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(71) Applicant: **Nice-Pak International Ltd.**
Flint, Clwyd CH6 5EX (GB)

(72) Inventor: **FORD, Simon**
Moreton, Wirral (GB)

(74) Representative: **Brooks, Nigel Samuel**
Hill Hampton
East Meon
Petersfield, Hampshire GU32 1QN (GB)

(54) STACK OF FOLDED WIPES

(57) A stack of non-interleaved folded wipes is described, each wipe comprising a first fold, a second fold parallel to the first fold, and a third fold perpendicular to the first and second folds, the three folds defining a pattern of 3 x 2 panels, including two first side panels, two centre panels and two second side panels. The first side panels and second side panels are folded onto the centre panels to form a C-fold. The two centre panels are folded against each other so that the first and second side panels are outwardly disposed. In this way, the direction of fold in relation to the first and second folds results in both edges of the wipe (that is, the edges of the side panels) being present on one face of the wipe, while the direction of fold in relation to the third fold results in the side panels, and thus the edges of the side panels, being anchored in place about the exterior of the central panels. As a result, two pick points (edges) can be expected to be available for extracting a wipe from the stack, making it easier for a user to grip and extract the wipe. Even should one of these pick points not be accessible due to a manufacturing problem or due to the way in which a previous wipe of the stack was removed, it is probable that the other pick point will still be available.

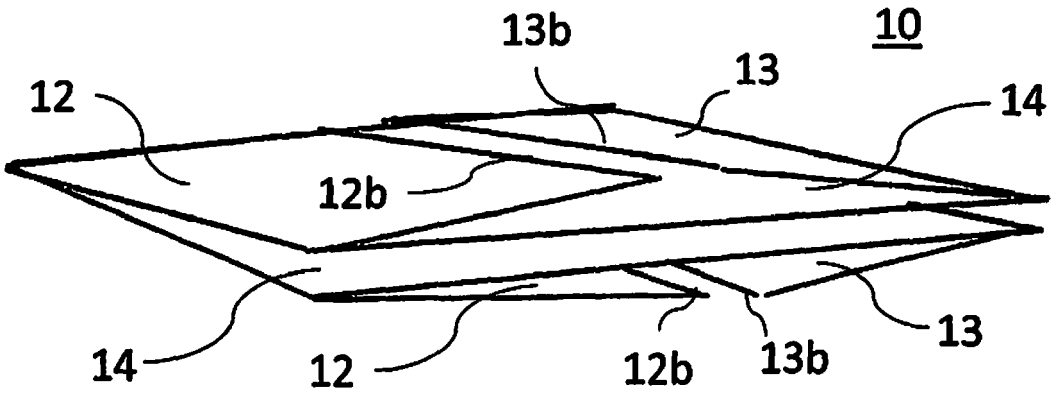

Figure 4

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Description

[0001] The present invention relates to a stack of folded wipes, a pack including the stack, a folded wipe for the stack, and to a method of forming a stack of folded wipes.

[0002] Wipes are flat sheets of material generally used for cleaning. Wipes may either be dry, or more commonly wet - impregnated with a liquid such as a cleansing agent which assists the cleaning action of the wipe. Wipes are often provided in stacks of wipes enclosed within a container, such as a pack. The container typically has an opening through which the wipes can be individually extracted. The position of the opening on the pack and the folded arrangement of the wipes may be such that an edge of an uppermost wipe in the pack is exposed through the opening, facilitating its extraction from the pack (since the exposed edge is easier for a user to grip than a flat planar part of a wipe).

[0003] Existing folded arrangements for wipes have several drawbacks, including manufacturing complexity in the folding operation, and difficulties in extracting wipes from a pack in the event of misalignment of a wipe edge with the pack opening.

[0004] The object of the present invention is to provide a wipe which can be more easily and reliably retrieved from a pack.

[0005] According to a first aspect of the present invention, there is provided a stack of non-interleaved folded wipes, each wipe comprising:

- a first fold,
- a second fold at least substantially parallel to the first fold, and
- a third fold at least substantially perpendicular to the first and second folds, wherein:
- the three folds define a pattern of 3 x 2 panels, including:
    - two first side panels,
    - two centre panels and
    - two second side panels,
- the first side panels and second side panels are initially folded onto the centre panels to form the wipe with an initial C-fold,
- the two centre panels are folded against each other so that the first and second side panels are outwardly disposed with respective C-folds and
- the first side panels of one wipe are placed against the second side panels of the next wipe throughout the stack.

