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Procedure for cold-packaging and shrinkwrapping groups of products.

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Description

This invention describes a procedure for packaging and shrinkwrapping groups of products.

With the techniques currently available on the market, most packs for packaging groups of products, such as cans or bottles of drinks are comprised of strips of heat-shrinkwrapping material.

The advantage of these packs enabling individual loose products to be grouped, so that they are easier to handle and move, is that they are easy to manufacture, a film of heat-shrinkwrapping material is simply wound round the group of products, usually around the longer horizontal axis of the group, which is then passed through an oven where the wrapping is shrunk. So when the group leaves the oven it is already firmly wrapped and no further operations are needed.

The main disadvantage of this kind of wrapping is financial: the wrapping film has to be fairly thick to support the weight of the group of products and the force of heat-shrinkwrapping without tearing involves some expense and wasted materials.

A further disadvantage of this kind of wrapping is that it does not have a handle for carrying or moving the groups of products around.

The simplest way of handling them is either by gripping the pack at the edge of the side openings or by making holes in the wrapping with the tips of the fingers, but this is rather difficult because the wrapping film is tough.

In order to overcome this disadvantage some wrapping strips have been designed that can have a handle attached to them on the outside.

This is quite a good idea for machine operators having to move the wrappings around, but it is very expensive for the manufacturer who requires a more complex and consequently more expensive machine.

To overcome these problems the US-A-4596330 publication proposes a package comprising a pair of circumferentially continuous bands or tubes made from elastic plastic film of materials capable of being highly stretched below the elastic limits thereof. The band with horizontal axis makes also the function of handle. The material is applied without the necessity to be heated. During the application of the first (with vertical axis) band the products, that are to be packed, have the tendency to roll or slide and it is required particular care in the handling of this partially completed package; however the stretching of the ring bands and the applying phase of the same around the bottles is not an easy and simple procedure.

It is, therefore the purpose of this invention to overcome the afore-mentioned disadvantages. In the form of the claims characterising it, this invention overcomes this disadvantage with a procedure using a double wrapping strip that also forms a carrying

handle.

One of the advantages of this invention is that it is simple to manufacture, consisting of a few simple stages, such as holding back the group of products and wrapping them in a partially stretched film of material that will cling easily and stretch without tearing.

A further advantage of this invention is that it is inexpensive because the materials are relatively thin and do not require an oven.

This invention is subsequently explained in greater detail in the following description with the diagrams enclosed, these being only one example of the invention and not to be interpreted as being in any way restrictive.

Figures 1 to 5 are perspective drawings showing the different stages of the procedure in the terms of this invention.

With reference to the enclosed figures, the procedure in the terms of this invention consists of the following steps:

- holding the group of products, 1, by their two opposite sides;
- using the film of material, 2, which clings easily and which when pulled will lengthen and shrink in width without tearing to form the first wrapping, 3, of said group of products around one of its perpendicular axes at the sides where it is being held;
- slightly pulling by permanently tightly stretching the film, 2, forming the first wrapping, 3;
- releasing the group of products, 1, and holding it by the other two sides at right-angles to the previous ones;
- using the film of material, 2, to form the second wrapping, 4, of the same group around the axis at right-angles to the previous sides where it is being held;
- slightly pulling by permanently tightly stretching the film, 2, forming the second wrapping, 4.

Wrapping, 3, around the vertical axis is formed by ensuring that the film, 2, protrudes slightly beneath the group of products, 1, so that when wrapping is complete, it will act as a partial support for the products, 1.

Whereas wrapping, 4, is around the horizontal axis, preferably the shorter one, so that it forms a carrying handle, 5, as shown in Figure 5.

Shrinkwrapping formed in this way (see Fig. 5) consists of two wrapping strips, 3 and 4 (of one or more turns) of material that will cling easily and which when pulled will lengthen and shrink in width without tearing.

Wrappings, 3 and 4, are overlapping and angled so as to be almost at right-angles to each other. The top of wrapping, 4, is on the horizontal axis and forms a carrying handle, 5.

