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

(11) **EP 3 670 376 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
24.06.2020 Bulletin 2020/26

(21) Application number: **18215572.1**

(22) Date of filing: **21.12.2018**

(51) Int Cl.:
B65D 30/18 *(2006.01)* ***B65D 30/20*** *(2006.01)*
B65D 33/16 *(2006.01)* ***B65D 33/10*** *(2006.01)*

(84) Designated Contracting States:
AL 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 RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

(71) Applicant: **BillerudKorsnäs AB**
169 27 Solna (SE)

(72) Inventors:
- **HILFERINK, Lisa**
  977 52 Luleå (SE)
- **SUNDBERG, Malin**
  972 41 Luleå (SE)
- **ALMKVIST, Jonas**
  952 51 Kalix (SE)

(74) Representative: **Kransell & Wennborg KB**
P.O. Box 27834
115 93 Stockholm (SE)

(54) **PAPER BAG**

(57) A paper bag for receiving and containing goods, the bag comprising a body (1, 101) formed from a single first paper blank (A, C) and a handle (5, 105). The body comprises a first wall panel (10, 110) having two longitudinal side edges (11, 12, 111, 112) and an upper edge (13, 113) and a second wall panel (20, 120) having two longitudinal side edges (21, 22, 121, 122) and an upper edge (23, 123). Two gusset sections (31, 32, 131, 132) are arranged such that each gusset section connects a longitudinal side edge (11, 12, 111, 112) of the first wall panel (10, 110) with a corresponding longitudinal side edge (21, 22, 121, 122) of the second panel (20, 120). An open mouth portion (40, 140) is formed between the upper edges (13, 23, 113, 123) of the first and second wall panels. A closed bottom section (50, 150) comprises mutually overlapping panels which form extensions of the first wall panel, the second wall panel and the gusset sections. The handle (5), 105) comprises a handle panel (6, 106) made of paper, which handle panel extends along the upper edge (13, 113) of the first wall panel and is attached to the first wall panel (10, 110) by adhesive areas comprising two first adhesive areas (10g', 110g') arranged on the outside of the first wall panel (10, 110), below the first panel's upper edge (13, 113).

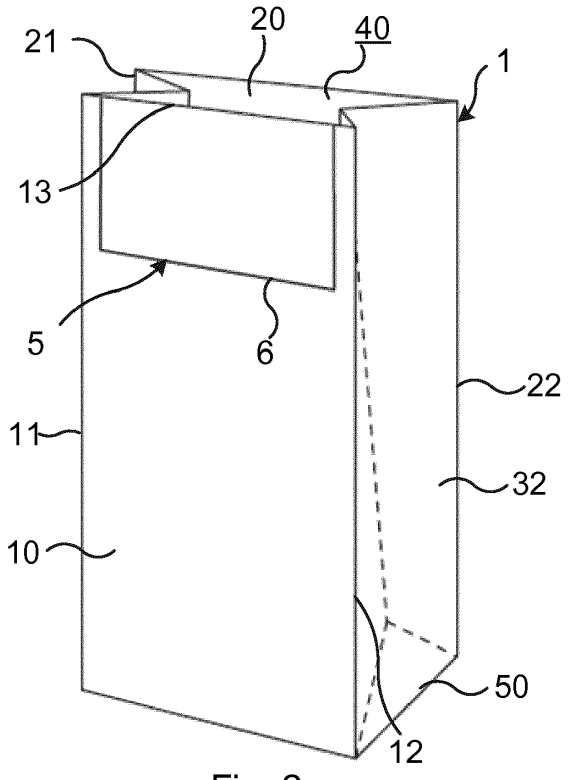

Fig. 2a

EP 3 670 376 A1

Description

Technical Field

[0001] The present disclosure generally relates to paper bags. In particular, it relates to a paper bag for receiving and containing goods and comprising a handle.

Background and Prior Art

[0002] Recent development of new paper materials having enhanced properties and qualities makes it possible to replace polymer and plastic materials by paper based materials in many different applications. This is highly desirable since paper materials generally have a much lower environmental impact than traditional plastic materials.

[0003] One area where it is desirable to replace plastics by paper is within the packaging industry and especially in single use packaging. Such single use packages are used e.g. in supermarkets and other food stores where products are sold by the weight. Here, customers pick the desired quantity of an unpacked product from e.g. a shelf, a tray, a table or the like and collect it in a single use package such as a bag. For granular and other bulk products, the desired quantity may be dispensed into the package from a so called gravity feed dispenser, a scope bin or the like. The so filled single use package is thereafter brought to the check-out counter where it is weighted and payed for. Alternatively, the customer weighs the package and attaches an automatically printed price label which is scanned at the check-out counter.

[0004] At home, the customers often dispose the single use package when the product has been unpacked. Presently, the vast majority of such single use packages are made of plastics and the very large number of such packages being disposed each year, around the world, constitutes a sever burden and threat to the environment.

[0005] In order to reduce the environmental impact of single use packages it has been suggested to use paper for forming such single use packages. Such paper packages mat be recyclable and/or biodegradable and thereby cause less environmental damages than traditional plastic packages. Using paper for forming single use packages also gives the package, to a higher degree than plastics, a sense of quality and naturalness which often is appreciated by the user.

[0006] However, earlier attempts to utilize paper for forming bags e.g. for products that are sold by the weight exhibit certain disadvantages. One problem relies in that it is difficult to open the bag from a flattened state and to keep the mouth open during loading of the products. Another problem is that it has proven difficult to grasp and carry the bag when loaded with products.

Summary

[0007] One object of the present disclosure is to provide an enhanced paper bag for receiving and containing goods.

[0008] Another object is to provide such a bag which is suitable for use as a single use bag, e.g. for products, such as fruit and vegetables, that are sold by the weight.

[0009] A further object is to provide such a bag which is simple in use.

[0010] A still further object is to provide such a bag which facilitates loading the bag.

[0011] Yet another object is to provide such a bag which facilitates holding and carrying the bag.

[0012] A still further object is to provide a such a bag that is environmentally friendly, such as fully recyclable and/or biodegradable.

[0013] Still another object is to provide such a bag which is strong and durable and capable of holding comparatively heavy loads without breakage.

[0014] Yet a further object is to provide such a bag which may be manufactured at a comparatively low cost.

[0015] Another object is to provide such a bag which may be loaded through the open mouth in an essentially horizontal direction.

[0016] Another object is to provide such a bag which has an esthetically appealing appearance and gives a sense of quality and naturalness.

[0017] A still further object is to provide a bag that is compact to store.

[0018] A still further object is to provide a bag that solves several or all of the foregoing objects.

