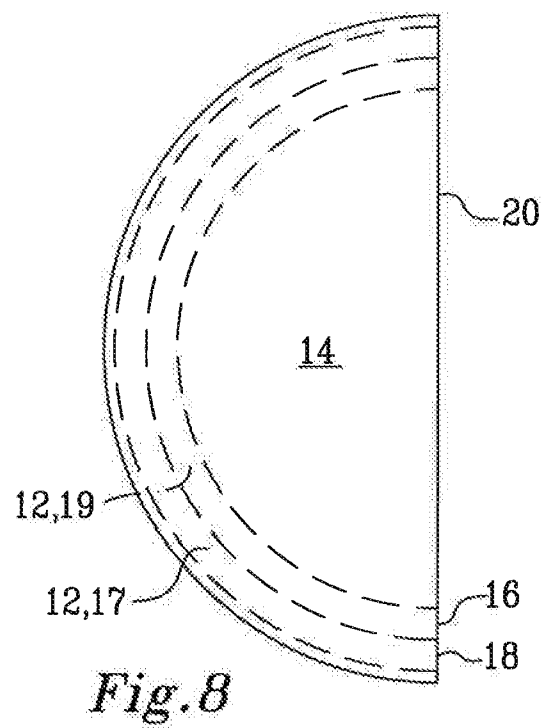
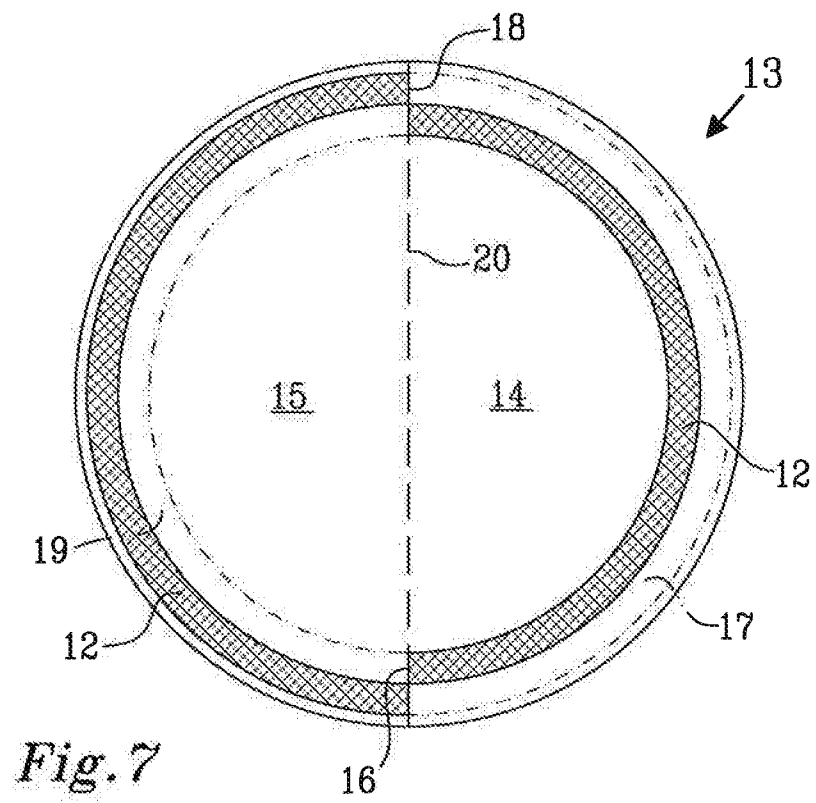
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