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

(11) Publication number: **0 393 841 A1**

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **90302862.9**

(51) Int. Cl.5: **B65D 27/30**

(22) Date of filing: **16.03.90**

(30) Priority: **18.04.89 US 339704**

(43) Date of publication of application:
24.10.90 Bulletin 90/43

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

(71) Applicant: **TRIGON PACKAGING SYSTEMS (UK) LIMITED**
Stafford Park 9
Telford, Shropshire TF3 3BZ(GB)

(72) Inventor: **Craig, John Philip**
4514-159th NE
Redmand, WA 98052(US)
Inventor: **Smith, Robert Christopher**
4 Oxmoor, Preston-upon-the-Weald Moors
Near Wellington, Telford TF4 6DG(GB)
Inventor: **Campbell, George Anderson**
17114-NE 30th Pl
Bellevue, WA 98008(US)

(74) Representative: **Gordon, Richard John Albert**
R.J. Gordon & Company 17 Richmond Hill
GB-Richmond-upon-Thames, Surrey TW10 6RE(GB)

(54) Tamper evident envelope.

(57) A tamper evident envelope (21) comprises a see-through appendage (29) which is secured, as at (28), to an upper portion of a rear panel (23) of the envelope (21). The appendage (29) is provided with a hot melt adhesive (31, 32) whereby, when the appendage (29) is folded onto a front panel (22) of the envelope (21) and pressed into contact therewith, the appendage (29) seals the envelope (21) in a closed condition. However, the adhesive (31, 32) is arranged to extend beyond upper transverse edges of the panels (22, 23) and must be fractured to gain access to the envelope (21). Therefore, if the envelope (21) is re-sealed, the adhesive (31, 32) cannot be perfectly re-positioned without distortion and this will be visible through the appendage (29).

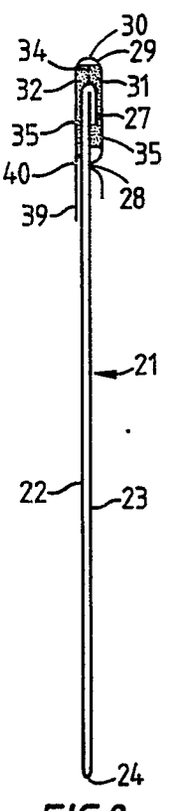


FIG.8

EP 0 393 841 A1

Tamper Evident Envelope

This invention relates to a tamper evident envelope.

Envelopes used for transporting valuable items generally comprise front and rear panels and a flap extending from one of the panels and carrying pressure sensitive contact adhesive whereby a sealed condition of an envelope is effected by folding the flap onto the other of the panels and uniting the flap thereto by means of the adhesive. Generally, the adhesive is a hot melt adhesive.

It has become apparent that such envelopes are not tamper evident because it is relatively easy to open the envelopes and reseal them without detection. A common technique is to freeze the closure flap by applying dry ice or Freon the effect of which is to reduce the temperature of the hot melt adhesive such that the adhesive characteristics are diminished with a result that the flap can be peeled away from the opposite facing surface of the envelope leaving the frozen adhesive intact. The envelope can be resealed by refolding the flap onto the opposite facing surface of the envelope to close the envelope, warming the adhesive to room temperature, when the adhesive once again becomes tacky, and pressing the flap into contact with the opposite facing surface whereby the flap is united with the opposite facing surface by the adhesive.

The invention is characterised in that the adhesive extends beyond the panels such that opposite facing surfaces of the flap are united one with another in a sealed condition. If dry ice or Freon were to be applied to the adhesive, the adhesive would solidify and lose most of its strength. The flap can then easily be peeled from the opposite facing surface of the envelope thus exposing the hot melt adhesive. However, envelope integrity is maintained because the adhesive is fused to itself above the envelope opening. In this frozen state the brittle adhesive can easily be shattered and the envelope opened but such would be obvious from the appearance of the adhesive.

Preferably, the flap is of see-through material so that the adhesive may be observed when the envelope is in a closed condition.

Following is a description, by way of example only and with reference to the accompanying drawings, of one method of carrying the invention into effect.

