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(54) METHODS AND PLASTICS FILMS FOR HANDLING ITEMS

VERFAHREN UND KUNSTSTOFFFOLIEN ZUR HANDHABUNG VON ARTIKELN

PROCÉDÉS ET FILMS EN PLASTIQUE POUR MANIPULATION D'OBJETS

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Description

[0001] This disclosure relates to handling items such as cans, jars, bottles and cartons in unitised packages, each unitised package holding a pre-determined number of items in a secure but releasable manner.

Background to the Disclosure

[0002] Food and beverages are presented to the consumer in a variety of primary packaging forms, typically made from metals such as steel and aluminium, and/or glass or plastics, and may include cellulose-based elements, for example cardboard and cardboard laminate. Such primary packaging protects and preserves the contents for a predicted shelf life or storage period, and presents a sales unit of a standard or industry-preferred amount of product, displaying branding and product information to the consumer. The primary packaging may include sale units commonly identified as cans, tins, jars, bottles, tubes, cartons, etc.

[0003] Multiple individual sales units may be collected together for distribution in secondary packaging such as trays, shrink wrapping, boxes or cartons, and webbing. An aspect of secondary packaging is so-called unitisation into multi-packs which are readily handled by the consumer or retailer.

[0004] GB 2 475 622 B and GB 2 485 895 B relate to aspects of item packaging and disclose plastics film carriers and unitising machinery. Document US 5 609 247 discloses a plastics film unitising member according to the preamble of claim 1 and a method of unitising items according to the preamble of claim 9. When retailers wish to present products on display in a retail outlet, shelving units distributed across the retail outlet have to be stocked. This entails removing secondary packaging and arranging the primary package products in a manner intended to promote consumer interest in purchasing the products. This shelf stocking task is generally labour intensive, and often requires staff to use box cutters or scissors to remove secondary packaging. The removal of shrink wrap, boxes, cartons, fibreboard dividers, etc. is time consuming and presents waste product which has to be collapsed or compacted for recycling. The removed product units then have to be individually arranged upon the shelf in a manner intended to display branding and information optimally for consumer interest in order to promote sale of the products. Similar considerations apply to filling of automated vending machines.

Summary of the Disclosure

[0005] A method, according to claim 9, of unitising items such as primary packaged products is disclosed which facilitates stocking of shelves and reduces time associated with arranging the items for display on a shelving unit or slot ramp of a vending machine. A plastics film unitising member is disclosed, according to claim 1, for

use in unitising primary packaged products. A method of manufacturing a plastics film unitising member modified for the purpose of facilitating stocking of displays with products is also disclosed. In particular, the disclosure relates to a plastics film unitising member for unitising a plurality of items to provide a package, the plastics film unitising member comprising a release member extending lengthwise with respect to the plastics film unitising member, said release member having a free end for a user to hold, and a fixed end remote from the free end for the user, the fixed end being attached at an edge of the plastics film unitising member. The release member permits a user in a single action to release the plastics film unitising member from the items by simply withdrawing the release member lengthwise towards the user. A substantially linear movement of the release member with respect to the plastics film unitising member removes the modified plastics film unitising member from the items. The items may be primary packaging containers.

[0006] According to a first aspect, a plastics film unitising member has a series of apertures for respectively interacting with an item such as a container in a unitising operation, each aperture being defined within flexible plastics film edge portions, and spaced apart by inter web portions, wherein each aperture is dimensioned to pass over an upper part of the item and bring the flexible plastics film edge portions into contact with an outer surface of the item, wherein the plastics film unitising member is provided with a release member extending across at least a portion of one surface of the plastics film unitising member and being attached at one edge of the plastics film unitising member.

[0007] According to a second aspect, a plastics film unitising member has a series of apertures for respectively interacting with an item such as a container in a unitising operation, each aperture being defined within flexible plastics film edge portions, and spaced apart by inter web portions, wherein each aperture is dimensioned to pass over an upper part of the item and bring the flexible plastics film edge portions into contact with an outer surface of the item, wherein the plastics film unitising member has a separable side web portion adjacent to the apertures, and wherein the plastics film unitising member is provided with a release member extending across at least a portion of one surface of the plastics film unitising member and being attached at one edge of the plastics film unitising member. The plastics film unitising member may include perforated parts, partially slit parts, or thin or otherwise weakened parts, to permit the separable side web portion to be parted from an apertured part of the plastics film unitising member. The separable side web portion may remain joined with the apertured part of the plastics film unitising member by means of at least one end connecting portion.

[0008] Various novel and inventive aspects of the disclosed modified plastics film unitising member and uses thereof are defined in the appended claims.

[0009] According to a third aspect, a method of unitising items comprises, presenting a plurality of items in alignment for unitisation, providing a plastics film unitising member, the plastics film unitising member having a series of apertures for respectively interacting with an item in a unitising operation, each aperture being defined within flexible plastics film edge portions, and spaced apart by inter web portions, wherein each aperture is dimensioned to pass over an upper part of an item and bring the flexible plastics film edge portions into contact with an outer surface of the item, presenting the plastics film unitising member to an upper part of a first item and rolling the plastics film unitising member over the top of the first item whereby at least an upper part of the first item is within an aperture and an outer surface of the item is contacted by the flexible plastics film edge portions in a position-retaining manner, continuing the rolling action to apply successively each aperture to respective items to thereby unitise the items, wherein the plastics film unitising member is provided with a release member extending across at least a portion of one surface of the plastics film unitising member and being attached at one edge of the plastics film unitising member.

[0010] In an embodiment the plastics film unitising member has a length and a breadth. The length and breadth are chosen to overlie a plurality of items to be unitised. The series of apertures (or each series of apertures) may be aligned with the length of the plastics film unitising member.

[0011] When the plurality of items is unitised by the plastics film unitising member a unitised package is provided which is convenient for handling, stock control, transport and storage.

[0012] In embodiments the release member comprises at least one plastics strip extending in the direction of the length of the plastics film unitising member. Alternative forms of the release member are possible, such as a cord, ribbon or line, and the particular form of the release member is not critical to achieve the desired functionality to be more particularly described hereinafter.

[0013] In embodiments, the release member extends across an upper or lower surface of the plastics film unitising member, and the longest dimension of the release member may extend to less than the full length of the plastics film unitising member. The release member may extend from one edge of the plastics film unitising member in the direction of the series of apertures and has an end portion which at least partially overlies a final aperture in the series of apertures. The said end portion may provide a user accessible draw tab or loop.

[0014] In embodiments, the release member extends across an upper or lower surface of the plastics film unitising member, and the longest dimension of the release member may extend to at least the full length of the plastics film unitising member. The release member may extend beyond the length of the plastics film unitising member to provide a draw tab to facilitate release of the plastics film unitising member from items by a user. The draw

tab may be held by a user and simply pulled towards the user to withdraw the release member, and thereafter remove the plastics film unitising member.

[0015] In use of any of such embodiments a user may grasp the draw tab and withdraw the release member substantially parallel with respect to the plastics film unitising member.

[0016] In embodiments, the release member extends over unitised items which are releasably held in the series of apertures of the plastics film unitising member. In embodiments where more than one series of apertures is provided side by side, then multiple release members may be provided. The multiple release members may be individually pulled or may be connected to a single draw tab to be pulled by a user in a single draw action.

[0017] In embodiments the plastics film unitising member comprises inter web portions between apertures in the series of apertures, and the release member is located to contact the inter-web portions and interact therewith when the release member is pulled by a user. In this way a single pull upon the release member effects an interaction with a first inter web portion and successively thereafter, an interaction with each further inter web portion contacted by the release member.

[0018] In embodiments, the plastics film unitising member may be oriented prior to application to items such that the release member is under the plastics film unitising member.

[0019] In embodiments the release member may be attached to the inter web portions. The attachment may be by adhesive bonding. The bonding may be temporary or permanent.

[0020] With respect to the series of apertures, the inter-web portion may be depressed during application of the plastics film unitising member to items to be unitised. At least a corresponding portion of the release member may be depressed under the corresponding inter-web portion at the same time.

[0021] In such embodiments, particularly using the plastics film unitising member of the first aspect, the plastics film unitising member is removable from an item-holding configuration in a series of steps in which the inter web portions are successively moved, easing the contact between the items and transverse flexible plastics film edge portions of the inter web portions. Longitudinal plastics film edge portions remain in contact with the items to maintain orientation and alignment. The movement of the inter web portions is achievable by a user pulling on the draw tab whereby the release member lifts the inter web portions in turn. Thus lifting of the first inter web portion by the release member effects partial release of an item nearest to the user initially leaving flexible plastics film edge portions on either side of the item in contact with the item. A continuance of the pull on the draw tab causes the release member to lift the next inter web portion too, and partially release the next item held in the series of apertures. This partial release process is continued until the last item held in the series

of apertures is also partially released. The plastics film unitising member can be finally pulled from the partially released items by virtue of the attachment of the release member to one edge of the plastics film unitising member.

[0022] In embodiments using the plastics film unitising member of the second aspect, the release member which overlies the plastics film may be withdrawn by a user pulling on the draw tab. However, the attached end remote from the user acts initially to separate a weakened portion nearest to the attached end and remote from the user. Successively thereafter the other weakened portions are also separated in turn and the separable side web portion may be parted from the unitised items. The whole plastics film unitising member is thereafter removable by continued withdrawing of the release member towards the user, leaving the previously unitised items free standing on retail unit shelf or slot ramp of a vending machine.

