(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 210 845 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
28.07.2010 Bulletin 2010/30

(51) Int Cl.:
B65H 45/28 *(2006.01)*

(21) Application number: **10151031.1**

(22) Date of filing: **19.01.2010**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR
Designated Extension States:
AL BA RS

(30) Priority: **26.01.2009 IT FI20090013**

(71) Applicant: **Polietilplast S.r.l.**
50051 Castelfiorentino (FI) (IT)

(72) Inventor: **Passaponti, Marco**
50050 Gambassi Terme (Firenze) (IT)

(74) Representative: **Bardini, Marco Luigi et al**
c/o Società Italiana Brevetti S.p.A.
Corso dei Tintori, 25
50122 Firenze (IT)

(54) **Method for bundle packaging a plurality of sheet-like articles, such as disposable sheets, to be singularly torn away**

(57) A method for bundle packaging a number of sheet-like articles (1), comprising the steps of: producing each of the articles with an excess portion (2), with respect to a final use size, defined along a side (2a) of the article; piling the articles so as to form at least one orderly stack (4); folding the stack (4) so as to reduce its size; forming respective pre-cut lines (3) on the articles, one by one before the piling in the stack, or subsequently when the stack has been formed or folded whereby in each article the excess portion (2) is defined between the aforementioned side (2a) and the pre-cut line (3); and making the articles mutually integral in correspondence with the excess portions (2), whereby the articles (1) are singularly adapted to a tear-away extraction along the pre-cut lines (3) leaving the excess portions (2) integral with the stack (4) with the remaining articles. The folding is carried out along folding lines substantially orthogonal to the pre-cut lines (3).

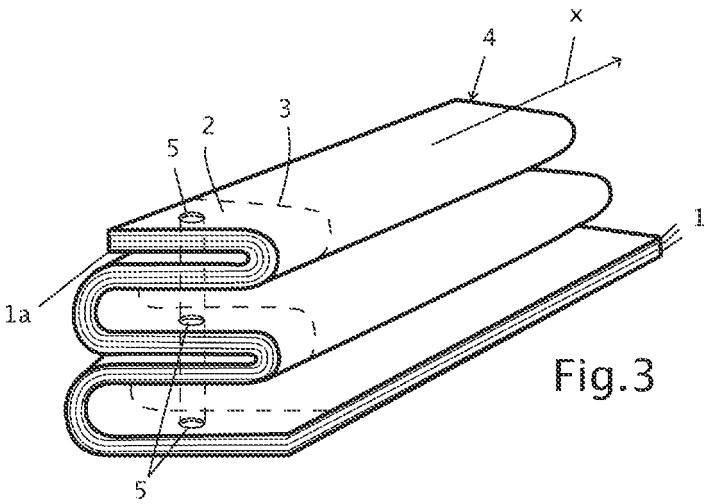

Fig.3

EP 2 210 845 A1

Description

[0001] The present invention concerns the field of packaging systems of sheet-like articles intended for individual extraction. Articles of this type, in general but not exclusively disposable, may comprise protective sheets or plastic film mantles (for example, made of polyethylene) for hairdressers, for beauty treatments such as body treatments with mud or cream.

[0002] Articles of this kind, if their size is considerable, are bundle packaged in groups of articles folded numerous times, so as to reach compact size shapes that facilitate storage and handling. The bundle can be arranged in a rigid box, made from cardboard or plastic material, or in a simple packet. In case of articles the use of which involves hygiene issues, the wrapper (box or packet) obviously also carries out a protection and isolation function.

[0003] The folding should be such as to make it possible to extract a single article at a time from the packaging, maintaining its integrity whilst also maintaining the integrity of the bundle of the remaining articles for future use. This result is currently not achieved in a satisfactory manner. According to a known solution, a bundle is made up of a stack of piled articles, joined along a side through punching or other types of connections or welding, with respective pre-cut lines running along the joining side and right beside it.