In its ideal form, as shown in the enclosed figures referring to bottles of drinks, 1, the group of bottles,

1, is held at the bottom by elevators, 6, and at the top by vertical pressers, 7, once the first strip of film, 2, marked 3a in Fig.1, is inserted between at least two bottles, 1. In the diagram the bottles, 1, are arranged in two lengthways rows, and the strip, 3a, is inserted between the two rows of bottles, 1, (see Figure 1, arrow f_1).

The film, 2, is then wrapped around the bottles, 1, as it comes from the reel, 9, turning three times around the vertical axis of the group of bottles (see Fig. 2, arrow f_2); as can clearly be seen in Fig. 2, rotation of the reel, 9, is shown in four intermediate positions marked 9a, 9b, 9c and 9d. The first of these turns of the film, 2, is effected with the film only slightly stretched, while the second and third turns of the film are subject to stretching (usually by pulling) to what may be as much as 300% of its initial length; this operation is shown in the diagram in Fig. 2, where the strip, 3s, of the film, 2, has been stretched starting from position 9d of the reel, 9.

Next the film, 2, is cut and the elevators and pressers, 6 and 7, are lowered or raised from the bottles, 1, (see Fig. 3, arrows f_3 and f_4), and wrapped in this way, they are fed to the next wrapping station (see Fig. 3, arrow f_5). As this figure shows, the wrapping, 3, protrudes slightly from underneath the edges of the bottles, 1, so that once the film, 2, is cut and the wrapping, 3, is no longer being pulled, it is released, becoming shorter and shrinking beneath the bottles, 1, thus acting as a support and clinging to them.

The group of bottles, 1, is then held and supported by two horizontal pressers, 8, pressing on the longer vertical sides and strip, 4a, of the film, 2, the same as the previous strip, but preferably being wound from the second reel, 10, is brought into contact with the wrapping, 3, beneath the bottles, 1, (see Fig. 4, arrow f_6).

As the film, 2, is made of material that clings easily, this will be sufficient to ensure that the strip, 4a, clings tightly to the wrapping, 3, and does not become unstuck while the reel, 10, makes three turns around the shorter diagonal horizontal axis of the group of bottles, 1, (see Fig. 2, arrow f_7). As in the previous case the first turn is effected with the film only slightly stretched, while the second and third turns are subjected to the afore-mentioned stretching in position 10d from the reel, 10.

Finally the film, 2, is cut and as the top of the wrapping, 4, forms a strip of limited width, it can also act as the carrying handle, 5. The film material, 2, is such that the handle, 5, becomes slightly longer when the bottles, 1, are picked up, as shown in Fig. 5, but shrinks again once it is released, so the shrinkwrapping will cling to the bottles, 1, again so that they will not move in any way.

As the material used for the film, 2, (polythene) is so thin that the three layers (two of which are

stretched) are not even as thick as the 0.8 mm of the heat-shrinkwrapping materials, it is less expensive.

A further advantage of this procedure is that no heat treatment is required so the machine being used is simpler, so many of the usual problems involved with shrinking ovens can be avoided.

In fact, this packing procedure is particularly suited to products likely to suffer damage from large changes in temperature. There are countless variations to this procedure: publicity leaflets can be inserted together with the film (these are usually transparent) during the first wrapping stage, the wrapping being held in place by the stretching of the subsequent turns of film; this saves the need for any further stages for the application of publicity materials.

The group of bottles, 1, could be rotated on its own axis and the reel, 9 and 10, kept still as a consequence, or the wrapping stages could be reversed.