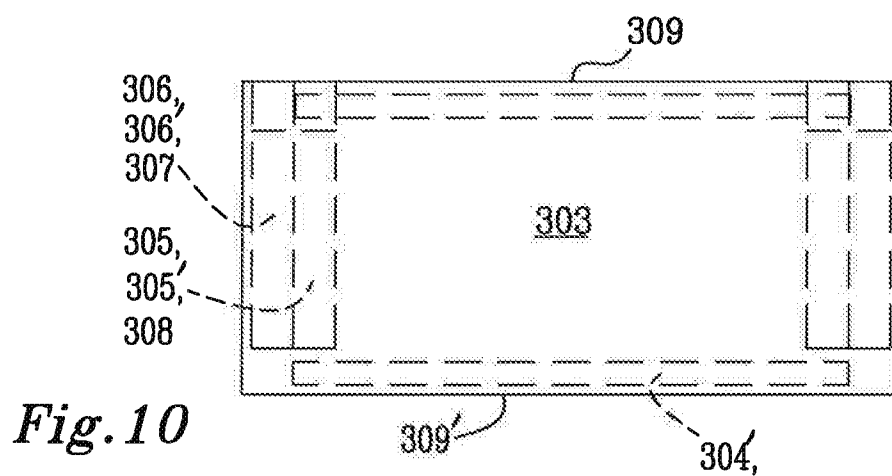
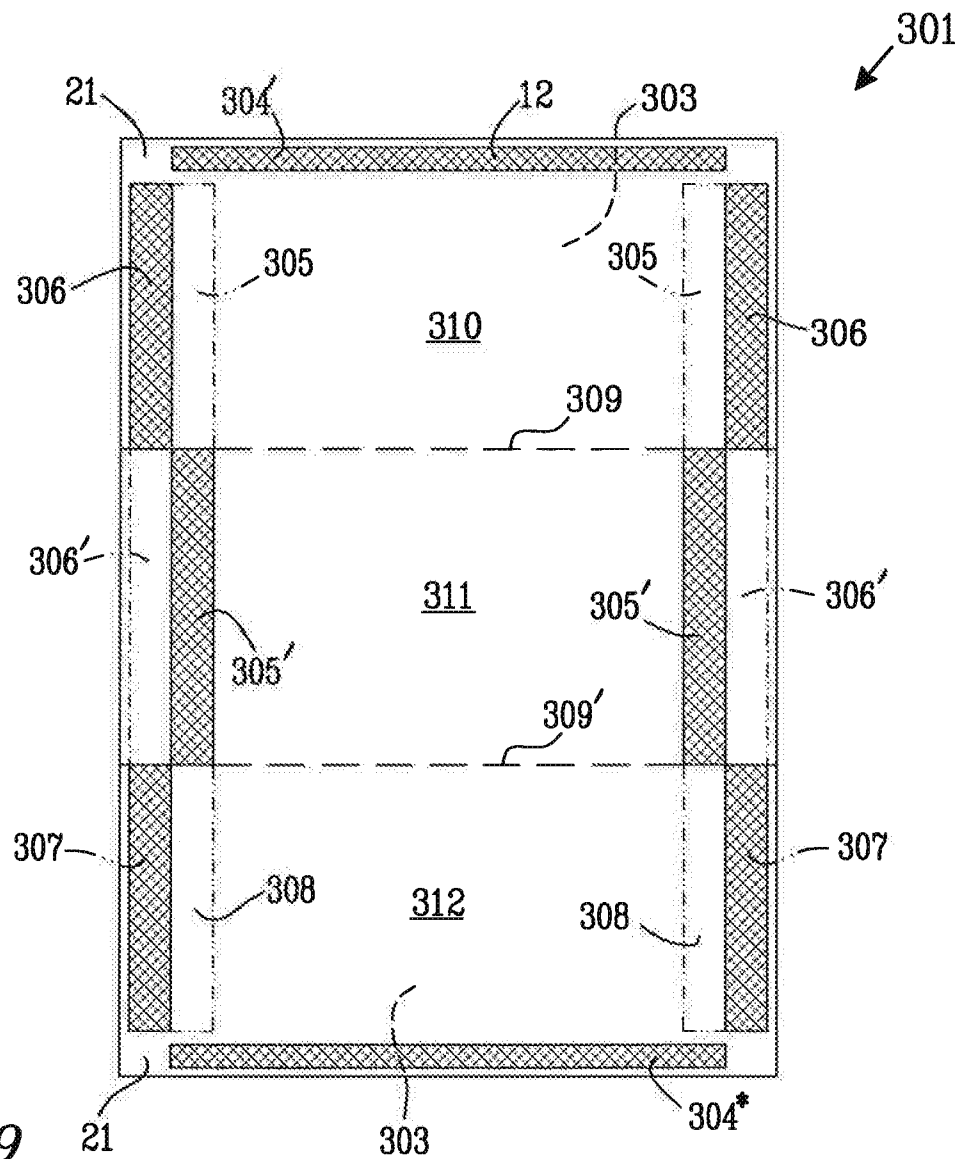
3/6