[0023] These embodiments are advantageous in that the interaction with successive inter web portions permits a controllable release of items from the series of apertures without adversely de-stabilising the arrangement of the items.

[0024] In use of such embodiments, the unitised item package the release member may have a draw tab proximal to a user. Attachment of the release member to a distal edge of the plastics film unitising member provides for the final removal of the plastics film unitising member from the items completely by continuance of the single pull action by the user.

[0025] Thus the user may reliably remove the plastics film unitising member in a single pull or linear withdrawing action upon the release member which passes over the unitised items. As the final item is released, the attachment of the release member to the edge of the plastics film unitising member allows the plastics film unitising member to be removed from the items completely. Since the items are not disturbed in any material way by this single pull action the released items are presented for retail in the same orientation as arranged prior to unitising. This obviates the usual problem of arranging product items after removal of secondary packaging. In this way a more rapid method of stocking a shelf of a retail outlet or vending machine is achievable.

[0026] In embodiments the plastics film member may comprise a single lane of apertures for receiving items.

[0027] In embodiments, the plastics film member may comprise parallel lanes of apertures for receiving items.

[0028] In embodiments, the release member is positionable between the plastics film unitising member and items to be unitised.

[0029] In embodiments, the release member is formed from an elongate plastics film strip.

[0030] In embodiments, the release member is freely separable from the plastics film unitising member apart from being attached at one edge of the plastics film unitising member. In embodiments the attachment of the release member to one edge of the plastics film unitising

member is remote from a free end of the release member accessible to a user.

[0031] In embodiments, the release member has a length allowing it to protrude beyond an edge of the plastics film unitising member opposite said one edge of the plastics film unitising member where the release member is attached, the protruding length part providing a user draw tab.

[0032] In embodiments the release member is attached to a surface near an edge of the plastics film unitising member by welding, for example by use of a hot air welding device.

[0033] In embodiments the release member is attached to a surface near an edge of the plastics film unitising member by adhesion, for example by use of a contact adhesive to bond the release member to the plastics film unitising member.

[0034] In embodiments the plastics film unitising member and the release member are formed from thermoplastics.

[0035] In embodiments the release member may be attached to the inter web portions. The attachment may be by adhesive bonding. The bonding may be temporary or permanent.

[0036] According to a fourth aspect, a method of presenting items on a display unit comprises a method according to the aforesaid third aspect, and comprises the additional steps of depositing the unitised items upon a surface of the display unit and pulling upon the release member to remove successively the plastics film unitising member from each of the items, leaving the items deposited on the surface of the display unit.

[0037] According to a fifth aspect, a unitised package of items comprises an array of items held by a plastics film unitising member having a series of apertures, each aperture being defined within flexible plastics film edge portions, and spaced apart by inter web portions, wherein the flexible plastics film edge portions contact an outer surface of an item to hold the item, wherein a release member is attached at one edge of the plastics film unitising member and extends across at least a portion of a surface of the plastics film unitising member, with portions of the release member overlying each item, and optionally (i) where the plastics film unitising member is one according to the first aspect passing under the inter web portions between the apertures or (ii) where the plastics film unitising member is one according to the second aspect passing over the inter web portions between the apertures.

[0038] In embodiments, a plastics film unitising member may have a release member which is formed from an elongate plastics film strip.

[0039] In embodiments, a plastics film unitising member may have a release member which is freely separable from the plastics film unitising member apart from being attached at one edge of the plastics film unitising member.

[0040] In embodiments, a plastics film unitising mem-

ber may have a release member which has a length allowing it to protrude beyond an edge of the plastics film unitising member opposite said one edge of the plastics film unitising member where the release member is attached, the protruding length part providing a user draw tab.

[0041] In embodiments the release member may be attached to the inter web portions. The attachment may be by adhesive bonding. The bonding may be temporary or permanent.

[0042] In embodiments, a plastics film unitising member may comprise a single lane of apertures for receiving items.

[0043] In embodiments, a plastics film unitising member may comprise parallel lanes of apertures for receiving items.

[0044] In embodiments the plastics film unitising member may be made from recycled plastics. Suitable plastics include thermoplastics and flexible film forming plastics such as polyolefin plastics, including polyethylene or derivatives thereof, and recycled or post-consumer waste plastics (PCWs).

[0045] In embodiments, the plastics film item unitising member may have flexible plastics film edge portions around the apertures which are configured to provide item unitising retention surfaces when the plastics film item unitising member is reconfigured around an item during a unitising operation. The application of the plastics film unitising member to a plurality of suitably arranged items may be realised by using a roller device. After rolling application it is observed that the plastics film unitising member is re-configured about the items to have a three-dimensional structure with depressed inter web portions between the unitised items.

[0046] In a method of unitising items, a method of making the plastics film unitising member with release member may be incorporated into the unitising packaging line.

[0047] A method of making the plastics film unitising member may comprise presenting a plastics film unitising member in a reeled strip to a unitising packaging line where a plurality of items are arranged for unitising, and introducing a release member to the plastics film unitising member prior to a unitising step, and attaching the release member to the plastics film unitising member.

[0048] The plastics film unitising member may be presented on a roller application drum to the plurality of items arranged for unitising and the release member may be attached to the plastics film unitising member by welding or gluing.

[0049] The release member may be fed vertically from an overhead supply strip to the plastics film unitising member upon the roller application drum for the purpose of attachment to the plastics film unitising member.

[0050] The method of making the plastics unitising member may comprise a cutting step to separate the release member from the overhead supply strip and provide the size required for the release member.

[0051] The plastics film unitising member may be made

from a carrier plastics film made from polyolefinic plastics such as polyethylene and polyethylene derivatives such as copolymers and addition polymers or polymer blends, but other plastics materials with similar mechanical properties may be used including recycled plastics. The carrier plastics film can be advantageously made from much thinner plastics films, for example of up to about 350µm thickness plastics film. The carrier plastics film may be prepared for use in the unitising process by pre-forming unitising apertures, by providing markings or cutting guides for later stages of the unitising process etc. The carrier plastics film aperture required for the plastics film unitising member can be dimensioned to fit about any item to be unitised such as the reduced chime or neck of a can or bottle. The shape of the aperture can be designed to suit the shape and width of the intended items to be unitised at the predetermined point of contact between the plastics film unitising member with the respective items. Thus the carrier plastics film may be prepared with apertures shaped and dimensioned to form an item engaging portion for each item to be unitised or multi-packaged. The carrier plastics film may be provided as length of single rank or multi-rank (parallel lanes) of apertured film, optionally as a reel for positioning in an operational position at the unitising apparatus.

[0052] In use multiple items may be unitised into a package by applying an apertured member to an array of items using a roller. The apertured member may have a series of apertures each accommodating an item within edge portions with inter web portions between the apertures. A release member is attached at one edge of the apertured member for interacting with the inter web portions to sequentially release items from the package without disturbing the array of items. The package can be used as a carrier for depositing items directly to stock shelving or vending machines quickly by a single linear pull action upon the release member first releasing the array of items to the shelving or vending machine and finally removing the apertured plastics carrier.

[0053] Optional or preferred features of an embodiment of an aspect of the invention are also contemplated for use with any or all other embodiments and aspects of the invention and may be useful alternatives to a specifically described embodiment.

Description of the Drawings

[0054]

Fig. 1 illustrates a plastics film unitising member for items, viewed from one side;

Fig. 2 shows a view from above the plastics film unitising member of Fig. 1, in which an attached release member extends beyond the length of the plastics unitising member;

Fig. 3 illustrates a plastics film unitising member

reconfigured around items to unitise same as a package for handling, and viewed from above the unitised item package;

Fig. 3a shows in enlarged view the sectional side view A-A of the portion circled in Fig. 3;

Fig. 4 shows a side view of the unitised items shown in Figs.3 and 3a;

Figs 5 to 10 illustrate sequentially removal of the plastics film unitising member by pulling of a release member;

Fig. 11 shows a view from above a plastics film unitising member with a separable side web portion;

Fig. 12 shows a package of items unitised by a plastics film unitising member as shown in Fig. 11;

Fig. 13 shows a limited access display unit in which item packaged products are displayed, with two packages of unitized items which have been deposited on a display surface, one of which shows an initial step in removal of the plastics film unitising member by pulling of the release member linearly in the axial direction shown by the arrow;

Fig. 14 shows a view from above a plastics film unitising member with two parallel series of apertures and a dual release member; and

Fig. 15 illustrates schematically a unitising operation wherein a plurality of items are unitised by rolling application of a plastics film unitising member, and a release member is attached to the plastics film unitising member just prior to the unitising operation.

Description of Embodiments

[0055] Referring to Fig. 1, a plastics film unitising member **1** has a release member **3** attached at one edge **4** of the plastics film unitising member **1**. As shown in Fig. 2, the attachment may be by means of a weld or adhesive **5**.

[0056] The plastics film unitising member **1** has a series of apertures **2** each dimensioned to accommodate an item, such as a container for the purpose of a unitising operation. The plastics film unitising member **1** has inter web portions **6** between the apertures **2**. Each aperture **2** is bounded by edge portions **10** of the plastics film unitising member **1**.

