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

(11) Publication number : **0 576 269 A1**

(12) EUROPEAN PATENT APPLICATION

(21) Application number : **93304909.0**

(22) Date of filing : **23.06.93**

(51) Int. Cl.[5] : **A44B 19/16,** B65D 33/25

(30) Priority : **23.06.92 GB 9213296**

(43) Date of publication of application :
29.12.93 Bulletin 93/52

(84) Designated Contracting States :
BE FR GB NL

(71) Applicant : **HANLEX LIMITED**
St. Michael's House, Norton Way South
Letchworth, Herts SG6 1PA (GB)

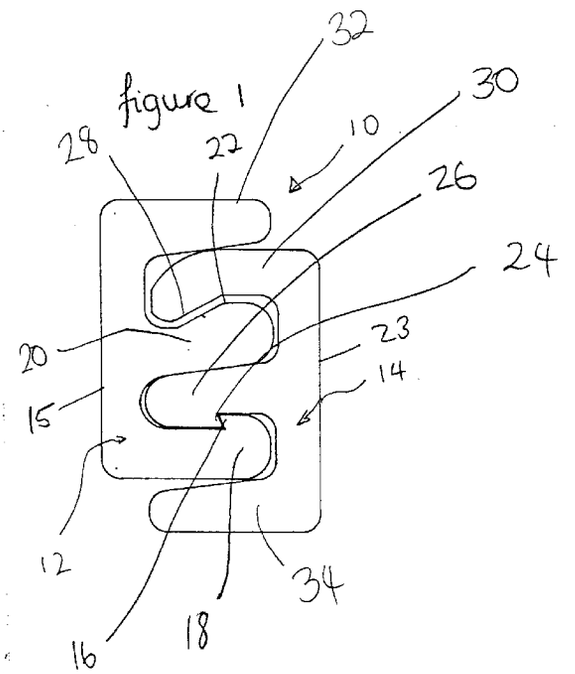
(72) Inventor : **Cowan, Michael Anthony, c/o Hanlex Limited**
St. Michael's House, Norton Way South
Letchworth, Herts SG6 1PA (GB)

(74) Representative : **Moir, Michael Christopher et al**
MATHYS & SQUIRE, 10 Fleet Street
London EC4Y 1AY (GB)

(54) Strip closures.

(57) A strip closure for sealing bags and the like comprises a first strip member (12) and a second strip member (14), each member having a base adapted to be attached to a respective wall of a bag, the strip members being adapted to interlock one with the other to close the bag, wherein the first member, in cross-section, comprises two limbs (18,20) extending from its base (15), each limb including an upwardly extending projection (16,22) ; the second member, in cross-section, comprising two limbs (26,28) extending from its base (23), each limb including a downwardly extending projection (24,28) ; and wherein the upwardly extending projections engage respectively with the downwardly extending projections such that the strip closure is adapted to be more readily opened from above than below.

figure 1



EP 0 576 269 A1

This invention relates to strip closures for sealing bags and the like.

Bags, for example made of extruded plastic material, often require a means for closing them. A number of different forms of strip closure have been proposed to accomplish this task.

GB2017813 shows a typical type of strip closure which is attached to the material of the bag by any appropriate means and can include integral bag and strip combinations obtained by extrusion, as well as adhesive or cohesive connections between the bag and the strip closure. The strip closure includes two strip members which interlock to close the bag.

A number of problems exist with this type of strip closure one of which is that if the bag is filled from the bottom (which subsequently is heat sealed to close it) and the contents of the bag are introduced under any pressure the strip closure has a tendency to open.

One object of the present invention is to overcome at least some of the disadvantages of currently known systems.

Accordingly to one aspect of the present invention there is provided a strip closure for sealing bags and the like comprising a first strip member and a second strip member, each member having a base adapted to be attached to a respective inner wall of a bag, the strip members being adapted to interlock one with the other to close the bag, wherein the first member, in cross-section, comprises two limbs extending from its base, each limb including an upwardly extending projection; the second member in cross-section, comprising two limbs extending from its base, each limb including a downwardly extending projection; and wherein the upwardly extending projections engage respectively with the downwardly extending projections such that the strip closure is adapted to be more readily opened from the above than below.

The term 'upwardly', 'downwardly, 'above' and 'below' are to be interpreted with reference to the intended orientation of the strip closure on a bag disposed with the closure at the top thereof.

