(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
3 April 2008 (03.04.2008)

PCT

(10) International Publication Number
WO 2008/038308 A1

(51) International Patent Classification:
B65D 75/56 (2006.01) *B31B 39/00* (2006.01)
B65D 30/08 (2006.01) *B31B 19/86* (2006.01)
B65D 33/06 (2006.01)

(21) International Application Number:
PCT/IT2006/000682

(22) International Filing Date:
25 September 2006 (25.09.2006)

(25) Filing Language: Italian

(26) Publication Language: English

(71) Applicant *(for all designated States except US)*: **ALCAN PACKAGING ARENZANO S.P.A.** [IT/IT]; Via Val Lerone, 3, I-16011 Arenzano (IT).

(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: **ANGIOLINI, Simone** [IT/IT]; Via A.G. Barrili 27/1, I-17043 Carcare (IT). **DELLA TORRE, Andrea** [IT/IT]; Via Milazzo, 42, I-21052 Busto Arsizio (IT). **COLABATTISTA, Paola** [IT/IT]; Piazza N.L. Poggi 16/1, I-16016 Cogoleto (IT).

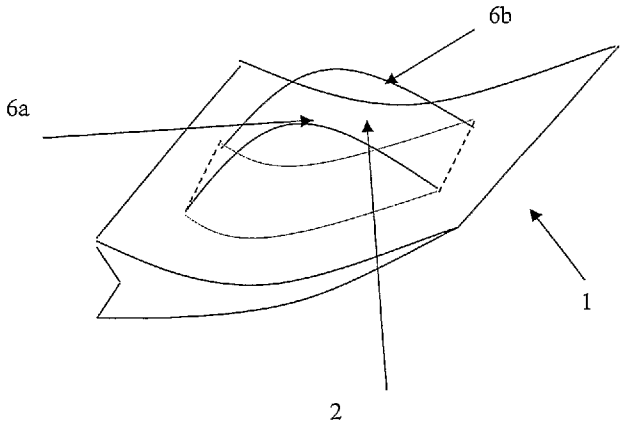
(74) Agents: **CHECCACCI, Giorgio** et al.; Porta, Checcacci & Associati S.p.A., Via Trebbia, 20, I-20135 Milano (IT).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*

(54) **Title:** FLEXIBLE CONTAINER WITH HANDLE AND METHOD FOR PRODUCING IT



(57) **Abstract:** A container (1) consisting of at least two flexible films, said container having at least one outer surface (3) and at least one inner surface, characterised in that at least one portion of said outer surface (3) is suitable for forming a handle (2) of the container (1) itself and capable of resisting lacerations during its use. Said container is produced by means of a method that is efficient, cost-effective and capable of being carried out with a limited number of steps, since no further step is necessary at the end of the production of the container (1) to apply the handle (2) to the container (1) itself.

WO 2008/038308 A1

Title: "Flexible container with handle and method for producing it"

DESCRIPTION

The present invention refers to a container, provided with a handle to make it easier to transport, consisting of at least two flexible films, and a method for producing such a container.

In particular, the container has at least one outer surface and at least one inner surface, at least one portion of said outer surface being suitable for forming a handle of the container itself.

Containers made from flexible plastic material, for example pouches, bags or sacks, are widely known in the art and are used to package various types of products, for example granular, powder and similar products for food, agricultural or building uses.

They are generally made from films having heat sealable inner layers and obtained by successive folding, carrying out transversal and longitudinal welding between the juxtaposed parts of heat sealable layers. Where heat sealable materials are not used in the films, such containers are made by means of sealing systems using glue or adhesives.

These containers are frequently supplied with a handle for transportation. This is not strictly necessary for light and small containers, but it is very useful in manipulation and transportation for bulky packs or those over a certain weight, for example for packages weighing over 1 Kg.

Different solutions have been adopted to apply handles on these containers.

One solution has been to apply premade handles or material strips to the top part of containers, by heat or adhesives welding. However, this solution has the disadvantage of causing problems in terms of production performances, since such handles are generally applied to the container during or at the end of the production process of the container itself, this additional step having negative impact on production costs.

Moreover, the presence of these handles makes it very complex to fill the container itself, for such a reason they are often applied only once filling process has been completed.

Finally, the materials used to make the handles are sometimes not homogeneous with the materials used to make the containers and this can cause recycling problems.

For example, European Patent Application no. 1651530 describes a container which can be closed at its upper end and is equipped with a carrying handle that is positioned so as not to hinder the closing of the container.

Another solution is given by making perforations in the container, generally in the top part of the container itself, so as to create a space suitable for allowing the insertion of a finger, creating a sort of handle. This solution avoids having to add material to create the handle; this solution is practical and widely used, but has limitations since the container is weakened by the presence of such perforations and the container tends to tear in the area subjected to most strain.

In order to reduce such a possibility of tearing, various solutions have been investigated such as reinforcement with welded or glued bands or by acting on the adhesion between the laminates, as described for example in the European Patent Application no. 1,129,960.

However, the above described containers having the handle perforated in the top area have problems with some processes and filling machinery being practically incompatible with them.

The solution proposed in Canadian Patent No. CA 2,532,381 of applying a preformed handle positioned in a given area of the container during the forming of the container itself is also inefficient in terms of productivity and of the relative production costs.

The technical problem forming the basis of the present invention is to provide a container made from flexible material provided with a handle integrated in the structure of the container itself, which is resistant to tear and capable of keeping unaltered the container properties of acting as a barrier to external agents.