[0057] The plastics film unitising member **1** has a width and a length. The release member **3** has a width narrower than that of the plastics film unitising member **1**. The release member **3** has a length which exceeds the length of the plastics film unitising member **1**. The excess length of the release member **3** presents a draw tab **7** for a user to grasp. The plastics film unitising member **1** overlies

the release member **3** which is centrally positioned and aligned with the length of the plastics film unitising member **1**. The inter web portions **6** of the plastics film unitising member **1** may overlie and contact the release member **3**. The inter web portions **6** may be temporarily or permanently bonded to the release member **3**.

[0058] A plurality of items **30** such as containers of a product, for example tins can be oriented and arranged in a line, and unitised using the plastics film unitising member **1**.

[0059] The plastics film unitising member **1** may be made from a carrier plastics film made from polyolefinic plastics such as polyethylene and polyethylene derivatives such as copolymers and addition polymers or polymer blends, but other plastics materials with similar mechanical properties may be used including recycled plastics. The carrier plastics film can be for example of up to about 350µm thickness. The carrier plastics film may have pre-formed unitising apertures **2** dimensioned to fit about any item **30** to be unitised. The shape of the aperture **2** can be designed to suit the shape and width of the intended items **30** to be unitised at the predetermined point of contact between the plastics film unitising member **1** with the respective items **30**.

[0060] Using a procedure similar to that disclosed in WO 2012 069834, a plastics film unitising member **1** may be introduced to an edge of a first item **30** and rolled over the top of the item such that a portion of the item **30** penetrates the aperture **2**. An applicator drum may be used for this purpose. The applicator drum may have projections to form pushers to facilitate application of the plastics film unitising member to oriented and arranged items to form a unitised package of items. During rolling application to each item **30**, edge portions **10** around the aperture **2** contact the item **30** such that it is held in the oriented and arranged position.

[0061] By continuing to roll the plastics film unitising member **1** over successive items **30** in the oriented and arranged line of items **30**, a unitised package **31** of items **30** is formed.

[0062] As illustrated in Figs. 3a and 4, the inter web portions **6** of the plastics film unitising member **1** and the release member **3** both may be depressed below an upper part of the items.

[0063] The unitised package of items **30** can be handled for transport, and presented to a point of sale such as a shelf of a retail display unit. It can be easily inserted into limited access display units or a slot ramp of a vending machine. The plastics film unitising member can be easily removed to leave the items **30** standing freely on a shelf or within a slot ramp of a vending machine by the method illustrated in Figs. 5 to 10. A user would grasp the release member **3** by the draw tab **7**, and withdraw it towards the user in a simple linear motion. In the initial pulling stages of the release procedure the inter web portions are lifted, moving transverse flexible plastics film edge portions **10** with respect to the item whilst leaving longitudinal side plastics film edge portions **10** in contact

with and retaining the item in position. Thus partial release of an item nearest to the user is effected leaving flexible plastics film edge portions 10 on either side of the item in contact with the item. A continuance of the pull on the draw tab causes the release member to lift the next inter web portion, and likewise partially release the next item held in the series of apertures. This partial release process is continued until the last item held in the series of apertures is also partially released. Continued pulling upon the draw tab 7 permits the user to finally withdraw the plastics film unitising member by virtue of the attachment of the release member 3 to the edge 4 of the plastics film unitising member. In this way, the problem of minimising labour associated with removal of secondary packaging is solved, and the problem of labour associated with arranging stock in a display unit or vending machine is also alleviated.

[0064] An alternative embodiment of a plastics film unitising member (numbered 11) is shown in Fig. 11. Features of this embodiment which are equivalent to the plastics film member of Figs. 1 and 2, share the same reference number incremented by 10. In this embodiment there is provided a separable side web portion 19, with weakened portions 18 to facilitate separation whenever the release member 13 is pulled. These weakened portions 18 may be perforated for example, or otherwise made susceptible to tearing.

[0065] The plastics film unitising member 11 has a series of apertures 12 of dimensions to accommodate an item, such as a container for the purpose of a unitising operation. The plastics film unitising member 11 has inter web portions 16. Each aperture 12 is bounded by edge portions 20 of the plastics film unitising member 11.

[0066] The plastics film unitising member 11 has a width and a length. The release member 13 has a width narrower than that of the plastics film unitising member. The release member 13 has a length which exceeds the length of the plastics film unitising member 11. The excess length of the release member 13 presents a draw tab 17 for a user to grasp. In this embodiment the plastics film unitising member 11 underlies the release member 13 which is centrally positioned and aligned with the length of the plastics film unitising member 11. The inter web portions 16 of the plastics film unitising member 11 may underlie and contact the release member 13. The end 14 of the release member 13 which is remote from the draw tab 17 is attached to the plastics film unitising member 11 by use of a weld or adhesive 15.

[0067] In use of this embodiment, items such as cans, jars etc. can be unitised in the same manner as for the previously described embodiment by rolling application. Fig. 12 shows unitised cans using this embodiment of the plastics film unitising member. The unitised package can be handled, transported and deposited in a retail unit shelf or slot ramp of a vending machine. In order to release the items, the user withdraws the draw tab 17 linearly towards the user.

[0068] In this embodiment the release member 13, by

virtue of the attached end 14 acts initially to separate the weakened portion 18 nearest to the attached end 14. Successively thereafter the other weakened portions 18 are also separated and the separable side web portion 19 falls away from the unitised items in turn. The whole plastics film unitising member is removable by continued withdrawing of the release member towards the user, leaving the previously unitised items free standing on retail unit shelf or slot ramp of a vending machine.

[0069] A still further embodiment is shown in Figure 14, where like parts to those of the first embodiment are numbered equivalently but incremented by 100. This embodiment has a dual release member 103, underlying the parallel series of apertures 102 of the plastics film unitising member 101. This is used in a similar way to the first and second embodiments but reduces the number of pull steps and releases two lanes of items from a unitised package at the same time.

[0070] Referring to Fig. 15, a unitising packaging line is schematically represented. Multiple identical and oriented items such as cans of product are arranged for unitising by an overhead unitising roller drum. The items are progressed relative to the unitising roller drum by a conveyor. A plastics film unitising carrier web is fed to the unitising roller drum. At the same time a strip of film is also introduced from an overhead supply to the plastics film unitising carrier web. A welding or gluing unit is juxtaposed with the unitising roller drum to fasten a portion of the strip of film to a section of the plastics film unitising carrier web to thereby form a plastics film unitising member with a release member fastened at one end thereof.

[0071] The unitising operation is generally similar to that disclosed in WO 2012 069834, and simply requires the presentation of the plastics film unitising member to the items such that a first aperture of the plastics film unitising member is positioned to pass over a first item, and during continued rolling of the plastics film unitising member over the item, edge portions around the aperture contact and hold the item. This process continues during the rolling process as the items are progressed relative to the unitising roller drum and in this way multiple items are formed into a unitised package. Multiple parallel lanes of items can be handled to unitise the items.

Claims

1. A plastics film unitising member (1) comprising a plastics film having a series of apertures (2) for respectively interacting with an item (30) in a unitising operation, each aperture (2) being defined within flexible plastics film edge portions (10), and spaced apart by inter web portions (6), wherein each aperture (2) is of dimensions to pass over an upper part of an item (30) and bring the flexible plastics film edge portions (10) into contact with an outer surface of the item (30), wherein a release member (3) is provided, **characterised in that** said release mem-