This strip closure has the advantage that it is resistant to opening by pressure within the bag and this overcomes, at least to some extent, the problems of the prior art.

Preferably the first strip member is substantially E shaped in cross section and the middle and lower limb of the E shape form said two limbs of the first strip member; and the second strip member is substantially E shaped in cross section and the upper and middle limbs of the E shape form said two limbs of the second strip member.

This feature has the advantage that the E shape member allows easier alignment of the interlocking parts and provides strength to the closure member.

Preferably the middle limb of the first strip member is adapted to interlock with the upper limb of the second strip member and the lower limb of the first strip member is adapted to interlock with the middle limb of the second stip member.

This feature also provides enhanced interlocking and strength to the closure strip.

Advantageously one pair of engaging projections (for example those on said interlocking lower and middle limbs) are in the form of hooks and the other pair of engaging projections (for example those on said interlockable upper and middle limbs) are in the form of curved abutment surfaces.

The invention also includes a resealable bag having a strip closure as set forth above.

The strip closure may be formed integrally with the material of the bag, or may be adhered, fused (cohered) or otherwise fixed thereto.

Such a bag may include a closed end adjacent to the strip closure on the other side thereof from the main portion of the bag and which is removable by appropriate means e.g. cut off when the bag is to be opened. The closed end acts as a means for identifying when the bag has been tampered with.

Reference will now be made, by way of example, to the accompanying drawings, in which;

Figure 1 is a cross-sectional view of the strip closure according to one aspect of the present invention;

Figure 2 is a cross-sectional view of a resealable bag incorporating the strip closure of the Figure 1, the closure being exaggerated in size relative to the bag for clarity; and

Figure 3 is a cross-sectional view of the closure of Figure 1 to illustrate the function thereof.

Referring to the illustrations, a strip closure is shown generally at 10. The strip closure includes a first strip member 12 and a second strip member 14. Strip member 12 is substantially E shaped in cross section and includes a base portion 15 and an upwardly projecting hook 16 on the lower limb 18 of the E. In addition the middle limb 20 includes an upwardly extending curved abutment surface 22. The second strip member is also substantially E shaped in cross-section. This member 14 includes a base portion 23, a downwardly projecting hook 24 on middle limb 26 of the E shape and a downwardly extending curved abutment surface 28 on the upper limb 30. The abutment surface 28 is configured to correspond to the abutment surface 22.

When the strip closure 10 is closed, hooks 16 and 24 interlock whilst abutment surfaces 28 and 22 engage with one another.

The upper limb 32 of member 12 and the lower limb 34 of member 14 are not essential, but are preferred because they contact the limbs 30 and 32 to assist in maintaining the projections 22, 28 and 16, 24 in engagement. The limbs 32, 34 are tapered towards their extremities to permit insertion of the limbs 18, 20, 24 and 30.

The strip members are made of a resilient plastic

material such as a mixture of high and low molecular weight polyethylene so that the limbs of the respective members can deform elastically to "snaplock" and achieve the positive interlocking shown in Figure 1. Other materials however may just as easily be used, provided they have adequate resilience so that elastic deformation and subsequent interlocking of the members can be effected.

Referring particularly to Figure 2 there is shown a bag 40 which may be made of an extruded plastics material, including a strip closure 10 as illustrated in Figure 1, the base portion 15, 23 thereof being fixed to the respective inner walls of the bag 40. The bag may be provided to the consumer either filled or empty and in either state will be heat sealed at the bottom 42 of the bag. In addition a tamper-evident fold 44 is provided at the top of the bag on the other side of the closure member from the main portion of the bag. This tamper evident fold may be removed by the consumer at any time to provide a resealable bag. The absence of the fold 44 prior to intended use indicates that the bag and possibly its contents may have been tampered with.

When the closure strips are assembled to close the bag the limb 26 is forced between the limbs 26 and 34. The limb 34 rotates slightly by bending of the base portion 23 and the limb 20 also rotates slightly, a gap being provided between the limbs 20 and 30 for this purpose. The limb 30 is received between the limbs 20 and 32 by slight bending of the base portion 15 and/or of the limbs 30 and 32. The limb 32 engages the outer face of the limb 30 to assist in maintaining engagement of the projections 22, 28.