In accordance with a first aspect of the invention, this problem is solved by a container as defined in the attached claim 1.

In particular, a container consisting of at least two flexible films, said container having at least one outer surface and at least one inner surface, is characterised in that at least one portion of said outer surface is suitable for forming a handle of the container itself and is able to resist tearing during its use.

In this way, the handle is made from the same material used to make the container, making recycling easier.

For the purposes of the present description and of the following claims, by the term "container" it is meant a pouch, bag, sack, or any other robust container suitable for containing granular, powdered and similar products, such as for example food for people or animals, agricultural products

such as soil or fertilisers, building products such as lime, cement.

Preferably, the handle of the container can take up two distinct shapes, according to whether the container is in rest condition (handle closed) or in operative condition (handle open).

Preferably, in rest condition, i.e. when it is not necessary to hold the handle to carry and/or to transport the container, said surface suitable for forming a handle is part of the outer surface of the container.

In this way, there is the advantage that the surface suitable for forming the handle does not take additional volume and therefore does not create problems of encumbrance or of hindrance, thus, for example, making easier filling, sealing, transportation and storage steps of the container.

Preferably, in operative conditions, i.e. when the handle must be held to transport the container, said surface suitable for forming a handle is lifted with respect to said outer surface of the container.

In this way, the user's hand can be inserted into the recess that is created between such a surface suitable for forming a handle and the surface of the container.

Said outer surface suitable for constituting a handle can be of any geometric shape and size, based upon the desired design, its position on the container and the target tear resistance.

Preferably, at least one part of the perimeter of said surface suitable for forming the handle consists of at least one incision line onto the outer surface of the container.

In this way, said at least one incision line makes it easier to identify the surface suitable for forming the handle and to carry out the relative lifting to be gripped.

Preferably, said at least one incision line is a straight line, a curved line or a combination thereof.

Preferably, there are at least two incision lines.

In one embodiment, said incision lines define a curvilinear surface having a central area that is narrower than the peripheral one.

In another embodiment, said incision lines are at least two parallel straight lines.

Preferably, said incision lines are of a length substantially equal to the average width of a man's hand (considered as the distance between thumb and little finger) and are arranged at a shorter distance apart than the average size of the palm of a man's hand.

Preferably, such sizes are within a range between 3 and 30 centimetres of length and between 0.5 and 10 cm of width. In the case of curved lines by length and width it is meant the total length and width of the geometric shape enclosed between such incision lines.

In this way, the surface between such lines is of a size to be able to be used as a handle.

Preferably, said container also comprises a device such as, for example, a tab, an adhesive band, or whatever opening or lifting device suitable for lifting easier such a surface suitable for forming the handle.

In a preferred embodiment, said device is also suitable for making easier to maintain the handle in rest condition, making the moving and storage steps easier.

The containers of the present invention can have different shapes and functionalities.

Preferably, said container has at least two faces.

More preferably, said container has at least two front faces and from one to three side faces, where by side faces are meant both the bottom face and the side faces (known as gusset) located between said front faces.

In a preferred embodiment, said surface suitable for forming a handle is positioned on at least one of said front faces.

In another preferred embodiment, said surface suitable for forming a handle is positioned on at least one of said gussets so as to leave the front faces free to facilitate the filling and sealing of the container.

In this way, said incision line creates an opening on the outer surface of the container suitable for constituting a handle.

Preferably, said container can further include known in the art elements suitable for finishing off the container and for providing the container itself with particular advantages, such as, for example, the different types of container bottom, as simple (or "bavette"), flat (or added) or folded; the easy opening system; reclosing systems, as zip and "slider", in the different positions on top or at the front; the labels; the technical solutions for dosing the content; and others.

Preferably, the container of the present invention is made with films of various materials selected according to

requirements and applications such as, for example, paper, plastic, amorphous, mono-orientated o bi-orientated, composite or lacquered plastics, such as for example plastic films coated with organic or inorganic layers, coextruded or others; metallic materials, such as for example aluminium foil, or mixtures thereof; biodegradable materials to produce containers that meet the requirements of current biodegradability and compostability standards (such as for example EN13432), or combinations thereof.

Amongst the plastic materials polyesters, polyethylenes, polypropylenes, polyamides, polycarbonates, polyvinylchlorides, or mixtures thereof are preferred.

In this way, the container of the present invention has the advantage of using flexible materials, therefore easier to be folded during the production of the container and with good sealing properties to obtain containers able to ensure a suitable air-tightness.

Moreover, these materials have the advantage of ensuring suitable final mechanical properties to the container.

In this way, even in the case of handle failure, the integrity and air-tightness properties of the container itself are not jeopardised.

Preferably, at least one of said films positioned highest up from such juxtaposed films is transparent or pigmented.

More preferably, at least one of said films positioned highest up from such juxtaposed films is suitable for being printed on by means of any printing technology known in the field of the packaging industry such as, for example, rotogravure or flexography, so as to be able to reproduce, for example, distinctive marks, information about the product

contained inside the container, manufacturer's name, and the like.

In this way there is the advantage of being able to obtain containers in which such information are visible.

In accordance with a second aspect of the invention, this problem is solved by a container as defined in the attached claim 18.