[0006] In this way, the direction of fold in relation to the first and second folds results in both edges of the wipe (that is, the edges of the side panels) being present on one face of the wipe, while the direction of fold in relation to the third fold results in the side panels, and thus the edges of the side panels, being anchored in place about the exterior of the central panels. As a result, two pick points (edges) can be expected to be available for extracting a wipe from the stack, making it easier for a user to grip and extract the wipe. Even should one of these pick points not be accessible due to a manufacturing problem or due to the way in which a previous wipe of the stack was removed, it is probable that the other pick point will still be available.

[0007] Preferably, the first side panels and second side panels do not overlap each other, with the result that the thickness of the wipe (both before and after being folded about the third fold) is controlled. In particular, prior to the third fold the lack of overlap of the first and second side panels will result in a thickness of two layers, while following the third fold the lack of overlap of the first and second side panels will result in a thickness of four layers.

[0008] The first side panels may extend from a first edge of the wipe to the first fold and the second side panels extend from a second edge of the wipe to the second fold, the first and second side panels being folded onto the centre panels so that the first and second edges of the wipe are in close proximity or substantially meet. If the first and second edges are in close proximity or substantially meet then the size of an opening (see below) through which the wipes can be extracted can be made relatively small while still allowing both edges to be exposed. It may not be desirable for the two edges to actually meet, since this may actually inhibit access to one or other of the edges, while risking an overlap if there is an alignment issue during the manufacturing process. It is therefore preferred that a small gap be left between the first and second edges. However, in principle the two edges may be made to meet while still gaining most of the benefit of the present technique.

[0009] The first and second edges may be in close proximity or substantially meet at or near the middle of the centre panels, resulting in a symmetrical design. Alternatively, an asymmetrical design could be used in which one pair of side panels is larger than the other pair of side panels, such that the first and second edges are in close proximity or substantially meet at an off-centre position.

[0010] The stack may be housed within a container (e.g. a pack) having an opening through which wipes of the stack can be extracted, and wherein the opening of the container exposes part of the first and/or second edges of the wipe. The opening will generally be in a top surface of the container, and in alignment with and exposing preferably both the first and second edges of the top-most wipe in the stack. Removal of the top-most wipe through the opening will leave the first and second edges of the underlying wipe exposed.

[0011] The wipe may have a square or non-square rectangular shape, with the first and second folds being parallel to an edge of the rectangular shape. In the case that the wipe has a non-square rectangular shape, the first and second folds may be parallel to the short edges of

the wipe.

[0012] The invention may be applied to various different types of wipe. For example, the wipes may be dry wipes, or may be wet wipes impregnated with a liquid. The wipes may be cosmetic wipes.

[0013] Whilst the stack may be provided as a refill for a container to be filled with the wipes, normally the stack will be provided in a container as a pack of wipes.

[0014] Accordingly in a second aspect of the invention there is provided a pack containing a stack of non-interleaved folded wipes in accordance with the first aspect, i.e. each wipe comprising:

- a first fold,
- a second fold at least substantially parallel to the first fold, and
- a third fold at least substantially perpendicular to the first and second folds, wherein:
- the three folds define a pattern of 3 x 2 panels, including:
    - two first side panels,
    - two centre panels and
    - two second side panels,
- the first side panels and second side panels are initially folded onto the centre panels to form the wipe with an initial C-fold,
- the two centre panels are folded against each other so that the first and second side panels are outwardly disposed with respective C-folds and
- the first side panels of one wipe are placed against the second side panels of the next wipe throughout the stack.

[0015] The pack may be a plastics injection moulded container, or indeed a card carton, with an openable lid or closure of a dispensing aperture in a side, normally a top side, of the container or carton. However, normally the pack will be a flow wrap pack, of a plastics material web formed into a tube with a longitudinal seam usually underneath the stack opposite the dispensing aperture and two transverse seams at opposite ends. Again an injection moulded closure could be adhered onto the top of the pack at the dispensing aperture; but normally a self-adhesive sheet closure will be provided.

[0016] Each wipe may also have the two centre panels folded away from each other so that the first and second side panels are inwardly disposed with respective C-folds.

[0017] According to a third aspect of the present invention, there is provided a folded wipe comprising a first fold, a second fold parallel to the first fold, and a third fold perpendicular to the first and second folds, the three folds defining a pattern of 3 x 2 panels, including two first side panels, two centre panels and two second side panels, wherein the first side panels and second side panels are folded onto the centre panels to form a C-fold, and the two centre panels are folded against each other so that the first and second side panels are outwardly disposed, wherein the folded wipe is not interleaved with another wipe.

