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

(11) Publication number: **0 170 531**
A2

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **85305509.3**

(51) Int. Cl.⁴: **B 65 B 61/14**

(22) Date of filing: **02.08.85**

(30) Priority: **03.08.84 GB 8419859**

(43) Date of publication of application:
05.02.86 Bulletin 86/6

(84) Designated Contracting States:
AT BE CH DE FR GB IT LI LU NL SE

(71) Applicant: **Tetra Pak International AB**
P.O. Box 61
S-221 00 Lund(SE)

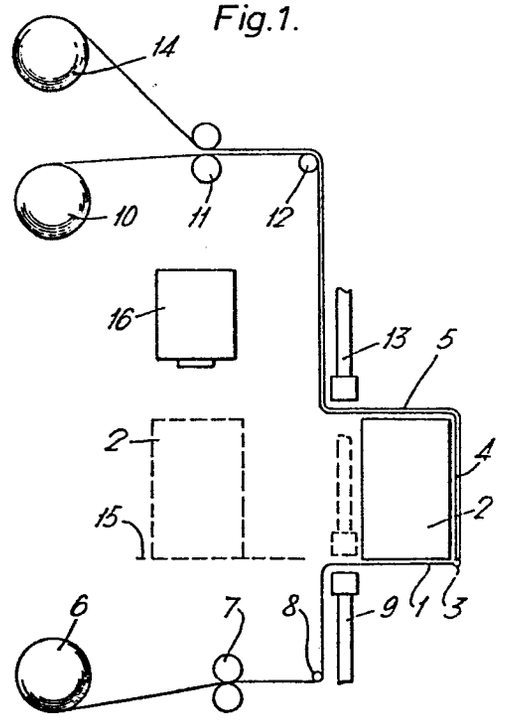
(72) Inventor: **Collins, Brian Davy**
3 Briar Lane Four Marks
Near Alton Hampshire(GB)

(74) Representative: **Calderbank, Thomas Roger et al,**
MEWBURN ELLIS & CO. 2/3 Cursitor Street
London EC4A 1BQ(GB)

(54) **Handles for wrapped packages.**

(57) An article (2) is wrapped in three plastics films (1, 4, 5) which are secured together at or near the bottom of the article by heat sealing using heat sealing jaws (9 and 13). The films (1, 4, 5) are then conformed to the shape of the article (2) by e.g. heat shrinking using hot air blower (16). One of the films (5) has different properties from the others and conforms differently so that it forms a handle for the wrapping. Strength of attachment of the handle is achieved by the combined effect of the heat seal (3) and the "tack" of the plastics films (4, 5) along the sides of the article.

Fig.1.



EP 0 170 531 A2

HANDLES FOR WRAPPED PACKAGES

The present invention relates to a method of forming a handle on a wrapped package, and to a package so formed.

One way of wrapping a package in a plastics film is by shrink-wrapping. The package is loosely wrapped in a loose sleeve or bag of thin film of plastics material, which material is then heated. The heating causes the plastics material to shrink around the package so that the package is tightly encased in the film.

Another way of wrapping a package is by stretch-wrapping. Here a plastics film is wrapped tightly around the package so that again the result is a tightly encased package.

It is well known to provide a shrink or stretch-wrapped package with a handle by first wrapping the package in plastics film and then attaching the handle to the package. The usual way of doing this uses an adhesive tape handle which is simply stuck to the wrapping film. Examples of this are shown in e.g. US-A-4078659, US-A-4294058, US-A-4296861, and US-A-4422281. It is, however, desirable for the handle to be attached simultaneously with the wrapping of the package, so that both could be done in a single manufacturing operation.

It is known from UK-A-1382842 to attach a handle to a package by simultaneously wrapping a package in a first

plastics film and positioning a second film so that it partially underlies and partially overlies the second plastics film, at the top of the article to be wrapped. The two plastics films are sealed together, and the first film is shrunk around the article. The second film has different characteristics, and so does not conform to the shape of the article in the same way as the first film. As a result it forms a handle.