[0019] According to one aspect, there is provided a paper bag for receiving and containing goods. The bag comprises a body formed from a single first paper blank and a handle. The body comprises: a first wall panel having two longitudinal side edges and an upper edge; a second wall panel having two longitudinal side edges and an upper edge. Two gusset sections are arranged such that each gusset section connects a longitudinal side edge of the first wall panel with a corresponding longitudinal side edge of the second panel. An open mouth portion is formed between the upper edges of the first and second wall panels. A closed bottom section comprises mutually overlapping bottom panels which form extensions of the first wall panel, the second wall panel and the gusset sections. The handle comprises a handle panel made of paper, which handle panel extends along the upper edge of the first wall panel and is attached to the first wall panel by adhesive areas comprising two first adhesive areas arranged on the outside of the first wall panel, below the first panel's upper edge.

[0020] The two first adhesive areas typically extend at a mutual distance, from the upper edge of the first wall panel, a distance corresponding to the height of the handle panel, in the direction towards the bottom section of the body. Hereby a downwardly open handle forming pocket is formed between the outside of the first wall panel and the inside of the handle panel, which pocket is sealed sidewise by said two first adhesive areas.

[0021] In use, goods may be loaded into the bag

through the upper open mouth portion. Grace to the gusset sections, the bag adopts an expanded state when an item is contained in the bag. The bag may adopt several expanded states, depending on the volume of the goods received in the bag, i.e. the degree to which the bag is filled.

[0022] The handle arranged at the upper edge of the first panel may easily be grabbed and held by introducing fingers into the downwardly open pocket which is formed between the first wall panel and the handle panel. Since the handle is arranged at the upper edge of the first wall panel, i.e. at the open mouth portion, the mouth portion will be maintained open when the bag has been expanded and a first item has been loaded. The arrangement of the handle at the upper edge of the first panel will, in combination with the gravity exerted by a loaded item, prevent the open mouth portion from closing. Hereby loading of the bag is highly facilitated.

[0023] Additionally, in comparison with known paper bags for products that are sold by the weight, where no handle normally is provided, the handle arranged at the upper edge greatly facilitates holding and carrying the bag, especially when the bag is heavily loaded.

[0024] Further, the arrangement of the handle at the outside of the bag, in proximity to the mouth allows for, in combination with the comparatively high stiffness of the paper material forming the bag, that the bag may be loaded in a horizontal direction. I.e. the paper bag may be held by the handle, such that the first and second wall panels are oriented essentially horizontally and the products may be inserted through the mouth in a horizontal direction. This way of loading the bag may be advantageous in some applications, e.g. when a tool such as a scoop or a spade is used for loading the bag.

[0025] According to one preferred embodiment, the handle panel is formed from a separate second paper blank and the adhesive areas comprise at least one second adhesive area arranged on the first wall panel at or in proximity to the first wall panel's upper edge. By forming the handle panel from another paper blank than the body, it is possible to individually select advantageous paper qualities and properties for the body and the handle panel respectively. Additionally, this embodiment also reduces the spillage of paper material during manufacturing the bag, when the first and second blanks are cut out from respective webs of paper.

[0026] At an alternative embodiment the handle panel may be formed from the first paper blank. At such embodiments the handle panel may comprise a flap which extends from and is folded about the upper edge of the first wall panel.

[0027] A second adhesive area may be arranged on the outside of the first wall panel. At such instances the second adhesive typically extends along the upper edge of the first wall panel and forms the upper seal of a handle forming pocket arranged between the first wall panel and the handle panel. This allows for that a single unfolded sheet of paper may form the handle panel. Additionally, this also allows for that all adhesive areas for attaching the handle panel to the body are arranged on the same side of the first wall panel, which facilitates applying the necessary adhesive during manufacturing of the bag.

[0028] Alternatively or in combination a second adhesive area may be arranged at the inside of the first wall panel and the handle panel may then be folded over the first wall panel's upper edge. At such instances, the second adhesive area arranged on the inside, may preferably extend along the upper edge of the first wall panel. Thereby an alternative upper seal of the handle forming pocket is formed. Such an inner second adhesive area may increase the strength and durability of the handle.

[0029] The first adhesive areas may extend along or in proximity to a respective one of the first wall panel's longitudinal side edges. By this means the width of the handle panel is maximized, thereby allowing introduction of several fingers into the handle forming pocket.

[0030] At some embodiments, the handle panel may comprise a handle flap formed from the first paper blank, which handle flap is folded onto the outside of the first wall panel. At such embodiments the second adhesive area may be omitted since the handle forming pocket is sealed at the upper edge of the first wall panel by the fold connecting the first wall panel with the handle panel.

[0031] A lower edge portion of the handle panel may comprise an edge flap folded about the lower edge of the handle panel. Such a folded edge portion arranged at the lower opening of the handle forming pocket reduces the risk of injuring the fingers when grabbing the handle. The folded edge portion also increases the strength of the handle's lower portion.

[0032] The edge flap may preferably be folded onto the inside of the handle panel, i.e. the side facing the outside of the first wall panel. By this means, the folded flap is concealed such the it does not influence the visual appearance of the bag.

[0033] The folded edge flap may extend over essentially the entire height of the handle panel, thereby forming a double layer handle. By this means the strength of the entire handle is increased.

[0034] The paper for forming the first paper blank used to form the body of the bag may be given suitable properties according to the following, such that it may withstand comparatively heavy loads.

[0035] The first paper blank may be formed of a kraft paper.

[0036] The first paper blank may be formed of a paper having a grammage of 35-85 g/m2 measured according to ISO 536:2012.

[0037] The first paper blank may be formed of a paper having a geometric tensile energy absorption (TEA) index of 1.9 - 3.3 J/g as measured according to ISO 1924-3:2005.

[0038] The first paper blank may be formed of a paper having a tear index of 9.0 - 16.0 mNm2/g in the machine direction and the cross direction as measured according to ISO 1974:2012.

[0039] The paper for forming the second paper blank used to form the handle panel of the bag may be given suitable properties according to the following, such that it may withstand the higher load concentrations and forces that apply to the handle panel in use.

[0040] The second paper blank may be formed of a kraft paper having a grammage of 100 - 200 g/m2 measured according to ISO 536:2012.

[0041] The second paper blank may be formed of a kraft paper having a geometric tensile energy absorption (TEA) index of 2.3 - 4.5 J/g as measured according to ISO 1924-3:2005.

[0042] The second paper blank may be formed of a kraft paper having a tear index of 13.0 - 20.0, preferably 14.0 - 20.0 mNm^2/g in the machine direction and 14.0 - 23.0, preferably 15.5 - 23.0 mNm^2/g the cross direction as measured according to ISO 1974:2012.

[0043] The first and/or second wall panels may comprises a see through window formed of a transparent window material other than the material forming the first paper blank. By this means goods carried in the bag may easily be seen and identified from outside of the bag without the need to look through the mouth portion. This facilitates the handling for example at the check-out counter when purchasing products sold by the weight.