- ber (3) being attached at one edge (4) of the plastics film unitising member (1) and extending across at least a portion of a surface of the plastics film unitising member.
2. A plastics film unitising member (11) comprising a series of apertures (12) for respectively interacting with an item (30) in a unitising operation, each aperture (12) being defined within flexible plastics film edge portions (20), and spaced apart by inter web portions (16), wherein each aperture (12) is of dimensions to pass over an upper part of the item (30) and bring the flexible plastics film edge portions (20) into contact with an outer surface of the item (30), **characterised in that** the plastics film unitising member (11) has a separable side web portion (19) adjacent to the apertures (12), and wherein the plastics film unitising member (11) is provided with a release member (13) extending across at least a portion of one surface of the plastics film unitising member (11) and being attached at one edge of the plastics film unitising member (11).
 3. A plastics film unitising member (1) according to claim 1, wherein the release member (3) is positionable between the plastics film unitising member (1) and items (30) to be unitised.
 4. A plastics film unitising member (1, 11) according to any one of claim 1 to claim 3, wherein the release member (3, 13) is formed from an elongate plastics film strip.
 5. A plastics film unitising member (1, 11) according to any one of claim 1 to 4, wherein the release member (3, 13) is bonded to inter web portions (6, 16) of the plastics film unitising member (1, 11).
 6. A plastics film unitising member (1, 11) according to any one of claim 1 to 5, wherein the release member (3, 13) has a length allowing it to protrude beyond an edge of the plastics film unitising member (1, 11) opposite said one edge of the plastics film unitising member (1, 11) where the release member (3, 13), is attached, the protruding length part providing a user draw tab (7, 17).
 7. A plastics film unitising member (1, 11) according to any one of claim 1 to 6 wherein the plastics film unitising member (1, 11) is made from recycled plastics.
 8. A plastics film unitising member according to any one of claim 1 to 7, wherein the flexible plastics film edge portions (10, 20) are configured to provide item unitising retention surfaces when the plastics film unitising member (1, 11) is reformed around an item (30) during a unitising operation using a roller device to apply the plastics film unitising member to the item.
 9. A method of unitising items comprising, presenting a plurality of items (30) in alignment for unitisation, providing a plastics film unitising member (1, 11), the plastics film unitising member (1, 11) having a series of apertures (2, 12) for respectively interacting with an item (30) in a unitising operation, each aperture (2, 12) being defined within flexible plastics film edge portions (10, 20), and spaced apart by inter web portions (6, 16), wherein each aperture (2, 12) is of dimensions to pass over an upper part of an item (30) and bring the flexible plastics film edge portions (10, 20) into contact with an outer surface of the item (30), presenting the plastics film unitising member (1, 11) to an upper part of a first item (30) and rolling the plastics film unitising member (1, 11) over the top of the first item (30) whereby at least an upper part of the first item (30) is within an aperture (2, 12) and an outer surface of the item is contacted by plastics film edge portions (10, 20), continuing the rolling action to apply successively each aperture (2, 12) to respective items (30) to thereby unitise the items (30), **characterised in that** the plastics film unitising member (1, 11) is provided with a release member (3, 13) extending across at least a portion of one surface of the plastics film unitising member (1, 11) and being attached at one edge of the plastics film unitising member (1, 11).
 10. A method according to claim 9, wherein the plastics film unitising member is as claimed in claim 1; or wherein the plastics film unitising member is as claimed in claim 2.
 11. A method according to claim 9 or claim 10, wherein the release member is positionable between the plastics film unitising member (1) and items (30) to be unitised.
 12. A method according to any one of claim 9 to 11, wherein the release member is formed from an elongate plastics film strip.
 13. A method according to any one of claim 9 to 12, wherein the release member (3, 13) is freely separable from the plastics film unitising member (1, 11) apart from being attached at one edge of the plastics film unitising member (1, 11).
 14. A method according to any one of claim 9 to 12, wherein the release member (3, 13) is bonded to inter web portions (6, 16) of the plastics film unitising member (1, 11).
 15. A method of stacking items on a display unit comprising a method according to any one of claims 9 to 14, and further comprising the additional steps of depositing the unitised items (30) upon a surface of the display unit and withdrawing the release member

(3, 13) linearly to remove the plastics film unitising member (1, 11) from each of the items (30), leaving the items (30) deposited on the surface of the display unit.

Patentansprüche

1. Ein Kunststofffolien-Unitisiererelement (1), das eine Kunststofffolie mit einer Reihe von Öffnungen (2) zum jeweiligen Interagieren mit einem Objekt (30) in einem Unitisierablauf beinhaltet, wobei jede Öffnung (2) innerhalb biegsamer Kunststofffolien-Randabschnitte (10) definiert und durch Zwischenstegabschnitte (6) mit Abstand angeordnet ist, wobei jede Öffnung (2) Abmessungen aufweist, um über einen oberen Teil eines Objekts (30) zu gehen und die biegsamen Kunststofffolien-Randabschnitte (10) mit einer äußeren Oberfläche des Objekts (30) in Kontakt zu bringen, wobei ein Löseelement (3) bereitgestellt ist, **dadurch gekennzeichnet, dass** das Löseelement (3) an einem Rand (4) des Kunststofffolien-Unitisiererelements (1) angebracht ist und sich über mindestens einen Abschnitt einer Oberfläche des Kunststofffolien-Unitisiererelements erstreckt.
2. Ein Kunststofffolien-Unitisiererelement (11), das eine Reihe von Öffnungen (12) zum jeweiligen Interagieren mit einem Objekt (30) in einem Unitisierablauf beinhaltet, wobei jede Öffnung (12) innerhalb biegsamer Kunststofffolien-Randabschnitte (20) definiert und durch Zwischenstegabschnitte (16) mit Abstand angeordnet ist, wobei jede Öffnung (12) Abmessungen aufweist, um über einen oberen Teil des Objekts (30) zu gehen und die biegsamen Kunststofffolien-Randabschnitte (20) mit einer äußeren Oberfläche des Objekts (30) in Kontakt zu bringen, **dadurch gekennzeichnet, dass** das Kunststofffolien-Unitisiererelement (11) neben den Öffnungen (12) einen trennbaren Seitenstegabschnitt (19) aufweist, und wobei das Kunststofffolien-Unitisiererelement (11) mit einem Löseelement (13) versehen ist, das sich über mindestens einen Abschnitt einer Oberfläche des Kunststofffolien-Unitisiererelements (11) erstreckt und an einem Rand des Kunststofffolien-Unitisiererelements (11) angebracht ist.
3. Kunststofffolien-Unitisiererelement (1) gemäß Anspruch 1, wobei das Löseelement (3) zwischen dem Kunststofffolien-Unitisiererelement (1) und zu unitisierenden Objekten (30) positionierbar ist.
4. Kunststofffolien-Unitisiererelement (1, 11) gemäß einem von Anspruch 1 bis Anspruch 3, wobei das Löseelement (3, 13) aus einem länglichen Kunststofffolienstreifen gebildet ist.
5. Kunststofffolien-Unitisiererelement (1, 11) gemäß ei-

nem der Ansprüche 1 bis 4, wobei das Löseelement (3, 13) an Zwischenstegabschnitte (6, 16) des Kunststofffolien-Unitisiererelements (1, 11) gebunden ist.

- 5 6. Kunststofffolien-Unitisiererelement (1, 11) gemäß einem der Ansprüche 1 bis 5, wobei das Löseelement (3, 13) eine Länge aufweist, die ermöglicht, dass es über einen Rand des Kunststofffolien-Unitisiererelements (1, 11) gegenüber dem einen Rand des Kunststofffolien-Unitisiererelements (1, 11), an dem das Löseelement (3, 13) angebracht ist, vorsteht, wobei der vorstehende Längenteil eine Benutzerzuglasche (7, 17) bereitstellt.
- 10 7. Kunststofffolien-Unitisiererelement (1, 11) gemäß einem der Ansprüche 1 bis 6, wobei das Kunststofffolien-Unitisiererelement (1, 11) aus wiederverwertetem Kunststoff hergestellt ist.
- 15 8. Kunststofffolien-Unitisiererelement gemäß einem der Ansprüche 1 bis 7, wobei die biegsamen Kunststofffolien-Randabschnitte (10, 20) konfiguriert sind, um Objektunitisier-Rückhalteoberflächen bereitzustellen, wenn das Kunststofffolien-Unitisiererelement (1, 11) während eines Unitisierablaufs um ein Objekt (30) neu formiert wird, wobei eine Rollenvorrichtung zum Aufbringen des Kunststofffolien-Unitisiererelements auf dem Objekt verwendet wird.
- 20 9. Ein Verfahren zum Unitisieren von Objekten, beinhaltend das Darbieten einer Vielzahl von Objekten (30) in Ausrichtung zur Unitisierung, das Bereitstellen eines Kunststofffolien-Unitisiererelements (1, 11), wobei das Kunststofffolien-Unitisiererelement (1, 11) eine Reihe von Öffnungen (2, 12) zum jeweiligen Interagieren mit einem Objekt (30) in einem Unitisierablauf aufweist, wobei jede Öffnung (2, 12) innerhalb biegsamer Kunststofffolien-Randabschnitte (10, 20) definiert und durch Zwischenstegabschnitte (6, 16) mit Abstand angeordnet ist, wobei jede Öffnung (2, 12) Abmessungen aufweist, um über einen oberen Teil eines Objekts (30) zu gehen und die biegsamen Kunststofffolien-Randabschnitte (10, 20) mit einer äußeren Oberfläche des Objekts (30) in Kontakt zu bringen, das Darbieten des Kunststofffolien-Unitisiererelements (1, 11) für einen oberen Teil eines ersten Objekts (30) und Rollen des Kunststofffolien-Unitisiererelements (1, 11) über das obere Ende des ersten Objekts (30), wodurch mindestens ein oberer Teil des ersten Objekts (30) innerhalb einer Öffnung (2, 12) liegt und eine äußere Oberfläche des Objekts mit den Kunststofffolien-Randabschnitten (10, 20) in Kontakt gebracht wird, das Fortführen des Rollvorgangs zum sukzessiven Aufbringen jeder Öffnung (2, 12) auf jeweilige Objekte (30), um dadurch die Objekte (30) zu unitisieren, **dadurch gekennzeichnet, dass** das Kunststofffolien-Unitisiererelement (1, 11) mit einem Löseelement (3, 13) ver-
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sehen ist, das sich über mindestens einen Abschnitt einer Oberfläche des Kunststofffolien-Unitisiererelements (1, 11) erstreckt und an einem Rand des Kunststofffolien-Unitisiererelements (1, 11) angebracht ist.

