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

(11) EP 1 880 952 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
23.01.2008 Bulletin 2008/04

(51) Int Cl.:
B65D 33/00 *(2006.01)*

(21) Application number: **07112876.3**

(22) Date of filing: **20.07.2007**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK YU

(30) Priority: **22.07.2006 GB 0614615**

(71) Applicant: **3 S's Limited**
Upton-upon Severn, Worcestershire WR8 0PW (GB)

(72) Inventors:
- **Smithson, Martin Dominic**
  Malvern
  Worcestershire WR13 6LE (GB)
- **Tan, Tien Tjiu**
  65153 Singosari (ID)

(74) Representative: **Macpherson, Craig Stuart et al**
Page Hargrave, Southgate, Whitefriars, Lewins Mead
Bristol BS1 2NT (GB)

(54) A stack of bags

(57) A stack of bags, each bag of the stack comprising a body portion (4) formed by front (5) and rear walls having closed sides (6), a closed bottom (7) and an open mouth (8), first and second spaced apart handles (10,12) extending from the body portion (4) and front and rear tabs (14) extending from the front (5) and rear walls respectively, the front and rear tabs (14) being centrally located between the first and second handles (10,12) and being provided with aligned apertures (26) at an end remote from the mouth, the tabs (14) being separably attached to the first and second handles (10,12) at attachment points spaced from the mouth of the bag, the closed bottom (7) being provided with a bottom tab (30) extending away from the body portion and being provided with a centrally located aperture (32), wherein the stack can be folded about a transverse fold line (29) between the closed bottom and the mouth of the bag, such that the aperture (32) on the bottom tab is aligned with the apertures (26) on the front and rear tabs for receiving a retention member.

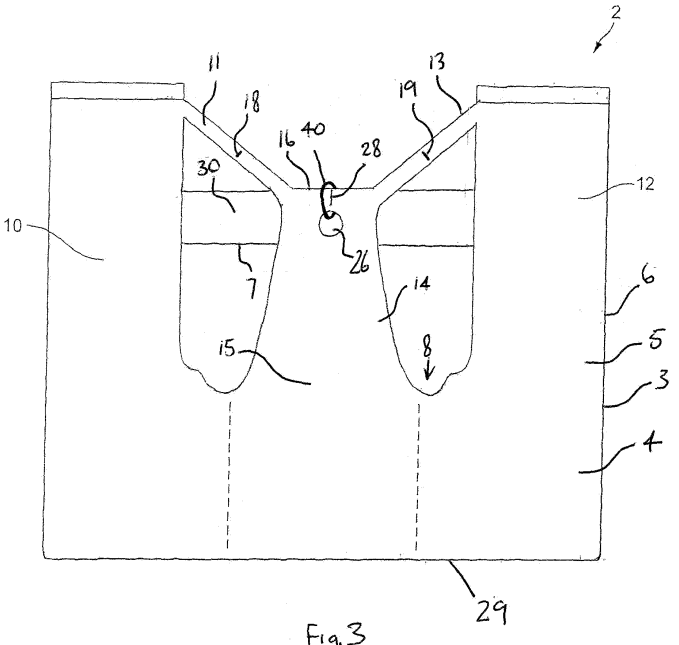

Fig. 3

EP 1 880 952 A1

Description

[0001] The present invention relates to a stack of bags and the combination of a stack of bags and a dispensing plate.

[0002] It is common practice for supermarkets and other retail outlets to provide plastic bags at the checkout, on the produce aisle, or at any other suitable location, into which customers may pack their shopping. The most common type of bag is the so-called T-shirt type bag which comprises a bag portion, formed by front and rear walls having a closed bottom and an open mouth, and two looped side handles extending therefrom. Typically the bags are provided in the form of a stack of bags, with, for example, 50 bags in a stack. The bags in the stack may be connected together by a variety of means, such as, but not limited to, heat bonding, tying or other suitable means.

[0003] Stacks of bags are well known in which the handle portions of each bag are bridged by bridging webs of plastic connected to the handle portions at each end by lines of weakness (e.g. defined by perforations). The bridging webs are held together (e.g. by heat bonding, taping, wrapping, clipping and/or tying) to form a so-called block header between the handle portions of the stack. This provides a large through-channel in the stack in the region of the mouth of the bags.

[0004] Generally the stack of bags is mounted on a dispenser from which the customer may ideally remove one bag at a time. A variety of different bags and dispensers are known, all of which set out to achieve two main objectives: to dispense individual bags one at a time and to dispense the bag to the customer in a partially open condition.

[0005] In order to dispense a bag in a partially open condition it has become common to provide a region of adhesion between adjacent bags in the stack. The region of adhesion may suitably be in the form of a "glue spot" provided near the mouth of adjacent bags. US 5,421,803 discloses the use of such glue spots. As the first bag in the stack is removed from the dispenser by the customer the front wall of the next bag in the stack is pulled forward. The glues used are typically contact adhesives or hot melt adhesives and are selected to have a breaking point in the region of about 4 to about 9 Newtons. It is intended that the connection between the first bag in the stack and the next bag will be broken as the first bag is pulled away, leaving the next bag partially open and ready to use. However, it has been found that when the first bag on the stack is removed, not merely the next bag but the next three or four bags are pulled forward and opened to some extent. This effect is known as "daisychaining" and is an undesirable consequence of providing regions of adhesion.