[0044] The first and/or the second wall panels may exhibit a cut out opening and the window material may cover the cut out opening and be attached to the first and/or second wall panel by at least one third adhesive area arranged around or in proximity to the edge of the cut out opening.

[0045] The first blank may be formed of white MF kraft paper provided by BillerudKorsnäs under the name "Axello Swan" and having a grammage of 70 - 80 g/m^2. Alternatively, the first blank may be formed of white sack kraft paper provided by BillerudKorsnäs under the name "Preformance White SE" and having a grammage of 70 - 80 g/m^2.

[0046] The second blank may be formed of white kraft paper provided by BillerudKorsnäs under the name "PulpWrap SE" and having a grammage of 130 - 145 g/m^2. Alternatively, the second blank may be formed of white sack kraft paper provided by BillerudKorsnäs under the name "QuickFill® White Single" and having a grammage of 110 - 120 g/m^2. A further alternative is to form the second blank from a kraft paper provided by BillerudKorsnäs under the name of "FibreForm®" and having a grammage of 100-200 g/m^2.

[0047] The paper material of the first and/or the second blank may be coated, e.g. with a pigment coating.

[0048] Each gusset section may for example comprise a pair of subpanels folded along a gusset fold line. The two subpanels of the gusset may have a generally flattened "V" shape when the bag is in a collapsed state. Thus, in the collapsed stated of the bag, the gusset fold line may have an acute angle. In one expanded state of the bag, the gusset fold line may have an obtuse angle such that the gusset section is concave. In a further expanded state of the bag, the gusset fold line may have a more obtuse angle. Alternatively, at least one gusset section of the bag may be flat or substantially flat when the bag adopts one or more expanded states.

[0049] Since the bag may be substantially flat in a collapsed state, several empty bags may be stored and/or transported in a stack which is space saving.

[0050] Further objects and advantages of the paper bag will appear from the following description of exemplifying embodiments and from the appended claims.

Brief Description of the Drawings

[0051] Further details, advantages and aspects of the present disclosure will become apparent from the following embodiments taken in conjunction with the drawings, wherein:

Fig. 1a is a perspective view from behind illustrating a paper bag according to a first embodiment, in a collapsed state and fig.ib is a perspective view from the front of the paper bag shown in fig. 1a.

Fig. 2a is a perspective view from the front the paper bag shown in fig. 1a in an expanded state and fig. 2b is a perspective view from behind of the paper bag shown in fig. 2a.

Fig. 3a is a plan view of a first blank for forming the body of the paper bag shown in figs. 1a-b and 2a-b.

Fig 3b is a plan view of the first blank shown in fig 3a, to which a handle panel formed of a second blank has been attached.

Fig. 4a is a perspective view from the front illustrating a paper bag according to a second embodiment in a collapsed state and fig. 4b is a perspective view from behind of the paper bag shown in fig. 4a.

Fig. 5a is a perspective view from the front the paper bag shown in fig. 4a in an expanded state and fig. 5b is a perspective view from behind of the paper bag shown in fig. 5a.

Fig. 6 is a plan view of a first blank for forming the body of the paper bag shown in figs. 4a-b and 5a-b.

Detailed Description of Exemplifying Embodiments

[0052] In the following, a paper bag according to the invention for receiving and containing goods will be described. The same reference numerals will be used to denote the same or similar structural features.

[0053] Figs 1a-b illustrate a paper bag according to a first embodiment in a collapsed state and figs. 2a-b show the same paper bag in an expanded state. Fig. 3a shows a first blank for forming the body of the bag according to

the first embodiment and fig. 3b illustrates the first blank after attachment of a handle panel during manufacturing of the bag.

[0054] With reference to figs. 1a-3b, the paper bag according to the first embodiment comprises a body 1 formed of a first paper blank A and a handle 5 formed of a second paper blank B. The first blank A is made of white MF kraft paper provided by BillerudKorsnäs under the trademark "Axello Swan" and has a grammage of 80 g/m^2. The second blank B is made of a white kraft paper provided by BillerudKorsnäs under the trademark "Pulp-Wrap SE" and has a grammage of 130 g/m^2. However other paper materials exhibiting suitable strength, stretchability and bending resistance may also be used for forming the first and second blank.

[0055] The body 1 comprises a first wall panel 10 forming a front panel and a second wall panel 20 forming a rear panel. The first wall panel 10 exhibits a first 11 and a second 12 longitudinal side edge and an upper edge 13. Correspondingly, the second wall panel 20 exhibits a first 21 and a second 22 longitudinal side edge and an upper edge 23. An open mouth portion 40 is formed between the upper edges 13, 23 of the first 10 and second 20 wall panels

[0056] A first gusset section 31 connects the first side edges 11, 21 and a second gusset section 32 connects the second side edges 12, 22. As best seen in fig. 3a the first gusset section 31 comprises a first gusset panel 31a connected to the first wall panel 10 by fold line 11a which constitutes the first longitudinal side edge 11 of the first wall panel 10 and a second gusset panel 31b connected to the first gusset panel 31a by fold line 31c. The second gusset panel is also connected to the second wall panel by fold line 21a which constitutes the first longitudinal side edge 21 of the second wall panel 20. Correspondingly, the second gusset section 32 comprises a first gusset panel 32a connected to the first wall panel 10 by fold line 12a which constitutes the second longitudinal side edge 12 of the first wall panel and a second gusset section 32b which is connected to the first gusset section 32a by fold line 32c.

[0057] A connection flap 33 is connected to the second longitudinal side edge 22 of the second wall panel 20 by fold line 22a. When assembling the paper bag, the connection flap 33 is attached to the rear side of the second gusset section's 32 second gusset panel 32b by means of an adhesive area applied to the upper surface of connection flap 33 as seen in fig. 3a.

[0058] The bag further comprises a closed bottom section 50 which is arranged longitudinally opposite to the first upper edges 13, 23 and the open mouth portion 40. The bottom section 50 constitutes a so called block bottom. The closed bottom section 50 is formed of first 10', 20', 31a', 31b', 32a', 32b', 33' and second 10", 20", 31a", 31b", 32a", 32b", 33" longitudinal extension panels of the first wall panel 10, the second wall panel 20, the first 31a, 32a and second 31b, 32b gusset panels and the connection flap 33. These longitudinal extensions are connected by fold lines as seen in fig. 3a. The closed block bottom section 50 is formed by folding the extension panels in an overlapping manner and connecting them by adhesive areas 10"g, 20"g, 33"g applied to the extension panels 10", 20" and 33". Such forming of block bottom sections is known in the art and not described more in detail here.

