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

(11) Publication number: **0 112 660**
A2

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **83307242.4**

(22) Date of filing: **28.11.83**

(51) Int. Cl.³: **B 65 D 30/08**

(30) Priority: **21.12.82 GB 8236310**

(43) Date of publication of application: **04.07.84 Bulletin 84/27**

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

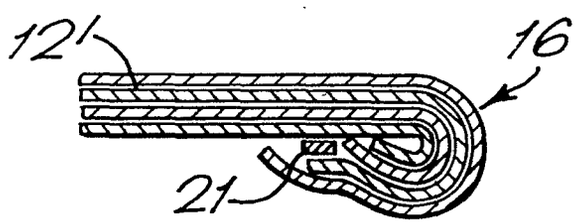
(71) Applicant: **LIN PAC CONTAINERS INTERNATIONAL LIMITED, Charles Street, Louth Lincolshire (GB)**

(72) Inventor: **Thomson, William, Lauderdale Mill Lane Thimbleby, Horncastle Lincolnshire LN9 6JS (GB)**

(74) Representative: **Oliver, Roy Edward et al, POLLAK MERCER & TENCH High Holborn House 52-54 High Holborn, London WC1V 6RY (GB)**

(54) Pinch bottom sacks.

(57) An easy-open pinch bottom sack 12' and method of manufacturing the same, comprising a tape (21) which is located between at least one folded ply and an adjacent wall of the sack (12') at one end thereof and which has been secured to said at least one ply of a plurality of stepped or staggered plies (16) at that end of the sack (12') by means of a hot melt adhesive, prior to the stepped or staggered plies (16) being folded and adhered together during manufacture of the sack (12'). Preferably, the tape (21) is impregnated with hot melt adhesive which has been re-melted immediately prior to the application of the tape (21) to the stepped or staggered plies (16) at the one end of the sack (12') in a multi-wall tubular form, which plies (16) have been subsequently folded and adhered to each other.



EP 0 112 660 A2

PINCH BOTTOM SACKS

DESCRIPTION

This invention relates to a pinch bottom sack comprising a multi-wall tube with plies of paper, or other suitable material, such as a flexible plastics material, arranged at one end thereof in a stepped or staggered configuration which permits the end to be folded and closed by an adhesive to provide a strong, sift-proof seal. In its basic form, such a sack has to be cut or torn to gain access to its contents.

By altering the configuration of the stepped or staggered paper plies at one end of the multi-wall tube during manufacture of the sack, it is possible to incorporate a rip cord which, when pulled, tears a strip of paper plies from the sealed sack end to facilitate access to the sack contents.

A known form of such rip cord is a length of string which is secured to the folded paper plies when the one end of the multi-wall tube is sealed with a hot melt adhesive. For cold adhesive applications, using starch or P.V.A., string is not practical, in that it cannot be secured properly between the folded paper plies.

An object of the present invention is to overcome this disadvantage associated with such cold adhesive applications and to provide an easy-open, pinch bottom sack which is an improvement over the prior art sacks of this type.

Accordingly, a first aspect of the invention provides an easy-open pinch bottom sack comprising a tape which is located between the folded plies of the sack at one end thereof and which has been secured to the stepped or staggered configuration of the plies at that end of the sack by means of a hot melt adhesive, prior to the plies being folded and adhered together during manufacture of the sack.

In accordance with a second aspect of the invention, there is provided a method of manufacturing an easy-open, pinch bottom sack comprising adhering, preferably by means of a hot melt adhesive, a tape to the stepped or staggered configuration of the plies at one end of the sack, prior to the folding and adhering operations upon the stepped or staggered ply configuration at said one end of the sack.

Preferably, the tape is impregnated with the hot melt adhesive which is re-melted immediately prior to the application of the tape to the stepped or staggered ply configuration at the one end of the multi-wall tube which is subsequently to be folded, with the folded plies themselves adhered to each other.

A preferred method of manufacturing easy-open, pinch bottom, paper sacks using a modified, prior art pinch bottom sack production line will now be described by way of example and with reference to the accompanying drawing in which:

Fig 1 is a diagrammatic, elevational side view of a prior art production line for manufacturing pinch bottom paper sacks;

Fig 2A is a partial, sectional side view of one end of a multi-wall tube having a stepped paper ply configuration, prior to the adhesive application and folding operations;

Fig 2B is a partial, sectional side view of the

one end of the multi-wall tube shown in Fig 2A but after the adhesive application and folding operations;

Fig 3 is a diagrammatic, elevational side view of a modified form of the prior art production line shown in Fig 1, constituting a production line for carrying out the inventive method of manufacturing easy-open, pinch bottom sacks;

Fig 4A is a partial, sectional side view of one end of a multi-wall tube having a stepped paper ply configuration, prior to the adhesive application and folding operations but with a tape applied thereto; and

Fig 4B is a partial, sectional side view of the one end of the multi-wall tube shown in Fig 4A after the adhesive application and folding operations have been carried out upon the stepped paper ply end configuration.