10. Verfahren gemäß Anspruch 9, wobei das Kunststofffolien-Unitisiererelement wie in Anspruch 1 beansprucht ist; oder wobei das Kunststofffolien-Unitisiererelement wie in Anspruch 2 beansprucht ist.
11. Verfahren gemäß Anspruch 9 oder Anspruch 10, wobei das Löseelement zwischen dem Kunststofffolien-Unitisiererelement (1) und zu unitisierenden Objekten (30) positionierbar ist.
12. Verfahren gemäß einem der Ansprüche 9 bis 11, wobei das Löseelement aus einem länglichen Kunststofffolienstreifen gebildet ist.
13. Verfahren gemäß einem der Ansprüche 9 bis 12, wobei das Löseelement (3, 13) von dem Kunststofffolien-Unitisiererelement (1, 11) mit Ausnahme einer Anbringung an einem Rand des Kunststofffolien-Unitisiererelements (1, 11) frei trennbar ist.
14. Verfahren gemäß einem der Ansprüche 9 bis 12, wobei das Löseelement (3, 13) an Zwischenstegabschnitte (6, 16) des Kunststofffolien-Unitisiererelements (1, 11) gebunden ist.
15. Ein Verfahren zum Stapeln von Objekten auf einer Präsentiereinheit, beinhaltend ein Verfahren gemäß einem der Ansprüche 9 bis 14 und ferner beinhaltend die zusätzlichen Schritte des Abstellens der unitisierten Objekte (30) auf einer Oberfläche der Präsentiereinheit und des geradlinigen Wegnehmens des Löseelements (3, 13), um das Kunststofffolien-Unitisiererelement (1, 11) von jedem der Objekte (30) zu entfernen, so dass die Objekte (30) auf der Oberfläche der Präsentiereinheit stehen gelassen werden.

Revendications

1. Un élément de fardelage en film plastique (1) comprenant un film plastique ayant une série d'ouvertures (2) pour interagir respectivement avec un article (30) lors d'une opération de fardelage, les ouvertures (2) étant chacune définies à l'intérieur de portions de bords en film plastique souple (10), et espacées les unes des autres par des portions inter-feuilles en continu (6), dans lequel chaque ouverture (2) est de dimensions à passer par-dessus une partie supérieure d'un article (30) et à amener les portions de bords en film plastique souple (10) au contact d'une surface externe de l'article (30), dans lequel un élément de libération (3) est fourni, **caractérisé en ce**

que ledit élément de libération (3) est attaché à un bord (4) de l'élément de fardelage en film plastique (1) et s'étend d'un côté à l'autre d'au moins une portion d'une surface de l'élément de fardelage en film plastique.

2. Un élément de fardelage en film plastique (11) comprenant une série d'ouvertures (12) pour interagir respectivement avec un article (30) lors d'une opération de fardelage, les ouvertures (12) étant chacune définies à l'intérieur de portions de bords en film plastique souple (20), et espacées les unes des autres par des portions inter-feuilles en continu (16), dans lequel chaque ouverture (12) est de dimensions à passer par-dessus une partie supérieure de l'article (30) et à amener les portions de bords en film plastique souple (20) au contact d'une surface externe de l'article (30), **caractérisé en ce que** l'élément de fardelage en film plastique (11) a une portion de feuilles en continu de côté séparable (19) adjacente aux ouvertures (12), et dans lequel l'élément de fardelage en film plastique (11) est pourvu d'un élément de libération (13) qui s'étend d'un côté à l'autre d'au moins une portion d'une surface de l'élément de fardelage en film plastique (11) et qui est attaché à un bord de l'élément de fardelage en film plastique (11).
3. Un élément de fardelage en film plastique (1) selon la revendication 1, dans lequel l'élément de libération (3) est positionnable entre l'élément de fardelage en film plastique (1) et des articles (30) à fardeler.
4. Un élément de fardelage en film plastique (1, 11) selon l'une quelconque des revendications 1 à 3, dans lequel l'élément de libération (3, 13) est formé à partir d'une bande en film plastique allongée.
5. Un élément de fardelage en film plastique (1, 11) selon l'une quelconque des revendications 1 à 4, dans lequel l'élément de libération (3, 13) est collé à des portions inter-feuilles en continu (6, 16) de l'élément de fardelage en film plastique (1, 11).
6. Un élément de fardelage en film plastique (1, 11) selon l'une quelconque des revendications 1 à 5, dans lequel l'élément de libération (3, 13) a une longueur lui permettant de faire saillie au-delà d'un bord de l'élément de fardelage en film plastique (1, 11) à l'opposé dudit un bord de l'élément de fardelage en film plastique (1, 11) où l'élément de libération (3, 13) est attaché, la partie de longueur faisant saillie fournissant une languette utilisateur à tirer (7, 17).
7. Un élément de fardelage en film plastique (1, 11) selon l'une quelconque des revendications 1 à 6, l'élément de fardelage en film plastique (1, 11) étant

réalisé à partir de plastique recyclé.

8. Un élément de fardelage en film plastique selon l'une quelconque des revendications 1 à 7, dans lequel les portions de bords en film plastique souple (10, 20) sont configurées afin de fournir des surfaces de rétention de fardelage d'articles lorsque l'élément de fardelage en film plastique (1, 11) est reformé autour d'un article (30) au cours d'une opération de fardelage à l'aide d'un dispositif à rouleau afin d'appliquer l'élément de fardelage en film plastique sur l'article.
9. Un procédé de fardelage d'articles comprenant le fait de présenter une pluralité d'articles (30) en alignement pour fardelage, le fait de fournir un élément de fardelage en film plastique (1, 11), l'élément de fardelage en film plastique (1, 11) ayant une série d'ouvertures (2, 12) pour interagir respectivement avec un article (30) lors d'une opération de fardelage, les ouvertures (2, 12) étant chacune définies à l'intérieur de portions de bords en film plastique souple (10, 20), et espacées les unes des autres par des portions inter-feuilles en continu (6, 16), dans lequel chaque ouverture (2, 12) est de dimensions à passer par-dessus une partie supérieure d'un article (30) et à amener les portions de bords en film plastique souple (10, 20) au contact d'une surface externe de l'article (30), le fait de présenter l'élément de fardelage en film plastique (1, 11) à une partie supérieure d'un premier article (30) et de rouler l'élément de fardelage en film plastique (1, 11) par-dessus le haut du premier article (30) grâce à quoi au moins une partie supérieure du premier article (30) se trouve à l'intérieur d'une ouverture (2, 12) et une surface externe de l'article est mise au contact de portions de bords en film plastique (10, 20), le fait de poursuivre l'action de roulement afin d'appliquer successivement chaque ouverture (2, 12) à des articles (30) respectifs afin de fardeler de ce fait les articles (30), **caractérisé en ce que** l'élément de fardelage en film plastique (1, 11) est pourvu d'un élément de libération (3, 13) qui s'étend d'un côté à l'autre d'au moins une portion d'une surface de l'élément de fardelage en film plastique (1, 11) et qui est attaché à un bord de l'élément de fardelage en film plastique (1, 11).
10. Un procédé selon la revendication 9, dans lequel l'élément de fardelage en film plastique est tel que revendiqué dans la revendication 1 ; ou dans lequel l'élément de fardelage en film plastique est tel que revendiqué dans la revendication 2.
11. Un procédé selon la revendication 9 ou la revendication 10, dans lequel l'élément de libération est positionnable entre l'élément de fardelage en film plastique (1) et des articles (30) à fardeler.

12. Un procédé selon l'une quelconque des revendications 9 à 11, dans lequel l'élément de libération est formé à partir d'une bande en film plastique allongée.
13. Un procédé selon l'une quelconque des revendications 9 à 12, dans lequel l'élément de libération (3, 13) est librement séparable de l'élément de fardelage en film plastique (1, 11) mis à part le fait qu'il est attaché à un bord de l'élément de fardelage en film plastique (1, 11).
14. Un procédé selon l'une quelconque des revendications 9 à 12, dans lequel l'élément de libération (3, 13) est collé à des portions inter-feuilles en continu (6, 16) de l'élément de fardelage en film plastique (1, 11).
15. Un procédé pour empiler des articles sur un présentoir comprenant un procédé selon l'une quelconque des revendications 9 à 14, et comprenant en sus les étapes supplémentaires consistant à déposer les articles fardelés (30) sur une surface du présentoir et à retirer l'élément de libération (3, 13) linéairement afin d'enlever l'élément de fardelage en film plastique (1, 11) de chacun des articles (30), laissant les articles (30) déposés sur la surface du présentoir.