[0004] The folding which reduces the size of the stack in a direction orthogonal to the pre-cut lines (direction normally corresponding to the longitudinal extension of the article) is thus carried out in a consecutive manner parallel to the aforementioned lines, so as to fold the stack upon itself. The direction orthogonal to the pre-cut lines (and to the folding lines) is the one along which a traction is exerted manually by the user to tear-away the articles, one by one, from the stack. On the other hand, due to the aforementioned configuration, the removal of one single article by tearing it away, as a result of the friction exerted between adjacent articles, tends to unfold the stack of remaining articles in an uncontrolled manner, or in any case to alter the orderly arrangement.

[0005] Considering the aforementioned circumstances, the applicant has now devised a new method of bundle packaging sheet-like articles intended for being extracted individually, which is able to achieve easy extraction of every single article without altering the orderly and compact bundle of the remaining articles, for future use.

[0006] According to the present invention, this and other results are achieved with the method the essential characteristics of which are defined by the attached claim 1. A bundle packaging which can be obtained with the method according to the invention has the essential characteristics defined by claim 7.

[0007] The characteristics and advantages of the method according to the present invention shall become clearer from the following description of one of its embodiments, given as an example and not for limiting purposes, with reference to the attached drawings, in which:

- figures from 1 a to 1 d respectively schematize section views of arrangements of sheet-like articles which can be packaged according to the invention;
- figure 2 schematically shows a perspective view of a stack of articles made with the method according to the invention, before a folding step; and
- figures 3 and 4 represent, through schematic perspective views, two possible folded configurations of the stack of figure 2.

[0008] With reference to the above figures, according to the invention the articles are firstly provided, on one of the sides, with excess material with respect to the final desired size of the article intended for use. The excess material is that on which, once various articles have been piled up so as to form a stack, a mutual connection will be made between the articles to stabilise the stack itself. If, as generally occurs, the articles have a prevailing extension along a longitudinal direction, the excess material will be, contrary to the prior art, made in the transverse direction, whereby the article, before the assembling in the stack, will have the same length and oversized width with respect to the final, use configuration.

[0009] Going into detail, according to what shown in the figures from 1a to 1d, an article 1 can be made up of a single sheet 1 (figure 1 a), but can also have a doubled structure, like the single-fold article 11 of figure 1b, or a bellow-like structure as in the article 101 with multiple folds of figure 1c. Moreover, like in the example of figure 1d, the article may take on the shape of a tube 1001. Such figures are obviously unrealistic diagrams, since it is clear that in all cases, as the article consists of a thin plastic, paper (or even fabric) film, even when it is folded it maintains an overall sheet-like squashed configuration. Such figures also represent the article in section on a plane orthogonal to the side along which the aforementioned excess extends, whereby the latter is represented and indicated, respectively, by the reference numerals 2, 12, 102, 1002.

[0010] The excess 2 is in practice defined between one side or margin 1a of the article 1, and a pre-cut line 3 (13, 103, 1003 in figures from 1b to 1d corresponding to the different embodiments), as can be clearly seen from figure 2 in which it is shown how a plurality of articles 1, in a variable number according to the cases, has been piled up to form a stack 4 of articles perfectly aligned with one another and orderly.

[0011] At this point, bearing in mind the need to reduce the bulk of the packaging, the folding of the stack 4 is carried out, according to parallel and consecutive folding lines orthogonal with the pre-cut lines, thus folding the stack upon itself. In the aforementioned case in which, like in the example, the stack has a longitudinal extension parallel to the pre-cut lines 3, the folds will therefore run in the transverse direction.

[0012] The overall shape of the folding can vary, fol-

lowing for example a bellows shape like in figure 3, or with consecutive book-like closures in figure 4. Of course, the various pre-cut lines 3 continue to be superimposed to one another, just like the excess portions 2. The pre-cutting, according to a variant embodiment, can also be made in this step, i.e. after the folding, or also on the stack 4 before being folded, instead of in the preliminary step on each single article 1.

[0013] From the figures it should also be noted how the direction along which the tearing force must act so as to be able to separate the single products from the stack, indicated with X and obviously substantially orthogonal to the pre-cut lines 3, is in this case parallel to the folding lines.