[0006] In orderto overcome the undesirable effects of"daisychaining" bag dispensers may be provided with a restraining means which ensures that only the next bag in the stack is pulled forward. One such dispenser is disclosed in GB-A-2 309 957. This document teaches a dispenser comprising a body part and an anchor part for the stack of bags. The anchor part includes a catch means for engaging the stack, whereby the stack of bags depends from the catch means, and may be grasped for removal. A stack restraining member bears against the stack to restrain the stack of bags, but can be deflected against a gravitational restoring force when the front wall of the first bag of the stack is drawn past it to open the first bag for loading prior to removal from the stack. As the first bag is removed from the stack the rear wall of the bag is drawn past the restraining member as is the front wall of the next bag. The restraining member then comes to bear against the rear wall of the next bag and the force is sufficient to break the region of adhesion between the first bag and the next bag. The next bag is left in a partially open condition and becomes the first bag in the stack.

[0007] The dispenser disclosed in GB-A-2 309 957 functions satisfactorily. However, there are a number of drawbacks associated with conventional "glue spot" bags. It has been shown that customers tend to grasp the bags from the bottom and, rather than pulling the first bag away from the stack, pull the bag downwards. This makes it more difficult to remove the bag from the stack and results in little or no opening of the next bag in the stack. Furthermore, the provision of a glue spot between each pair of adjacent bags in the stack results in a substantial increase in the costs of production. One further disadvantage of the conventional "glue spot" bags is that the glues may leave a sticky residue on the bags which may be undesirable.

[0008] An alternative to the use of "glue spots" is disclosed in US 5,087,234. This document discloses that adjacent bags in a stack can be caused to adhere to one another in the mouth region by a combination of corona discharge treatment and pressure. As disclosed in US 5,087,234 the mechanism for this adhesion is not fully understood. However, it has been shown that the combination of the corona discharge treatment and the pressure applied by the cutter during the formation of the handles, mouth and centre tab results in the formation of an area of adhesion between the outer surfaces of adjacent bags.

[0009] Conventionally, corona discharge treatment has been used to treat the surface of polyethylene bags to make them receptive to ink. This procedure is done in order to apply logos and the like to the bags. In its natural state, polyethylene has a surface energy of approximately 30 dynes/cm. In order to make it receptive to ink the surface energy must be raised to about 38 dynes/cm. This is known as increasing the "wettability" of the polyethylene and this can be done using corona discharge treatment.

[0010] Stacks of bags are disclosed in GB-A-2 391 538 and GB-A-2 395 938. Each bag comprises a front layer and a rear layer of flexible plastics material joined at the base and sides and defining a open mouth end. Handles

extend from the open mouth end and tabs extend from each ply of material between the handles. An attachment block is provided between the handles and the handles are separably attached to the block by perforated lines of weakening. The tabs are also separably attached to the attachment block. In use, the bags are mounted on a suitable bag dispenser. When the bags are removed from the stack the attachment block is left behind. This can be untidy and messes up the checkout area.

[0011] It is the object of the present invention to alleviate some of the problems of the prior art, or at least to provide an alternative to them.

[0012] According to a first aspect of the present invention there is provided a stack of bags, each bag of the stack comprising a body portion formed by front and rear walls having closed sides, a closed bottom and an open mouth, first and second spaced apart side handles extending from the body portion and front and rear tabs extending from the front and rear walls respectively, the front and rear tabs being centrally located between the first and second handles and being provided with aligned apertures at an end remote from the mouth, the tabs being separably attached to the first and second handles at attachment points spaced from the mouth of the bag, the closed bottom being provided with a bottom tab extending away from the body portion and being provided with a centrally located aperture, wherein the stack can be folded about a transverse fold line between the closed bottom and the mouth of the bag, such that the aperture on the bottom tab is aligned with the apertures on the front and rear tabs for receiving a retention member, wherein the stack is provided with a retention member which passes through the aperture on the bottom tab and the apertures on the front and rear tabs when the bags are in the folded condition to retain the stack in said condition.

[0013] The tabs are preferably located midway between the first and second handles. On each side of the tabs a through channel is defined by one side of the tabs, one of the handles and a portion of the mouth of the bag. In use, the stack of bags may be mounted on a dispenser, with the prongs of the dispenser being received in the through channels.

[0014] It is preferred that a portion of the tabs in the region of the mouth of the bag is cut-away. The term "cut-away" as used herein refers to the fact that a portion of the tabs in the region of the mouth of the bag is of a reduced width, such that the width of the tabs at the mouth of the bags is narrower than the width of the tabs at at least one point remote from the mouth. It is most preferred that a portion on each side of the tabs is cut away. The cut-away portion offers two main benefits. Firstly, it reduces the material required to form the bag. Secondly, and more importantly, it encourages the front tab of the top bag of the stack to hang forward.