In the drawings:-

Figure 1 is a perspective view of one embodiment of an envelope in accordance with the present invention, the envelope being in an open condition ready for use,

Figure 2 is a cross section on the line II - II of Figure 1,

Figure 3 is a view similar to Figure 2 showing the envelope in a closed condition,

Figure 4 is a view similar to Figure 2 showing the envelope re-opened from the closed position shown in figure 3,

Figure 5 is a diagrammatic representation of another embodiment of an envelope in accordance with the present invention, the envelope being in an open condition,

Figure 6 is a front view of the envelope shown in Figure 5,

Figure 7 is a rear view of the envelope shown in Figures 5 and 6 and

Figure 8 is a diagrammatic cross section of the envelope shown in Figures 5 to 7.

Referring now to Figures 1 to 4 of the drawings, there is shown an envelope generally designated 1 comprising a front panel 2 and a rear panel 3 formed by folding at 4 a sheet of plastics film material so that the panels 2 and 3 are of equal dimension and welding the panels 2 and 3 one to another in side welds 5 and 6 thereby providing an opening 7 remote from the base fold 4. A closure flap 8 of clear polyethylene is attached to the rear panel 3 by means of a hot melt adhesive strip or a heat weld 9. The closure flap 8 also is provided on a surface thereof facing the opening 7 with pressure sensitive contact adhesive 10 which extends from the opening 7 towards the base fold 4 and in an opposite direction beyond the opening 7 for sufficient distance such that, when the closure flap 8 is folded over the opening 7 and attached by the adhesive 10 to the front panel 2, the adhesive 10 extends on the front panel 2 towards the base fold 4 for substantially the same distance as on the rear panel 3. The cover strip 8 also is provided with two additional strips 11 of pressure sensitive contact adhesive for securing the closure flap 8 to the front panel 2.

The exposed portion of the adhesive 10 and the strips 11 would be covered by a peelable release tape which would be removed when the envelope 1 is to be sealed.

As is apparent from Figure 3, the envelope 1 is secured by the adherence of the adhesive 10 when the flap 8 is folded over the opening 7 and is sealed to the front panel 2 by means of the adhesive 10. Additional sealing is effected by the adhesive strips 11. It is also apparent that a portion of the adhesive 10 unites opposite facing surfaces of the folded over flap 8 beyond the opening 7.

If dry ice or Freon were to be applied to the flap 8 adjacent the adhesive 10, the adhesive 10 would solidify and lose most of its strength. The

flap 8 could then easily be peeled from the front panel 2 thus opening the envelope 1 and the envelope 1 could subsequently be resealed by the adhesive. However, since a portion of the adhesive 10 is fused to itself beyond the opening 7, the adhesive 10 is in a brittle state and will be shattered when the envelope 1 is opened and the fact that the envelope 1 had been opened would be obvious from the appearance of the torn and distorted adhesive 10 viewed through the see-through flap 8.

As an additional security feature, the flap 8 may be provided with a row of perforations extending in a longitudinal direction of the flap 8 and transversely of the envelope 1, as shown at 12, the row extending parallel to an outer edge of the area of adhesive 10 nearest the adhesive strips 11 and within the area. The row of perforations provides a line of weakening that would rupture if an attempt were to be made to gain access to the envelope 1 by tearing or lifting the flap 8 from adhesive contact with the front panel 2.

A second row of perforations (not shown) may be provided extending parallel to the row 12 and also contained in the area of adhesive 10 but being located adjacent an edge of the area nearest the adhesive strip or heat weld 9. As with the row of perforations 12, the second row of perforations provides a security feature of a line of weakening which would rupture if an attempt were to be made to gain access to the envelope 1 by tearing or lifting the flap 8 from adhesive contact with the rear panel 3.

The material of the envelope 1 may be low density polyethylene and may be a laminate or co-extrusion an outer layer of which is of mica-filled or impregnated high density polyethylene.

Referring now to Figures 5 to 8 of the drawings, there is shown an envelope generally designated 21 comprising a front panel 22 and a rear panel 23 formed by folding at 24 a sheet of low density polyethylene film material so that the front panel 22 extends upwardly from the base fold 24 beyond the rear panel 23 and the extended portion is folded over and downwardly onto the rear panel 23 and opposite side margins of the panels 22, 23 are welded one to another in side welds 25 and 26, side margins of the lip also being included in the side welds 25, 26 to form a captive flap 27.