[0059] The handle 5 comprises a rectangular handle panel 6 of paper formed from the second paper blank. The handle panel 6 is attached to the outside of the first wall panel 10 by means of two first 10g' and a second 10g" adhesive areas. The first adhesive areas 10g' are arranged below the upper edge 13 of the first wall panel and extend longitudinally towards the bottom section 50 in proximity to a respective side edge 11, 12 of the first wall panel 10. The sidewise outer edges of the first adhesive areas 10g' extend in parallel with the side edges 11, 12 of the first wall panel and the inner edges of the first adhesive areas 10g' tapers towards the bottom section 50, such that the mutual distance between the first adhesive areas 10g' increases in the direction from the mouth portion 40 towards the bottom section 50 of the body 1.

[0060] The second adhesive area 10g" is, in this embodiment, also arranged on the outside of the first wall panel 10 and extends along the upper edge 13 of the first wall panel, between the two first adhesive areas 10g'. At this embodiment the first 10g' and second 10g" adhesive areas thus form a single joint, generally U-shaped adhesive area. The rectangular handle panel 6 has a width which corresponds to the distance between the sidewise outer edges of the first adhesive areas 10g' and a height which corresponds to the distance between the upper edge of the second adhesive area 10" to the lower edges of the first adhesive areas 10g'.

[0061] When the handle panel 6 has been attached to the first wall panel 10 by means of the first 10g' and second 10g" adhesive areas, a downwardly open handle pocket is formed. The handle pocket is sealed along the upper edge 13 and the side edges 11, 12 of the first wall panel 10.

[0062] The so formed handle 5 allows the user of the bag to insert one or a few fingers of one hand from below into the handle pocket and to conveniently hold the bag with the palm turned upwards and the inserted fingers slightly bent. By utilizing the handle the bag may thus be held and carried by means of a form locking grip rather than friction grip. In comparison to traditional single use paper bags without handles, where the user needs to pinch a wall panel of the bag, this greatly reduces the effort for holding and carrying the bag when loaded.

[0063] Since the handle 5 is arranged at the upper edge 13 of the first wall panel 10, the gusset sections 31, 32 will tend to expand when a first product has been loaded into the bag and to keep the mouth portion 40 open. Thereby, continued loading of the bag is greatly facilitated.

[0064] In figs. 4a-b, 5a-b and 6 a paper bag according to a second embodiment is illustrated. Just as in the first

embodiment this paper bag comprises a body 100 formed of a first paper blank C and a handle 105 formed from a second paper blank (not shown). The body comprises a first wall panel 110 having longitudinal side edges 111, 112 and an upper edge 113 as well as a second wall panel 120 having longitudinal side edges 121 and 122 and an upper side edge 123. The side edges 111, 112, 121, 122 of the first 110 and second 120 wall panels are connected by respective gusset sections 131, 132 and connection flap 133 in the same way as shown in figs. 1a-3b and described above.

[0065] The handle 105 comprises a handle panel 106 which is attached to the outer side of the first wall panel 110 by two first adhesive areas 110g' and a second adhesive area 110g". This also fully corresponds to what is described above with reference to figs. 1a-3b.

[0066] The bag according to the second embodiment differs to the first embodiment in that the closed bottom section 150 form a so called V-bottom, instead of a block bottom. The bottom section 150 is formed of a number of first extension panels 110', 120', 131a', 131b', 132a', 132b' forming longitudinal extensions of first wall panel 110, second wall panel 120 and gusset wall panels 131a, 131b, 132a, 132b respectively. A second extension panel 110" further extends first extension panel 110' of the first wall panel 110. Adhesive areas 110"g, 120'g are applied to the second extension panel 110" and first extension panel 120' respectively. The closed V-bottom section 150 is formed by overlapping folding of the first extension panels 110', 120', 131a', 131b', 132a', 132b' and connecting them by means of adhesive area 120'g and by folding the second extension panel 110" onto the outer side of second wall panel 120 where it is attached by means of adhesive area 110"g. Such forming of V-bottom sections is known in the art and not further described here.

[0067] The bag according to the second embodiment also differs from the first embodiment in that it comprises a transparent window 160 arranged in the first wall panel 110. The first wall panel 110 exhibits a circular cut-out opening 160a arranged below the handle 105. In the shown example an adhesive area 160g surrounds the cut-out opening 160a on the side forming the outer side of first wall panel 110, when the bag has been assembled. A circular sheet of transparent material 160b is attached to the first wall panel 110 by means of the adhesive area 160g such that it covers the cut out opening 160a. However, it may be preferable that the adhesive area and the transparent sheet are applied on that side of the panel that forms the inner side of the bag. This could be effected by applying the adhesive and the transparent sheet to the paper web in a converting machine before the web has been folded to a tubular configuration. The adhesive could either be applied to the paper web or to the transparent sheet before the sheet is applied to the paper web.

[0068] The transparent sheet may be formed of plastic material, which preferably is recyclable or biodegradable. Even more preferable, the transparent sheet is formed of recyclable and/or biodegradable paper material.

[0069] The paper bag according to the second embodiment exhibits the same advantages as the first embodiment with regard to the handle. In addition the transparent window allows for identifying the content of the bag without looking through the mouth portion 140.

[0070] A common feature of the embodiments described above is that all adhesive areas are applied to the upper side of the first blank A, C as seen in the figures. This greatly facilitates manufacturing of the bag since all application of the adhesive may be done from above in the converting machine during assembly.

[0071] A further advantage of the bag is that the same adhesive may be used both for forming the body of the bag and for attaching the handle panel as well as the transparent window sheet, when applicable. This also facilitates manufacturing. Preferably a starch based biodegradable adhesive is used at all adhesive areas.

[0072] Instead of forming the adhesive areas as respective continuous zones, it is also possible that some of the adhesive areas such as adhesive areas 10g', 10g", 110g', 110g" for attaching the handle panel are formed as intermittent or discontinuous lines or dots.

[0073] According to an embodiment not shown in the figures, the handle panel is folded over the upper edge of the first wall panel and attached by a second adhesive area to the inside of the first wall in proximity to the upper edge. At such embodiments the second adhesive area 10g", 110g" shown in the figures may be omitted or may be maintained. Such attachment of the handle panel may increase the attachment force for the handle.

[0074] At a further not shown embodiment, a lower portion of the handle blank may be folded about the lower horizontal edge of the handle panel, such as to provide a double layer handle panel at least at the lower portion of the handle. Such folding of the lower edge of the handle blank reduces the risk of being injured by cutting when grabbing the handle. At a not shown variation of this embodiment, the folded portion of the handle blank may extend over a longer portion, such as over the majority or essentially the entire longitudinal length of the handle. By this means the strength of the handle is further increased.