[0015] The retention member may conveniently be a loop of material, such as, plastic, string or metal, which loops through the apertures and around a portion of the tabs. A key feature of this embodiment is that the bottom tabs of the bags are secured directly to the front and rear tabs. This enables the bags to be supplied to stores in a folded state, thus avoiding the need for in-store operators to fold the bags when loading them onto dispensers. With minimum excess material it is possible to attach the bottom tabs to the front and rear tabs.

[0016] In an embodiment each bag in the stack may be attached to the next bag in the stack, for example at least a portion of the rear tab of one bag in the stack may be attached to at least a portion of the front tab of the next bag in the stack. The attachment may be effected by means of an adhesive. Alternatively, the attachment may be effected by means of corona discharge treatment. The process of corona discharge treatment is disclosed in US 5,087,234. The bag material is corona discharge treated before the handles, tabs and mouth are cut. The process of cutting the handles, tabs and mouth causes the rear wall of each bag to adhere to the front wall of the adjacent bag in the region of the cut. The bag material may be selectively treated to ensure optimum performance.

[0017] When the stack of bags is in its folded condition it may conveniently be mounted on a dispenser with prongs which are received in the through channels which are defined by the tabs, the handles and a portion of the mouth of the bag. A first bag of the stack may be removed from the stack by grasping the bag in the region of the transverse fold and pulling in a direction away from the stack. As the bag is removed from the stack it will break away from the retention member and the rear tab of the bag will pull the front tab of the next bag in the stack forward, thus breaking its attachment to the retention member. When the first bag is fully removed the second bag becomes the top bag of the stack and its tab hangs forward. A user may now remove the top bag from the stack by pulling the front tab in a direction away frm the stack, or by grasping the bag in the region of the transverse fold and pulling.

[0018] In an embodiment the bottom tab may be provided with an area of weakening adjacent the aperture. Additionally or alternatively the front and rear tabs may be provided with an area of weakening adjacent the apertures. The area of weakening may comprise a cut in the bag material, or any other form of weakening commonly associated with bags, such as perforations or stamped lines of weakness. The area of weakening typically extends from the edge of the tab towards the aperture and facilitates easy removal of the back from the retention member.

[0019] In an embodiment the front and rear tabs may be separably attached to the first and second handles at lines of weakening. The lines of weakening may be formed by perforations or they may be formed by cuts in the bag material. Alternatively, they may be formed by any other suitable means which enables the tabs to be detached from the handles by a user pulling the front tab. However, the separable attachment must be strong

enough to support the weight of the stack if necessary. The lines of weakening break when the bag is pulled from the dispenser.

[0020] In an embodiment the front tab of each bag may comprise markings to direct a user to grasp the tab in order to remove the bag from the stack, for example the front tab of each bag is a contrasting colour to the body portion of the bag. This helps to aid user recognition and ensures correct operation of the dispensing method. It also helps to ensure that the folded bags are loaded onto the dispenser as the operator can ensure that the markings are visible. If the bags are fitted incorrectly then the bottom portion of the bags will obscure the markings.

[0021] According to a second aspect of the present invention there is provided a combination of a stack of bags and a dispensing plate, each bag of the stack comprising a body portion formed by front and rear walls having closed sides, a closed bottom and an open mouth, first and second spaced apart handles extending from the body portion and front and rear tabs extending from the front and rear walls respectively, the front and rear tabs being centrally located between the first and second handles and being provided with aligned apertures at an end remote from the mouth, the tabs being separably attached to the first and second handles at attachment points spaced from the mouth of the bag, the closed bottom being provided with a bottom tab extending away from the body portion and being provided with a centrally located aperture, the stack being folded about a transverse fold line between the closed bottom and the mouth of the bag, such that the aperture on the bottom tab is aligned with the apertures on the front and rear tabs, the dispensing plate being provided with support means which engage with the stack to support it for dispensing of individual bags, wherein a retaining member passes through the aperture on the bottom tab and the apertures on the front and rear tabs to retain the stack in the folded condition, the retaining member being provided on the stack of bags.

[0022] In an embodiment the dispensing plate may be provided with means for securing it to a surface, for example the plate may be provided with one or more openings to enable it to be screwed to a wall or other surface.

[0023] In an embodiment the dispensing plate may be configured to cooperate with a dispenser, for example the dispensing plate may be configured such that it may be received within a dispenser.

[0024] Other aspects of the second aspect of the invention are as described in relation to the first aspect.

[0025] A particular advantage of the present invention is that only minimal waste material is left behind when a bag is dispensed. This has not previously been possible in stacks of bags with central tabs as they have all required some means to keep the tabs up. For example, in GB-A-2 391 538 and GB-A-2 395 938, the central tabs are separably attached to an attachment block. When the bags are removed from the stack the attachment block is left behind on the dispenser. This is untidy and the discarded attachment blocks must be tidied up by the checkout assistant. The stack of bags according to the present invention avoids this problem by having the tabs attached directly to the first and second handles.

[0026] The first and second handles may conveniently be provided with apertures for receiving prongs of a bag dispenser therethrough. This improves the operational flexibility of the stack of bags as it enables the stack of bags to be used on more than one style of dispenser. This is particularly desirable as different countries tend to prefer different types of dispenser. The present invention permits a single stack of bags to be used on the two main types of dispenser most commonly found, that is dispensers with prongs which may be received in the through channel defined by the handles, tabs and mouth of the bag and dispensers of the rack-arm type where prongs are received in apertures in the handles of the bags. Previously it has been necessary to manufacture separate bags for each type of dispenser. The apertures may suitably be defined by slits in the bag material.