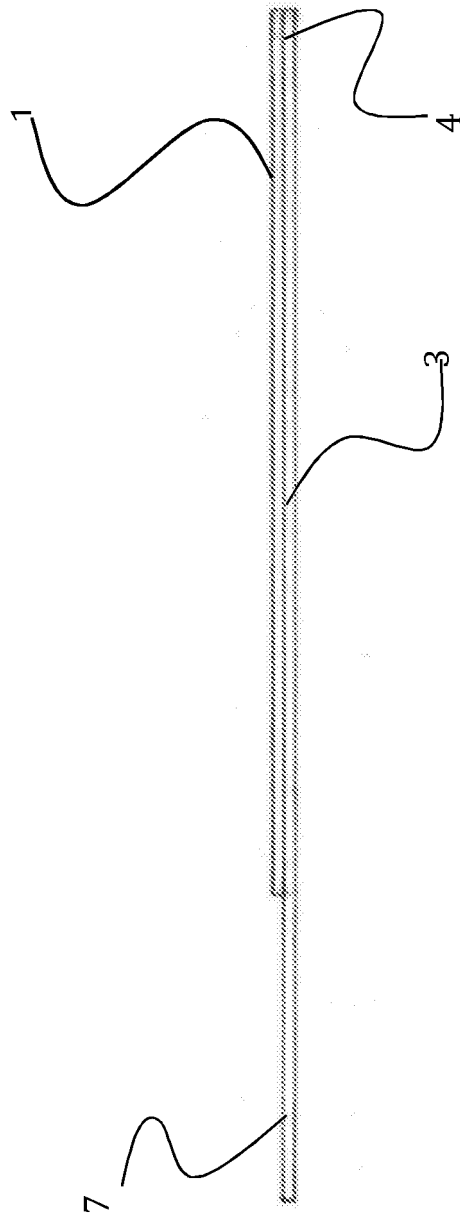


Fig. 1

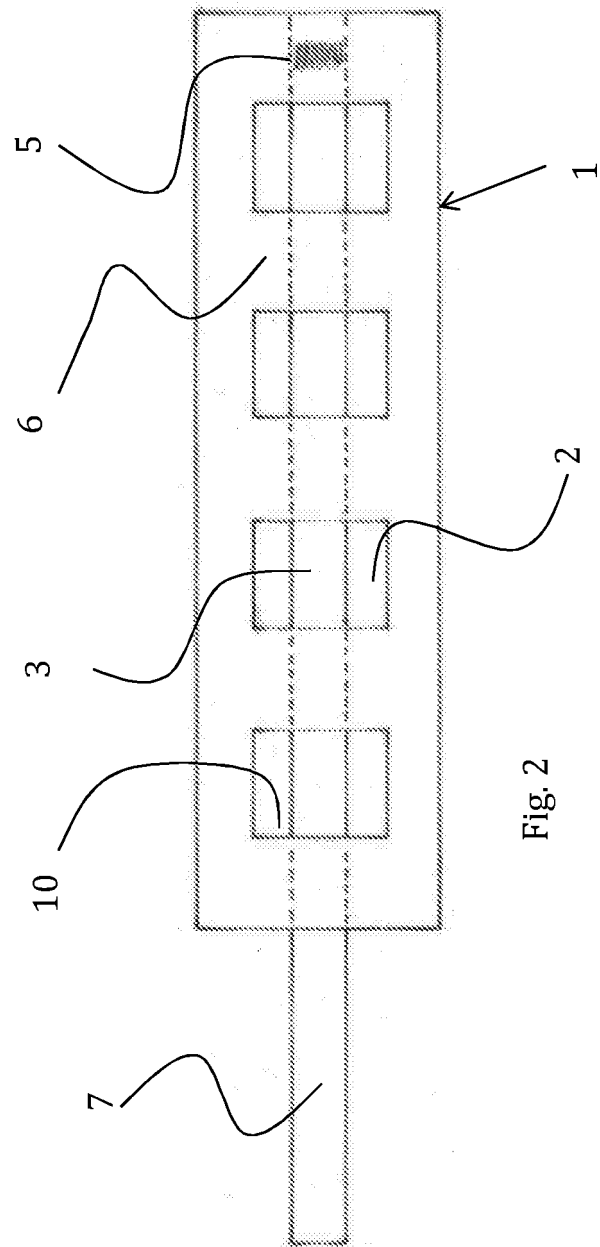


Fig. 2

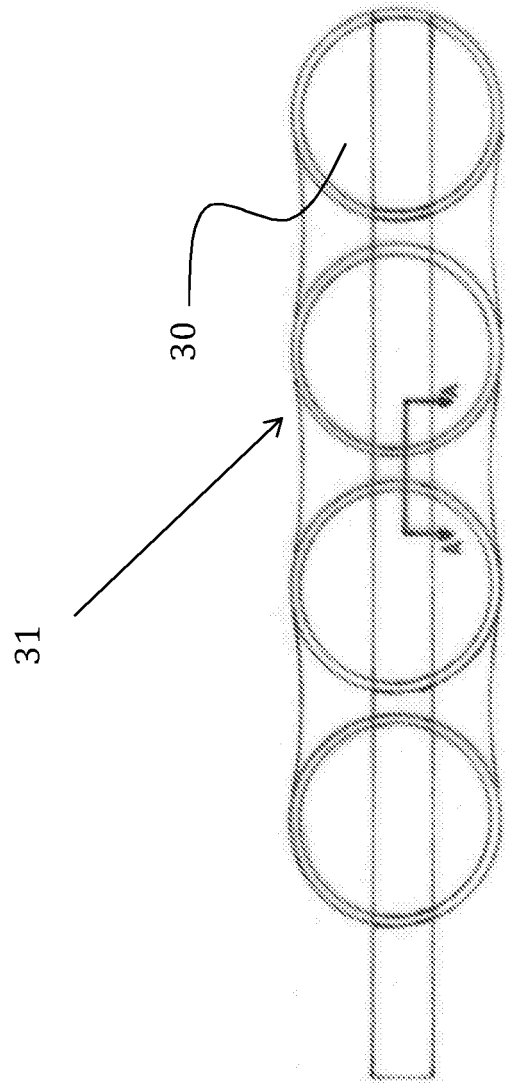


Fig.3

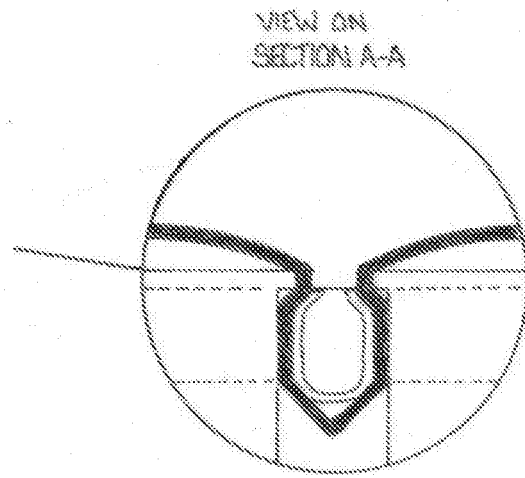


Fig. 3a

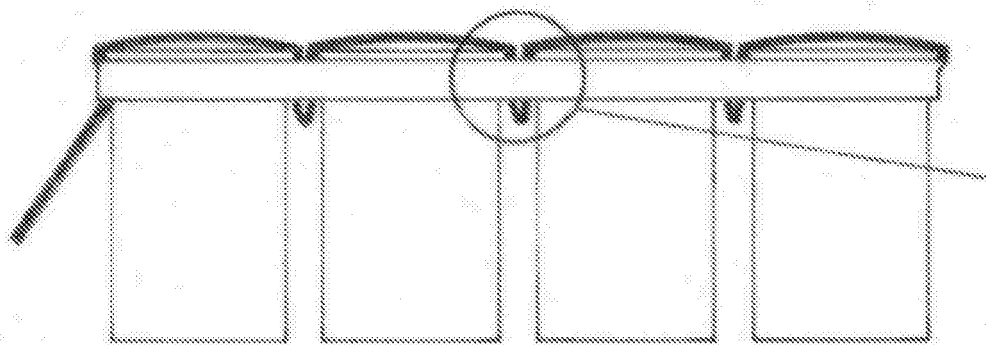


Fig. 4

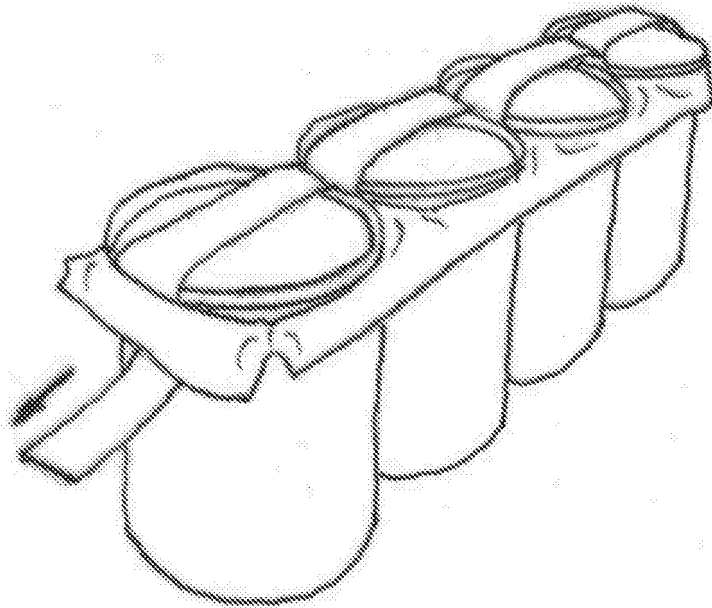


Fig. 5

