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(54) **Easy-Open film bag, dispensing arrangement and method of manufacture for same**
Einfach zu öffnender Filmbeutel, Abgabevorrichtung dafür und Verfahren zu seiner Herstellung
Sachet de film à ouverture facile, arrangement de distribution et son procédé de fabrication

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(73) Proprietor: **Chum, Tung Hang
Fo Tan, Shatin New Territories,
Hong Kong (CN)**

(72) Inventor: **Chum, Tung Hang
Fo Tan, Shatin New Territories,
Hong Kong (CN)**

(74) Representative: **Godwin, Edgar James
Marks & Clerk
90 Long Acre
London WC2E 9RA (GB)**

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Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] This invention relates to the manufacture and dispensing of plastic bags and more particularly to a manufacturing method and arrangement of multiple plastic bags from which open bags are dispensed individually and which presents an conspicuous retrieval point for each bag.

2. Description of the Related Art

[0002] Plastic bags have become the preferred means for packaging goods sold in shops and markets throughout the world. As manufacturing techniques become more sophisticated, bags have become extremely thin, complicating their storage, dispensing and use. Currently, it is known to stack multiple thin film plastic bags and bond them together at one or more points so that the assembled stack of bags can be stored and displayed neatly. The bonded portions are typically not part of the bag itself but part of a bag root from which each bag breaks away at perforations between the bag and bag root.

[0003] Typically, the consumer or clerk grasps any convenient portion of the bag and exerts pulling force to break the perforations and separate a bag from the bag root. This motion does not usually open the bag. The thin film from which bags are constructed is inherently flimsy and prone to static charge. The limp nature of the film combined with static charges cause the inner layers of the bag to cling together, making opening of the bag inconvenient and time consuming. Frequently, opening the bag requires extensive manipulation that potentially contaminates the bag. Additionally, the user frequently grasps and retrieves more than one bag. This often results in unused bags being thrown away.

[0004] There is a need in the art for an arrangement for dispensing plastic bags which is not only practical for transportation and display but also overcomes the inconveniences associated with bag retrieval and opening as described above.

[0005] US-A-6 105 780 discloses a plastic bag made from a co-extruded film having a first ply of HDPE which forms the inner walls of the bag, and a second ply of LDPE, which forms the outer walls.

SUMMARY OF THE INVENTION

[0006] The invention provides a plastic bag as set forth in claim 1.

[0007] Briefly stated, a preferred embodiment of the invention comprises the manufacture of a thin film plastic bag where the body of the bag is high-density polyethylene (HDPE) with a strip of low-density polyethylene

(LDPE) applied to a portion of front and back outside surfaces of the bag at mutually opposite locations. The LDPE has a lower melting point than the HDPE. The invention then utilizes the different melting points to form an easily breakable bond connecting the outside surfaces of adjacent bags in a stack. Thus, when a first bag is retrieved from the stack of bags, it draws with it the front side of the following bag while the bond to the next bag restrains the rear side. In this manner, the clerk or consumer is always presented with an obvious and conveniently graspable portion of an already open bag for retrieval. Physical manipulation, i.e., shaking, blowing or rubbing is not required to open the bag, lowering the chances of contamination. Bags are retrieved individually, overcoming the common problem in the prior art where multiple bags are retrieved in error.

[0008] The invention also provides a method of manufacturing a dispensing arrangement, as set forth in claim 4, a dispensing arrangement as set forth in claim 7, and a method of manufacturing a plastic bag, as set forth in claim 12.

[0009] In accordance with a further aspect of the invention, a flexible separation tab may be attached to the stack of bags in a position to separate the front and back portions of the top bag in the stack. The separation tab deflects from this position as the top bag is retrieved, then moves back into place separating the front and back portions of the following bag. The separation tab may be brightly colored to indicate a highly visual and well defined retrieval point. Thus, a clearly delineated retrieval point is presented, eliminating the grasping of multiple bags.

[0010] In accordance with another aspect of the invention, the inventive composite HDPE/LDPE bag and bonding method may be applied to known hanging bag arrangements as well as stacks of bags that are dispensed from a box or other container. In either configuration, a clearly defined retrieval point is presented to the clerk/consumer and bags are dispensed open and one at a time.

[0011] It is an object of the present invention to provide a new and improved plastic bag, arrangement for dispensing plastic bags and manufacturing method for plastic bags and plastic bag dispensing arrangements which ensure the dispensing of individual bags that are open and ready for use.

[0012] Another object of the present invention is to provide a new and improved thin film plastic bag that permits a stack of the bags to be assembled in which retrieval of a bag opens the following bag.

[0013] A further object of the present invention is to provide a new and improved dispensing arrangement of plastic bags which presents a clearly defined retrieval point to the user.