Referring firstly to the prior art production line 1 shown in Fig 1, flat, multi-wall paper tubes 2, with stepped, double ply wall configurations 3 facing downwardly as shown in Fig 2A, are fed in side-by-side relationship in the direction of the arrow A along the line 1. An adhesive, normally cold starch or P.V.A., is applied to the underside stepped configuration 3 by means of a rotating wheel 4. A downstream former plate 5 folds, in known manner, the stepped configuration 3, at the one end of each multi- wall tube 2, such that the pinch bottom end of the sack is formed with a configuration 6 shown in Fig 2B. This folded configuration 6 is maintained as such by then passing each sack 2' between a pair of moving compression belts 7, to allow the adhesive to set. After such setting at the end of the line 1, the sacks 2' are counted and bundled for storage and/or transportation.

In Figs 2A and 2B, the multi-wall tube 2 and sacks 2', with respective unfolded and folded stepped paper ply ends 3,6, have double paper ply walls, although

it will be appreciated that any number of paper plies may be used, depending upon the use to which the sacks 2' are to be put.

A modified form 11 of the production line 1 shown in Fig 1, for carrying out the method according to the invention, is illustrated in Fig 3. Here, the stepped configuration 13 of each flat multi-wall tube 12 is such as to accommodate a hot melt adhesive inpregnated tape 21 in a precise position to enable the paper plies to be torn accurately after the sack has been manufactured and filled, thereby providing access to its contents. The tubes 12 are positioned in side-by-side relationship in the same manner as the tubes 2 in the production line 1, except that they are spaced further apart to accommodate the "tail" of the opening tape.

The hot melt impregnated tape 21 is fed from a spool supply 32, via a series of tensioning pulleys 33, over the surface of a heated rotating drum 34 where the adhesive impregnated in the tape 21 melts. This surface of the heated drum 34 also applies the tape 21 to the underside stepped configuration 13 of each tube 12, as shown in Fig 4A, such that melted adhesive is located between the tape and corresponding paper ply. A pressure wheel (not shown) urges the paper ply and tape 21 against the drum 34 to ensure the transfer of the tape to the stepped paper ply configuration 13.

The next three production stages, namely, the adhesive application, folding and initial compression operations, are carried out as in the case of the prior art line 1 described above, by means of a respective adhesive application wheel 14 and a forming plate 15, but with the tubes 12 spaced further apart and connected together by the adhesively applied tape 21. The initial compression operation is carried out between the first portions of a pair of moving compression belts 17. At

this stage, the folded end configuration 16 of each sack 12' takes the form of that shown in Fig 4B, with the sacks still connected together by the continuous length of tape 21.

The standard configuration of the compression belts 7 shown in the prior art arrangement of Fig 1 are modified, as shown at 17' in Fig 3, so that the sacks 12' can be fed successively through a tape cutter 35 in which the continuous tape 21 is cut, thereby separating the sacks for subsequent counting and bundling. Each sack 12' is thus provided with a free tape end 21' which can be used to open a filled sack, to facilitate access to its contents.

The tape cutter 35 is preferably actuated by an electronic signal derived from a detector or probe (not shown) which monitors the arrival of each sack 12' at the cutter 35, thus catering for different widths of sack. However, any other suitable form of actuating means may be used.

It will be appreciated that, in the production line 11 described above for carrying out the presently inventive method, the cold application of adhesive, via the wheel 14, to the stepped paper ply configuration 13 may be replaced by a hot adhesive application procedure. In such an instance, it would be possible to use a single heated drum, such as that shown at 34 in Fig 3, in order to apply both the hot melt adhesive - impregnated tape 21 and the hot adhesive for the ends of the multi-wall tubes 12 simultaneously.

CLAIMS

1. An easy-open pinch bottom sack (12') comprising a tape (21) which is located between at least one folded ply and an adjacent wall of the sack (12') at an end thereof,
characterised in that
the tape (21) has been secured to said at least one ply of a plurality of stepped or staggered plies (16) at said end of the sack (12') by means of a hot melt adhesive, prior to the stepped or staggered plies (16) being folded and adhered together during manufacture of the sack (12').

2. A sack (12') according to claim 1, characterised in that the tape (21) is impregnated with a hot melt adhesive which has been re-melted immediately prior to the application of the tape (21) to the stepped or staggered plies (16) at said one end of the sack (12') in a multi-wall tubular form, which plies (16) have been subsequently folded and adhered to each other.

3. A method of manufacturing an easy-open, pinch bottom sack (12'),
characterised in that
a tape (21) is adhered to at least one of a plurality of stepped or staggered plies (16) at one end of the sack, prior to the folding and adhering operations upon the stepped or staggered plies (16) at said one end of the sack (12').