When the strip closure 10 is in its interlocked state as shown in all the figures it is capable of being opened from outside the bag and resealed without damage. Referring to Figure 3 if a force is applied to the strip closure as shown by of arrows A and B it is relatively easy for the base portion 15, 23 to be bent outwards, permitting the projections 22 and 28 to slide across each other. The limbs 20, 30 are slightly spaced from each other to facilitate this. The hook 16 thereby is gradually disengaged from hook 24 until the middle limb 26 of the second strip member pops out of engagement with the first strip member. Clearly this would be the normal manner in which the bag or strip closure were opened.

However, if a force were applied as shown by arrows C and D the hooks 24 and 16 would be pulled into closer engagement with each other and a considerably greater force would need to be applied for the hooks to snap apart and the strip closure to open. This has the advantage that when the bag is filled through end 42 in Figure 2 and if pressure is applied from within the bag the closure will be more resistant to accidental opening.

Furthermore, if the opening force from below or within the bag is such as also to twist or shear the seal, as shown at C', D' in Figure 3, then the seal itself will twist, the hooks 16, 24 remaining engaged. Opening due to twisting or shearing in the opposite sense also is resisted, the limb 20 acting as a fulcrum for limbs 26 to maintain engagement of the hooks 16, 24.

The strip members forming the strip closure may be formed with or applied to the bag in any known manner for example extrusion during fabrication of the bag or by adhesive or by cohesive contact e.g. thermal bonding.

The material of the strip members may be coloured or perfumed if required.

This closure may be used for other applications other than sealable plastic bags. For example, the closure may be adapted for use with any element which requires a sealed edge of one form or another.

Claims

1. A strip closure for sealing bags and the like comprising a first strip member and a second strip member, each member having a base adapted to be attached to a respective wall of a bag, the strip members being adapted to interlock one with the other to close the bag, wherein the first member, in cross-section, comprises two limbs extending from its base, each limb including an upwardly extending projection; the second member, in cross-section, comprising two limbs extending from its base, each limb including a downwardly extending projection; and wherein the upwardly extending projections engage respectively with the downwardly extending projections such that the strip closure is adapted to be more readily opened from above than below.

2. A strip closure according to Claim 1, wherein the first strip member is substantially E-shaped in cross-section and the middle and lower limbs of the E-shape form said two limbs of the first strip member.

3. A strip closure according to Claim 1 or Claim 2, wherein the second strip member is substantially E-shaped in cross-section and the upper and middle limbs or the E-shape form said two limbs of the second strip member.

4. A strip closure according to Claim 3, wherein the middle limb of the first strip member is adapted to interlock the upper limb of the second strip member and the lower limb of the first strip member is adapted to interlock the middle limb of the second strip member.

5. A strip closure according to Claim 4, wherein the projections on said interlockable lower and mid-

dle limbs are in the form of hooks.

6. A strip closure according to Claim 4 or Claim 5, wherein the projection on said interlockable upper and middle limbs are in the form of curved abutment surfaces.

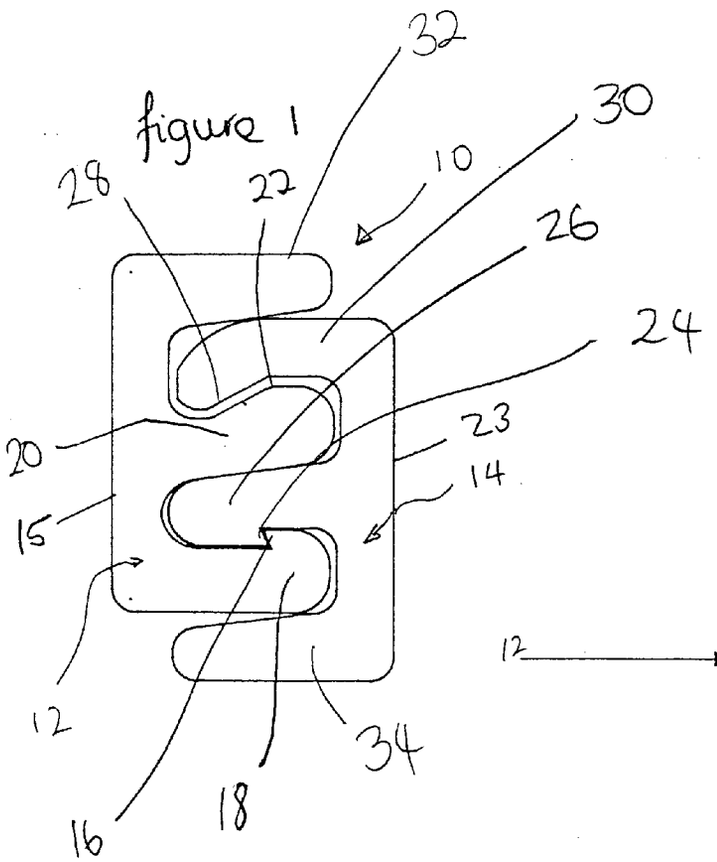
7. A strip closure according to any preceding claim, wherein the closure is fabricated of a plastics material.