[0018] According to a fourth aspect of the present invention, there is provided a method of forming a non-interleaved stack of folded wipes, the method comprising:

providing a continuous length of planar wipe material;
folding the wipe material in a C-fold along a first and second fold extending parallel with the side edges of the wipe material, the side edges being folded towards each other onto the central part of the wipe material;
cutting the continuous length into individual C-folded wipes;
folding each individual C-folded wipe onto itself along a third fold perpendicular to the first and second folds so that the side edges which have been folded towards each other are outwardly disposed; and
stacking the thus-folded wipes on top of each other in a non-interleaved manner to form the stack of folded wipes.

[0019] To help understanding of the invention, a specific embodiment thereof will now be described by way of example and with reference to the accompanying drawings, in which:

Figure 1 schematically illustrates an existing folded wipe based on a Z-fold;
Figure 2 schematically illustrates the Z-fold of Figure 1, folded in half on itself;
Figure 3 schematically illustrates an improved folded wipe based on a C-fold;
Figure 4 schematically illustrates the C-fold of Figure 3, folded in half on itself;
Figure 5 schematically illustrates a pack of wipes with an opening through which wipes can be extracted; and
Figure 6 is a schematic flow diagram illustrating a method of forming a stack of folded wipes.

[0020] Referring first to Figures 1 and 2 a prior art wipe rectangular wipe 1 is folded first using a 'Z' fold in which a first side panel 2 is folded along a fold line 2a against a first face of a central panel 4, and in which a second side panel 3 is folded along a fold line 3a against a second face (opposite to the first face) of the central panel 4, such that two opposite edges 2b, 3b of the wipe are each disposed parallel to each other and towards the centre of the wipe 1, but to either side of the wipe 1. The edges 2b, 3b are therefore closely proximate each other, but with the central panel 4 of the wipe 1 separating them. The wipe 1 is then folded along the dashed line 5, resulting in the configuration shown in Figure 2. Referring now to Figure 2, it can be seen that one of the side panels 2,

and thus the edge 2b is outwardly disposed on both sides of the wipe 1, while the other of the side panels 3, and thus the edge 3b is now inwardly disposed. This design has a number of disadvantages which will be discussed in detail below.

[0021] Referring now to Figure 3, an improved cosmetic wipe 10 of the invention is schematically illustrated. The wipe 10 is folded first using a 'C' fold in which a first side panel 12 is folded along a fold line 12a against a face of a central panel 14, and in which a second side panel 13 is folded along a fold line 13a against the same face of the central panel 14, such that two opposite edges 12a, 12b of the wipe 10 are each disposed parallel with each other, towards the centre of the wipe, and to the same side of the wipe 12. The edges 12b, 13b are therefore closely proximate to each other, as with Figures 1 and 2, but without the central panel 14 of the wipe 10 separating them. The wipe 10 is then folded along the dashed line 15 with the two parts of the central panel 14 being folded towards each other, and the side panels 12, 13 being exposed on the outside, resulting in the configuration shown in Figure 4. In particular, it can be seen from Figure 4 that following the fold along the line 15, the first side panel 12 and second side panel 13 each now comprise two parts (or panels) - one on either face of the wipe 10. More specifically, each of the side panels 12, 13 comprises a first part at the top of the wipe 10 and a second part at the bottom of the wipe 10. Similarly, the central panel 14 also comprises two parts following the folding of the wipe 10 along the line 15, and in this case both parts are adjacent to (folded against) each other. It can be seen from Figure 4 that both at the top face of the wipe 10 and the bottom face of the wipe 10 the edge 12b of the first side panel 12 is proximate and substantially parallel to the edge 13b of the second side panel 13. It will be appreciated that by folding the wipe in half along the line 15, the side panels are effectively anchored to the central panel at the part of the side panel which is folded around the central panel 14 along the line 15. This keeps the wipe 10 neatly folded, inhibiting the side panels 12, 13 from flapping open away from the central panel 14.

[0022] It will be appreciated that the side and centre panels referred to above are not separate components, but are simply areas of a unitary sheet of wipe material which are delineated from each other by the first and second fold lines 12a, 13a. Similarly, each of the side panels and centre panels are themselves divided into two panels by the third fold line 15, resulting in a pattern of 3 x 2 panels (two first side panels, two centre panels and two second side panels).