[0014] The subsequent step provides making a distribution of holes 5 on the excess portions 2, through cold or hot (if the material of the articles allows it) mechanical punching processes. These holes are needed for the mechanical fastening that consolidates the configuration of the folded stack (or of many stacks piled together), said fastening being carried out through tubular cores or flexible straps (not represented) to be engaged in the holes. The mechanical fastening means are normally connected mechanically to the wrapper in which, as a final step of the packaging method, the stack or stacks are arranged, all according to what can be found *per se* in the prior art. Such fastening means may also be made up of folded portions of the wrapper, and in general by any other mechanical system suitable for anchoring the stack or stacks to one or more fixed points so as to counteract the tearing force for removing the single article.

[0015] In any case, it should be noted that, in the case in which a single stack is used, the mechanical fixing means can even be left out, with it only being necessary to insert the holes 5 in any kind of support, either fixed or even simply held manually. In order to proceed to the progressive extraction of every single article 1, starting from the article which is exposed first on top, it is indeed necessary to operate a manual traction, on a free side flap of the article itself (i.e. the flap opposite to the excess zone 2), along the axis X, counteracted indeed on the excess zone by the mechanical connection to the wrapper and/or by a manual withholding action. The tearing along the pre-cut line 3 will leave the excess portion 2 integral with the stack, the article thus being in the shape and size decided for its use.

[0016] It should be appreciated how, thanks to the fact that the traction does not operate orthogonally to the folds, and therefore in a manner such as to make it easier to unwrap or unfold, but rather parallel to the folds themselves, the friction component generated on the remaining articles by effect of the extraction is efficiently counteracted by the junction along the respective pre-cut lines, whereby such articles remain substantially undisturbed and the stack remains completely compact and orderly until the last article has been extracted.

[0017] The prefixed object of the invention is thus fully achieved, with a solution that does not have any negative impact upon simplicity of production, and can be applied with articles of any shape and material already currently in use, not only in the sanitary and beauty treatment fields, but also in that of packaging films and in general wherever there is need for packaging analogous to that outlined above.

[0018] The present invention has been described with reference to a preferred embodiment. It should be understood that there may be other embodiments that fall within the same inventive concept, as defined by the scope of protection of the appended claims.

Claims

1. A method for bundle packaging a number of sheet-like articles (1), comprising the steps of: producing each of said articles with an excess portion (2), whereby the article is oversized with respect to the final use size, said portion (2) being defined along a side (2a) of the article; piling said articles (1) so as to form at least one orderly stack (4); folding said stack (4) so as to reduce its size; forming on said articles (1), one by one before the piling in the stack (4), or subsequently when the stack (4) has been formed or folded, respective pre-cut lines (3), whereby in each article (1) said excess portion (2) becomes defined between said side (2a) and said pre-cut line (3); and making mutually integral the articles (1) in correspondence with the excess portions (2), whereby the articles (1) are singularly adapted to a tear-away extraction along said pre-cut lines (3) leaving the excess portion (2) integral with the stack (4) with the remaining articles, the method being **characterized in that** the folding of the stack (4) is carried out along folding lines substantially orthogonal to said pre-cut lines (3).

2. The method according to claim 1, wherein said articles (1) have a prevailing development along a longitudinal direction, said side (2a) and said pre-cut line (3) delimiting the excess portion (2) being extended longitudinally, whereby the article before being torn away form the stack (4), and therefore comprising the excess portion (2), has, with respect to the extracted use configuration, the same length and an oversized width.

3. The method according to claim 1 or 2, wherein said step of making the articles (1) mutually integral in at least one stack (4) comprises the step of forming in said excess portion (2) a distribution of holes (5) and engaging with said holes (5) mechanical fastening means.

4. The method according to any of the previous claims, wherein said folded stack (4) is arranged in a protective, rigid or flexible wrapper.

5. The method according to claim 3, wherein said folded stack (4) is arranged within a protective, rigid or flexible wrapper, said fastening means being made integral with said wrapper.