In particular, a method for producing a container as previously described, wherein said method comprises, in order, the steps of:

a) laying at least two flexible films over one another;

b) coupling said juxtaposed films so as to obtain a laminate;

c) folding and sealing said laminate to obtain such a container so that the film positioned highest up from such juxtaposed films contributes to forming the outer surface of the container and the film positioned lowest down from such juxtaposed films contributes to forming the inner surface of the container,

characterised in that said method also comprises step d) of producing at least one incision line onto a portion of said laminate or on a portion of at least one of said films positioned highest up so that said incision line contributes to define a surface suitable for being lifted from the underlying non-incised films to form the handle of the container itself,

said step d):

- being carried out at any moment with respect to steps a), b) and c) of above, and

- being such as not to produce any incision onto at least the film positioned lowest down,

is able to produce such a container efficiently, cost-effectively and capable of being made with a limited number of steps, since no further steps are necessary at the end of the production of the container to apply the handle to the container itself.

Such a production method is therefore easy and cost-effective and the container obtained is compatible with any industrial filling process of the container itself.

During step a), at least two films are laid on top of one another so that at least one film positioned highest up from such juxtaposed films contributes to form, at the end of the production process, the outer surface of the container and the film positioned lowest down from such juxtaposed films contributes to form the inner surface of the container.

Preferably, during step a) from 2 to 10 films, more preferably from 2 to 6, are laid on top of one another.

In this way the container consists of a number of films that represents a good compromise to obtain good air-tightness and stiffness, at the same time keep the production costs to the minimum.

Preferably, each of said films can consist of one or more layers.

Preferably, said juxtaposed films are coupled during step b) by means of technologies known in the field of the packaging industry such as, for example, the use of solvent-based or solvent-free lamination coupling machines or by extrusion.

Preferably, said juxtaposed films are coupled through lamination with at least one layer suitable for promoting the adhesion between said films being arranged between them, so as to make a laminate.

More preferably, said at least one layer suitable for promoting the adhesion between said films contains at least one adhesive agent.

Adhesive agents or glues able to be used for the purposes of the adhesion of said films can be of any type amongst those commonly used in the field of flexible packaging, such as for example those known as monocomponent or with many components, solvent-based, water-based or alcohol-based or solvent-free, of the polyurethane, polyester, polyether or mixed type or even of the acrylic or epoxy type, able to be cross linked by catalysts, temperature, light or other energy sources.

In this way, the films are coupled so as to form a compact and resistant multilayer laminate film.

Preferably, at said surface suitable for forming the handle of the container there is a non-adhesion area between said surface and said non-incised underlying film.

In one embodiment, said at least one layer suitable for promoting the adhesion between said films has no adhesive agents in said non-adhesion area, whereas the remaining part of said layer contains said adhesive agents.

In another embodiment, said at least one layer suitable for promoting the adhesion between said films comprises, in said non-adhesion area, at least one agent having release properties or being chemical or physical incompatible with said adhesive agent. Preferably, in such a case, in said non-adhesion area, a layer containing said agent having release properties is first applied and then said adhesive agent is applied onto all of said adhesive layer.

In this way, the surface suitable for forming the handle does not stick to the adhesive layer and can thus be easily lifted from the underlying non-incised films.

Preferably, in both of said preferred embodiments, said non-adhesion area has a greater surface dimensions than that of said surface suitable for being lifted.

In this way, the surface suitable for forming the handle of the container is even easier to separate from the underlying non-incised films and the resistance to tearing is greater.

Preferably, said step d) produces at least two incision lines so as to define between them said surface suitable for being lifted.

Preferably, such incision lines are made by a mechanical cutting system or a laser cutting system.

Such cutting systems allow a portion of said laminate or a portion of at least one of said films positioned highest up to be sufficiently deeply incised as to allow the surface suitable for forming the handle to be lifted and detach from the underlying non-incised films.

At the same time, such cutting systems allow the films, which do not contribute to form the surface suitable for forming the handle and that lie below the films onto which the incision lines are made, to not be influenced by such incisions and therefore allowing them to maintain unaltered their properties of making the container airtight, with clear advantages.

More preferably, a laser cutting system is used that is able to generate more precise incisions and to reduce the occurrence of tearing of the cut material.

In a first preferred embodiment of the present invention, step d) is completed before step b) begins.

Preferably, in this first embodiment, said incision lines are made onto one of such films before step a) of juxtaposing

films. Thus, said films onto which said incision lines have been made are positioned highest up in the step a) of juxtaposing said films.

In this way, incise such films when they do not yet lie over other underlying films not to be incised, has the advantage to avoid the risk of accidentally incise such underlying films.

In a second preferred embodiment of the present invention, step d) is carried out during step b).

In this case there is the advantage to reduce production complexity and working cycle, since the incision lines are made during the lamination step of such films.

In a third preferred embodiment of the present invention, step d) is carried out after the completion of step b), i.e. when the laminate has been obtained, and before step c) begins.

Preferably, in this third embodiment, the incision lines onto the films positioned highest up are carried out on dedicated equipment or in the trimming or slitting step.

In this way the risk of also incise the underlying not-to be-incised films is further reduced.

Whatever the embodiment of the present invention amongst those previously described, step c) of the production method of the container of the present invention uses a laminate that is already prepared for making a container with handle.

In this way no additional step of application of a handle during or after step c) is necessary.

Preferably, before such a step c) begins, the laminate is cut so as to obtain the suitable size according to requirements.

Preferably, step c) comprises carrying out successive folds of the laminate along its edges and transversal and longitudinal welding between juxtaposed parts of heat sealable layers so as to obtain the container.

Such a step c) is carried out by means of industrial techniques and equipments known to experts skilled in the art and therefore are not described in detail in the present invention.

The type of laminate used and the geometry of the incisions are selected and designed so as to ensure processability without drawbacks in both longitudinal or transversal machines for the production of containers (known as packaging or bag machines).