[0014] These and other objects, features, and advantages of the invention will become readily apparent to those skilled in the art upon reading the description of the preferred embodiments, in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015]

Figure 1 is a front plan view of a hanging dispensing arrangement of bags in accordance with the present invention;

Figure 2 is an exploded view of an arrangement of bags to be dispensed from an enclosure in accordance with the present invention; and

Figure 3 is a sectional end view through one full bag and a partial second bag illustrating the bond between outside bag layers in accordance with the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0016] Referring more particularly to Figures 1 through 3, wherein like numerals refer to similar parts, Figure 1 illustrates a hanging dispensing arrangement 10 of film bags 2 in accordance with the present invention. The bags 2 are primarily manufactured from high-density polyethylene (HDPE). The HDPE preferably has a molecular weight in the range of between 0.935 and 0.95. HDPE of this molecular weight will typically have a softening/melting point in a range of from 135°C to 160°C. HDPE bags of conventional thickness have proven to be practical for purposes of implementation of the present invention.

[0017] In accordance with one aspect of the present invention, during extrusion of the bags a localised layer 1 of low-density polyethylene (LDPE) is applied to a portion of each of the primary outside surfaces, i.e., the front and back outside surfaces of each film bag 2. The LDPE preferably has a molecular weight in the range of approximately 0.92 or less. LDPE having this molecular weight will typically have a softening/melting point in the range of from 90°C to 105°C. The LDPE is preferably applied in a layer thickness of less than 0.002mm and more preferably less than 0.001 mm.

[0018] The bags are manufactured using common extrusion and partial combination. These methods of plastic bag manufacture are well known and understood by those of skill in the art. During bag manufacture the LDPE is included during extrusion of the bag material. The HDPE and LDPE are extruded at the same time. The LDPE material is then partially combined on the outside of the HDPE bag material to form an external layer. At the extrusion stage, the bag material may be extruded as a tube or as a sheet. The LDPE localised layer 1 is preferably a strip extending along a portion of the bag material that will be positioned at the median of the finished bags. Thus, in accordance with one aspect of the present invention, when the bags are stacked and cut, the LDPE strip preferably coincides with the center of the bag opening 3.

[0019] Figure 3 is a sectional view through one bag

and a partial second bag. The bag body 2 is constructed of HDPE, which in this case is extruded as a tube. A strip 1 of LDPE is partially combined or bonded to opposite outside surfaces of the HDPE tube. The tube is folded, cut and formed into bags as described herein. Heat is applied to form a bond 7 between the external LDPE portions 1. The temperature applied is in a range to partially melt the LDPE but is insufficient to soften or melt the HDPE bag body 2. The inside surfaces of the bag, being constructed of HDPE, remain free of each other.

[0020] Individual bags 2 are cut from the extruded tube or formed from the sheet bag material as is known in the art. The illustrated bags 2 are formed from an extruded tube of bag material and are of the type having symmetrical handles on either side of an opening 3. An area of the extruded tube above the opening and between the handles is utilized as a bag root 4. In manufacturing steps, perforations 5 are provided between the bag root 4 and the bag 2, while a seal 16 is applied to the top of the handles and the bottom of the bag. Some of the HDPE material is removed and recycled into additional bags. Of course the invention as herein described is compatible with other bag configurations.

[0021] Melted through holes 6 connect all the bag roots 4. Individual bags 2 separate from the connected bag roots at the perforations 5. The 'through holes 6 permit the dispensing arrangement 10 to be hung in a convenient location for use by the consumer or clerk as is currently known in the art.

[0022] Figure 1 illustrates a hanging arrangement for dispensing bags 2. In accordance with one aspect of the present invention, the bags are stacked in multiples of approximately 50 to 300, although other smaller or larger stacks may be desirable. Heat and pressure are applied to the stacked bags in a location corresponding to the LDPE film portions 1. As an example: For a stack of 100 bags manufactured from HDPE film of 0.007mm thickness with an LDPE layer 1 of less than 0.001mm thickness, heat is applied by means of heated pressure points disposed on opposite sides of the stack. The configuration and position of the heated pressure points determines the configuration and position of the resulting bond 7 between bag outside surfaces. A temperature of approximately 100°C is applied for a period of approximately 30 seconds. As a result, a bond 7 is formed between the localised LDPE layers 1, joining only the outside surfaces of adjacent bags in the stack.

[0023] The bag bodies comprised of HDPE have a higher melting point than the LDPE layer. As a result, while the outside surfaces of adjacent bags are joined, the inside surfaces of the bags remain separate. Further, the bond formed between the thin LDPE layers 1 on the outside surfaces of the bags is relatively weak. A thicker LDPE layer would result in an undesirably robust bond. The LDPE layer is preferably less than 0.002mm in thickness and even more preferably less than 0.001mm. Thus, when a consumer or clerk grasps a first bag, the inside surfaces separate easily. The front portion of a

first bag is retrieved by the user while the rear portion of the first bag is held back via its connection 7 to the following bag. Each bag is opened in a reliable and predictable manner. Further, during retrieval of a bag, the front portion of the following bag is pulled away from the rear layer.

[0024] In accordance with a further particular aspect of the invention, a flexible separation tab 14 is arranged to maintain the separation between front and rear layers initiated by retrieval of the previous bag. The separation tab 14 flexes out of the way while a bag is being retrieved but falls back to maintain the separation between the layers of the next bag in the stack. The separation tab 14 is preferably solid brightly colored heavy gage polyethylene. The separation tab clearly indicates where the next bag is to be grasped and retrieved. The top surface of the next bag will always be sequentially separated from the stack by the separation tab 14. The separation tab 14 may be fixed to the bag root (as illustrated), may be clipped on or otherwise arranged to remain adjacent the bag opening.