The rear panel 23 has secured thereto by means of a transverse weld 28 or hot melt adhesive an appendage 29 comprising an elongate strip of clear polyethylene film material extending transversely of the rear panel 23. The appendage 29 is provided with a longitudinal score line 30 and is coated with two longitudinally extending spaced parallel strips 31, 32 of pressure sensitive contact adhesive located on either side of the score line 30. A protective cover release strip 33 covers the adhesive strips 31, 32 and is peelable therefrom prior to closing and sealing the envelope 21. The adhesive 32 has indicia 34 printed thereon. The appendage 29 is provided with spaced parallel rows of perforations 35. Additional security is provided by lines of microprinting 36, 37 extending adjacent and parallel to the welds 25, 26 and on an upper portion of the front panel 22 a coating 38 of ink which changes colour when in contact with a solvent. The appendage 29 also includes a receipt portion 39, there being a row of perforations 40 whereby the receipt 39 is severable from the appendage 29 by tearing the material of the receipt 39 bridging the perforations 40. In Figure 5, the envelope 21 is shown with the receipt 39 already having been removed.

Preferably, the receipt 39 and the outer surface of the appendage 29 remote from the surface carrying the adhesive 32 are each provided with two serial numbers the numbers being identical one with another.

Assuming that items to be dispatched in the envelope 21 are inserted therein the protective cover strip 32 is peeled from the appendage 29 exposing the adhesive strips 31, 32. The appendage 29 then is folded about the score line 30 so that the adhesive 32 is brought into contact with the ink coating 38 on the front panel 22 and the folded over appendage 29 is squeezed such that the appendage is united with the front and rear panels 22, 23 by the adhesive 32, 31 and adjacent portions of the adhesive strips 31, 32 extending above the captive flap 27 are fused together with the indicia 34 embedded therein. The receipt 39 is then removed from the appendage 29 and stored, the number printed thereon being an indication that the envelope 21 has been dispatched.

If, subsequently, the appendage 29 is lifted relative to either of the front or rear panels 22, 23, the material of the appendage 29 will sever along an adjacent one of the rows of perforations 35. If an attempt is made to release the appendage 29 by application of a solvent under a lip of the appendage 29 adjacent the front panel 22, the attempt will be revealed when the solvent contacts the ink 38 since the ink will change colour and the indicia 34 and adhesive 31, 32 will distort thereby indicating that it has been subjected to the solvent. If the hot melt adhesive 31, 32 is frozen so as to nullify the adhesive characteristics of the hot melt adhesive 31, 32 and thereby permit the appendage 29 to be unfolded, access to the envelope below the captive flap 29 is not possible without disturbing the solidified frozen adhesive 31, 32 and the printed indicia 34 embedded therein. In consequence, when an attempt is made to reconstitute the frozen block of adhesive 31, 32 the task is virtually impos-

sible to achieve without the printed indicia 34 having a distorted appearance. This would be visible through the clear re-folded appendage 29.

The front and rear panels 22, 23 may be treated by electric corona discharge or with special inks to key the surfaces to ensure that the adhesive remains attached to the main body of the envelope 21 in preference to the appendage 29, thereby ensuring that, when the envelope 21 is opened, no adhesive 31, 32 remains thereon which could interfere with contents of the envelope 21.

Claims

1. An envelope (1,21) comprising front (2,22) and rear panels(3,23), a flap (8,29) extending from one of the panels (3,23) and carrying pressure sensitive contact adhesive (10,31,32) whereby a sealed condition of the envelope (1,21) is effected by folding the flap (8,29) onto the other of the panels (2,22) and uniting the flap (8,29) thereto by means of the adhesive (10,31,32) characterised in that the adhesive (10,31,32) extends beyond the panels (2,22;3,23) such that opposite facing surfaces of the flap (8,29) are united one with another in the sealed condition.

2. An envelope (1,21) as claimed in Claim 1 characterised in that the flap (8,29) is secured to the said one of the panels (3,23).

3. An envelope (1,21) as claimed in Claim 2 characterised in that the adhesive (31,32) extends in spaced parallel stripes (31,32) extending parallel to the fold (30) of the flap (29) in the sealed condition of the envelope (21).