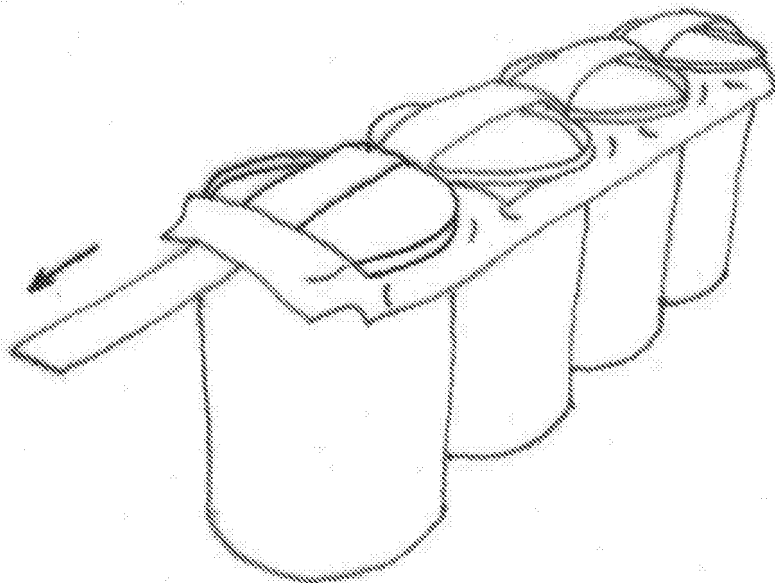


Fig. 6

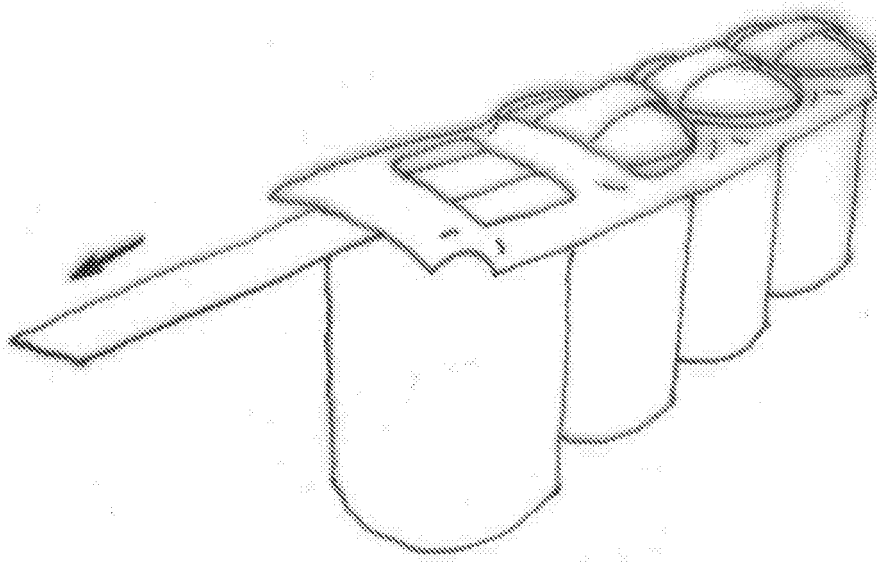


Fig. 7

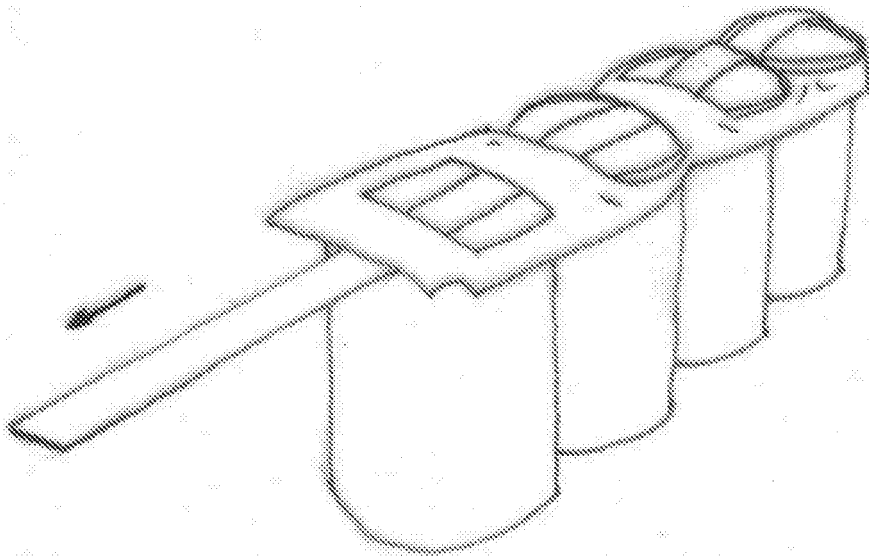


Fig. 8

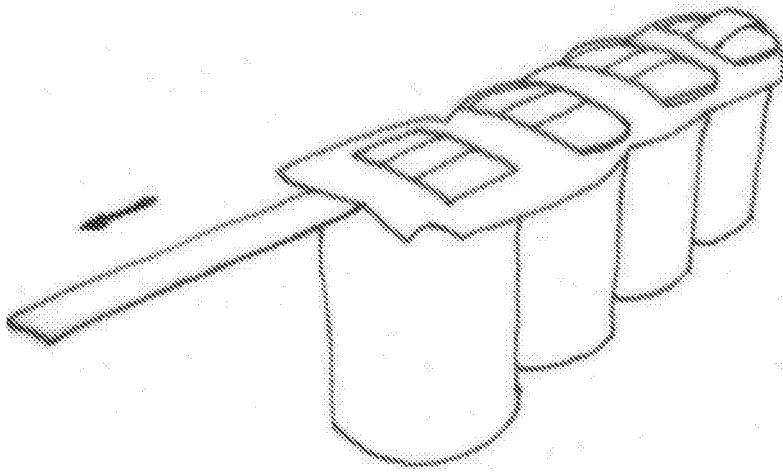


Fig.9

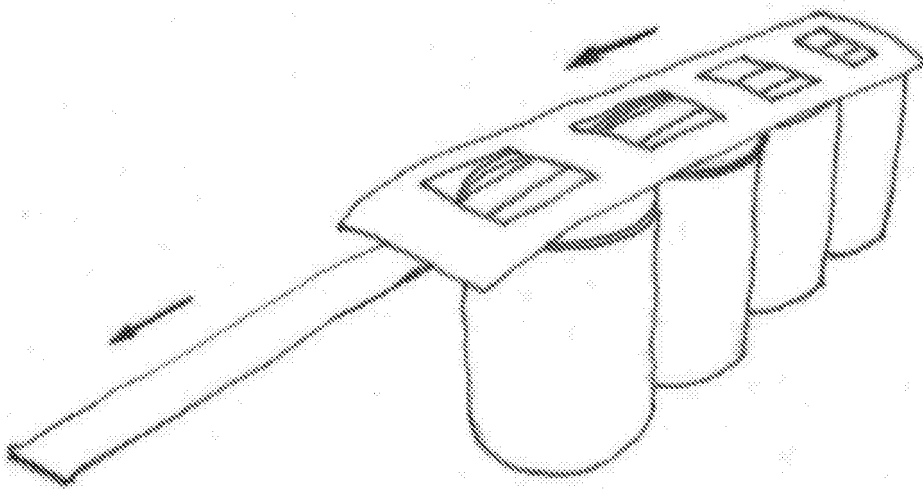


Fig. 10

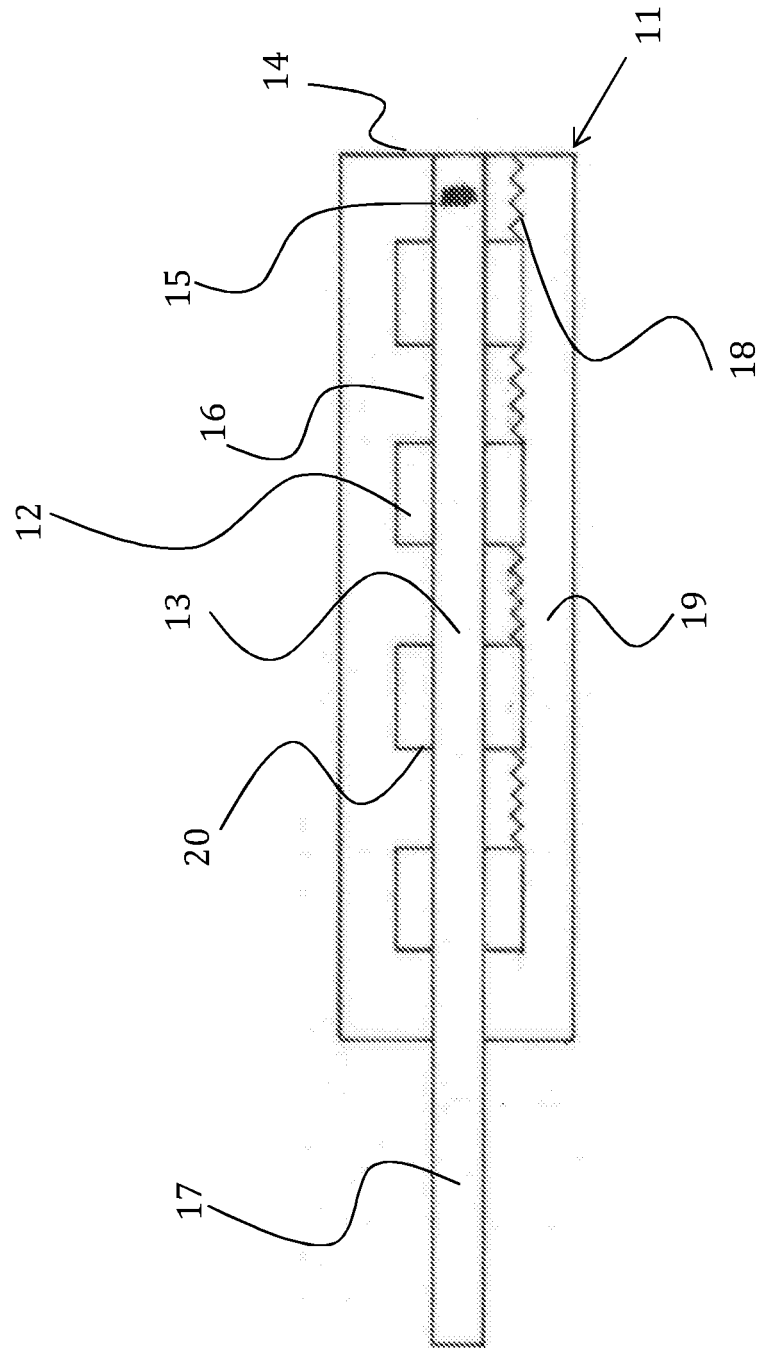