[0025] Figure 2 illustrates an alternative dispensing arrangement 20 of bags configured to be dispensed from a box or other container. The bags incorporated into this arrangement are for all practical purposes identical to the bags described with respect to the arrangement of Figure 1. The manufacturing of the bags 2 and formation of the bonds 7 between bags are carried out as described above with reference to the hanging dispensing arrangement 10.

[0026] In the contained dispensing arrangement 20, the bag root 4 consists of portions adjacent each handle and a portion adjacent the bag opening. The bags are formed and stacked as described above. The bag root portions 4 are melted together. The thermal bond 7 is then formed as described above with reference to hanging dispensing arrangement 10. The thermal bond 7 joins the outside surfaces of adjacent bags as previously discussed. In the illustrated embodiment, the stacked, bonded bags are arranged on and fixed to a rigid baseboard 9 by the bag roots 4. Perforations 5 are provided between the bag roots and the bags themselves. Other bag dispensing configurations that may include other localised LDPE layer configurations, may occur to one of skill in the art. The illustrated embodiments are given by way of illustration only and are not intended to limit the invention disclosed herein.

[0027] The stacked bonded bags and baseboard 9 are inserted into a box, plastic sack 11 or other container having an opening 12. The opening 12 is arranged so that a retrieval portion 8 of the top bag protrudes from the opening. The container may be a permanently mounted, re-fillable dispenser (not illustrated). The clerk or consumer grasps the retrieval portion 8 to retrieve a bag. The bond 7 between outside layers of the bags restrains the rear portion of the bag being retrieved. This forces the bag to open while being retrieved. Each bag separates from the bag roots 4 along perforations 5. The bond

7 pulls the next retrieval portion 8 through the opening breaking the first perforations 5 adjacent the upper central bag root 4.

[0028] In this illustrated embodiment 20 and in accordance with another aspect of the present invention, the connection between bag 2 and root 4 formed by perforations 5 adjacent the upper central bag route is preferably less robust than the connection between bag 2 and root portions formed by perforations adjacent the handle bag roots 4. The thermal bond 7 between adjacent bag outside layers thus is strong enough to break the perforation at the upper central bag root and pull the next retrieval portion 8 through the opening before the bag connections to the handle roots restrain the bag and break the bond 7. Only the bag being retrieved is touched or exposed to the atmosphere. This arrangement maintains the stacked bags neatly and in a clean environment.

[0029] The strength of the thermal bond 7 and the connections formed by the perforations can be adjusted as necessary to provide a desired bag-opening and tear off properties for a given bag dispensing arrangement. Thermal bonds having a larger surface area will be stronger than thermal bonds having a smaller surface area. Multiple bonds are stronger than single bonds. Perforated connections in which the webs of bag material between perforations are smaller will be weaker than perforated connections in which the webs of bag material are more substantial. Also, the thickness of the bag film and thickness of the low melting point layer will affect the strength of the thermal bond and perforated connections.

[0030] A preferred embodiment of extruded HDPE bag with LDPE partial layer has been disclosed. It will occur to those skilled in the art that other bag materials might utilize the principles of the present invention. For example, a polypropylene bag material with a layer of LDPE may prove to be a practical embodiment of the invention. Other polymer films or sheet materials may also be applicable.

[0031] While preferred embodiments of the foregoing invention have been set forth for purposes of illustration, the foregoing description should not be deemed a limitation of the invention herein. Accordingly, various modifications, adaptations and alternatives may occur to one skilled in the art without departing from the spirit and the scope of the present invention.

Claims

1. A plastic bag (2) comprising a bag body constructed from a first plastic film having a first melting temperature, the bag body having front and rear outside and inside surfaces;
characterised in that front and rear localised layers (1) of a second plastic film having a second melting temperature lower than the first melting temperature are deposited on respective portions of the front and rear outside surfaces at mutually opposite locations.