[0075] According to still a not shown embodiment, the handle panel is formed from and made integral with the first paper blank for forming the body of the bag. At such embodiments the handle panel may be formed as an upper extension of the first wall panel and be connected to the first wall panel by a fold line which, when the bag is assembled defines the upper edge of the first wall panel. The so formed handle panel may be folded and attached onto the outside of the first wall panel by first adhesive areas arranged generally as shown in the figures.

[0076] At another not shown embodiment, a see through window formed of a transparent material extends over the entire longitudinal length of the bag. At such embodiments a first longitudinal edge of the transparent sheet may be fixed by adhesive to a longitudinal edge of

the first, panel, the second panel, any of the gusset panels or the connection flap before the paper web is folded into a tubular configuration in the converting machine. After forming the tubular configuration, the second longitudinal edge of the transparent sheet is fixed by adhesive to a longitudinal edge of a corresponding panel formed of the first paper blank.

[0077] While the present disclosure has been described with reference to exemplary embodiments, it will be appreciated that the present invention is not limited to what has been described above. Although the bag may be produced with the dimension ratios presented in the drawings, it will be appreciated that the dimensions of the parts may be varied as needed. Accordingly, it is intended that the present invention may be limited only by the scope of the claims appended hereto.

Claims

1. A paper bag for receiving and containing goods, the bag comprising a body (1, 101) formed from a single first paper blank (A, C) and a handle (5, 105), wherein the body comprises:

- a first wall panel (10, 110) having two longitudinal side edges (11, 12, 111, 112) and an upper edge (13, 113) ;
- a second wall panel (20, 120) having two longitudinal side edges (21, 22, 121, 122) and an upper edge (23, 123);
- two gusset sections (31, 32, 131, 132), each gusset section connecting a longitudinal side edge (11, 12, 111, 112) of the first wall panel (10, 110) with a corresponding longitudinal side edge (21, 22, 121, 122) of the second panel (20, 120);
- an open mouth portion (40, 140) formed between the upper edges (13, 23, 113, 123) of the first and second wall panels;
- a closed bottom section (50, 150) comprising mutually overlapping panels which form extensions of the first wall panel, the second wall panel and the gusset sections, wherein

the handle (5, 105) comprises a handle panel (6, 106) made of paper, which handle panel extends along the upper edge (13, 113) of the first wall panel and is attached to the first wall panel (10, 110) by adhesive areas comprising two first adhesive areas (10g', 110g') arranged on the outside of the first wall panel (10, 110), below the first panel's upper edge (13, 113).

2. A paper bag according to claim 1, wherein the handle panel (6, 106) is formed from a separate second paper blank (B) and wherein the adhesive areas comprise at least one second adhesive area (10g", 110g") arranged on the first wall panel (10, 110) at or in proximity to the first wall panel's upper edge (13, 113).

3. A paper bag according to claim 2, wherein a second adhesive area (10g", 110g") is arranged on the outside of the first wall panel (10, 110).

4. A paper bag according to claim 2 or 3, wherein a second adhesive area is arranged at the inside of the first wall panel and wherein the handle panel is folded over the first wall panel's upper edge.

5. A paper bag according to any of claims 1-4, wherein the first adhesive areas (10g', 110g') extend along or in proximity to a respective one of the first wall panel's longitudinal side edges (11, 12, 111, 112).

6. A paper bag according to claim 1, wherein the handle panel comprises a handle flap formed from the first paper blank, which handle flap is folded onto the outside of the first wall panel.

7. A paper bag according to any of claims 1-6, wherein a lower edge portion of the handle panel comprises an edge flap folded about the lower edge of the handle.

8. A paper bag according to any of claims 1-7, wherein the first paper blank (A, C) is formed of a paper having a grammage of 35-85 g/m^2 measured according to ISO 536:2012.

9. A paper bag according to any of claims 1-8, wherein the first paper blank (A, C) is formed of a paper having a geometric tensile energy absorption (TEA) index of 1.9 - 3.3 J/g as measured according to ISO 1924-3:2005

10. A paper bag according to any of claims 1-9, wherein the first paper blank (A, C) is formed of a paper having a tear index of 9.0 - 16.0 mNm^2/g in the machine direction and the cross direction as measured according to ISO 1974:2012.

11. A paper bag according to any of claims 1-10, wherein the second paper blank (B) is formed of a kraft paper having a grammage of 100 - 200 g/m^2 measured according to ISO 536:2012.

12. A paper bag according to any of claims 1-11, wherein the second paper blank (B) is formed of a kraft paper having a geometric tensile energy absorption (TEA) index of 2.3 - 4.5 J/g as meassured according to ISO 1924-3:2005.

13. A paper bag according to any of claims 1-12, wherein the second paper blank (B) is formed of a kraft paper

having a tear index of 13.0 - 20.0, preferably 14.0 - 20.0 mNm^2/g in the machine direction and 14.0 - 23.0, preferably 15.5 - 23.0 mNm^2/g the cross direction as measured according to ISO 1974:2012.

14. A paper bag according to any of claims 1-13 wherein the first (110) and/or second wall panels comprises a see through window (160) formed of a transparent window material other than the material forming the first paper blank (A, C).

15. A paper bag according to claim 14, wherein the first (110) and/or the second wall panels exhibit a cut out opening (160a) and the window material covers the cut out opening and is attached to the first (110) and/or second wall panel by at least one third adhesive area (110g) arranged around the in proximity to the edge of the cut out opening.