6. The method according to claim 4 or 5, wherein said mechanical fastening means comprise tubular cores, flexible straps, or folded portions of said wrapper.

7. A bundle packaging of a number of sheet-light articles (1), comprising at least one orderly stack (4) of piled articles (1), made mutually integral in correspondence with respective excess portions (2), whereby the article is oversized with respect to the final use size, said excess portions (2) being each defined between a side (2a) of the article (1) and a pre-cut line (3) whereby the articles (1) are singularly adapted to a tear away extraction along said pre-cut line (3) living the excess portion (2) integral with the stack (4), the stack being folded so as to reduce its size, the packaging being **characterized in that** the folding of the stack (4) is carried out along folding lines substantially orthogonal to said pre-cut lines (3).

8. The packaging according to claim 1, wherein said articles 1 have a prevailing development along a longitudinal direction, said side (2a) and said pre-cut line (3) delimiting the excess portion (2) being extended longitudinally, whereby the article before being torn away form the stack (4), and therefore comprising the excess portion (2), has, with respect to the extracted use configuration, the same length and an oversized width.

9. The packaging according to claim 7 or 8, wherein said articles (1) are made mutually integral via mechanical fastening means engaged with a distribution of holes (5) formed in said excess portions (2).

10. The packaging according to any of the claims from 7 to 9, wherein said folded stack (4) is arranged in a protective, rigid or flexible wrapper.

11. The packaging according to any of the claims from 7 to 9, wherein said folded stack (4) is arranged within a protective, rigid or flexible wrapper, said fastening means being integral with said wrapper.

12. The packaging according to claim 10 or 11, wherein said mechanical fastening means comprise tubular cores, flexible straps, or folded portions of said wrapper.