[0023] A number of advantages follow from the folded wipe arrangement of Figure 4. One of these advantages can be readily appreciated from Figure 5, which schematically illustrates a pack 20 of a stack of wipes of the form shown in Figure 4, disposed within a container 21. The stack has tens of wipes stacked on top of each other with lower side panels of 12,13 of an upper wipe being placed on the upper side panels of the next wipe, with this arrangement continued down throughout the stack. The third folds of each wipe are arranged above each other, although a different arrangement with the each wipe turned through 90° or 180° with respect to the one below can be envisaged. In Figure 5, the container is conventionally folded and sealed flow wrap web formed with the stack into a flow wrap pack. This type of container is well suited to use with non-interleaved wraps which require a user to be able to individually extract wipes without being able to rely on a preceding wipe having pulled part of the next wipe out as it is extracted. The container 21 has an opening 22 in its top. The opening is normally closed by a self-adhesive closure 23. With the closure peeled back, part of the first and second side panels 12, 13, and part of both edges 12b, 13b are exposed through the opening 22. A user is able to extract the wipe 10 through the opening 22 by gripping either or both of the edges 12b, 13b, facilitating extraction. The dotted lines in Figure 5 show the positions of the edges of the uppermost wipe in a case where the orientation of the wipes is rotated by 90°. It will be appreciated that the orientation of the wipes with respect to the pack 20 is not important, provided that the edges 12b, 13b are exposed through the opening 22. One particular advantage of this is that if during manufacturing, or during extraction of a previous wipe, one of the edges 12b, 13b is caused to be out of alignment with the opening 22, it is likely that the other of the edges 12b, 13b will still be exposed. In this way, it is likely that there will always be at least one "pick point" visible and accessible through the opening 22, and so the likelihood of the user not having an edge to grip is substantially reduced compared to a folding arrangement in which only a single edge is exposed (as with the arrangement of Figures 1 and 2).

[0024] Another advantage of the proposed folding arrangement is that the edges 12b, 13b can be brought into very close proximity, and even coincide with each other if desired, without increasing the thickness of the wipe 10 beyond two layers (or four layers when folded in half). In contrast, the edges 2, 3 of the wipe 1 shown in Figures 1 and 2 must be kept further apart, because the thickness of the central panel disposed between the side panels will need to deform between the edges 2, 3 if the overall thickness of the folded wipe is not to exceed two layers (or four layers when folded in half).

[0025] Another advantage of the proposed folding arrangement is that when the wipe 10 is folded in half along the line 15, both side panels 12, 13 are folded around the outside of the central panel, such that the wipe structure is substantially symmetrical about a centre line which is generally coincident with the edges 12b, 13b. In contrast, with the wipe 1 shown in Figures 1 and 2 one side panel is folded around the outside of the central panel while the other side panel is folded internally of the central panel. This gives an asymmetrical structure which may give rise to a lack of alignment (and potentially an overlap) of the edges 2,3.

[0026] Another advantage of the C folded arrangement

is that when liquid is applied to one face of the incoming continuous length of wipe material (prior to folding), whilst the liquid does penetrate the material, some surface presence is likely. This surface liquid can be undesirably removed from the material as it is processed through the standard folding apparatus. By folding the material into a C (rather than, for example, a Z), the surface liquid becomes encapsulated between the central panel and the side panels, thus inhibiting liquid loss and permitting a more even distribution of liquid within the finished package.

[0027] The wipe configuration shown here is particularly useful for non-interleaved and separate (not joined) wipes, since the lack of interleaving or joining means that as each wipe is extracted the next wipe is not "dragged" out through the aperture. It is therefore particularly important that pick points are available for the user to extract each new wipe.

[0028] The folding arrangement described above can be achieved simply using conventional folding and cutting machines, of a type well known to the person skilled in the art. The main steps required in a process for forming a stack of wipes as described above is shown the schematic flow diagram of Figure 6. At a step S1, an incoming continuous length of wipe material is provided. The wipe material may for example be spooled from a dry roll of material and be sprayed with a liquid at the step S1. The wipe material is then passed through a first folding mechanism (e.g. a folding plate) at a step S2 to form the first fold 12a, and in particular to fold the side panel 12 against the central panel 14. The wipe material is also passed through a second folding mechanism (e.g. a folding plate) at a step S3 to form the second fold 13a, and in particular to fold the side panel 13 against the central panel 14. As a result of the fact that both folds are made onto the same side of the central panel, a combined folding mechanism could be provided which makes both of the first and second folds in a single operation. This would be difficult or impossible with the folding arrangement of Figures 1 and 2, in which the folds are to either side of the wipe. At a step S4 the folded wipe is cut to length. In particular, a knife or saw is used to cut across the width of the continuous length of (now folded) wipe material at regular intervals, to divide the continuous length into a series of individual wipes. At a step S5, each individual (separate) wipe is then folded in half (along the line 15 in Figure 3) as described above using a further folding mechanism (e.g. a folding plate). The thus-folded wipes are then added to a stack of wipes at a step S6 until the stack is complete. At a step S7, the stack of wipes are packaged into a container, such as a plastic pack. It will be appreciated that variations around the ordering of several of the step S1 to S7 are possible. For instance, in principle the third folding step S5 could take place before the cutting step S4.