[0027] The stack of bags or the combination of the stack of bags and the dispensing plate may be housed in a container, the container having a dispensing aperture through which a single bag may be dispensed in a partially open condition. The container is preferably arranged such that the front tab of the top bag in the stack protrudes therefrom. The container may suitably be a bag or it may be a box.

[0028] For a better understanding of the present invention reference will now be made to the accompanying drawings which show, solely by way of example, an embodiment of the present invention, in which:

Fig. 1 shows a plan view of a stack of bags in an unfolded condition;

Fig. 2 shows a plan view of the stack of bags of Fig. 1 in a folded condition; and

Fig. 3 shows a plan view of the stack of bags and a retention member.

[0029] Referring firstly to Fig. 1, this shows a plan view of a stack of bags 2 of the type commonly provided at supermarket checkouts or in the produce aisle of a supermarket or shop for fruit and vegetables.

[0030] The bags 2 are formed in the conventional way from a tube of plastics material, such as high density polyethylene (HDPE). Each bag 3 has a body portion 4 defined by a front wall 5 and a rear wall (not visible) having closed sides 6, a closed bottom 7 and an open mouth 8. The sides 6 are gusseted to allow expansion when the bag 3 is loaded with produce.

[0031] First and second side handles 10,12 extend away from the body portion 4 at opposite sides of the open mouth 8. The first and second handles 10,12 are in the form of conventional double ply looped handles. Front and rear tabs 14 extend from the front wall 5 and

rear wall respectively. The tabs 14 extend from the centre of the mouth 8, mid-way between the first and second handles 10,12 and have a first end 15, which is integral with the body portion 4, and second end 16, spaced from the mouth of the bag 8.

[0032] The tabs 14 are tapered along their length in a direction away from the body portion 4. The tabs 14 are generally "T" shaped, comprising a stem 14a extending away from the mouth 8 of the bag 3 and a cross bar 14b, extending perpendicularly to the stem 14a at the second end 16 of the tab 14.

[0033] The tabs 14 are provided with a centrally located aperture 26 at the second end 16. A cut 28 is provided in the tabs 14 extending from the top edge of the tabs 14 at the second end 16 towards the aperture 26. The cut 28 creates a line of weakness such that the bag material will break at this location when a force is applied within the aperture 26

[0034] The first and second handles 10,12 comprise inward projections 11,13 which extend perpendicularly to the main portion of the handles 10,12, towards the tabs 14. The inward projections 11,13 are separably attached at lines of weakening 18,19. The lines of weakening 18,19 comprise cuts in the bag material which causes these points to fail when the bag 3 is pulled from the stack 2. The lines of weakening 18,19 may be in any suitable form of weakening, such as, but not limited to, cuts, perforations, nicks and scores.

[0035] On each side of the tabs 14, the handles 10,12, tabs 14 and mouth 8 define a through channel 20,21. In use, these through channels 20,21 may receive a prong of a dispensing plate or dispenser in order to support the stack 2 on the dispensing plate or dispenser. Other means of supporting the stack on a dispenser are also possible.

[0036] A bottom tab 30 is provided on the bottom edge 7 of each bag 3 extending away from the body portion 4 of the bag 3. The bottom tab 30 is provided with a centrally located aperture 32. A cut 34 is provided in the bottom tab 30, extending from an edge of the tab 30 towards the aperture 32. The cut 34 creates a line of weakness such that the bag material will break at this location when a force is applied within the aperture 32.

[0037] Referring now to Fig. 2, this shows the stack 2 of bags 3 of Fig. 1 in a folded condition. The bottom edge 7 of each bag 3 has been folded about a transverse line 29 spaced between the bottom edge 7 and the mouth 8 of the bag 3 such that the handles 10, 12 of the bag 3 lie on top of the bottom edge 7 of the bag 3. The aperture 32 on the bottom tab 30 is aligned with the apertures 26 on the front and rear tabs 14. The bags 3 may be held in the folded condition by a retaining member. The retaining member may be provided on a dispensing plate or dispenser, for example a prong which passes through the apertures 26, 32.

[0038] Providing the bags 3 in a folded condition offers a number of advantages. Firstly, it is space saving as the bags 3 do not hang at their full length. This also makes them appear neater. Furthermore, it makes the dispensing action easier and less prone to user mistakes. In previous embodiments of bags and dispensers there has been a tendency for users to grasp the bags from the bottom edge, regardless of the presence of a tab, and pull. This is not the intended method of removal and will result in the bag or bags being dispensed in a closed condition and possibly more than one bag being dispensed. However, in the present invention a user may grasp the top bag either by the tab 14 or in the region of the fold 29 and it will dispense correctly.