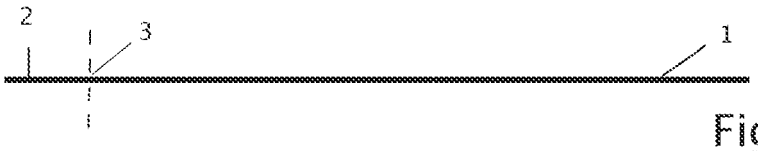

Fig.1a

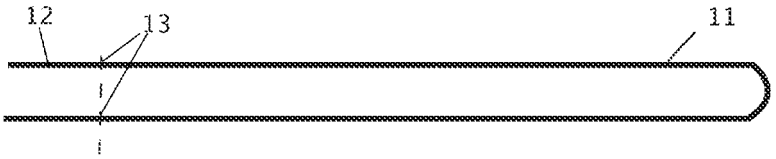

Fig.1b

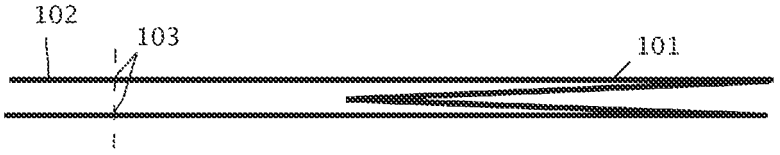

Fig.1c

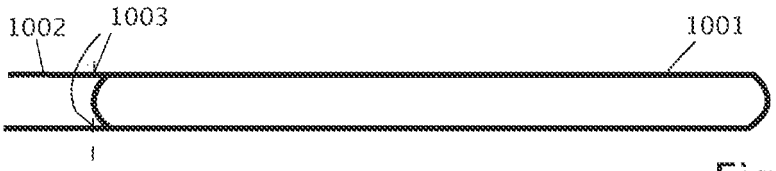

Fig.1d

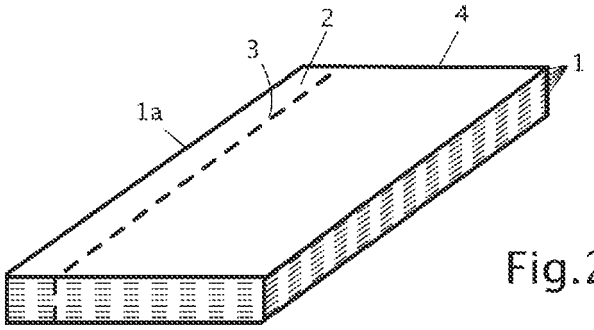

Fig.2

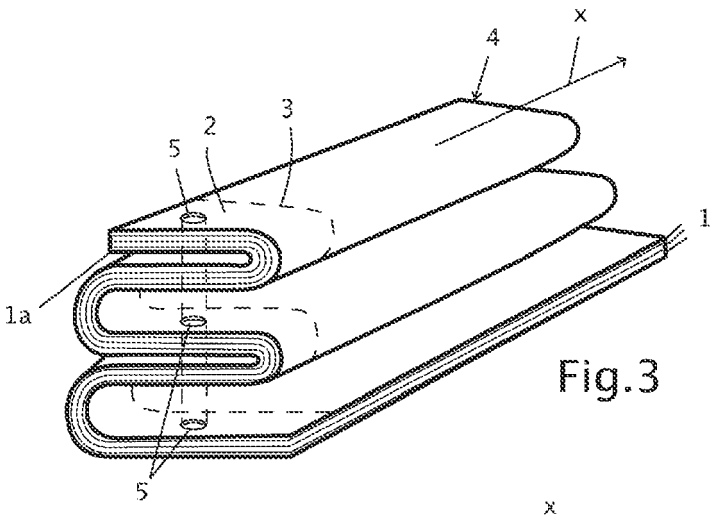

Fig.3

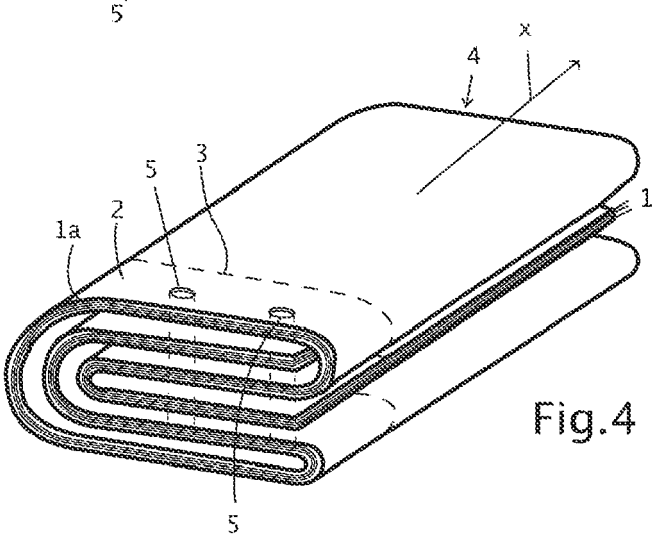

Fig.4

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 10 15 1031

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	WO 02/47812 A (NEW PIG CORP [US]) 20 June 2002 (2002-06-20) * page 5, line 18 - page 6, line 18 * * page 8, line 16 - page 9, line 9 * -----	1-12	INV. B65H45/28
A	US 2003/139275 A1 (NEUBAUER WILLIAM C [US] ET AL) 24 July 2003 (2003-07-24) * paragraph [0003] - paragraph [0076] * -----	1-12	
A	US 2 115 699 A (BOYD LEONARD E) 3 May 1938 (1938-05-03) * column 1, line 1 - column 3, line 2 * * column 3, line 53 - column 4, line 56 * -----	1-12	

TECHNICAL FIELDS SEARCHED (IPC)

B65H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	10 May 2010	Jezierski, Krzysztof

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 10 15 1031

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

10-05-2010

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 0247812 A	20-06-2002	AU 7158301 A	24-06-2002
		CA 2431408 A1	20-06-2002
		JP 2002186573 A	02-07-2002
		US 6548135 B1	15-04-2003
US 2003139275 A1	24-07-2003	CA 2416777 A1	18-07-2003
		US 2004162208 A1	19-08-2004
US 2115699 A	03-05-1938	NONE	

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82