2. The plastic bag of claim 1, wherein the localised layers (1) extend along medians of the front and rear outside surfaces respectively.
3. The plastic bag of claim 1, wherein the first plastic film is high-density polyethylene [HDPE] and the second plastic film is low-density polyethylene [LDPE].
4. A method of manufacturing a dispensing arrangement of plastic bags, comprising the steps of:
 - arranging a plurality of plastic bags (2) in a stack with each bag in contact with a preceding and a subsequent bag; and
 - applying heat and pressure to the stack, the heat and pressure sufficient to form a bond between the adjacent bags without forming a bond between the inside surfaces of any bags in the stack;
 - each plastic bag (2) comprising a bag body constructed from a first plastic film having a first melting temperature, the bag body having front and rear outside and inside surfaces;
 - characterised in that** front and rear localised layers (1) of a second plastic film having a second melting temperature lower than the first melting temperature are deposited on respective portions of the front and rear outside surfaces, and the location of the front localised layer (1) of each bag (2) is opposite the location of the rear localised layer (1) of the next bag (2) so that the bond is formed between these two layers by the heat and pressure.
5. The method of claim 4, wherein a heat of approximately 100°C is applied by means of a heated element.
6. The method of claim 5, wherein said heated element applies a constant pressure to the stack.
7. A dispensing arrangement of plastic bags (2) having inside and outside surfaces, the dispensing arrangement comprising:
 - a plurality of said plastic bags (2) disposed in a stack in contact with each other, wherein adjacent bags in the stack are bonded together at a given location and said inside surfaces are not bonded together at the given location, and
 - wherein each plastic bag (2) comprises a bag body constructed from a first plastic film having a first melting temperature, the bag body having front and rear outside and inside surfaces;
 - characterised in that** front and rear localised layers (1) of a second plastic film having a second melting temperature lower than the first melting temperature are deposited on respective portions of the front and rear outside surfaces, and the location of the front localised layer (1) of each bag (2) is opposite the location of the rear localised layer (1) of the next bag (2), these two layers being bonded together by heat and pressure at said given location.
8. The dispensing arrangement of claim 7, wherein each bag in said arrangement includes an open end (3) and a closed end and said given location is adjacent said open end.
9. The dispensing arrangement of claim 8, wherein each bag in said arrangement comprises a bag root (4) connected to said open end by a perforated attachment (5) and said bag roots (4) are connected to each other, said arrangement further comprising:
 - a separation tab (14) configured to project into the open end (3) of a top bag in said stack.
10. The dispensing arrangement of claim 9, wherein said separation tab (14) is resiliently flexible, such that said separation tab (14) deflects during disconnection of said top bag from said stack and returns to a position projecting into the open end of a top bag in said stack.
11. The dispensing arrangement of claim 7, wherein said plurality of plastic bags (2) are surrounded by a container (11), said container having an opening (12) through which a retrieval portion of a top bag in the stack protrudes, said opening (12) and the bond between the top bag and the next bag being configured such that withdrawal of said top bag pulls a retrieval portion (8) through said opening (12) after which said bond breaks.
12. A method of manufacturing a plastic bag, comprising:
 - providing a bag body constructed of a first plastic film having a first melting temperature, said bag body having front and rear inside and outside surfaces;
 - characterised by** bonding front and rear localised layers (1) of a second plastic having a second melting temperature lower than said first melting temperature to respective portions of the front and rear outside surfaces at mutually opposite locations.
13. The method of claim 12, wherein the step of providing comprises extruding the bag body from HDPE and the step of bonding comprises partial recombination of each localised layer (1) to the respective outside surface of the bag body, each localised layer (1) com-

prising LDPE.

14. The method of claim 12, wherein each said localised layer (1) comprises a strip of LDPE.
15. The method of claim 12, wherein said localised layers (1) extend along medians of the front and rear outside surfaces respectively.

Patentansprüche

1. Kunststoffbeutel (2), umfassend einen Beutelnkörper aus einem ersten Kunststofffilm mit einer ersten Schmelztemperatur, wobei der Beutelnkörper vordere und hintere Außen- und Innenflächen aufweist; **dadurch gekennzeichnet, dass** die vorderen und hinteren örtlich begrenzten Schichten (1) eines zweiten Kunststofffilms mit einer zweiten Schmelztemperatur, die niedriger als die erste Schmelztemperatur ist, auf entsprechenden Abschnitten der vorderen und hinteren Außenflächen an sich gegenüberliegenden Stellen abgelagert werden.
2. Kunststoffbeutel nach Anspruch 1, wobei die örtlich begrenzten Schichten (1) sich jeweils entlang der Mitte der vorderen und hinteren Außenflächen erstrecken.
3. Kunststoffbeutel nach Anspruch 1, wobei der erste Kunststofffilm aus Polyethylen hoher Dichte [HDPE] und der zweite Kunststofffilm aus Polyethylen niedriger Dichte [LDPE] besteht.
4. Verfahren zur Herstellung einer Abgabeanordnung für Kunststoffbeutel, umfassend folgende Schritte:

Anordnen einer Mehrzahl von Kunststoffbeuteln (2) in einem Stapel, wobei jeder Beutel in Kontakt mit dem vorhergehenden und dem nachfolgenden Beutel steht; und
Anlegen von Wärme und Druck an den Stapel, wobei Wärme und Druck ausreichend sind, um eine Bindung zwischen den aneinander angrenzenden Beuteln zu bilden, ohne dass eine Bindung zwischen den Innenflächen irgendwelcher Beutel im Stapel gebildet wird;
wobei jeder Kunststoffbeutel (2) einen Beutelnkörper umfasst, der aus einem ersten Kunststofffilm mit einer ersten Schmelztemperatur hergestellt ist, und der Beutelnkörper vordere und hintere Außen- und Innenflächen aufweist;
dadurch gekennzeichnet, dass vordere und hintere örtlich begrenzte Schichten (1) eines zweiten Kunststofffilms mit einer zweiten Schmelztemperatur, die niedriger als die erste Schmelztemperatur ist, auf entsprechenden Abschnitten der vorderen und hinteren Außenflächen

chen abgelagert werden, und die Stelle der vorderen örtlich begrenzten Schicht (1) jedes Beutels (2) gegenüber der Stelle der hinteren örtlich begrenzten Schicht (1) des nächsten Beutels (2) liegt, so dass die Bindung zwischen diesen beiden Schichten durch Wärme und Druck gebildet ist.