[0039] Alternatively, as shown in Fig. 3, the retaining member 40 may be a discrete member, for example a piece of string, which passes through the apertures 26, 32 and around a portion of the tabs 14, 30. The present invention only requires a single retaining member 40, which is capable of retaining the bags 3 in the folded condition. The retaining member 40 secures the bottom tab 30 directly to the front and rear tabs 14. This enables the bags 3 to be delivered in a folded state. The bags 3 may be used on existing dispensers without modification.

[0040] In use the bags 3 are provided for dispensing in their folded condition. This may be achieved by virtue of the bags 3 being supplied with a retaining member, as shown in Fig. 3, or an operator may be required to load the bags onto a dispenser in such a manner that a retaining prong passes through the apertures 26, 32 and retains the bags 3 in their folded condition. The process of removing a bag 3 from the stack 2 will now be described in relation to a stack 2 with a discrete retaining member 40 mounted on a dispensing plate (not shown). The dispensing plate may be of a simple construction comprising a steel plate and two hooks or prongs which are provided to pass through the through channels 20, 21 defined by the tabs 14, handles 10, 12 and mouth 8 of the bags 3.

[0041] In order to remove a first bag 3 from the stack 2 a user (which may typically be a store employee) grasps the top bag 3 of the stack 2 in the region of the transverse fold 29 and pulls in a direction away from the stack 2. As the bag 3 is pulled away the front wall 5 begins to separate from the rear wall and this causes the bag 3 to begin to open. As the front wall 5 separates from the rear wall the aperture 26 on the front tab 14 breaks at the line of weakness 28, causing it to break away from the retaining member 40. The aperture 32 on the bottom tab 30 is also subjected to a force at this point and breaks at the line of weakness 34, freeing it from the retaining member40. Next, the handles 10,12 are pulled forward such that the cross bar 14b and inward projections 11,13 are pulled against the prongs of the dispenser.

[0042] The strain exerted by the pulling action causes the lines of weakening 18,19 between the tab 14 and the handles 10,12 to break. The pulling force is now directed onto the rear tab 14 of the top bag, which is attached to the front tab 14 of the next bag in the stack by virtue of the corona discharge treatment. Continued pulling causes the lines of weakening 18,19 between the front tab and handles of the next bag 3 on the stack 2 to break

and the front tab 14 is pulled forward. Finally, the attachment between the rear tab 14 of the top bag 3 and the front tab 14 of the next bag 3 is broken and the top bag 3 is fully removed in a partially open condition. The next bag 3 is now the top bag 3 in the stack 2. It is important that the attachment between the rear tab 14 of the top bag 3 and the front tab 14 of the next bag 3 remains in place until after the lines of weakening 18,19 between the front tab 14 and handles 10,12 of the next bag 3 has broken. This ensures that the front tab 14 is pulled forwards.

[0043] When a user comes to remove the next bag 3 from the stack 2 they may do so by grasping the tab 14 and pulling in a direction away from the stack, or by grasping the bag 3 in the region of the transverse fold 29 and pulling.

Claims

1. A stack of bags, each bag of the stack comprising a body portion formed by front and rear walls having closed sides, a closed bottom and an open mouth, first and second spaced apart side handles extending from the body portion and front and rear tabs extending from the front and rear walls respectively, the front and rear tabs being centrally located between the first and second handles and being provided with aligned apertures at an end remote from the mouth, the tabs being separably attached to the first and second handles at attachment points spaced from the mouth of the bag, the closed bottom being provided with a bottom tab extending away from the body portion and being provided with a centrally located aperture, wherein the stack can be folded about a transverse fold line between the closed bottom and the mouth of the bag, such that the aperture on the bottom tab is aligned with the apertures on the front and rear tabs for receiving a retention member, wherein the stack is provided with a retention member which passes through the aperture on the bottom tab and the apertures on the front and rear tabs when the bags are in the folded condition to retain the stack in said condition.

2. A stack of bags according to claim 1, wherein each bag in the stack is attached to the next bag in the stack.

3. A stack of bags according to claim 2, wherein at least a portion of the rear tab of one bag in the stack is attached to at least a portion of the front tab of the next bag in the stack.

4. A stack of bags according to any preceding claim, wherein the bottom tab is provided with an area of weakening adjacent the aperture.

5. A stack of bags according to any preceding claim, wherein the front and rear tabs are provided with an area of weakening adjacent the apertures.

6. A stack of bags according to claim 4 or claim 5, wherein the area of weakening comprises a cut in the bag material.

7. A stack of bags according to any preceding claim, wherein the front and rear tabs are separably attached to the first and second handles at lines of weakening.

8. A stack of bags according to any preceding claim, wherein the front tab of each bag comprises markings to direct a user to grasp the tab in order to remove the bag from the stack.

9. A stack of bags according to claim 8, wherein the front tab of each bag is a contrasting colour to the body portion of the bag.

10. A combination of a stack of bags and a dispensing plate, each bag of the stack comprising a body portion formed by front and rear walls having closed sides, a closed bottom and an open mouth, first and second spaced apart handles extending from the body portion and front and rear tabs extending from the front and rear walls respectively, the front and rear tabs being centrally located between the first and second handles and being provided with aligned apertures at an end remote from the mouth, the tabs being separably attached to the first and second handles at attachment points spaced from the mouth of the bag, the closed bottom being provided with a bottom tab extending away from the body portion and being provided with a centrally located aperture, the stack being folded about a transverse fold line between the closed bottom and the mouth of the bag, such that the aperture on the bottom tab is aligned with the apertures on the front and rear tabs, the dispensing plate being provided with support means which engage with the stack to support it for dispensing of individual bags, wherein a retaining member passes through the aperture on the bottom tab and the apertures on the front and rear tabs to retain the stack in the folded condition, the retaining member being provided on the stack of bags.