[0029] The invention is not intended to be restricted to the details of the above described embodiment. For instance, the shape and relative dimensions of the wipe may be different from that shown in the figures, and may be of a non-rectangular shape. For example, the side panels might be curved rather than having a straight edge.

Claims

1. A stack of non-interleaved folded wipes, each wipe comprising:

- a first fold,
- a second fold at least substantially parallel to the first fold, and
- a third fold at least substantially perpendicular to the first and second folds, wherein:
- the three folds define a pattern of 3 x 2 panels, including:
  - two first side panels,
  - two centre panels and
  - two second side panels,
- the first side panels and second side panels are initially folded onto the centre panels to form the wipe with an initial C-fold.

2. Each wipe as claimed in claim 1 having the two centre panels folded against each other so that the first and second side panels are outwardly disposed with respective C-folds.

3. Each wipe as claimed in claim 1 having the two centre panels folded away from each other so that the first and second side panels are inwardly disposed with respective C-folds.

4. A stack of non-interleaved folded wipes as claimed in claim 1, wherein the first side panels and second side panels do not overlap each other.

5. A stack of non-interleaved folded wipes as claimed in any preceding claim, wherein the first side panels extend from a first edge of the wipe to the first fold and the second side panels extend from a second edge of the wipe to the second fold, the first and second side panels being folded onto the centre panels so that the first and second edges of the wipe are close to each other or substantially meet.

6. A stack of non-interleaved folded wipes as claimed in any preceding claim, wherein the first and second edges are close to each other or substantially meet at or near the middle of the centre panels.

7. A stack of non-interleaved folded wipes as claimed in any preceding claim, wherein the stack is housed within a container having an opening through which

wipes of the stack can be extracted, and wherein the opening of the container exposes part of the first and/or second edges of the wipe at the open end of the stack.

8. A stack of non-interleaved folded wipes as claimed in any preceding claim, wherein the wipe has a square or non-square rectangular shape and the first and second folds are at least substantially parallel to an edge of the rectangular shape.

9. A stack of non-interleaved folded wipes as claimed in any preceding claim, wherein the wipe has a non-square rectangular shape and the first and second folds are parallel to the short edges of the wipe.

10. A stack of non-interleaved folded wipes as claimed in any preceding claim, wherein the wipes are impregnated with a liquid.

11. A folded wipe as claimed in any preceding claim comprising a first fold, a second fold parallel to the first fold, and a third fold perpendicular to the first and second folds, the three folds defining a pattern of 3 x 2 panels, including two first side panels, two centre panels and two second side panels, wherein the first side panels and second side panels are folded onto the centre panels to form a C-fold, and the two centre panels are folded against each other so that the first and second side panels are outwardly disposed, and wherein the folded wipe is not interleaved with another wipe

12. A method of forming a stack of non-interleaved folded wipes as claimed in any preceding claim, the method comprising:

- providing a continuous length of wipe material;
- folding the wipe material in a C-fold along a first and second fold extending parallel with the side edges of the wipe material, the side edges being folded towards each other onto the central part of the wipe material;
- cutting the continuous length into individual C-foldwipes;
- folding each individual C-fold wipe onto itself along a third fold perpendicular to the first and second folds so that the side edges which have been folded towards each other are outwardly disposed; and
- stacking the thus-folded wipes on top of each other in a non-interleaved manner to form the stack of folded wipes.

13. A stack of non-interleaved folded wipes or a wipe substantially as hereinbefore described with reference to Figures 3 to 5.

14. A method of forming a stack of non-interleaved folded wipes substantially as hereinbefore described with reference to Figure 6.

