

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) Publication number:

0 490 015 A1

(12)

EUROPEAN PATENT APPLICATION

(21) Application number: **90830514.7**

(51) Int. Cl.⁵: **B65B 11/58**, B65B 53/00,
B65D 71/00

(22) Date of filing: **12.11.90**

(43) Date of publication of application:
17.06.92 Bulletin 92/25

(84) Designated Contracting States:
BE DE DK ES FR GB GR IT LU NL

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(54) **Procedure for cold-packaging and shrinkwrapping groups of products.**

(57) This procedure forms a shrinkwrapping by placing two wrapping strips (3, 4) around the perpendicular axes of the group of products (1) by passing a film of material (2), that is partially stretched during the procedure so that it will cling easily and which when pulled will lengthen and shrink in width without tearing; one of the afore-mentioned wrapping strips (4) is then wrapped around the shorter horizontal axis of the group of products (1) and the top can be used as a carrying handle (5).

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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.

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 show-

ing 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 f₁).

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 f₂); 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.

This invention can be subjected to numerous modifications and variations, all of which are within the terms of the invention. For example, 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. Furthermore any or all of these details can be replaced by their technical equivalents.

Claims

1. Procedure for wrapping groups of products, wherein said procedure consists of the following stages:

- holding the group of products (1) by their two opposite sides;
- forming the first wrapping (3) of at least two turns around the perpendicular axis at the sides where the group of products (1) is being held by the film of material (2);
- pulling by permanently tightly stretching at least the second turn of 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;
- forming the second wrapping (4) for at least two turns around the axis at right-angles to the previous sides where the group of products (1) is being held by the film of material (2);
- pulling by permanently tightly stretching at least the second turn of the film (2) forming the second wrapping (4).

2. Procedure according to the description in claim 1, wherein the film (2) is made of material that will cling easily and which, when pulled will stretch without tearing.

3. Procedure according to the description in claim 1, wherein 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).

4. Procedure according to the description in claim 3, wherein the initial strip (3a) of the vertical wrapping (3) is inserted, prior to the wrapping (3) being formed, between at least two of the group of products (1).

5. Procedure according to the description in

claim 1, wherein 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).

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6. Procedure according to the description in claim 5, wherein the initial strip (4a) of the horizontal wrapping (4) is placed underneath the group of products (1) prior to the wrapping (4) being formed. 10
7. Procedure according to the description in claim 1, wherein the first wrapping (3) is made around the horizontal axis. 15
8. Procedure according to the description in claim 1, wherein at least one of the first (3) and second (4) wrappings is formed by at least three overlapping turns of the film (2) and wherein the second and third turns are subjected to pulling or tight stretching. 20
9. Shrinkwrapping formed by the procedure according to the description in claims 1 to 8 consisting of two wrappings (3 and 4) at right angles to each other and in material that clings easily and which when pulled will stretch without tearing; one of these wrappings (4) being around the horizontal axis and forming a carrying handle (5) at the top. 25 30
10. Shrinkwrapping according to the description in claim 9, wherein one of the wrappings (3) is around the perpendicular axis and protrudes from underneath the products (1) that it is wrapping, thus acting as a partial support. 35