In a fourth preferred embodiment of the present invention, step d) is carried out during step c).

Preferably, in this embodiment, the incision step is carried out by means of a laser cutting system installed on the packaging or filling machine.

At the end of the above steps of the production method of the present invention, a container is obtained comprising a handle integrated in the container itself. The handle can be made in any position of the container.

Preferably, the method of the present invention is able to make the handle onto at least one side face of the container.

In this way clear advantages are obtained in container handiness and in product dosing or pouring.

Preferably, at least one of said films constituting said container is suitable for being printed at any moment with respect to said steps a), b), c) and d) of the production method.

Such a printing step of one of the films used in the present invention can be carried out during any step of the method herein described and by any known techniques, not described in this document, such as for example, rotogravure or flexography.

The thus formed container is ready to be inserted into suitable filling machinery for such containers. Such machinery carries out the steps of opening the container, filling with the desired product and sealing the top part of the container.

At the end of the treatment in such filling machinery, the container, filled and sealed, is ready to be stored and/or transported.

Further characteristics and advantages of the container of the present invention and of the method for producing it shall become clearer from the following detailed description of some preferred embodiments thereof, given only as non-limiting examples with reference to the attached drawings. In such drawings,

- figure 1 is a schematic representation of a container in accordance with the present invention wherein two incision lines and the handle closed in rest condition can be seen;

- figure 2 is a schematic representation of the same container shown in figure 1 wherein the open handle in operative condition can be seen;

- figure 3 is a schematic representation of another embodiment of a container in accordance with the present invention wherein an incision line and the handle closed in rest condition can be seen;

- figure 4 is a schematic representation of the same

container shown in figure 3 wherein the open handle in operative condition can be seen;

- figures 5a and 5b are schematic representations of the method for producing the container in accordance with the first preferred embodiment of the invention;

- figures 6a and 6b are schematic representations of the method for producing the container in accordance with the third preferred embodiment of the invention;

- figure 7 is a representation in section of a part of the container in accordance with the present invention;

- figure 8 is a representation in section of a part of the container in accordance with another embodiment of the present invention wherein the adhesive layer containing an agent having release property can be seen.

With reference to figure 1, the conventional flexible container 1 is shown consisting of the top front face 21, the bottom front face 22 (hidden in the figures) and the side face 23 located between such front faces 21,22. In accordance with the present invention, the portion 4 of the outer surface 3 of the front face 21 enclosed between the parallel straight incision lines (6a,6b) and the dashed lines (16a,16b) is also clear. In rest condition, the portion 4 sticks to the outer surface 3 of the container 1.

With reference to figure 2, the same container 1 of figure 1 is shown, this time in operative condition, wherein the portion 4 is lifted and is suitable for forming the handle 2, thus allowing a user to grip the handle 2 to transport the container 1.

With reference to figure 3, the container 1' is shown having a straight incision line 24 and a curvilinear incision line

25 that contribute to define the surface portion 4'. In rest condition, the portion 4' sticks to the outer surface 3 of the container 1'.

Similarly to what has been described above with reference to the container 1, in figure 4 the same container 1' of figure 3 is shown, wherein the handle 2' can be seen in operative condition.

From figures 1-4 it is clear that the containers 1,1' of the present invention contain at least one portion of one of their outer surfaces suitable for forming a handle of the containers themselves capable of resisting tearing during the use.

With reference to figures 5a and 5b, the first preferred embodiment of the method for producing the container 1 of the present invention is shown.

Figure 5a shows a transparent film 5 onto which a laser cutting system 7 incises (step d) two straight incision lines (6a,6b). The two lines (6a,6b) define the portion 4 of the outer surface 3 of the film 5 between them.

The transparent film 5 is then laid over (step a) the film 8 onto which information 9 and distinctive marks relative to the content of the container have been printed. Between the film 5 and 8 there is an adhesive layer 11. Again with reference to figure 5a and, for extra clarity, also with reference to figure 7, a non-adhesion area 15 of the adhesive layer 11 at the portion 4 of the film 5 is shown. The non-adhesion area 15 shall allow the portion 4 of the film 5 to separate from the film 8 in operative condition.

Figure 8 also shows an alternative embodiment of a non-adhesion area 15' of the adhesive layer 11', wherein a layer 13 containing an agent having release properties with the

adhesive agent contained in the adhesive layer 11' is applied.

The film 8, then, is laid over the film 10 (step a), arranging an adhesive layer 12 between them.

With reference to figure 5b, the films 5,8 and 10 are laminated (step b) together to obtain the laminate 14. At the end of such a lamination step (step b), the film 5 comprising the portion 4 of surface suitable for forming the handle 2 is arranged in the highest position in the laminate 14.

Such a laminate 14 is then inserted in typical machinery not shown in the figures that, by folding and successive welding of the laminate 14 (step c), produces the container 1 in its final form of figure 1 or 2, wherein the handle 2 can be seen.

With reference now to figure 6a, the transparent film 5, the film 8 onto which information and/or distinctive marks 9 relative to the content of the container have been printed, and the film 10 are laid on top of one another (step a), ensuring that the film 5 is in the highest position and arranging the adhesive layers 11 and 12 between them in a similar way to what has been seen with reference to figure 5a.

During steps a) and/or b), the non-adhesion area 15 is made at the portion 4 of the film 5, in the same ways previously described with reference to figures 5a and 5b. The non-adhesion area 15 shall allow the portion 4 of the film 5 to separate from the film 8 in operative condition.