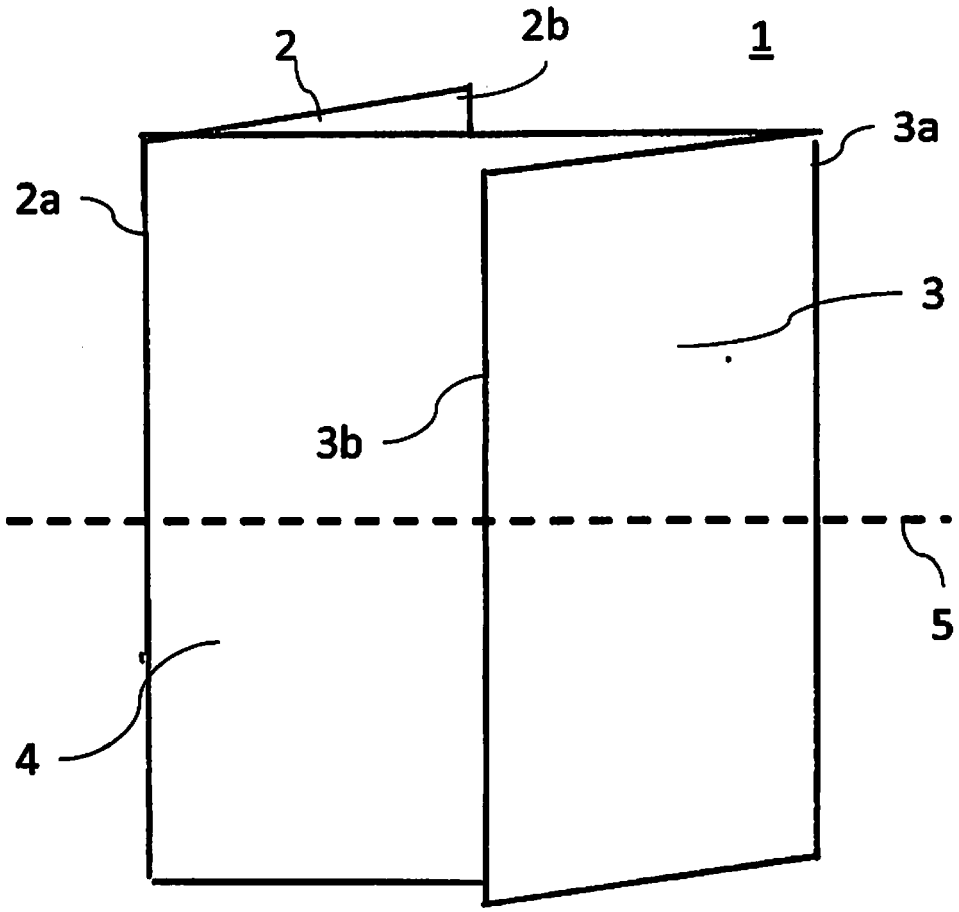

Figure 1 (Prior Art)

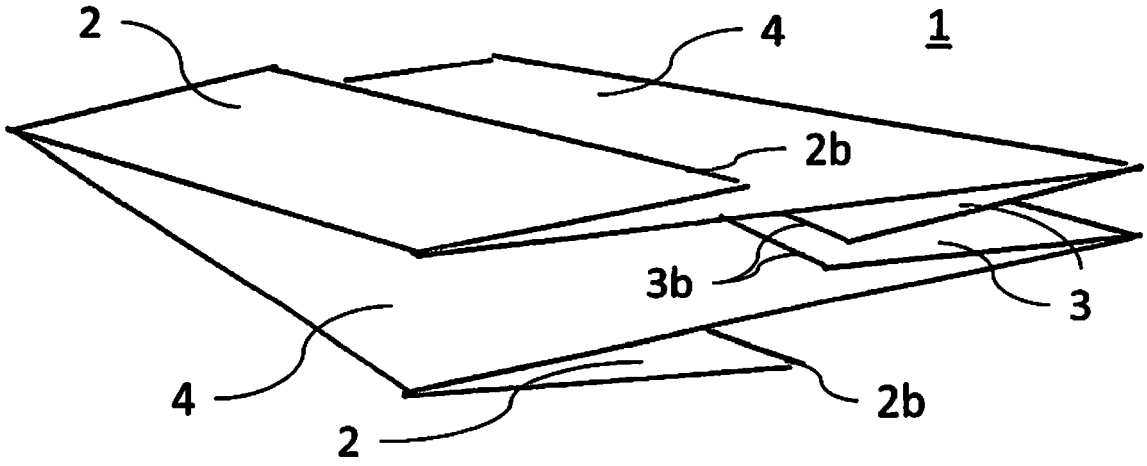

Figure 2 (Prior Art)