However, the attachment of the handle only to the film covering the top of the package gives insufficient strength for all but the lightest of objects. To carry heavier objects, such as filled bottles, more bonding strength is needed. In the arrangements in which the handle is secured to the package after wrapping, this simply means that the length of the part of the handle stuck to the wrapping must be increased. This is not possible, however, with the construction of UK-A-1382842 because of the way the handle film is folded into the other film.

It has been found that if the handle is attached at or near the bottom of the package, sufficient strength may be achieved by the "tack" of the plastic films as they contact each other along the sides of the article. The present invention therefore proposes a method in which the wrapping is formed, with the handle secured at or near the bottom of the article, then conformed to the shape of the article.

If conformation of the wrapping is by shrink-wrapping, the material to form the handle may have a lower

shrink capability and/or be of thicker gauge than the material to form the wrapping, so that it shrinks less than the wrapping material. If the conformation is by stretch-wrapping, the material to form the handle may have a lower tension than the wrapping material. The other properties of the material to form the handle could then be the same as the wrapping material, unless different properties were needed for suitable handle strength.

The material to form the handle is preferably a narrow web of suitable plastics material which is sealed to a wrapping film by e.g. heat sealing, and it is desirable that this heat sealing of the handle is carried out in the same operation as the heat sealing of the wrapping film around the package.

An embodiment of the present invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Fig. 1 shows a method of shrink-wrapping a package according to a first embodiment of the present invention; and

Fig. 2 shows a package wrapped by the method of Fig. 1.

Referring first to Fig. 1, a first wrapping web 1 extends underneath a package 2 to be wrapped. The package 2 may be a single item or a collation of items. At one side of the package 2, the first web 1 is heat sealed at seal 3 to a second web 4, and also to a third web 5, the second and

third webs extending over the top of the package. The first and second webs 1, 4 will form a sleeve of thin film plastics material around the package 2, whilst the third web 5 will form the handle. The first web 1 originates in a lower web drum 6, and passes through a lower web drive 7, past a roller 8 and over the top of a lower seal jaw 9. The second web 4 originates in an upper web drum 10 and passes through upper drive means 11, past a roller 12 and under an upper seal jaw 13. The third web 5, which would normally be narrower than the other two webs, originates in a handle web drum 14 and passes through the upper drive means 11, past the roller 12 and under the upper seal jaw 13. The distance between the second and third webs along their runs from the upper drive means 11 to the heat seal 3 is exaggerated for the sake of clarity.

From the position shown in Fig. 1, the upper seal jaw 13 is lowered to the position shown by dotted lines, at which position the three webs 1, 4, 5 are pressed together. Heat is applied between the upper and lower seal jaws 13 and 9 respectively to seal the webs to each other, with the second and third webs 4, 5 passing around three sides of the package 2.

The three webs are then cut at the seal thus formed so that part of the seal remains with the webs around the package and part holds the ends of the webs together. The package 2 is then removed e.g. via conveyor 15, and another package inserted from the left in Fig. 1. The part of the

seal formed in the previous operation which holds the ends of the webs together then forms the seal 3 for the new package.

If the package is to be shrink-wrapped, all three webs 1, 4, 5 are then heated e.g. by hot air blower 16, but the properties of the third web 5 are such that it shrinks less than the other two webs 1, 4. This may be achieved by making the third web 5 of thicker gauge than the other two webs, or by using a plastics material with a lower shrink capability. The result is shown in Fig. 2. The first and second webs 1 and 4 are wrapped tightly around the package 2 whilst the third web 5 extends loosely over the top of the package 2 and thus forms a handle. The handle is secured to the rest of the wrapping at the heat seal 3, and also at a heat seal 14 formed at the closing of the seal jaws 9 and 13. In this way, attachment strength is given by the "tack" of the second and third films 4, 5 where they are in contact.