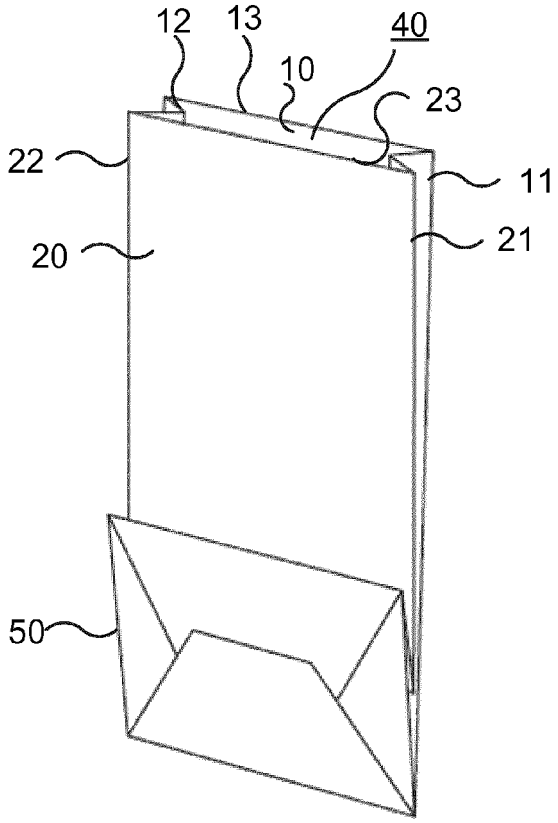

Fig. 1a

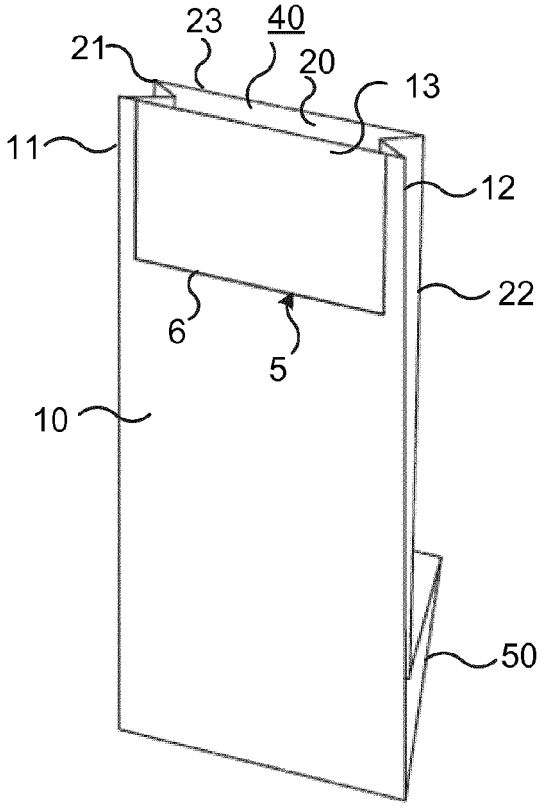

Fig. 1b

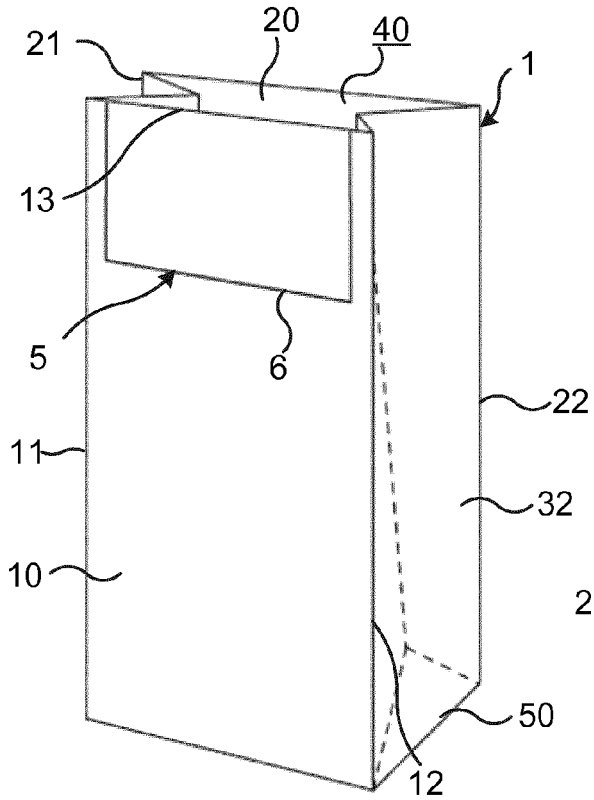

Fig. 2a

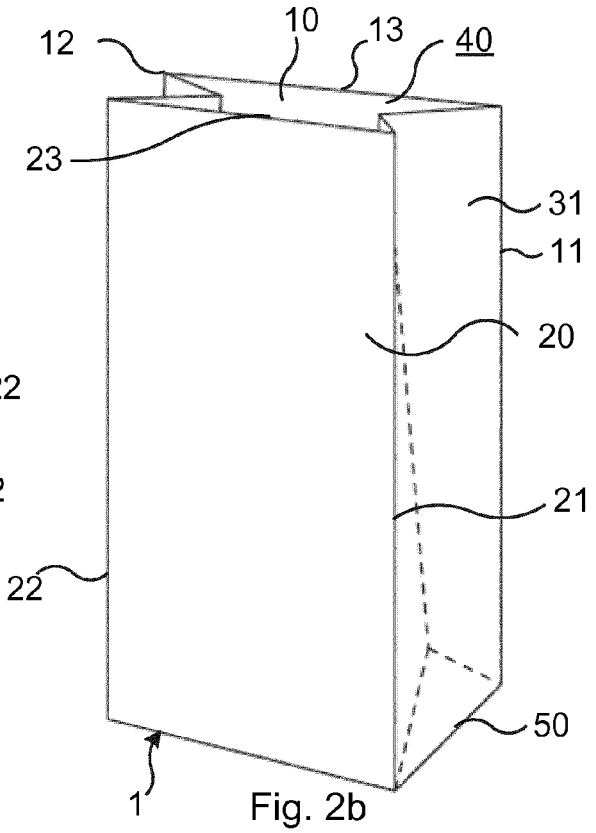

Fig. 2b

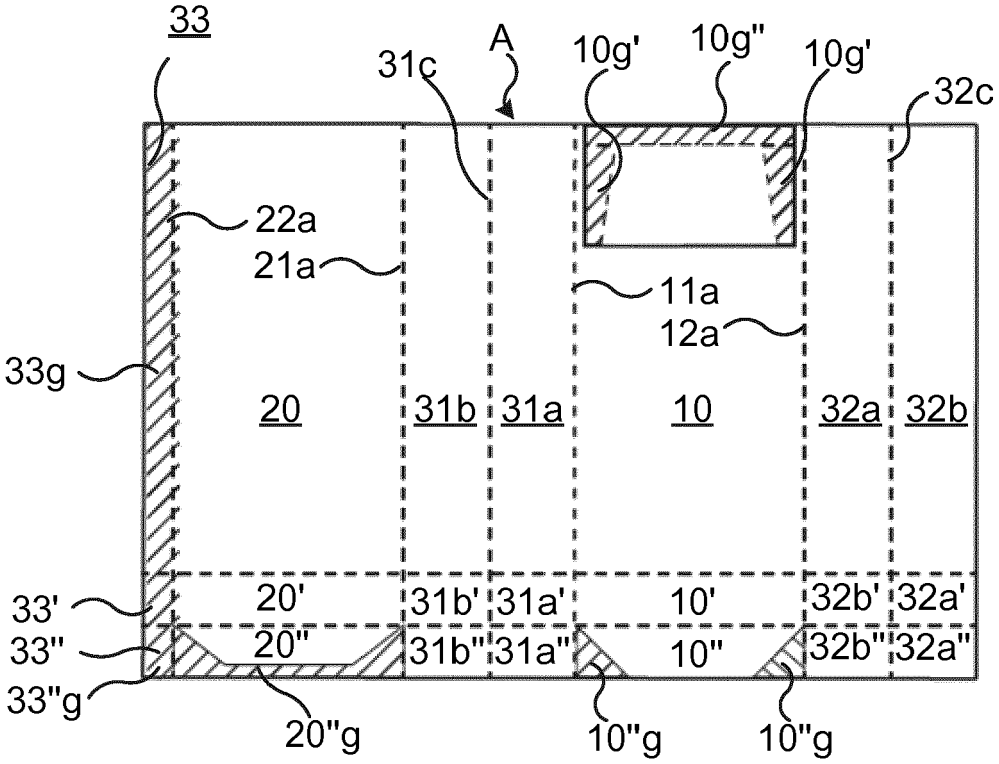
33
A
31c
10g'
10g"
10g'
32c
22a
21a
11a
12a
33g
20
31b
31a
10
32a
32b
33'
20'
31b'
31a'
10'
32b'
32a'
33"
20"
31b"
31a"
10"
32b"
32a"
33"g
20"g
10"g
10"g