Fig. 11

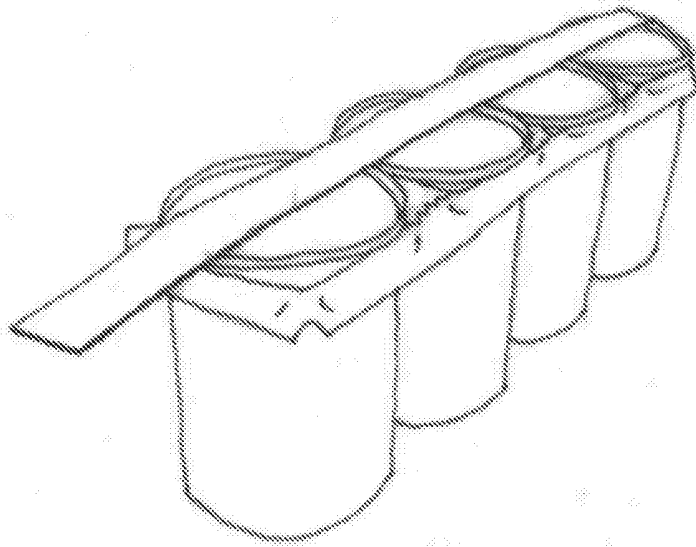


Fig. 12

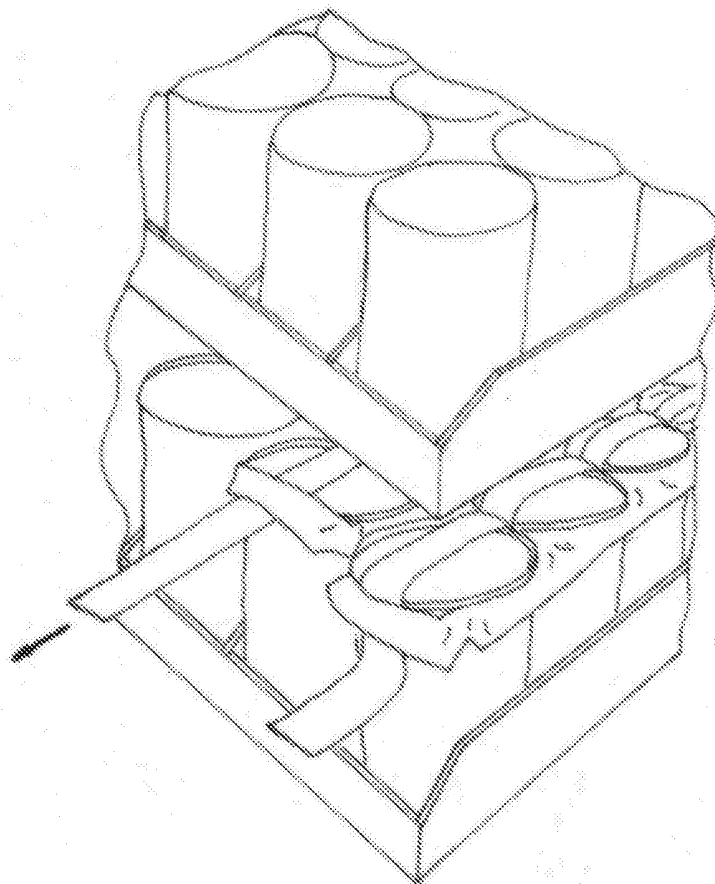


Fig.13

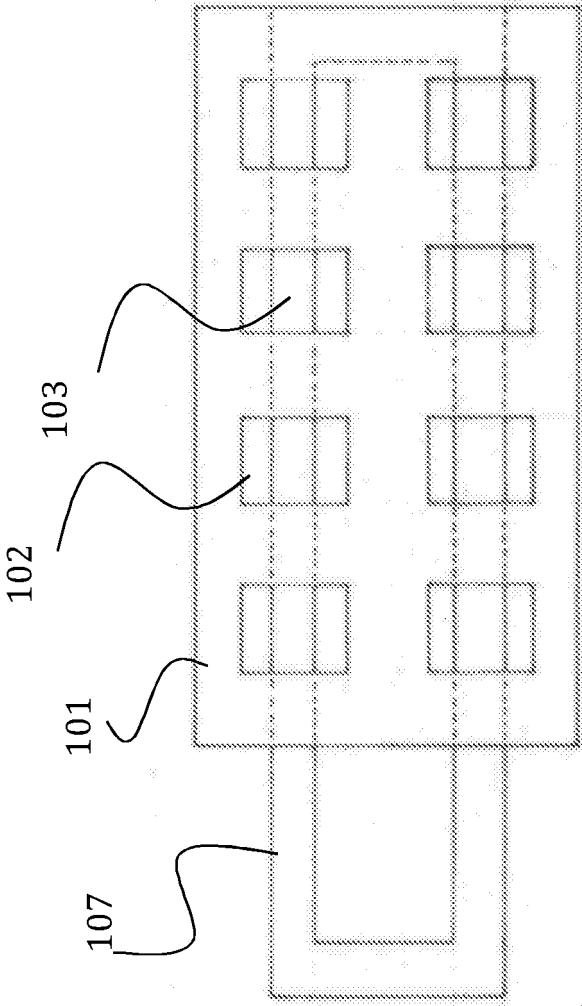


Fig. 14

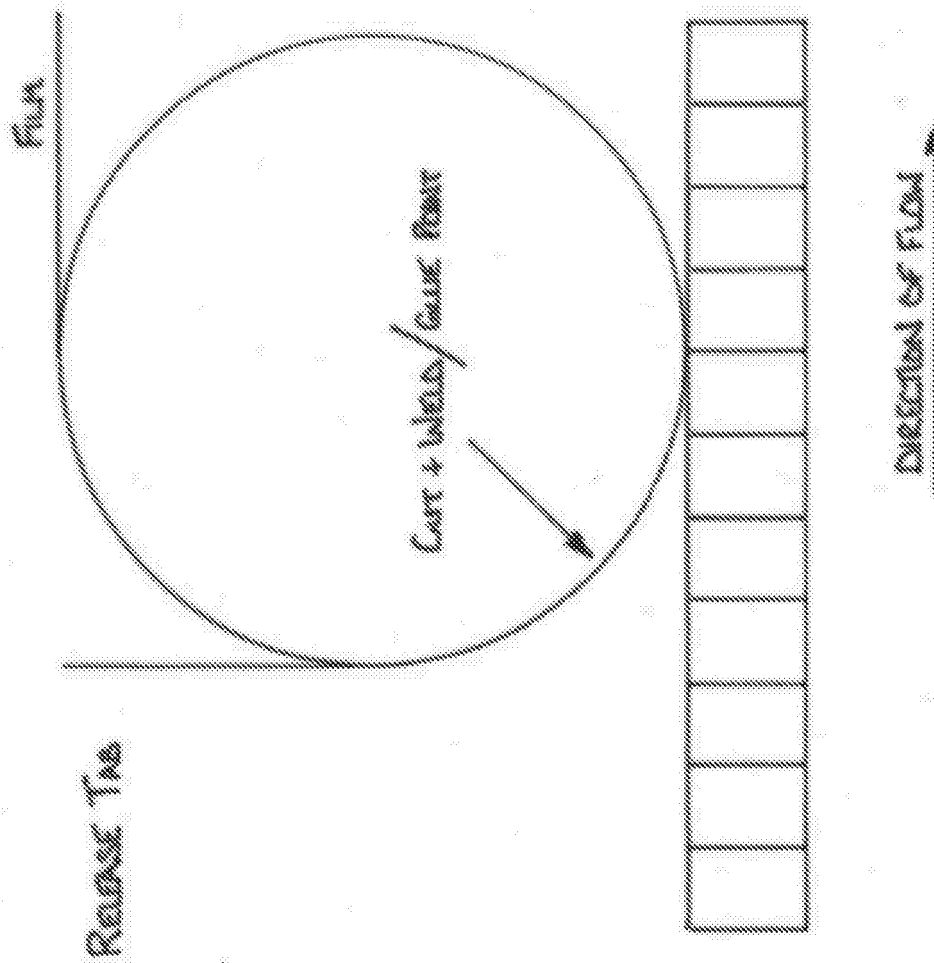


Fig. 15

REFERENCES CITED IN THE DESCRIPTION

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