In some cases the securing of the handle to the rest of the wrapping may be further strengthened by providing a material on the second or third webs 4 and 5 which bonds the webs together when the package is shrink-wrapped.

If the embodiment of Fig. 1 is to be used in stretch-wrapping, the first and second webs 1 and 4 would be under tension and the third web 5 would be relatively loose. In order to achieve this it would probably be necessary to provide a separate drive means for the third web 5, rather than use the same drive means 11 as the second web.

The handle need not be attached to the bottom of the wrapped package. If both the upper and lower seal jaws move, the sealing together of the three webs may be achieved at an intermediate point along the side of the package 2. However, this should be far enough from the top of the package 2 to ensure that attachment strength is given by "tack" due to contact between the films.

The material used for the first and second webs 1 and 4 may be of any suitable shrink or stretch-wrapping material. If the webs 1, 4, 5 are to be sealed together by heat as described above, the third web should be compatible for heat sealing to the other webs, and may in addition be coloured, printed, or embossed, to provide e.g. information about the package. However, other sealing methods may be used, e.g. ultrasonic welding.

The above description has described the formation of a single handle on the package; the present invention is not limited to this, and two or more handles may be provided by the use of additional webs. It would also be possible to form the handle from a rope of plastics material, rather than a web. The present invention is not limited to shrink and stretch-wrapping methods, but may also be adapted to other wrapping techniques, such as the use of "L" sealing machines. The important feature is that the plastics material to form the handle should behave differently from the wrapping material when the package is wrapped.

CLAIMS:

1. A method of wrapping an article (2) comprising the step of encasing the article (2) in a covering (1, 4, 5) of plastics material having two parts (1, 4 and 5) of different properties, and the step of acting on that covering (1, 4, 5) so that one part (1, 4) conforms to the shape of the article (2) and the other part (5) conforms differently to form a handle for the wrapping;

characterised in that:

during the step of encasing the article (2) the said other part (5) of the covering forming the handle is secured to the said one part (1,4) at or adjacent the base of the article (2) and extends around the sides and top of the article (2) such that, after the step of acting on the covering, the said one part (5) contacts the said other part (1, 4) along the sides of the article (2).

2. A method according to claim 1, wherein the covering (1, 4, 5) is shrunk to conform to the article (2).

3. A method according to claim 2, wherein the said other part (5) of the covering forming a handle has a lower shrink capability when heated than the said one part (1, 4) of the covering.

4. A method according to claim 2 or claim 3, wherein the said other part (5) of the covering forming the handle has a greater thickness than the said one part (1, 4) of the covering.

5. A method according to claim 1, wherein the covering

(1, 4, 5) is stretched to conform to the article (2), and the said other part (5) forming the handle has a lower tension than the said one part (1, 4).

6. A method according to any one of the preceding claims, wherein the said other part (5) forming the handle is heat sealed to the said one part (1, 4).

7. An apparatus for wrapping an article (2), comprising:

three films (1, 4, 5) of plastics material, one of the films (5) having different properties from the other two films (1, 4);

means (6, 7, 8, 10, 11, 12, 14) for guiding the films around an article (2) such that the article (2) is encased in the said films (1, 4, 5) and the said one film (5) extends around the sides and top of the article (2);

means (9, 13) for sealing the films (1, 4, 5) together at at least one point (3) at or adjacent the base of the article (2); and

means for causing the films (1, 4, 5) to conform to the shape of the article (2), such that the said one film (5) conforms differently from the other films (1, 4) and thereby forms a handle for the article (2), the said one film (5) contacting at least one of the other two films (1, 4) along the sides of the article.

8. An apparatus according to claim 7, wherein the means for causing the films (1, 4, 5) to conform to the shape of the article is heating means for causing the films to shrink.

9. An apparatus according to claim 7 or claim 8, wherein the sealing means (9, 13) is a pair of heatable jaws adapted to clamp the films (1, 4, 5) together between the jaws and heat the films (1, 4, 5) so that they seal together.

Fig.1.