Fig. 3a

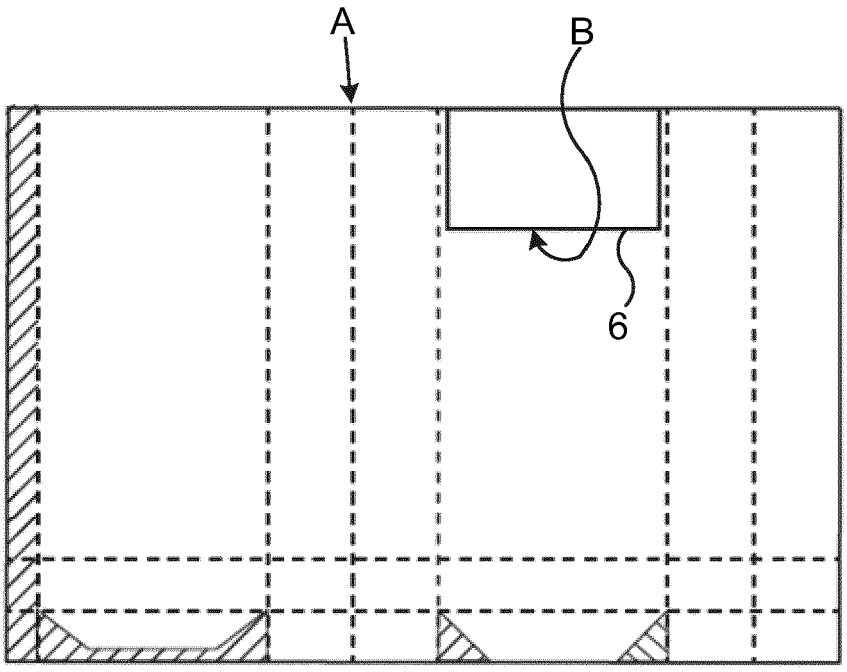
A
B
6

Fig. 3b

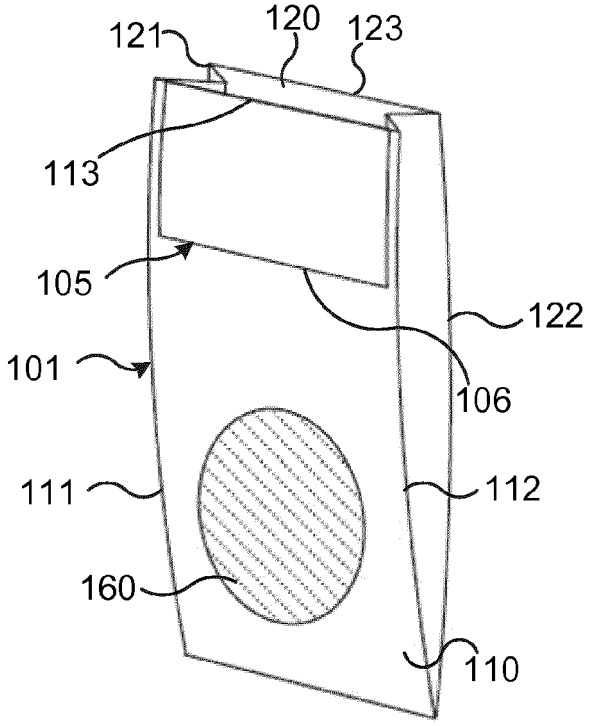

Fig. 4a

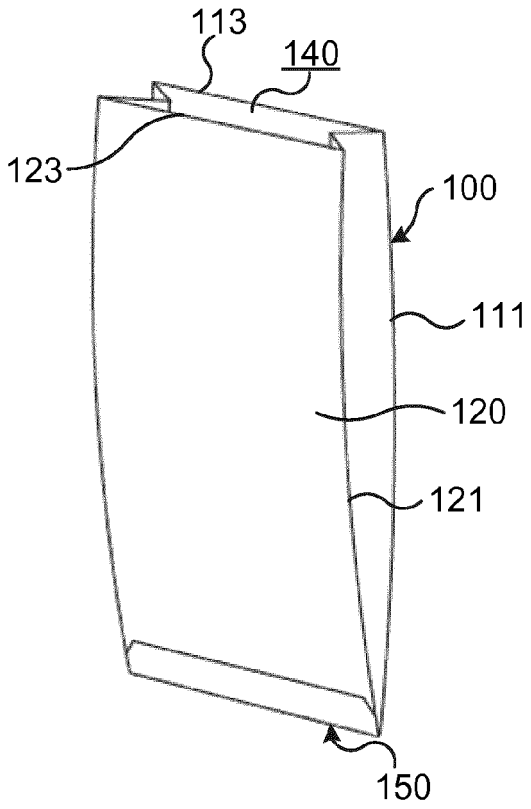

Fig. 4b

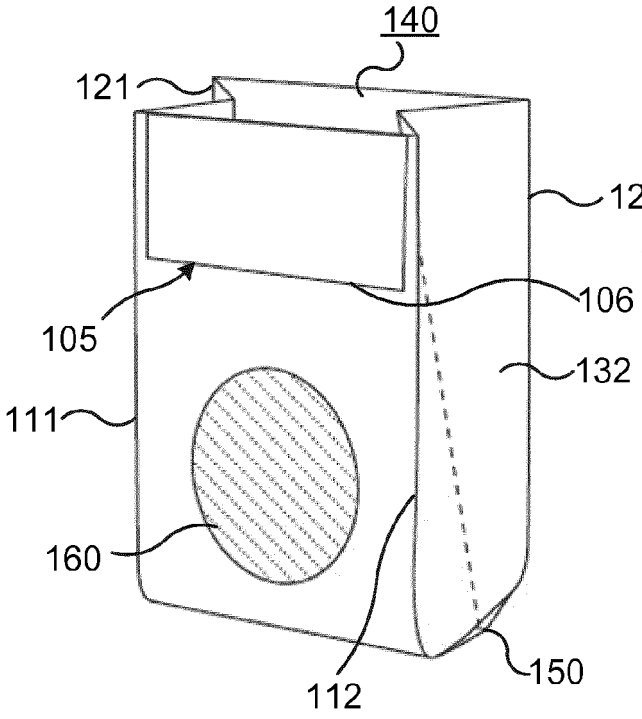

Fig. 5a

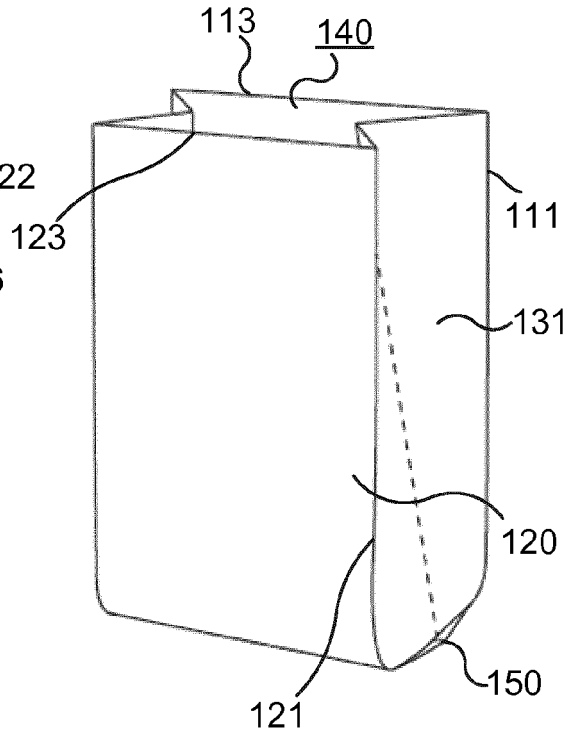

Fig. 5b

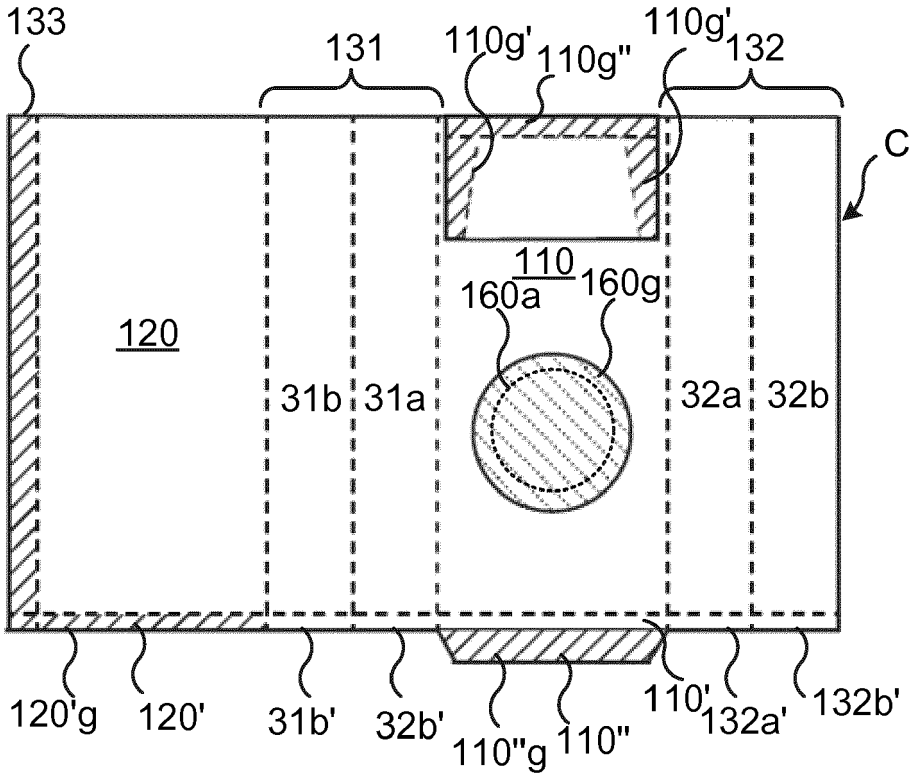
133
131
110g'
110g"
110g'
132
C
110
160a
160g
120
31b
31a
32a
32b
120'g
120'
31b'
32b'
110"g
110"
110'
132a'
132b'

Fig. 6

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 18 21 5572

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	WO 2016/182492 A1 (IFOODBAG AB [SE]) 17 November 2016 (2016-11-17) * abstract; figure 6 * * page 27, line 16 - page 30, line 3 *	1-15	INV. B65D30/18 B65D30/20 B65D33/16 B65D33/10
A	US 2014/294322 A1 (TRUSLOW SAMUEL BLAGDEN [US] ET AL) 2 October 2014 (2014-10-02) * abstract; figures 1,2,4 *	1	
A	Anonymous: "Kraft paper - Wikipedia, the free encyclopedia", , 21 July 2016 (2016-07-21), XP055292957, Retrieved from the Internet: URL:https://en.wikipedia.org/wiki/Kraft_paper [retrieved on 2016-08-02] * the whole document *	1,8-13	