Claims

1. Procedure for wrapping groups of products disposed in side-by-side relationship by means of two stretching plastics material film wrappings (3, 4) applied around the products at a right angle one with respect to each other, characterised in that said procedure consists of the following stages:
 - holding the group of products (1) by two opposite sides;
 - forming a first (3) of said wrappings of at least two turns around the perpendicular axis to the sides where the group of products (1) is being held by continuously unrolling a film of material (2);
 - permanently tightly stretching at least the second turn of film (2) forming the first wrapping (3) by pulling the film of material (2);
 - releasing the group of products (1) and holding it by a second set of two opposite sides at right-angles to the previous ones;
 - forming a second (4) of said wrappings of at least two turns around the axis at right-angles to the second set of opposite sides where the group of products (1) is being held by continuously unrolling the film of material (2);
 - permanently tightly stretching at least the second turn of film (2) forming the second wrapping (4) by pulling the film of material.
2. Procedure according to claim 1, characterised in that the film (2) is made of material that will cling easily and which, when pulled will stretch without tearing.

3. Procedure according to claim 1, characterised in that one of the wrappings (3) is formed around the vertical axis, ensuring that the film (2) protrudes from underneath beyond the edges of the group of products (1). 5
4. Procedure according to claim 3, characterised in that the initial strip (3a) of the vertical wrapping (3) is inserted, prior to the wrapping (3) being formed, between at least two of the groups of products (1). 10
5. Procedure according to claim 1, characterised in that one of the two wrappings (4) is placed around the shorter horizontal diagonal axis of the group of products (1) thus forming a carrying handle (5) for the group of products (1). 15
6. Procedure according to claim 5, characterised in that the initial strip (4a) of the horizontal wrapping (4) is placed underneath the group of products (1) prior to the wrapping (4) being formed. 20
7. Procedure according to claim 1, characterised in that the first wrapping (3) is made around the horizontal axis. 25
8. Procedure according to 1, characterised in that at least one of the first (3) and second (4) wrappings is formed by at least three overlapping turns of film (2) and characterised in that the second and third turns are subjected to pulling or tight stretching. 30

Patentansprüche

1. Verfahren zum Verpacken von Gruppen von Seite an Seite angeordneten Produkten mit Hilfe von zwei Umwicklungen (3, 4) mit einer Folie aus gedehntem Kunststoffmaterial, die im rechten Winkel zueinander um die Produkte angebracht werden **dadurch gekennzeichnet**, dass das genannte Verfahren aus folgenden Phasen besteht: 40
 - Halten der Gruppe von Produkten (1) an ihren beiden, sich gegenüberliegenden Seiten;
 - Herstellung einer ersten der genannten Umwicklungen (3) von wenigstens zwei Umwindungen um die zu den Seiten, an denen die Gruppe von Produkten (1) gehalten wird, senkrechte Achse, und zwar durch kontinuierliches Abwickeln einer Materialfolie (2);
 - ständiges leichtes Dehnen bei wenigstens der zweiten Umwindung der die erste Umwicklung (3) bildenden Folie (2) durch Ziehen der Materialfolie (2) selbst; 50