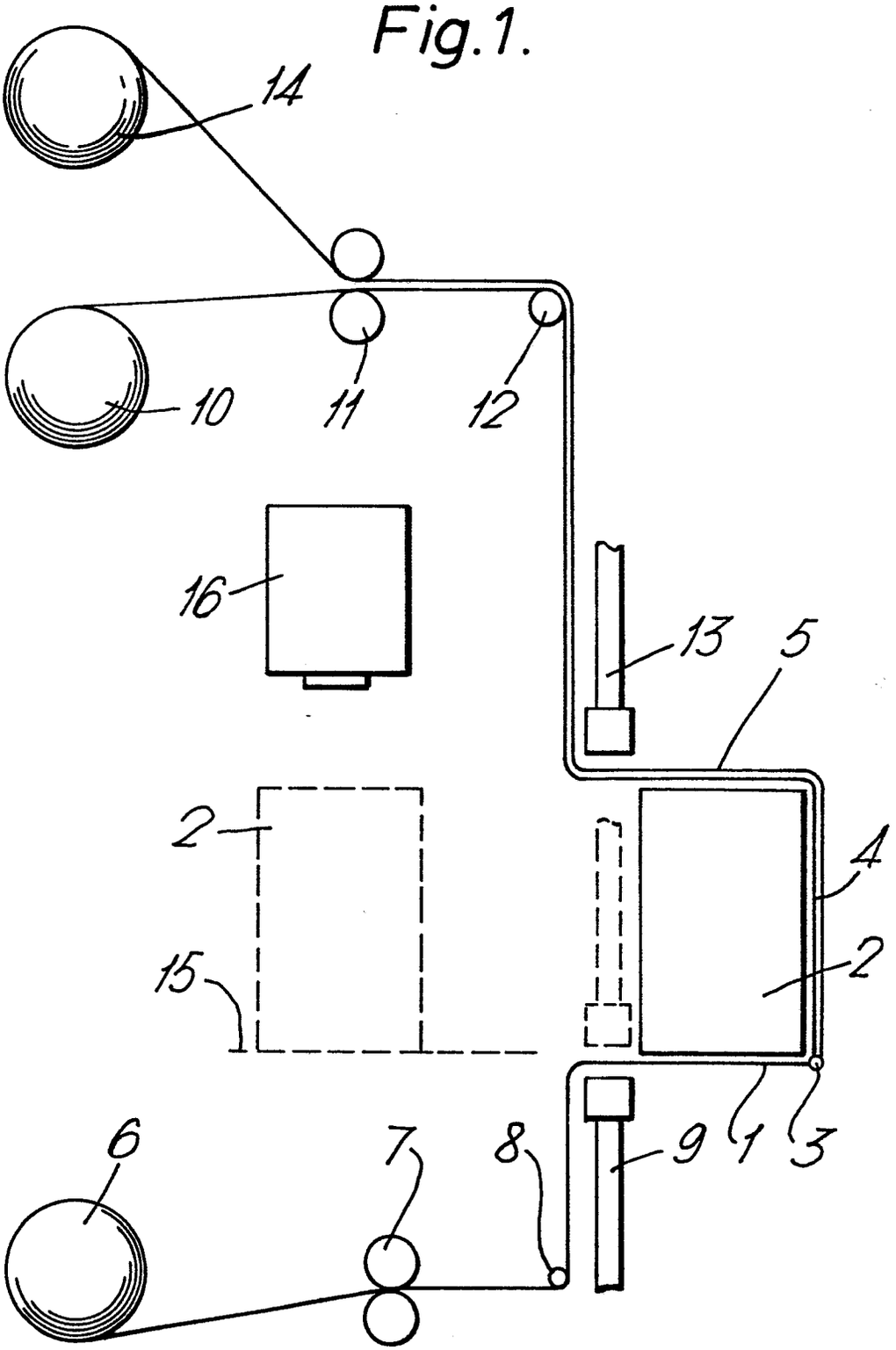


Fig.2.