A	EP 1 245 497 A1 (HOSOKAWA YOKO KK [JP]) 2 October 2002 (2002-10-02) * abstract; claim 1; figure 1 * * paragraph [0025]; figures 11,12 *	1,14,15	TECHNICAL FIELDS SEARCHED (IPC) B65D
A	US 2009/324143 A1 (SHARP STUART [US] ET AL) 31 December 2009 (2009-12-31) * abstract; figures 1,3 *	1,14,15	
A	CH 332 823 A (SCIPER SA [MA]) 30 September 1958 (1958-09-30) * page 2, line 23 - line 31; figures 1,6 *	1-15	
A	EP 1 046 590 A1 (WARD PACKING LTD [GB]) 25 October 2000 (2000-10-25) * abstract; figures 1,4 *	1-15	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	31 January 2019	Segerer, Heiko

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 18 21 5572

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.

31-01-2019

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2016182492 A1	17-11-2016	NONE	
US 2014294322 A1	02-10-2014	US 2014294322 A1	02-10-2014
		WO 2014160575 A1	02-10-2014
EP 1245497 A1	02-10-2002	EP 1245497 A1	02-10-2002
		JP 2001171685 A	26-06-2001
		US 2002141666 A1	03-10-2002
US 2009324143 A1	31-12-2009	US 2009324143 A1	31-12-2009
		US 2017361993 A1	21-12-2017
		WO 2011031353 A1	17-03-2011
CH 332823 A	30-09-1958	NONE	
EP 1046590 A1	25-10-2000	NONE	

EPO FORM P0459

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