With reference to figure 6b, such films 5, 8 and 10 are laminated (step b) obtaining the laminate 14'. Such a laminate 14' is then subjected (step d) to the action of a laser cutting system 7 that produces the two incision lines

(6a,6b) onto the outer surface 3 of the film 5.

As previously described with reference to figure 5b, also in this case the laminate 14' is subsequently inserted into typical machinery (not shown in the figures) so as to obtain (step c) the container 1 comprising the handle 2.

Therefore, in both of the embodiments of the method for producing a container in accordance with the present invention illustrated with reference to figures 5a, 5b, 6a and 6b, step c) takes place without having to add any steps to make the handle 2 of the container 1 itself, reducing the production costs and simplifying the production cycle.

Of course, the embodiments described above must be taken as mere non-limiting illustrations of some possible embodiments of the container of the present invention and of the method for producing it, with it clearly being meant to be understood that any element inherent to the container and to the method for producing it can be changed by the man skilled in the art to satisfy specific and contingent requirements, whilst still being covered by what is claimed.

For example, the incision step d) could be carried out during the container production step c) by implementing the suitable equipment on the container production machinery.

CLAIMS

1. Container consisting of at least two flexible films, said container having at least one outer surface and at least one inner surface, characterised in that at least one portion of said outer surface is suitable for forming a handle of the container itself.

2. Container according to claim 1, wherein said portion of outer surface suitable for forming a handle, in rest condition, is part of the outer surface of the container.

3. Container according to claim 1 or 2, wherein said surface portion suitable for forming a handle, in operative condition, is raised with respect to said outer surface of the container.

4. Container according to any one of the previous claims, wherein at least one part of the perimeter of said surface suitable for forming the handle consists of at least one incision line onto the outer surface of the container.

5. Container according to claim 4, wherein a part of said perimeter consists of at least two incision lines.

6. Container according to claim 4 or 5, wherein said incision lines are straight lines, curved lines, or combinations thereof.

7. Container according to any one of claims 4 to 6, wherein said incision lines define a curvilinear surface having a central area that is narrower than the peripheral one.

8. Container according to any one of claims 4 to 6, wherein said incision lines are two parallel straight lines.

9. Container according to any one of the previous claims, wherein said container also comprises a device to make it

easier to lift such a surface suitable for forming the handle.

10. Container according to any one of the previous claims, wherein said container has at least two faces.

11. Container according to claim 10, wherein said handle is positioned on at least one of said faces.

12. Container according to claim 10, wherein said container has at least two front faces and from one to three side faces.

13. Container according to claim 12, wherein said handle is positioned on at least one of said side faces.

14. Container according to any one of the previous claims, wherein said container is made from paper, plastic, plastic coated with inorganic material, or combinations thereof.

15. Container according to claim 14, wherein said plastic material is polyester, polyethylene, polypropylene, polyamide, polycarbonate, polyvinylchloride, or mixtures thereof.

16. Container according to any one of the previous claims, wherein at least one of said films is suitable for being printed.

17. Container according to any one of the previous claims, wherein at least one of said films is transparent or pigmented.

18. Method for producing a container as described in any one of claims 1-17, wherein said method comprises, in order, the steps of:

a) laying at least two flexible films over one another;

b) coupling said juxtaposed films so as to obtain a laminate;

c) folding and sealing said laminate to obtain such a container so that the film positioned highest up from such juxtaposed films contributes to form the outer surface of the container and the film positioned lowest down from such juxtaposed films contributes to form the inner surface of the container,

characterised in that said method also comprises the step d) of producing at least one incision line onto a portion of said laminate or on a portion of at least one of said films positioned highest up so that said incision line contributes to define a surface suitable for being lifted from the underlying non-incised films to form the handle of the container itself,

said step d):

- being carried out at any moment with respect to steps a), b) and c) above, and

- being such as not to produce any incision onto at least the film positioned lowest down.

19. Method according to claim 18, wherein said step a) is carried out by lying from two to ten flexible films on top of one another.

20. Method according to claim 18 or 19, wherein said step b) is carried out by coupling said juxtaposed films through lamination with at least one layer suitable for promoting the adhesion between said films arranged between it.

21. Method according to claim 20, wherein said at least one layer suitable for promoting the adhesion between said films contains at least one adhesive agent.

22. Method according to any one of claims 20 to 21, wherein at said surface suitable for forming the handle there is a non-adhesion area between said surface and said underlying non-incised films.

23. Method according to claim 22, wherein said layer suitable for promoting the adhesion between said films does not have adhesive agents in said non-adhesion area.

24. Method according to claim 22, wherein said layer suitable for promoting the adhesion between said film comprises, in said non-adhesion area, at least one agent having release properties or being chemical or physical incompatible with said adhesive agent.

25. Method according to any one of claims 22 to 24, wherein said non-adhesion area has greater surface dimensions than those of said surface suitable for being lifted.

26. Method according to any one of claims 18 to 25, wherein said incision lines are made by a mechanical system or a laser cutting system.

27. Method according to any one of claims 18 to 26, wherein step d) is completed before step b) begins.

28. Method according to claim 27, wherein said incision lines are made onto one of such films before being juxtaposed according to step a).

29. Method according to claim 27, wherein said film onto which said incision lines have been made is positioned higher up in step a) of juxtaposing said films.

30. Method according to any one of claims 18 to 26, wherein step d) is carried out during step b).

31. Method according to any one of claims 18 to 26, wherein step d) is carried out after the completion of step b) and before step c) begins.