5. Verfahren nach Anspruch 4, wobei eine Wärme von ungefähr 100°C mittels eines Heizelements angelegt wird.

6. Verfahren nach Anspruch 5, wobei das Heizelement einen konstanten Druck an den Stapel anlegt.

7. Abgabeanordnung von Kunststoffbeuteln (2), die Innen- und Außenflächen aufweisen, wobei die Abgabeanordnung umfasst:

eine Mehrzahl von Kunststoffbeuteln (2), die in einem Stapel in Kontakt miteinander angeordnet sind,
wobei aneinander angrenzende Beutel im Stapel an einer gegebenen Stelle aneinander gebunden sind, und die Innenflächen an der gegebenen Stelle nicht aneinander gebunden sind, und
wobei jeder Kunststoffbeutel (2) einen Beutelnkörper umfasst, der aus einem ersten Kunststofffilm mit einer ersten Schmelztemperatur hergestellt ist, und der Beutelnkörper vordere und hintere Außen- und Innenflächen aufweist;
dadurch gekennzeichnet, dass die vorderen und hinteren örtlich begrenzten Schichten (1) eines zweiten Kunststofffilms mit einer zweiten Schmelztemperatur, die niedriger als die erste Schmelztemperatur ist, auf entsprechenden Abschnitten der vorderen und hinteren Außenflächen abgelagert werden, und die Stelle der vorderen örtlich begrenzten Schicht (1) jedes Beutels (2) gegenüber der Stelle der hinteren örtlich begrenzten Schicht (1) des nächsten Beutels (2) liegt, und diese beiden Schichten an der gegebenen Stelle durch Wärme und Druck aneinander gebunden werden.

8. Abgabeanordnung nach Anspruch 7, wobei jeder Beutel in der Anordnung ein offenes Ende (3) und ein geschlossenes Ende beinhaltet und ein geschlossenes Ende und die gegebene Stelle neben dem offenen Ende liegen.

9. Abgabeanordnung nach Anspruch 8, wobei jeder Beutel in der Anordnung eine Beutelwurzel (4) umfasst, die über ein perforiertes Element (5) mit dem offenen Ende verbunden ist, und die Beutelwurzeln (4) miteinander verbunden sind, wobei die Anordnung ferner umfasst:

Eine Trennzunge (14), die so ausgestaltet ist, dass sie in das offene Ende (3) des obersten Beutels im Stapel hineinragt.

10. Abgabeanordnung nach Anspruch 9, wobei die Trennzunge (14) elastisch dehnbar ist, so dass die Trennzunge (14) bei der Trennung des obersten Beutels vom Stapel gebogen wird und sie zurück in die Position geht in welcher sie in das offene Ende eines obersten Beutels im Stapel hineinragt. 5
11. Abgabeanordnung nach Anspruch 7, wobei die Mehrzahl von Kunststoffbeuteln (2) von einem Behälter (11) umgeben sind, wobei der Behälter eine Öffnung (12) aufweist, durch die ein Wiederherstellungsabschnitt eines obersten Beutels im Stapel herausragt, wobei die Öffnung (12) und die Verbindung zwischen dem obersten Beutel und dem nächsten Beutel so konfiguriert ist, dass das Entfernen des obersten Beutels einen Wiederherstellungsabschnitt (8) durch die Öffnung (12) zieht, wonach die Verbindung kaputt geht. 10
12. Verfahren zur Herstellung eines Kunststoffbeutels, umfassend: 25

Bereitstellen eines Beutelskörpers, der aus einem ersten Kunststofffilm mit einer ersten Schmelztemperatur besteht, wobei der Beutelskörper vordere und hintere Innen- und Außenflächen aufweist; 30

durch Bindung charakterisierte vordere und hintere örtlich begrenzte Schichten (1) eines zweiten Kunststoffs mit einer zweiten Schmelztemperatur, die niedriger als die erste Schmelztemperatur ist, auf entsprechenden Abschnitten der vorderen und hinteren Außenflächen an sich gegenüberliegenden Stellen abgelagert werden. 35
13. Verfahren nach Anspruch 12, wobei der Schritt des Bereitstellens das Extrudieren des Beutelskörpers von der HDPE umfasst und der Schritt des Bindens eine Teilrekombination jeder örtlich begrenzten Schicht (1) zur entsprechenden Außenfläche des Beutelskörpers umfasst, wobei jede örtlich begrenzte Schicht (1) LDPE umfasst. 40
14. Verfahren nach Anspruch 12, wobei jede örtlich begrenzte Schicht (1) einen Streifen LDPE aufweist. 45
15. Verfahren nach Anspruch 12, wobei die örtlich begrenzten Schichten (1) sich jeweils entlang der Mitte der vorderen und hinteren Außenflächen erstrecken. 50

Revendications

1. Sac plastique (2) comprenant un corps de sac com-

posé d'un premier film plastique ayant une première température de fusion, le corps du sac comportant des surfaces externes et internes avant et arrière; **caractérisé en ce que** des couches localisées avant et arrière (1) d'un deuxième film plastique, ayant une deuxième température de fusion inférieure à la première température de fusion, sont déposées sur des parties respectives des surfaces externes avant et arrière, au niveau d'emplacements mutuellement opposés.