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FIG 1

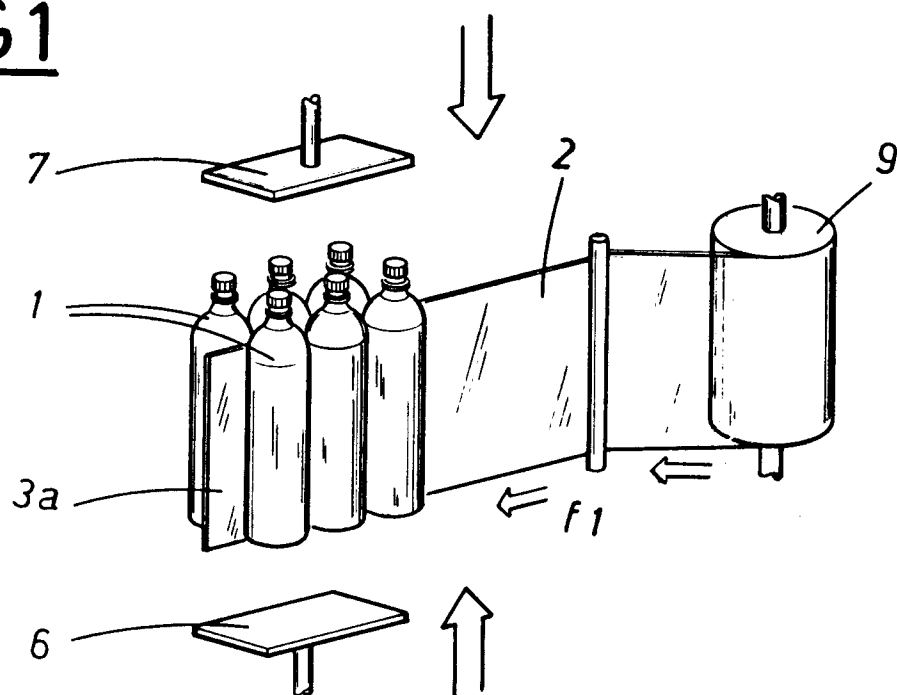


FIG 2

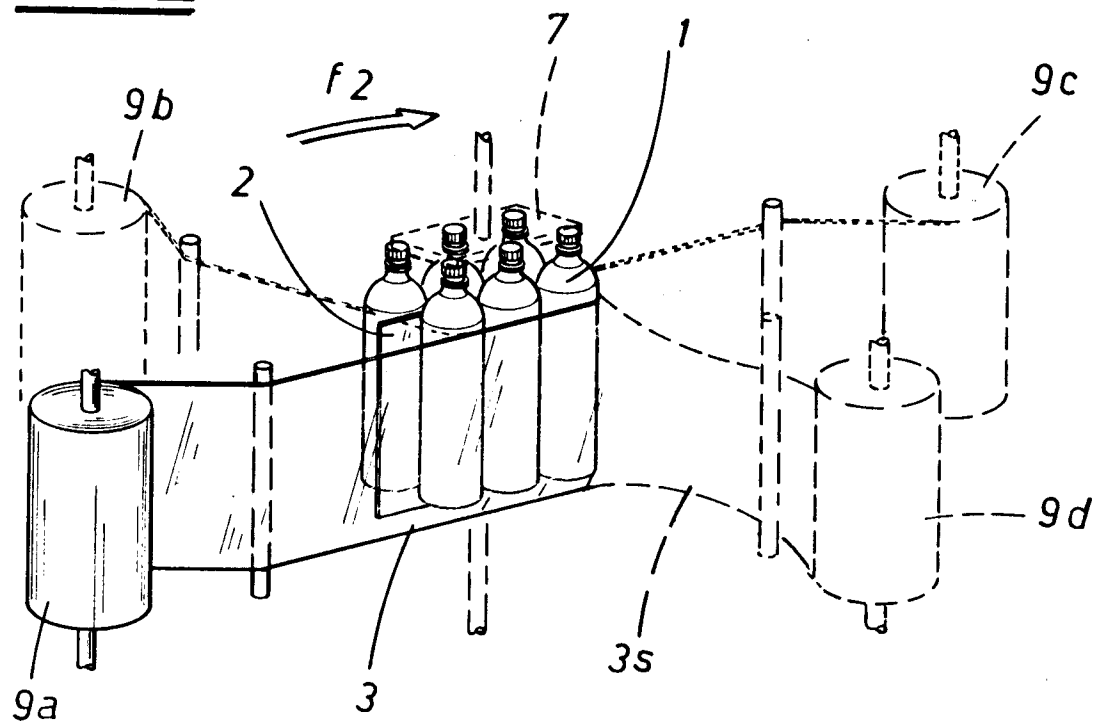


FIG 5

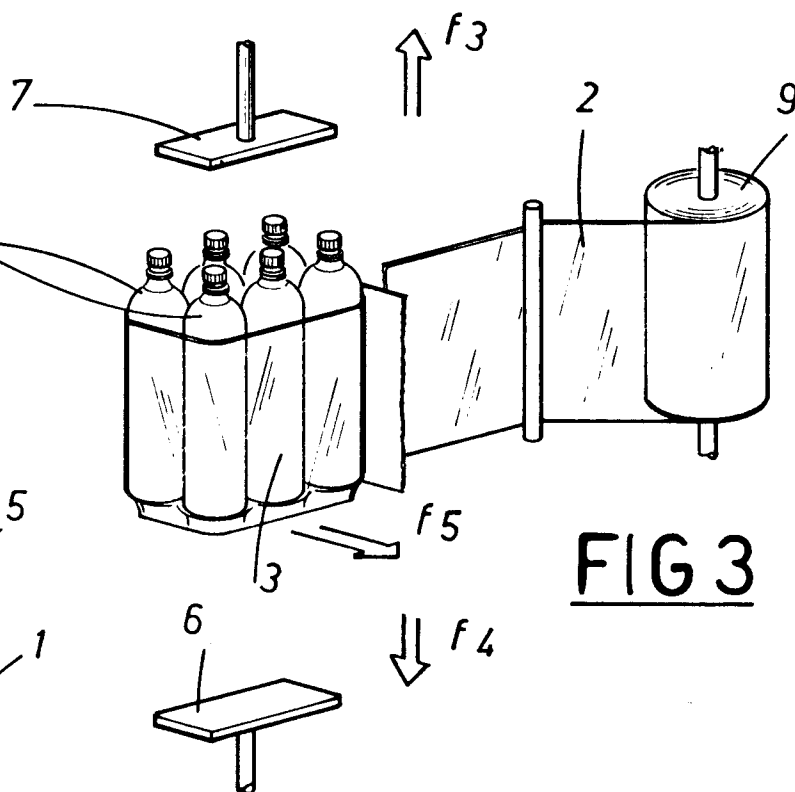
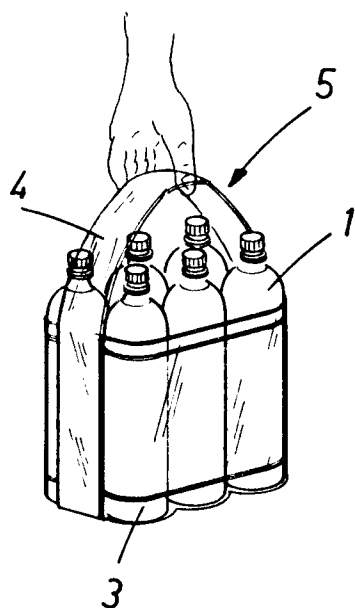
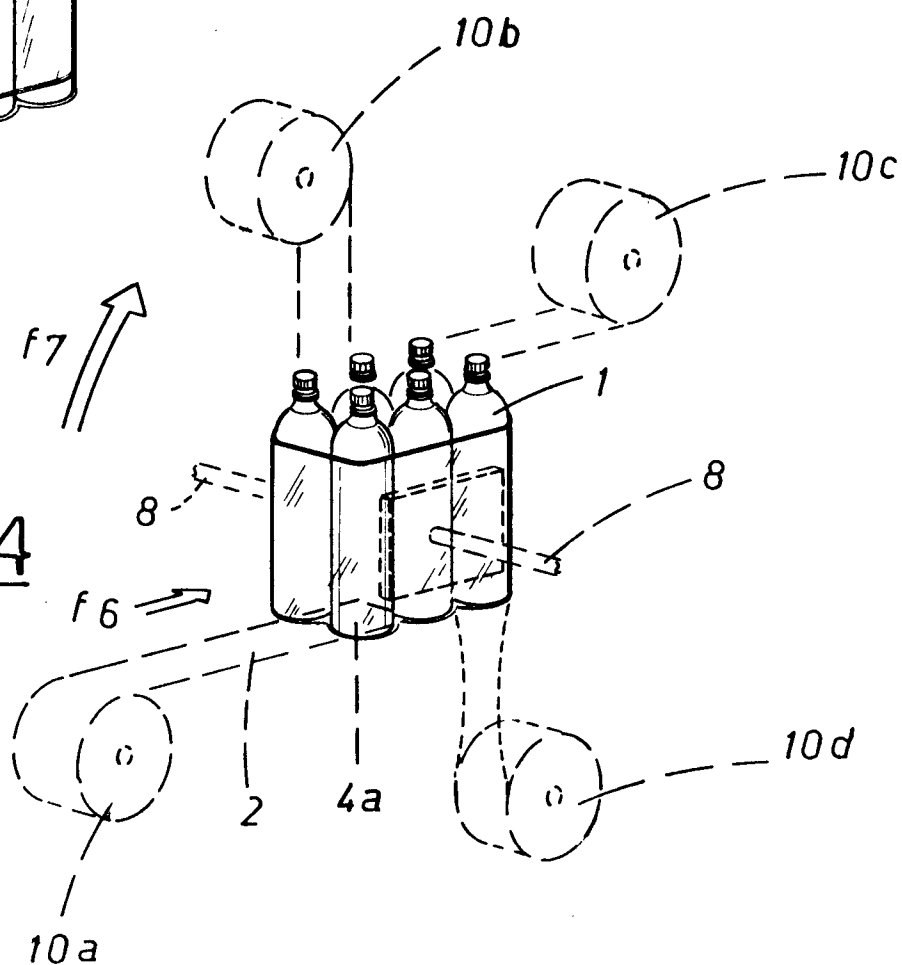


FIG 3

FIG 4





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EUROPEAN SEARCH REPORT

Application Number

EP 90 83 0514

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	US-A-4 596 330 (BENNO) * column 4, line 38 - column 6, line 48; figures 1-3 *	1, 5, 9	B65B11/58 B65B53/00 B65D71/00
A	US-A-4 403 463 (DANTI) * column 4, line 65 - column 5, line 47; figures 1-6 *	1, 9	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			B65B B65D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 06 JUNE 1991	Examiner CLAEYS H.C.M.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document I : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			