32. Method according to any one of claims 18 to 31, wherein step c) comprises the operations of carrying out successive folds of the laminate and transversal and longitudinal welds between juxtaposed parts of heat sealable layers so as to obtain the container.

33. Method according to any one of claims 18 to 32, wherein step d) is carried out during step c).

34. Method according to claim 33 wherein step d) is carried out by means of a laser cutting system, installed on the packaging or filling machine.

35. Method according to any one of claims 18 to 34, wherein at least one of said film constituting said container is suitable for being printed at any moment with respect to said steps a), b), c) and d) of the production method.

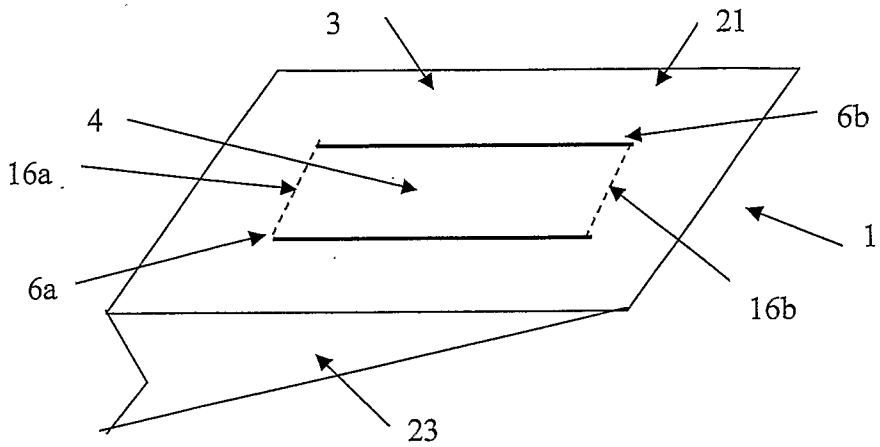


Figure 1

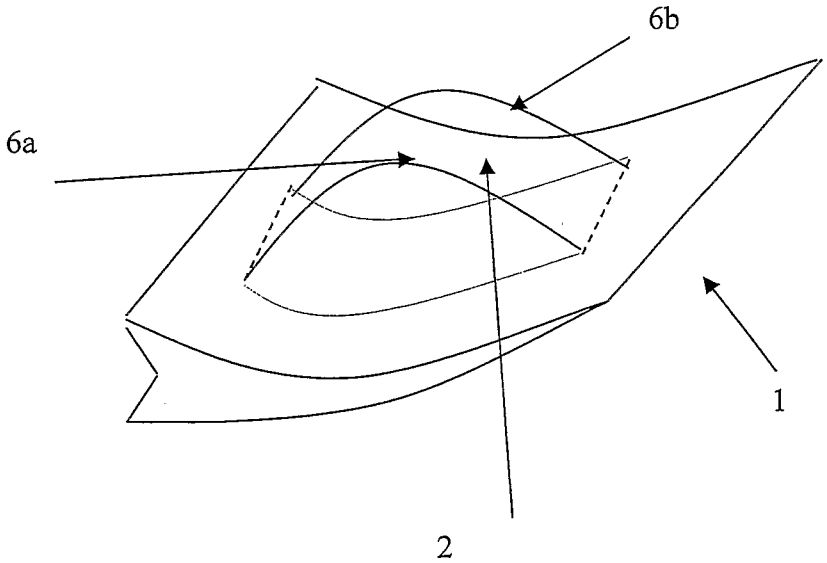


Figure 2

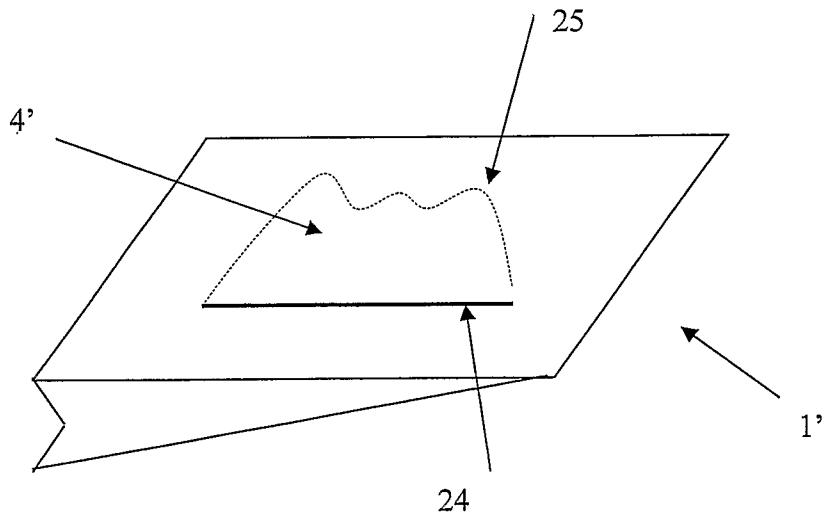


Figure 3

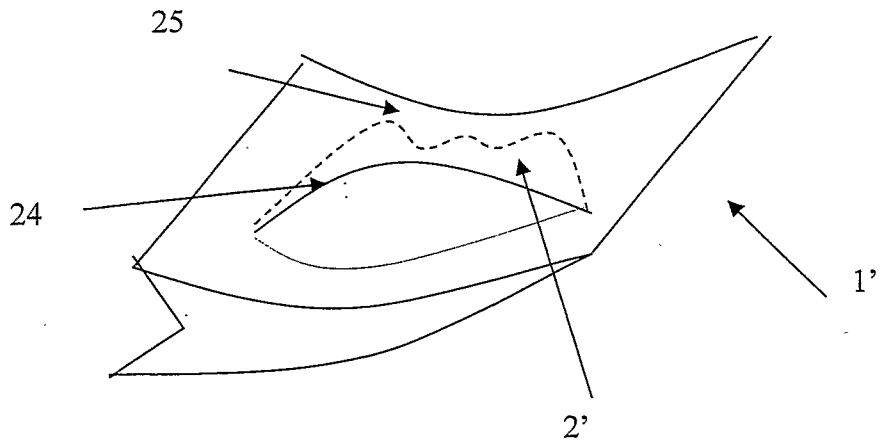
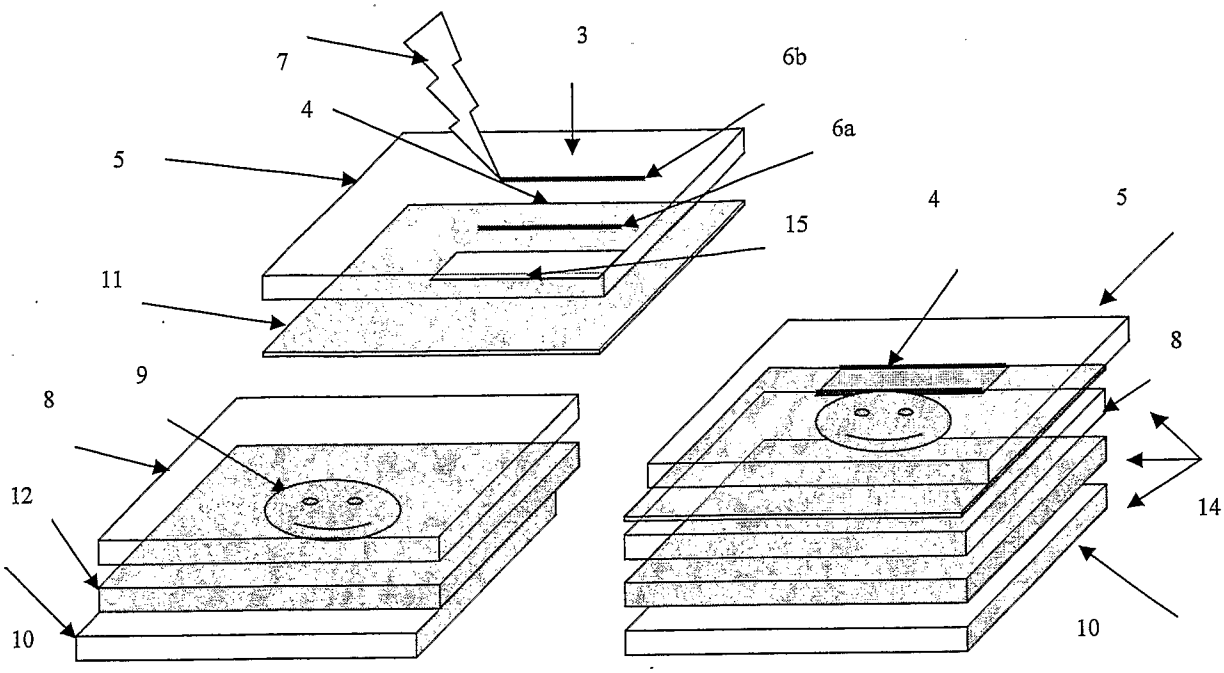


Figure 4

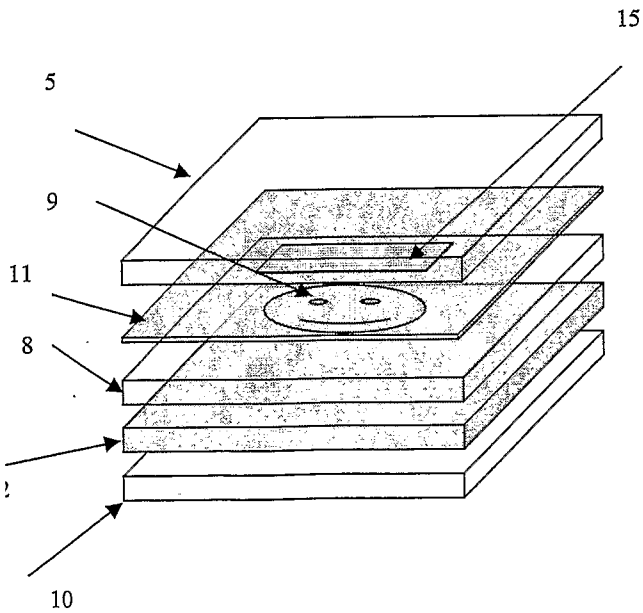


Phase d) - Phase a)