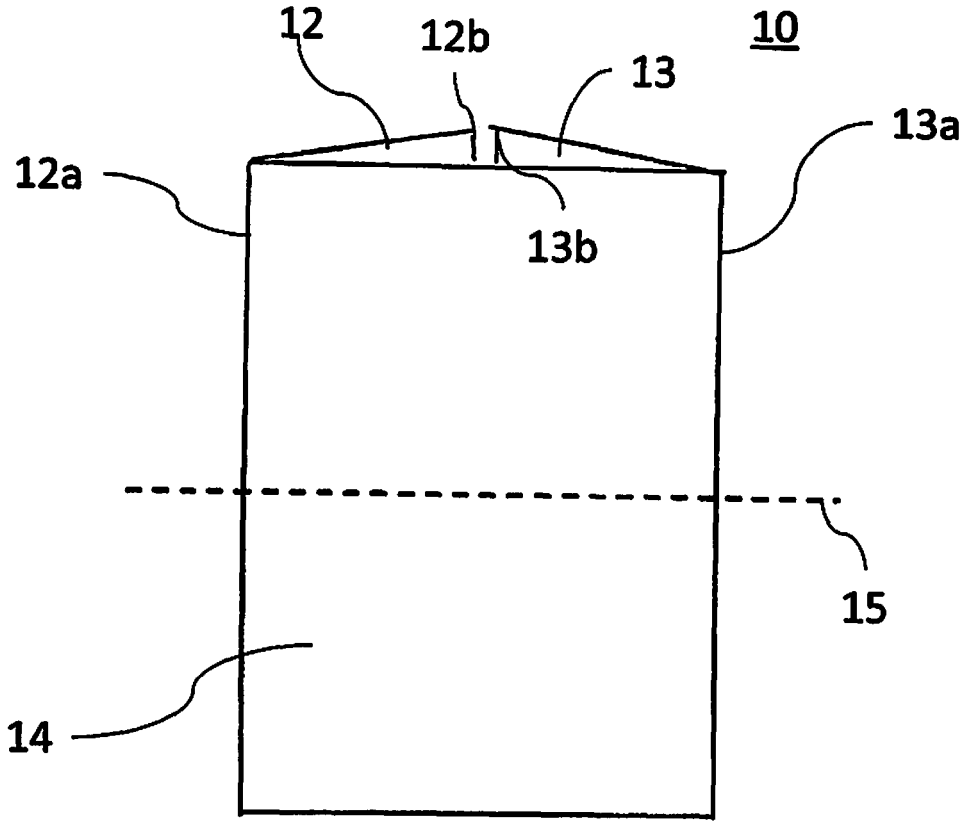

Figure 3

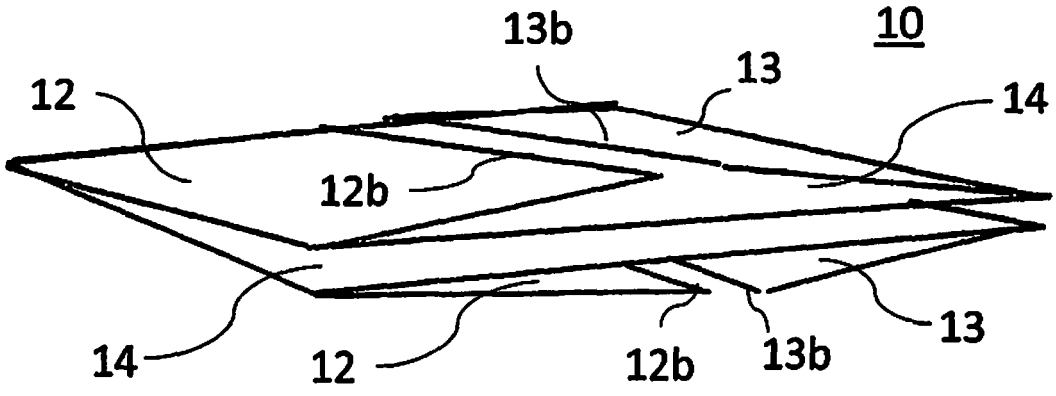

Figure 4

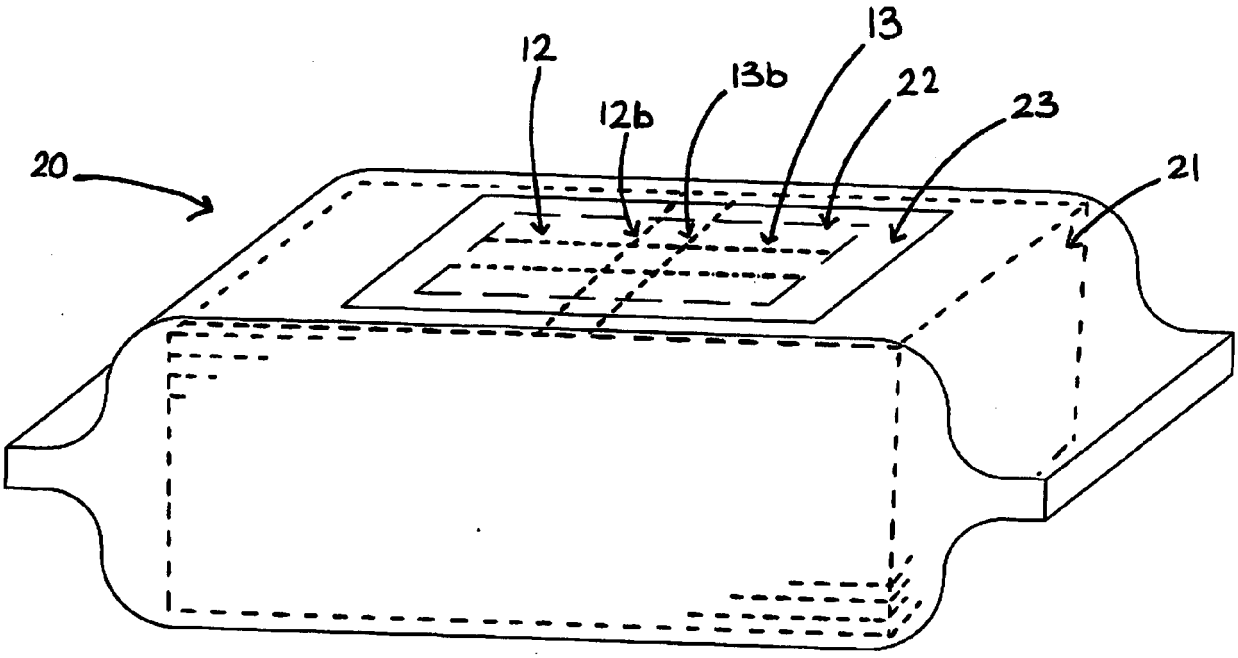

Figure 5

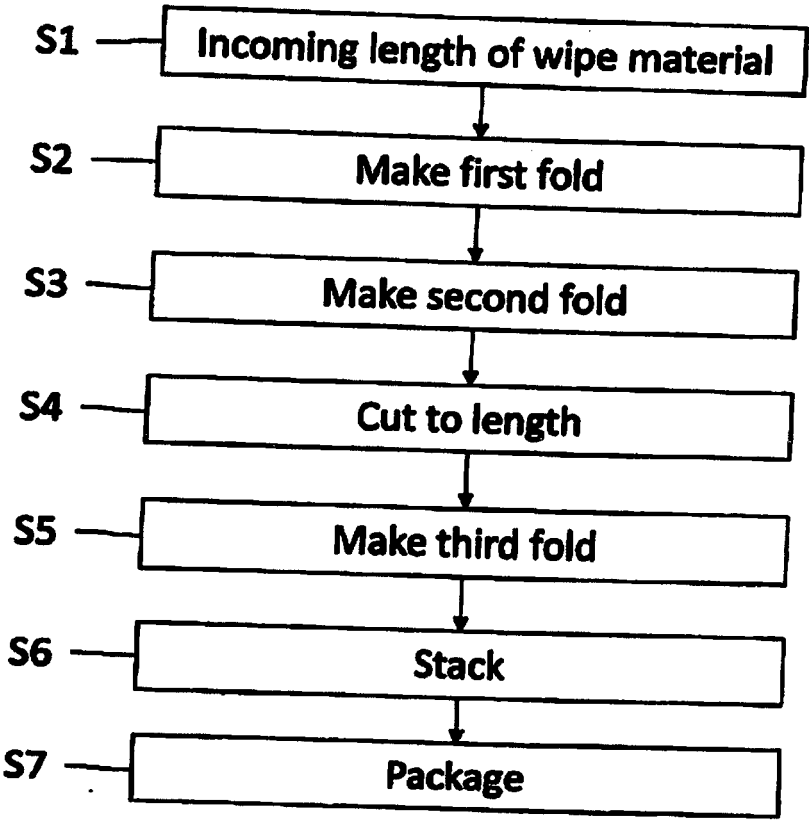

Figure 6

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EUROPEAN SEARCH REPORT

Application Number
EP 16 19 2674

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	AU 86064 82 A (NORMAN G & CO PTY LTD) 20 January 1983 (1983-01-20) * page 4, line 26 - page 5, line 14; figures 1-7,12-15 *	1,2,5-14	INV. A47K10/42 B65D83/08
A	US 2012/225244 A1 (MRVICA MATE [CA] ET AL) 6 September 2012 (2012-09-06) * paragraphs [0002], [0043] - [0057]; figures 1-5,7-11 *	1,3-12	
X	US 1 663 391 A (SHAFFER GLENN A ET AL) 20 March 1928 (1928-03-20) * the whole document *	1,2,4, 7-9,11, 13	
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X A	US 2 621 788 A (HITCHCOCK GUY C) 16 December 1952 (1952-12-16) * claims; figures *	1,3,4, 7-9, 12-14 11	TECHNICAL FIELDS SEARCHED (IPC) A47K B65D B65H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	9 February 2017	Fordham, Alan

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 16 19 2674

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09-02-2017

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