2. Sac plastique selon la revendication 1, dans lequel les couches localisées (1) s'étendent respectivement le long des lignes médianes des surfaces externes avant et arrière.
3. Sac plastique selon la revendication 1, dans lequel le premier film plastique est composé de polyéthylène haute densité (HDPE), le deuxième film plastique étant composé de polyéthylène basse densité (LPDE).
4. Procédé de fabrication d'un dispositif de distribution de sacs plastiques, comprenant les étapes ci-dessous:

agencement de plusieurs sacs plastiques (2) dans une pile, chaque sac étant en contact avec un sac précédent et un sac suivant; et application de chaleur et d'une pression à la pile, la chaleur et la pression étant suffisantes pour former une liaison entre les sacs adjacents, sans former une liaison entre les surfaces internes de quelconques sacs dans la pile; 5

chaque sac plastique (2) comprenant un corps de sac formé à partir d'un premier film plastique ayant une première température de fusion, le corps du sac comportant des surfaces externes et internes avant et arrière; **caractérisé en ce que** des couches localisées avant et arrière (1) d'un deuxième film plastique, ayant une deuxième température de fusion inférieure à la première température de fusion sont déposées sur des parties respectives des surfaces externes avant et arrière, l'emplac-

ment de la couche localisée avant (1) de chaque sac (2) étant opposé à l'emplacment de la couche localisée arrière (1) du sac suivant (2), de sorte que la liaison est formée entre ces deux couches par la chaleur et la pression.
5. Procédé selon la revendication 4, dans lequel une chaleur d'une température d'environ 100°C est appliquée par l'intermédiaire d'un élément chauffé.
6. Procédé selon la revendication 5, dans lequel ledit élément chauffé applique une pression constante à la pile.

7. Dispositif de distribution de sacs plastiques (2) comportant des surfaces internes et externes, le dispositif de distribution comprenant:

plusieurs desdits sacs plastiques (2) agencés dans une pile, en contact les uns avec les autres; les sacs adjacents dans la pile étant reliés au niveau d'un emplacement défini et lesdites surfaces internes n'étant pas reliées au niveau de l'emplacement défini; et

chaque sac plastique (2) comprenant un corps de sac composé d'un premier film plastique ayant une première température de fusion, le corps du sac comportant des surfaces externes et internes avant et arrière;

caractérisé en ce que des couches localisées avant et arrière (1) d'un deuxième film plastique, ayant une deuxième température de fusion inférieure à la première température de fusion sont déposées sur des parties respectives des surfaces externes avant et arrière, l'emplacement de la couche localisée avant (1) de chaque sac (2) étant opposé à l'emplacement de la couche localisée arrière (1) du sac suivant (2), ces deux couches étant reliées par application de chaleur et d'une pression au niveau dudit emplacement défini.

8. Dispositif de distribution selon la revendication 7, dans lequel chaque sac dans ledit dispositif englobe une extrémité ouverture (3) et une extrémité fermée, ledit emplacement défini étant adjacent à ladite extrémité ouverte.

9. Dispositif de distribution selon la revendication 8, dans lequel chaque sac dans ledit dispositif comprend une base de sac (4) connectée à ladite extrémité ouverte par une fixation perforée (5), lesdites bases des sacs (4) étant connectées les unes aux autres, ledit dispositif comprenant en outre:

une patte de séparation (14) configurée de sorte à déborder dans l'extrémité ouverte (3) d'un sac supérieur dans ladite pile.

10. Dispositif de distribution selon la revendication 9, dans lequel ladite patte de séparation (14) présente une flexibilité élastique, de sorte que ladite patte de séparation (14) est fléchie au cours de la déconnexion dudit sac supérieur de ladite pile et revient vers une position débordant dans l'extrémité ouverte d'un sac supérieur dans ladite pile.

11. Dispositif de distribution selon la revendication 7, dans lequel lesdits plusieurs sacs plastiques (2) sont entourés par un récipient (11), ledit récipient comportant une ouverture (12) à travers laquelle déborde une partie d'extraction d'un sac supérieur dans la

pile, ladite ouverture (12) et la liaison entre le sac supérieur et le sac suivant étant configurées de sorte que l'extraction dudit sac supérieur entraîne une partie d'extraction (8) à travers ladite ouverture (12), ladite liaison étant ensuite cassée.

12. Procédé de fabrication d'un sac plastique, comprenant l'étape ci-dessous:

fourniture d'un corps de sac composé d'un premier film plastique ayant une première température de fusion, ledit corps du sac comportant des surfaces internes et externes avant et arrière;

caractérisé par l'étape de liaison de couches localisées avant et arrière (1), composées d'un deuxième film plastique ayant une deuxième température de fusion inférieure à ladite première température, à des parties respectives des surfaces externes avant et arrière au niveau d'emplacements mutuellement opposés.

13. Procédé selon la revendication 12, dans lequel l'étape de fourniture comprend l'extrusion du corps du sac à partir de HDPE, l'étape de liaison comprenant une recombinaison partielle de chaque couche localisée (1) à la surface externe respective du corps du sac, chaque couche localisée (1) étant composée de LPDE.