- Loslassen der Gruppe von Produkten (1) und Halten an den anderen beiden sich gegenüberliegenden Seiten im rechten Winkel zu den vorherigen;
 - Herstellung einer zweiten der genannten Umwicklung (4) von wenigstens zwei Umwindungen um die zu den zweiten sich gegenüberliegenden Seiten, an denen die Gruppe von Produkten (1) gehalten wird, senkrechte Achse, und zwar durch kontinuierliches Abwickeln einer Materialfolie (2);
 - ständiges leichtes Dehnen bei wenigstens der zweiten Umwindung der die zweite Umwicklung (4) bildenden Folie (2) durch Ziehen der Materialfolie (2) selbst;
2. Verfahren nach Patentanspruch 1, **dadurch gekennzeichnet**, dass die Folie (2) aus einem Material hergestellt ist, welches leicht haftet, und dass sich beim Ziehen ohne zu reißen dehnt.
 3. Verfahren nach Patentanspruch 1, **dadurch gekennzeichnet**, dass eine der Umwicklungen (3) um die vertikale Achse ausgeführt wird und dabei sichert, dass die Folie (2) unten über die Bodenkanten der Gruppe von Produkten (1) hinausragt.
 4. Verfahren nach Patentanspruch 3, **dadurch gekennzeichnet**, dass das Anfangsstück (3a) der vertikalen Umwicklung (3), bevor die Umwicklung (3) geformt wird, zwischen wenigstens zwei der Gruppen von Produkten (1) eingeführt wird.
 5. Verfahren nach Patentanspruch 1, **dadurch gekennzeichnet**, dass eine der beiden Umwicklungen (4) um die kürzere diagonale Achse der Gruppe von Produkten (1) angeordnet ist, wodurch ein Tragegriff (5) für die Gruppe von Produkten (1) gebildet wird. 35
 6. Verfahren nach Patentanspruch 5, **dadurch gekennzeichnet**, dass das Anfangsstück (4a) der horizontalen Umwicklung (4) unterhalb der Gruppe von Produkten (1) angeordnet wird, bevor die Umwicklung (4) gebildet ist.
 7. Verfahren nach Patentanspruch 1, **dadurch gekennzeichnet**, dass die erste Umwicklung (3) um die horizontale Achse erfolgt ist.
 8. Verfahren nach Patentanspruch 1, **dadurch gekennzeichnet**, dass wenigstens eine der ersten (3) und zweiten (4) Umwicklungen durch wenigstens drei überlappte Umwindungen der Folie (2) gebildet wird, und **dadurch gekennzeichnet**, dass die zweiten und die dritten Umwindungen einem Zug oder einem leichten Dehnen unterliegen. 55

Revendications

1. Procédé d'emballage pour groupes d'objets disposés a côté les uns des autres au moyen de deux enveloppements (3, 4) de pellicule en matière plastique à rétraction appliqués autour des objets l'un perpendiculaire à l'autre, caractérisé en ce que ledit procédé prévoit les étapes de:
 - retenir le groupe d'objets (1) à deux de ses côtés opposés;
 - former le premier (3) desdits enveloppements comportant au moins deux tours selon un axe perpendiculaire aux côtés où le groupe d'objets (1) est retenu, moyennant le déroulement continu d'une pellicule de matériau (2);
 - tendre étroitement et de manière permanente au moins le second tour de pellicule (2) formant le premier enveloppement (3) moyennant étirage de la pellicule de matériau (2);
 - libérer le groupe d'objets (1) et le retenir par deux autres côtés opposés perpendiculaires aux précédents;
 - former le second (4) desdits enveloppements comportant au moins deux tours selon un axe perpendiculaire aux deux seconds côtés opposés de retenue du groupe d'objets (1), moyennant le déroulement continu d'une pellicule de matériau (2);
 - tendre étroitement et de manière permanente au moins le second tour de pellicule (2) formant le second enveloppement (4) moyennant étirage de la pellicule de matériau.
2. Procédé selon la revendication 1, caractérisé en ce que la pellicule (2) se compose d'un matériau ayant un degré d'adhésion élevé et capable de s'étendre sans se déchirer quand il est tiré.
3. Procédé selon la revendication 1, caractérisé en ce qu'un des enveloppements (3) est formé autour d'un axe vertical, assurant que la pellicule (2) dépasse du dessous les bords du groupe d'objets (1).
4. Procédé selon la revendication 3, caractérisé en ce que le pan initial (3a) de l'enveloppement vertical (3) est inséré, avant la formation du même enveloppement (3), entre au moins deux objets (1) formant un groupe.
5. Procédé selon la revendication 1, caractérisé en ce que l'un des enveloppements (4) est disposé autour de l'axe horizontal relatif au plus court côté du groupe d'objets (1) de manière à former une poignée de transport (5) pour le groupe d'objets

(1).