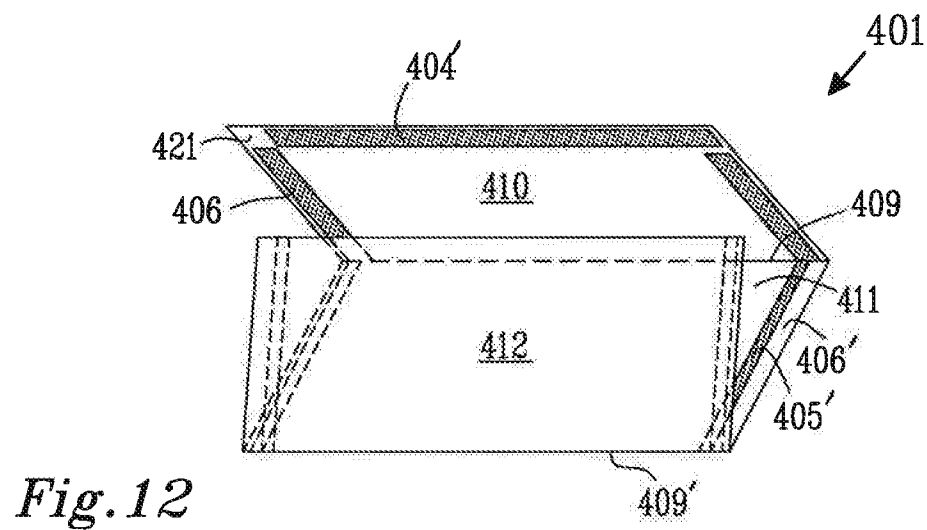
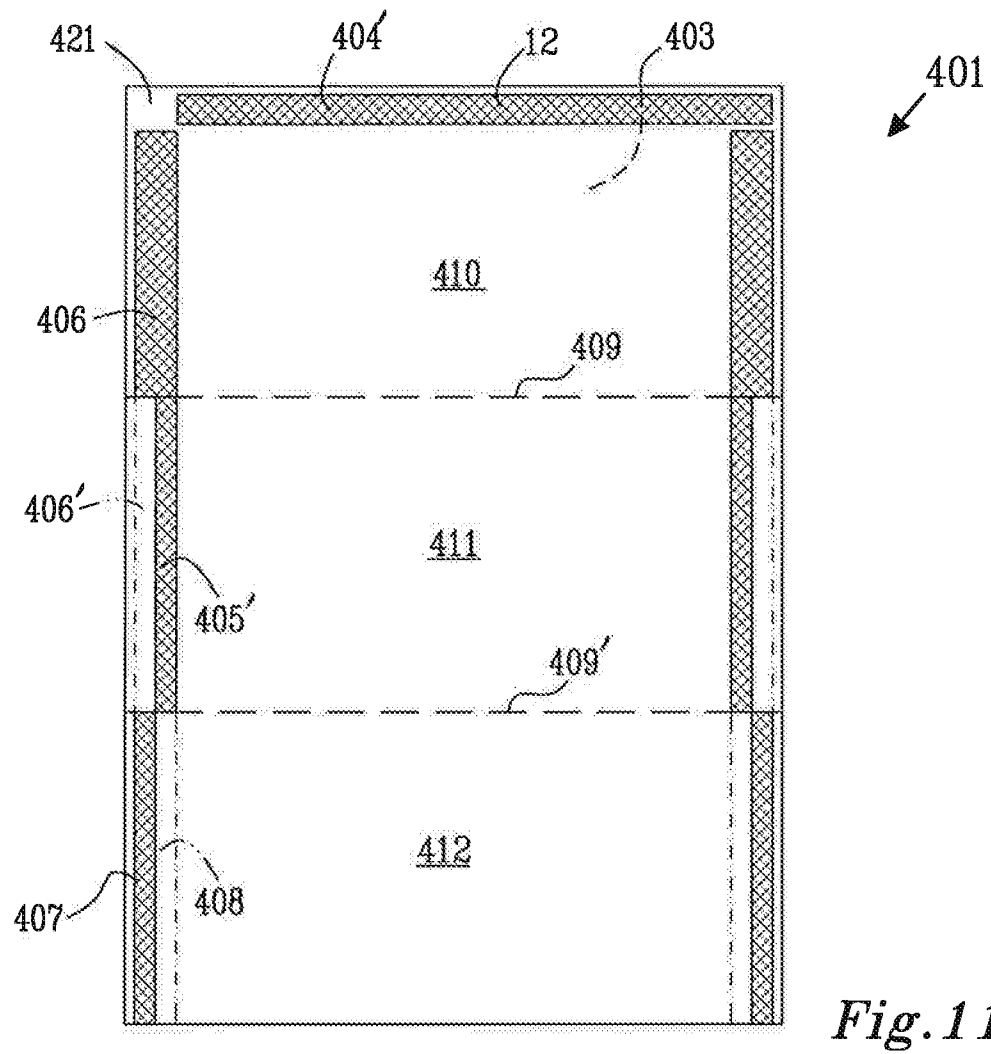
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE2012/050425