14. Procédé selon la revendication 12, dans lequel chaque dite couche localisée (1) comprend une bande de LDPE.

15. Procédé selon la revendication 12, dans lequel lesdites couches localisées (1) s'étendent respectivement le long des lignes médianes des surfaces externes avant et arrière.

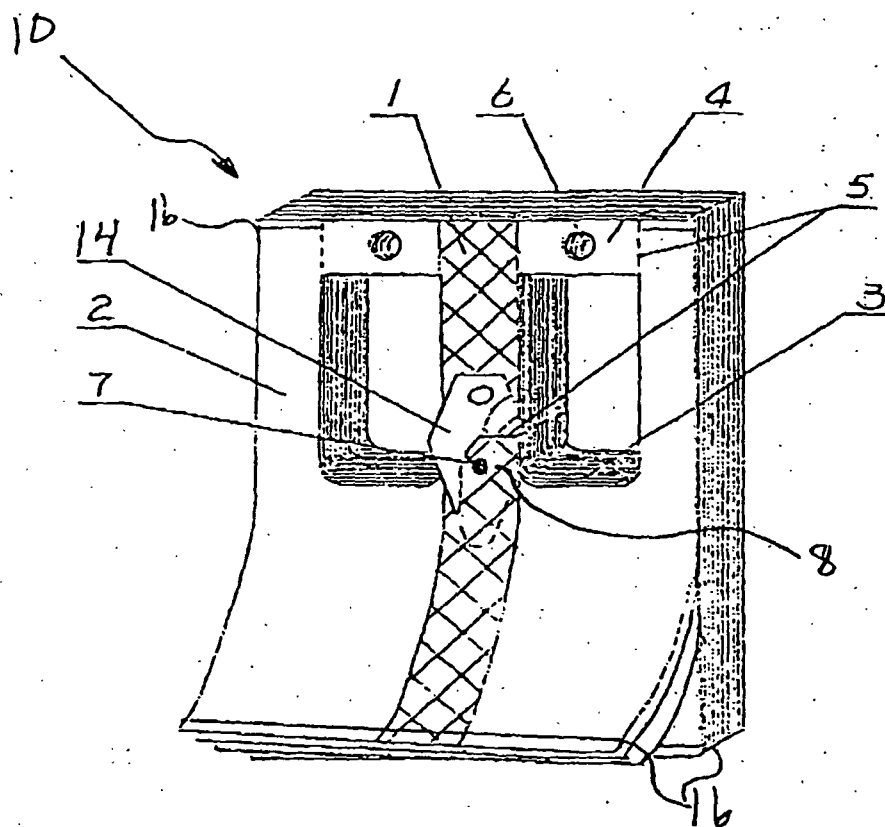


Figure 1

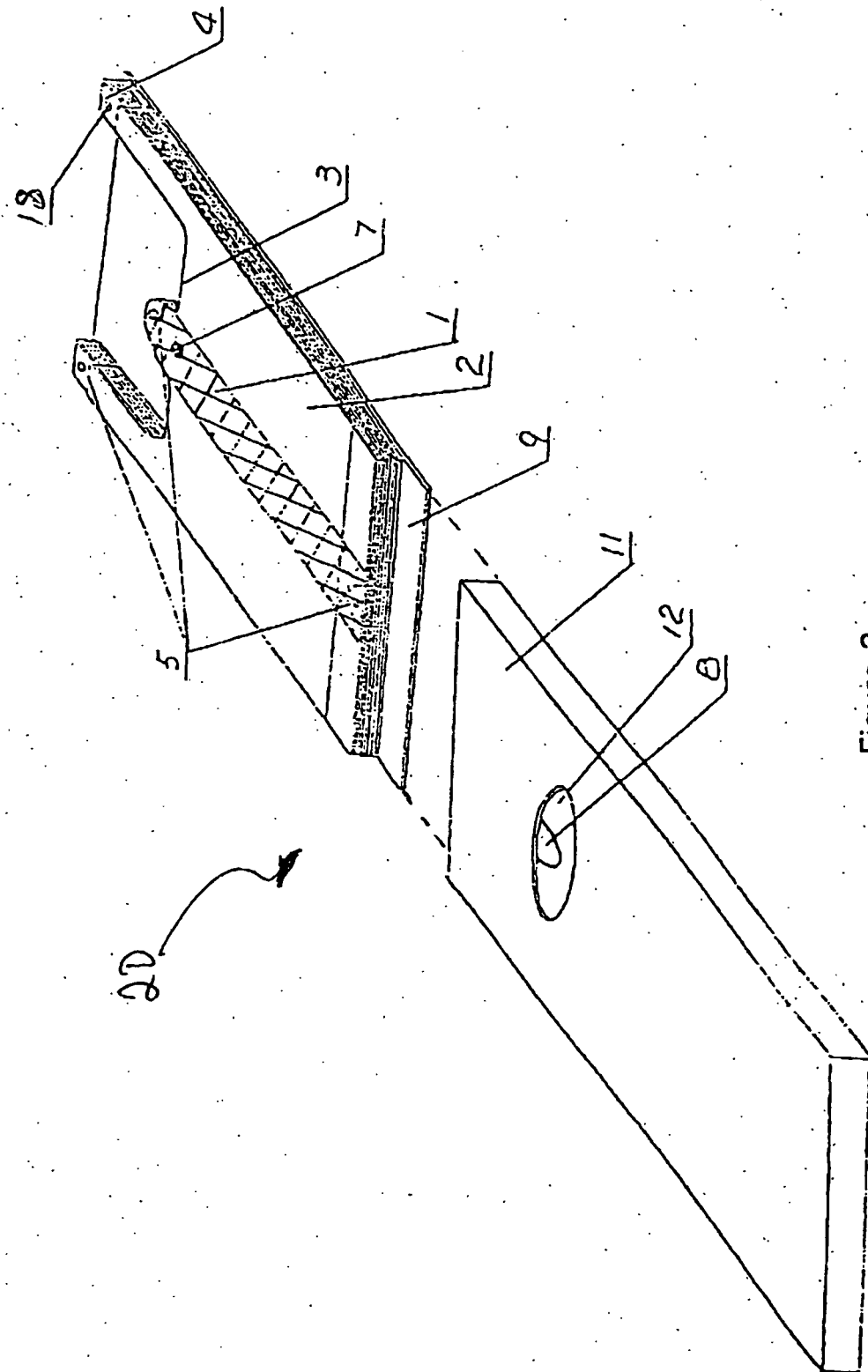


Figure 2

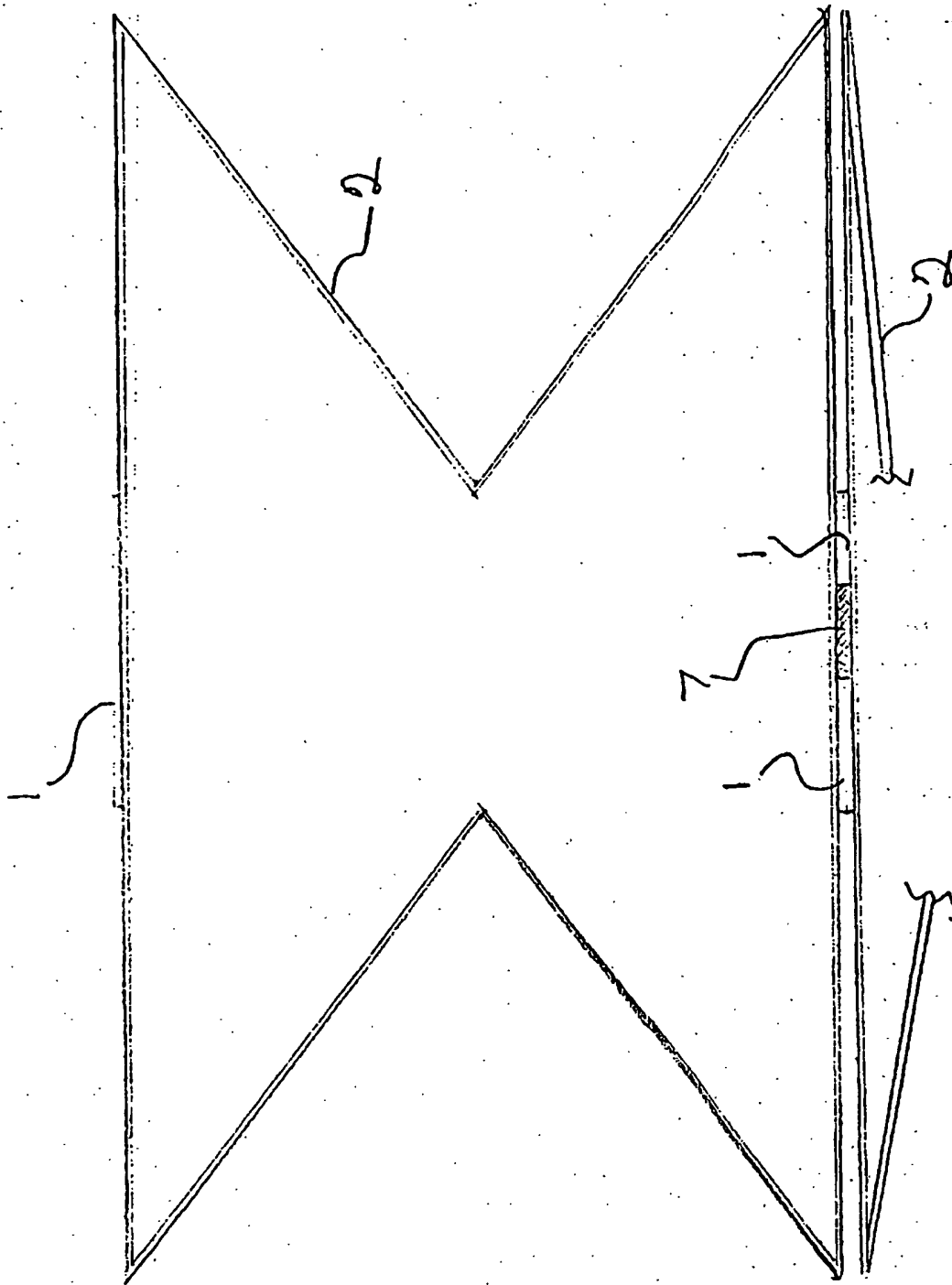


Figure 3

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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