8. A resealable bag having a closure strip according to any preceding claim.

9. A resealable bag according to Claim 8, wherein the bag includes a closed end adjacent to the strip closure, on the other side thereof from the main portion of the bag and forming a tamper-evident seal.

10. A resealable bag according to Claim 8 or 9, wherein the bag is fabricated of a plastics material.

figure 1



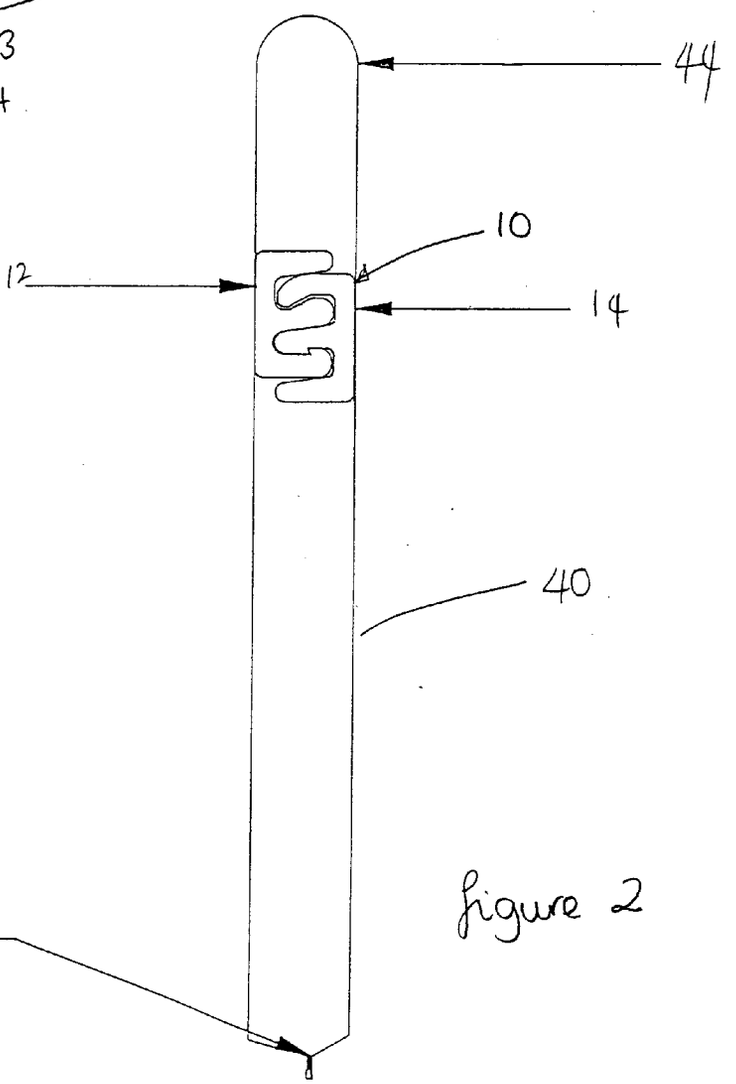


figure 2

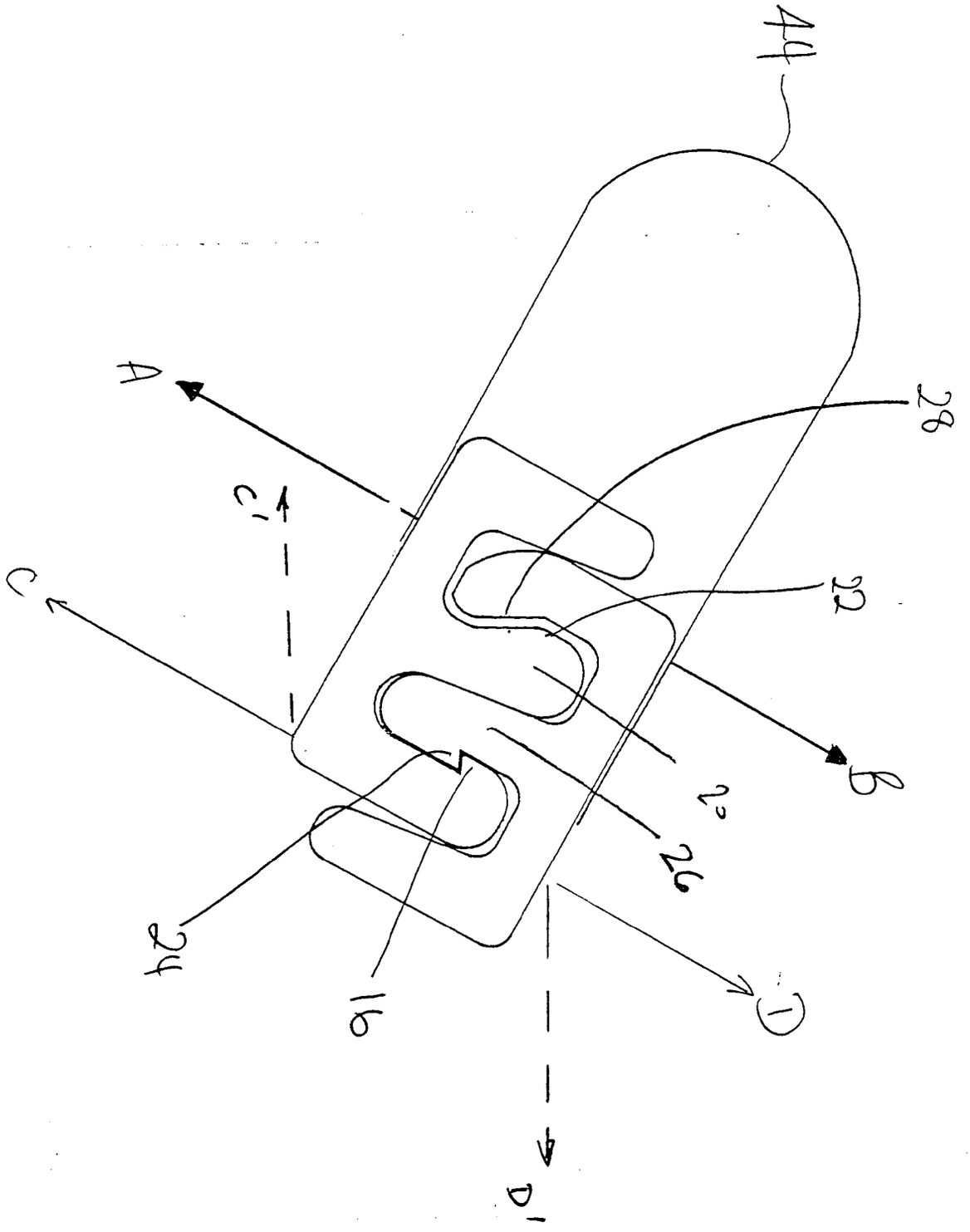


figure 3

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 93 30 4909

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	FR-A-2 444 620 (UNION CARBIDE CORPORATION) * page 2 * * page 4, line 14 - page 5, line 17 * * page 5, line 27 - line 30; claims 1-3; figures 1,3A,4,6 *	1,2,5-8, 10	A44B19/16 B65D33/25
X	US-A-4 578 813 (MINIGRIP INCORPORATED) * column 4, line 12 - column 6, line 60; figures 1-4 *	1,7,8,10	
X	US-A-4 619 021 (J. R. JOHNSON) * column 2, line 18 - column 3, line 24; figure 2 *	1-5,7,8, 10	
A	FR-A-2 586 650 (FLEXICO-FRANCE) * page 5, line 25 - page 7, line 23; figures 3-6 *	1-3,5, 7-10	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5) A44B B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	17 SEPTEMBER 1993	GARNIER F.M.A.C.

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

T : 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

EPO FORM 1503 03.82 (P0401)