11. A combination according to claim 10, wherein the dispensing plate is provided with means for securing it to a surface.

12. A combination according to claim 10 or claim 11, wherein the dispensing plate is configured to cooperate with a dispenser.

13. A stack of bags substantially as hereinbefore de-

scribed, with reference to the accompanying drawings.

14. A combination substantially as hereinbefore described with reference to the accompanying drawings.

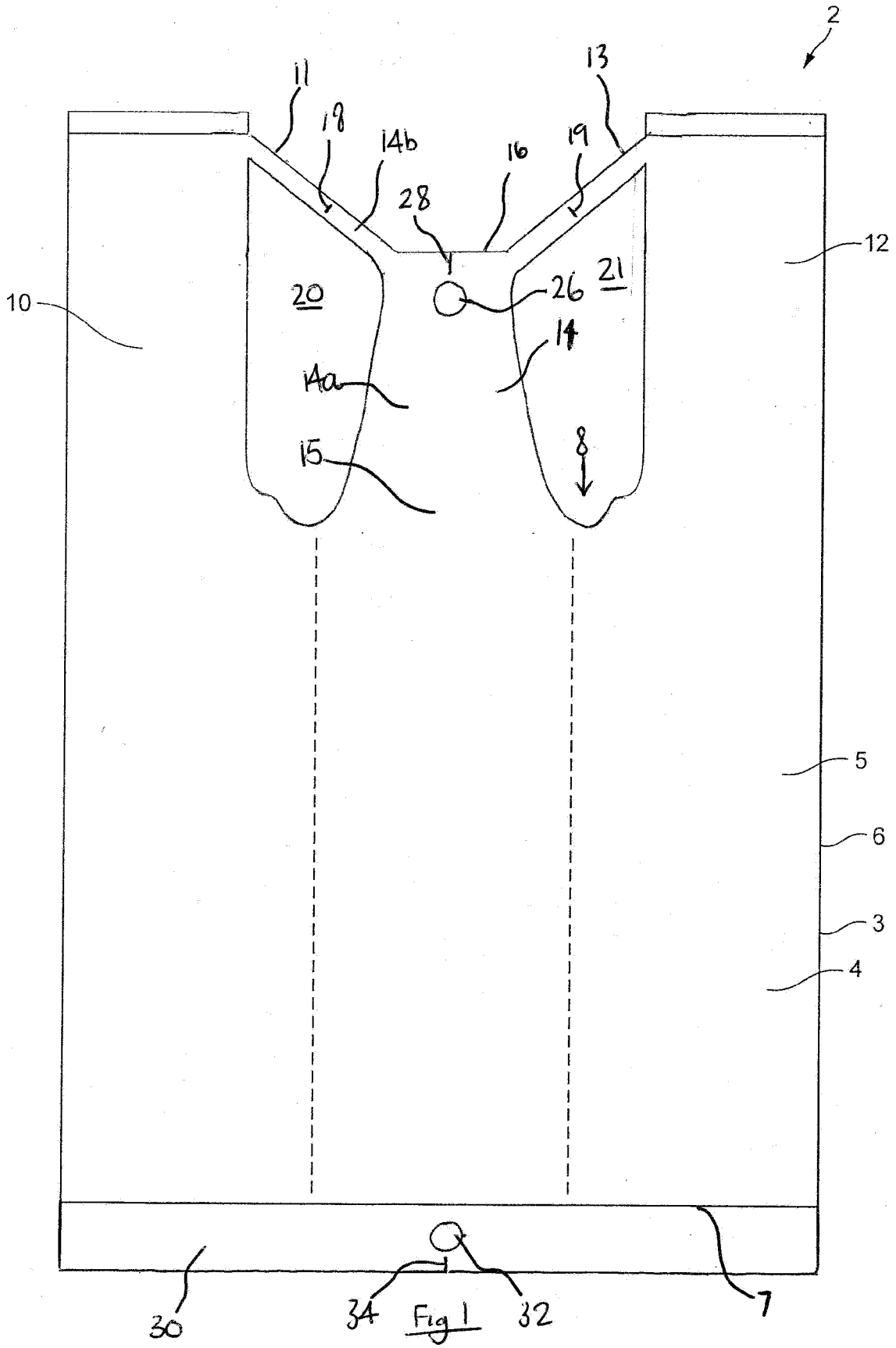

Fig 1

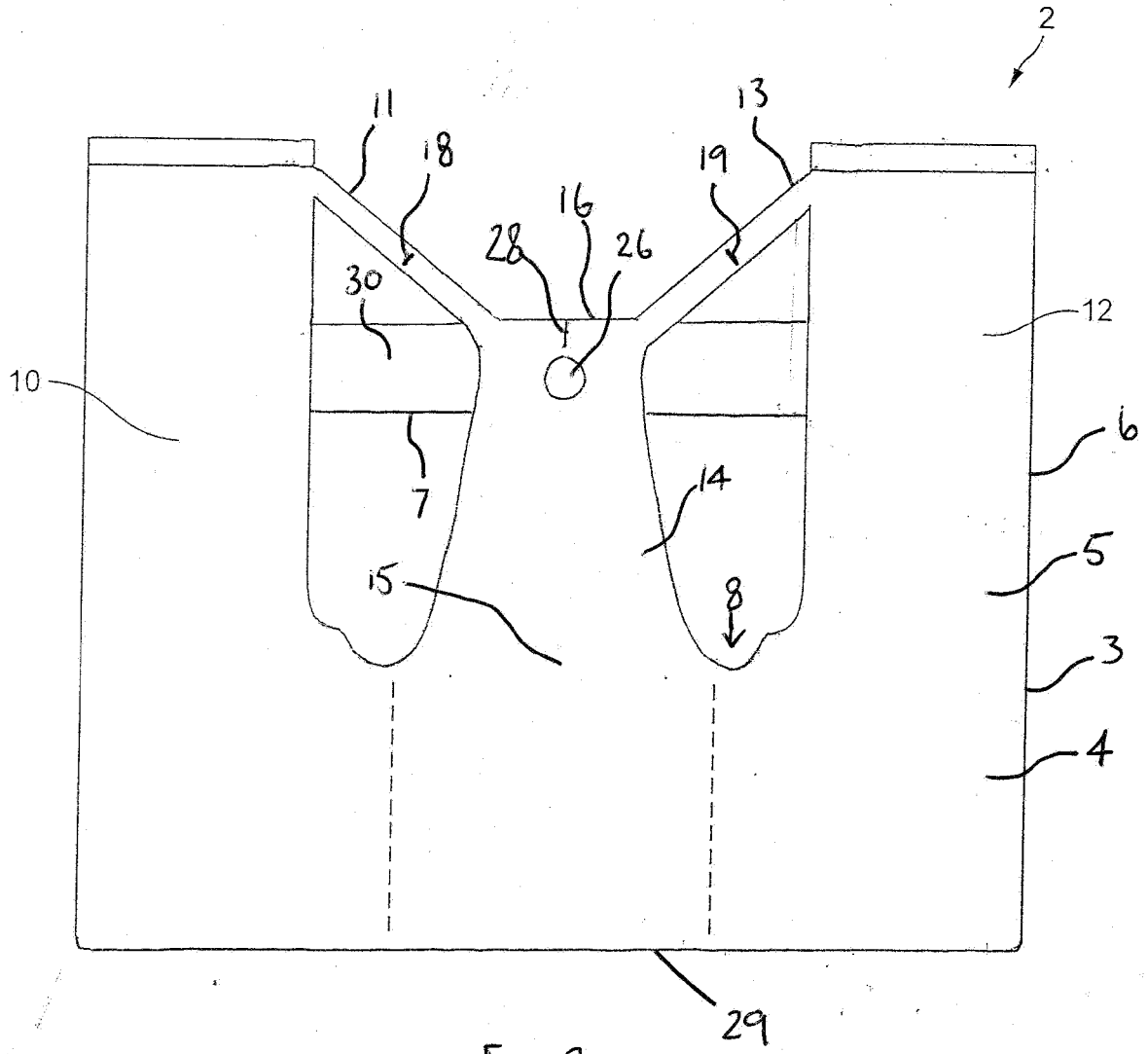

Fig. 2

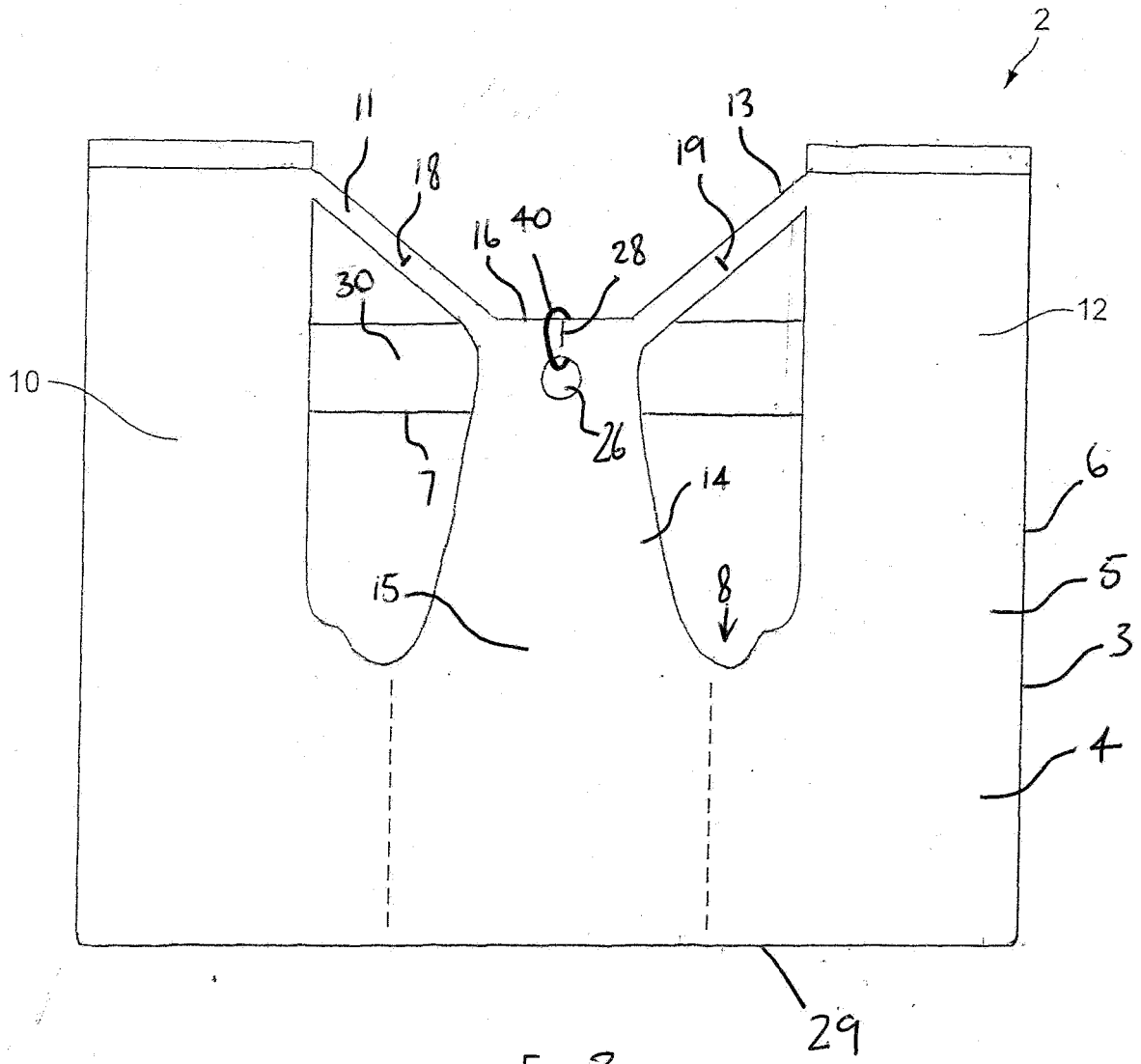

Fig. 3

European Patent Office

PARTIAL EUROPEAN SEARCH REPORT

which under Rule 45 of the European Patent Convention shall be considered, for the purposes of subsequent proceedings, as the European search report

Application Number EP 07 11 2876

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 Y	GB 2 332 422 A (EURO PACKAGING PLC [GB]; BOLTON SIMON MARK [GB]) 23 June 1999 (1999-06-23) * page 15, line 6 - page 17, line 2; figures 9-12 *	1-7, 10-12 8,9	INV. B65D33/00