4. A method according to claim 3, characterised in that the tape (21) is adhered to said at least one ply at the one end of the sack (12') by means of a hot melt adhesive.

5. A method according to claim 4, characterised in that the tape (21) is impregnated with the hot melt adhesive.

6. A method according to claim 5, wherein the hot melt adhesive is re-melted immediately prior ro the application of the tape (21) to said at least one ply.

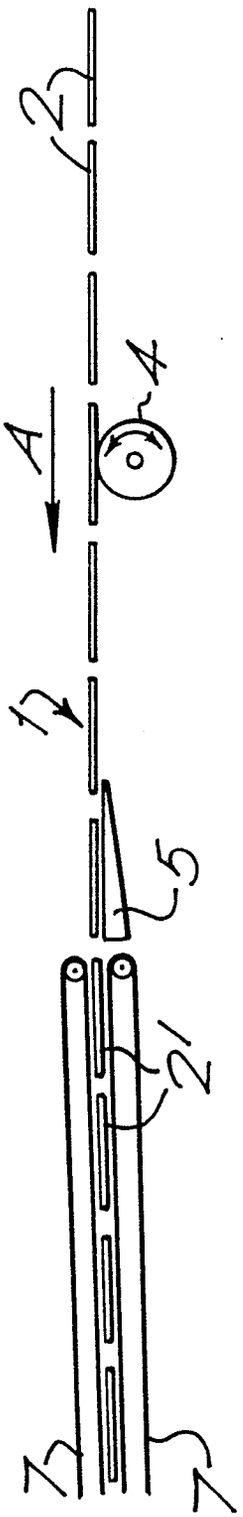


FIG.1.

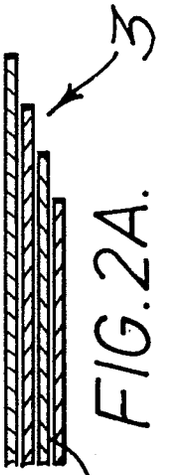


FIG.2A.

PRIOR ART

FIG.2B.

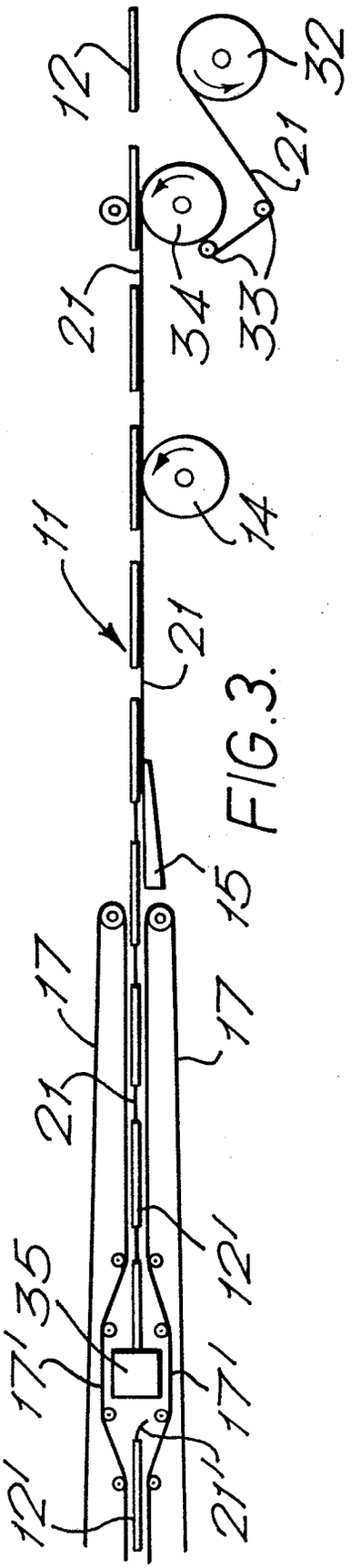


FIG.3.

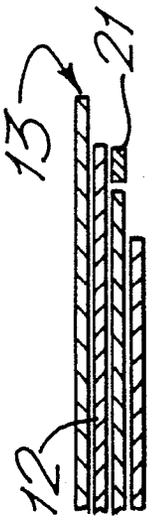


FIG.4A.

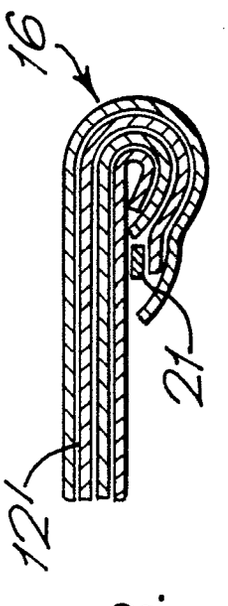


FIG.4B.