Figure 5a

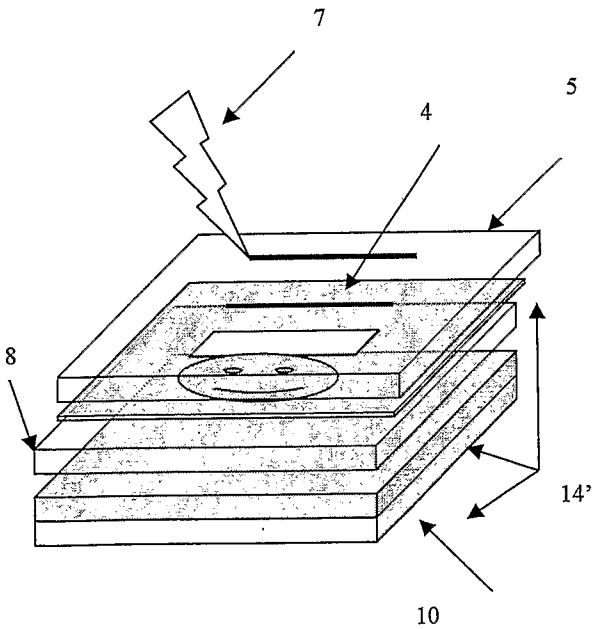
Phase b)

Figure 5b



Phase a)

Figure 6a



Phase b) - Phase d)

Figure 6b

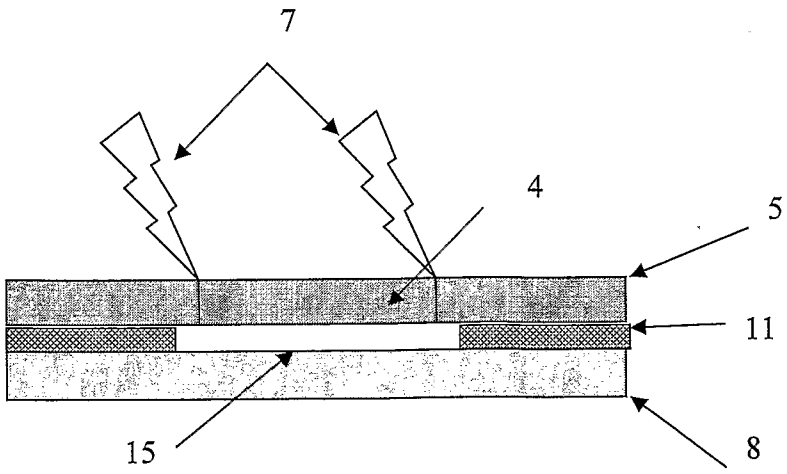


Figure 7

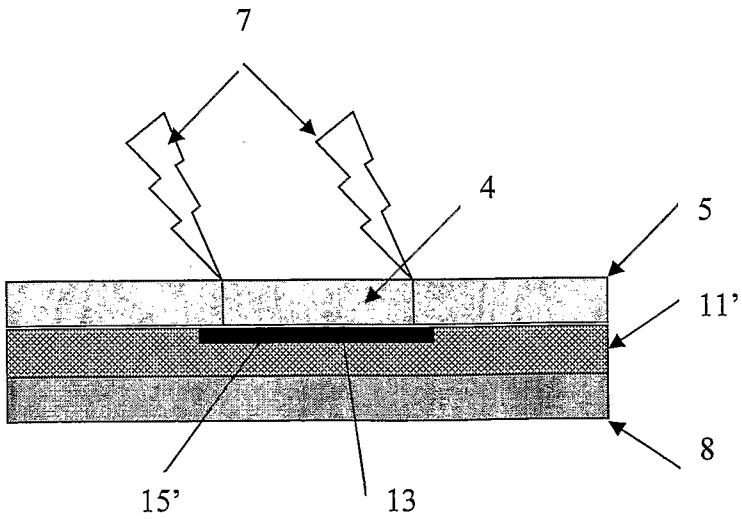


Figure 8

INTERNATIONAL SEARCH REPORT

International application No
PCT/IT2006/000682

A. CLASSIFICATION OF SUBJECT MATTER
INV. B65D75/56 B65D30/08 B65D33/06 B31B39/00 B31B19/86

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 B31B

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 practical, search terms used)
EPO-Internal, 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 A	DE 32 05 340 A1 (NORDENIA KUNSTSTOFFWERKE PETER [DE]) 25 August 1983 (1983-08-25) page 8, line 24 - page 9, line 20; figure 2	1-8,10, 14-17 18-35
X	DE 296 21 956 U1 (NORDENIA TECHNOLOGIES GMBH [DE]) 20 February 1997 (1997-02-20) page 3, line 25 - line 27 page 4, line 7 - page 6, line 28 claim 7 figures 1-3	1-6,8, 10-17
X	WO 93/21078 A (ROCKWOOL INT [DK]; OLSEN KJELD [DK]) 28 October 1993 (1993-10-28) page 2, line 16 - line 20 page 4, line 12 - line 19 figures 1-3	1-3, 10-17

-/--

[X] Further documents are listed in the continuation of Box C.

[X] 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 document 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	Date of mailing of the international search report
2 March 2007	12/03/2007

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Leijten, René

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No
PCT/IT2006/000682

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 555 804 A1 (CANNING HOWARD [CA] ET AL) 26 November 1985 (1985-11-26) column 2, line 39 - column 3, line 11; figures 1-3	1-3,9, 10,14-17
A	EP 1 449 789 A (ALCAN TECH & MAN LTD [CH]) 25 August 2004 (2004-08-25) paragraphs [0041] - [0047]; figures 15,16	18-35
A	FR 2 519 320 A (ROUSSET ROBERT LOUIS [FR]) 8 July 1983 (1983-07-08) the whole document	1-35

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IT2006/000682

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 3205340 A1	25-08-1983	NONE	
DE 29621956 U1	20-02-1997	NONE	
WO 9321078 A	28-10-1993	AU 4260193 A	18-11-1993
US 4555804 A1		NONE	
EP 1449789 A	25-08-2004	NONE	
FR 2519320 A	08-07-1983	NONE	