A. CLASSIFICATION OF SUBJECT MATTER

IPC: see extra sheet

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)

IPC: A61F, B65D

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

SE, DK, FI, NO classes as above

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

EPO-Internal, PAJ, WPI data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US1454H, US Statutory invention registration, NORDSON CORP. 1995-06-06; column 1, line 39 - column 2, line 22; column 4, line 27 - column 5, line 9; figures 1-3; claims 1-2	1-15
Y	--	1-15
Y	WO 8810219 A1 (MOELNLYCKE AB), 29 December 1988 (1988-12-29); page 2, line 25 - line 35; figures 1-5; claim 1 --	1-15
A	US 20100121299 A1 (COOPER KAREN), 13 May 2010 (2010-05-13); paragraphs [0032]-[0034]; figures 1-3; claim 1 --	1-15



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

“A” document defining the general state of the art which is not considered to be of particular relevance

“E” earlier application or patent but published on or after the international filing date

“L” document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

“O” document referring to an oral disclosure, use, exhibition or other means

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

“T” later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

“X” document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

“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

14-01-2013

Date of mailing of the international search report

15-01-2013

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE2012/050425

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
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A	US 5167739 A (HUTCHINSON WILBUR P ET AL), 1 December 1992 (1992-12-01); figures 3-6; claim 1 --	1-15
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A	US 20100298797 A1 (EHLENBACH LORANNE ET AL), 25 November 2010 (2010-11-25); figures 1-7; claim 1 --	1-15
A	US 5769837 A (PARR DEBORAH JEAN), 23 June 1998 (1998-06-23); column 2, line 26 - column 3, line 28; column 6, line 46 - line 59; figures 1-9; claim 1 -- -----	1-15

Continuation of: second sheet

International Patent Classification (IPC)

A61F 13/551 (2006.01)

B65D 65/14 (2006.01)

B65D 75/20 (2006.01)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/SE2012/050425

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