6. Procédé selon la revendication 5, caractérisé en ce que le pan initial (4a) de l'enveloppement horizontal (4) est disposé au-dessous du groupe d'objets (1) avant la formation de l'enveloppement (4) lui-même.
7. Procédé selon la revendication 1, caractérisé en ce que le premier enveloppement (3) est réalisé autour d'un axe horizontal.
8. Procédé selon la revendication 1, caractérisé en ce qu'au moins un des premier (3) et deuxième (4) enveloppements est formé par au moins trois tours superposés de pellicule (2) et en ce que les deuxième et troisième tours sont soumis à ladite action de traction ou d'étirage de blocage.

FIG 1

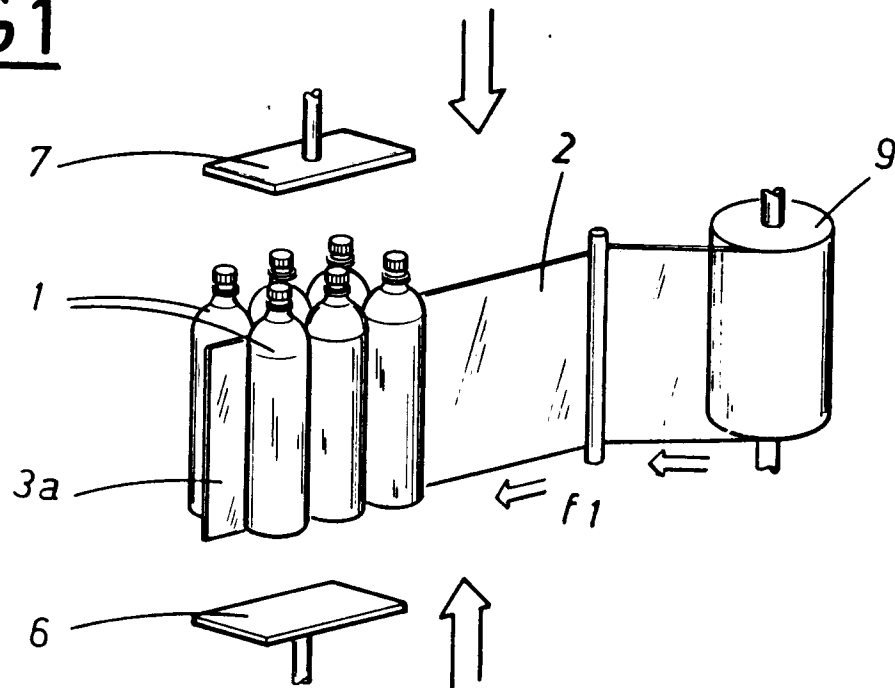


FIG 2

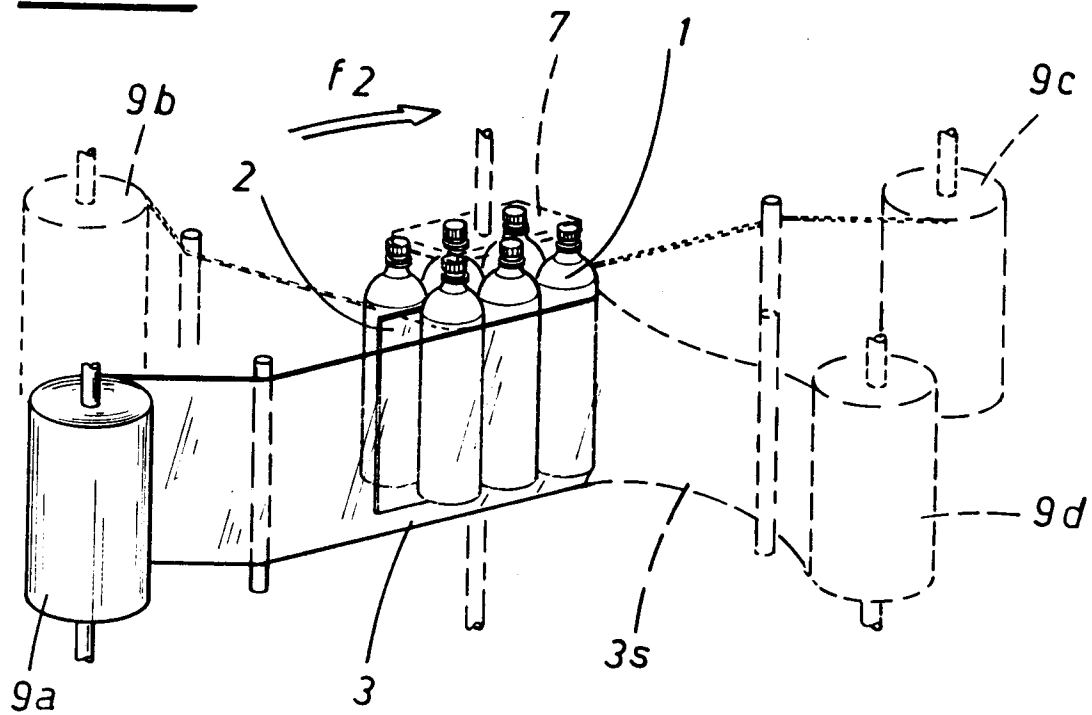


FIG 5

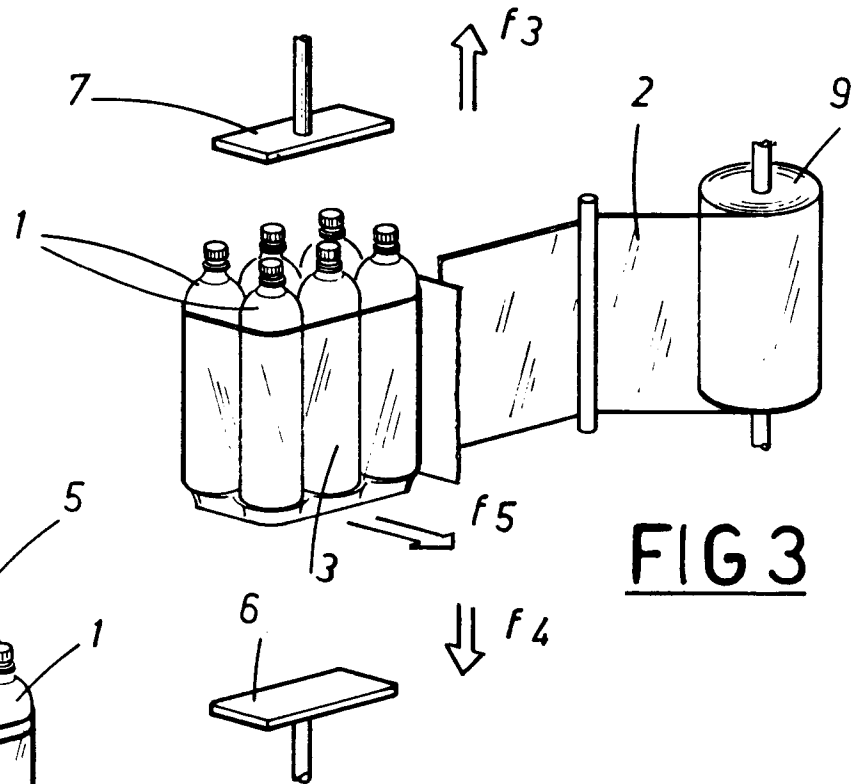
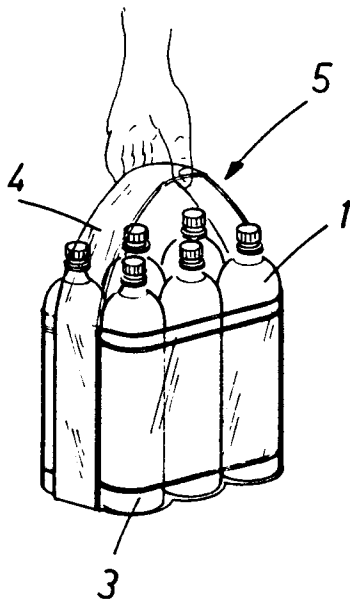


FIG 3

FIG 4