Y	EP 1 270 429 A (CHUM TUNG HANG [CN]) 2 January 2003 (2003-01-02) * paragraph [0021]; figures 1-3 *	8,9	
A	WO 2005/113356 A (EPS FZC [AE]; DICKINSON ADAM [GB]) 1 December 2005 (2005-12-01) * page 7, paragraph 4 - page 8, paragraph 1; figures 1-9 *	1,10	

TECHNICAL FIELDS SEARCHED (IPC)

B65D
A47F

INCOMPLETE SEARCH

The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC to such an extent that a meaningful search into the state of the art cannot be carried out, or can only be carried out partially, for these claims.

Claims searched completely :

Claims searched incompletely :

Claims not searched :

Reason for the limitation of the search:

see sheet C

Place of search	Date of completion of the search	Examiner
Munich	23 October 2007	Grondin, David

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

3

EPO FORM 1503 03.82 (P04C07)

European Patent Office

INCOMPLETE SEARCH SHEET C

Application Number
EP 07 11 2876

Claim(s) searched completely:
1-12

Claim(s) not searched:
13-14

Reason for the limitation of the search (non-patentable invention(s)):

Rule 29(6) EPC

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 07 11 2876

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.

23-10-2007

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 2332422 A	23-06-1999	AT 294754 T	15-05-2005
		AU 750790 B2	25-07-2002
		AU 1570999 A	05-07-1999
		CA 2315005 A1	24-06-1999
		CN 1285798 A	28-02-2001
		DE 69830080 D1	09-06-2005
		DE 69830080 T2	19-01-2006
		EP 1053187 A1	22-11-2000
		WO 9930985 A1	24-06-1999
		JP 2002508287 T	19-03-2002
		US 6655546 B1	02-12-2003
EP 1270429 A	02-01-2003	CN 1326890 A	19-12-2001
		DE 20113073 U1	18-10-2001
		ZA 200107778 A	20-03-2002
WO 2005113356 A	01-12-2005	EP 1755972 A1	28-02-2007

EPO FORM P0459

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

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- US 5421803 A **[0005]**
- GB 2309957 A **[0006] [0007]**
- US 5087234 A **[0008] [0008] [0016]**
- GB 2391538 A **[0010] [0025]**
- GB 2395938 A **[0010] [0025]**