4. An envelope (21) as claimed in any one of the preceding claims characterised in that an upper portion (27)of a panel (22) adjacent the said one of the panels (23) is folded over an upper portion of the said one of the panels (23).

5. An envelope (21) as claimed in any one of the preceding claims characterised in that the adhesive (31,32) has indicia (34) printed thereon.

6. An envelope (21) as claimed in any one of the preceding claims characterised in that the flap (29) is provided with a receipt portion (39) having a line of weakening (40) whereby the receipt portion (39)is separable from the flap (29).

7. An envelope (21) as claimed in Claim 6 characterised in that the flap (29) and the receipt portion (39) are provided with identical indicia.

8. An envelope (21) as claimed in any one of the preceding claims characterised in that the adhesive (31,32) effects a colour change when subjected to a chemical agent.

9. An envelope (21) as claimed in any one of the preceding claims characterised in that the flap (29) is weakened so that a portion of the flap (29) fractures when the flap (29) is peeled to open the envelope (21) from the sealed condition.

10. An envelope (21) as claimed in any one of the preceding claims characterised in that a surface of the envelope (21)on which the flap (29) is folded in the sealed condition is treated.

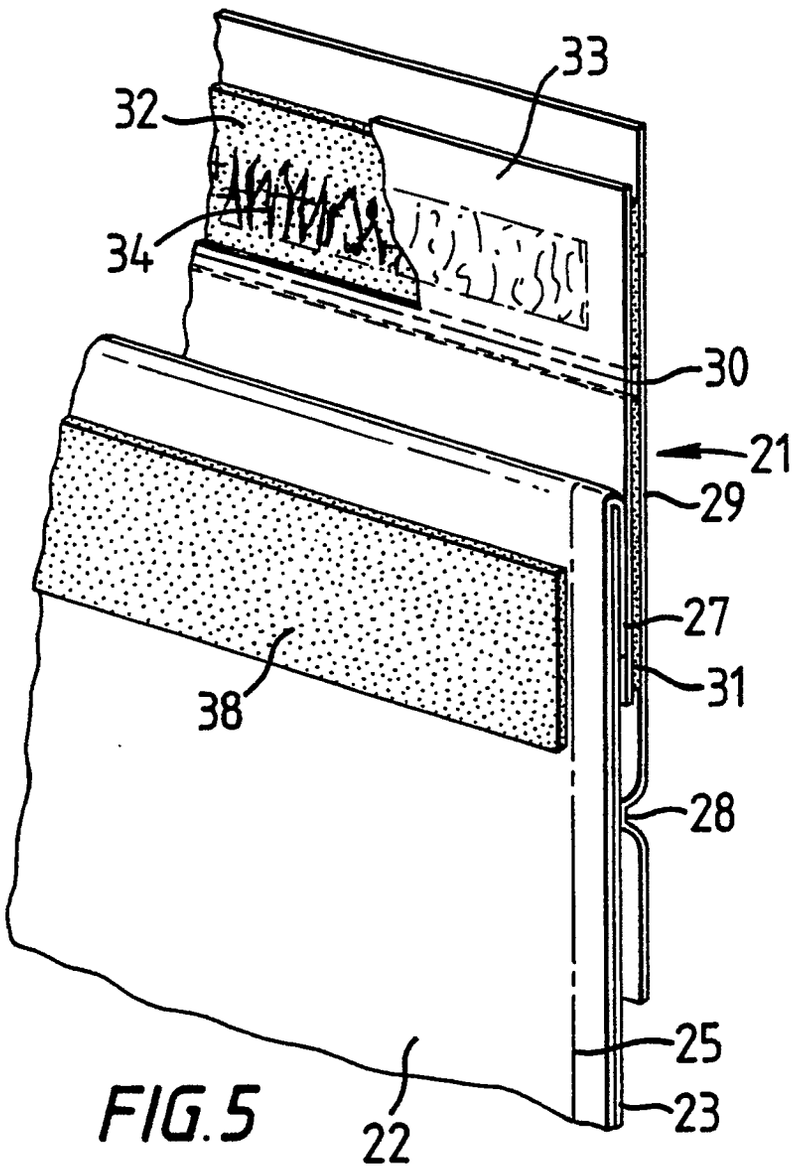

33
32
34
30
21
29
27
31
38
28
25
23
22

FIG.5

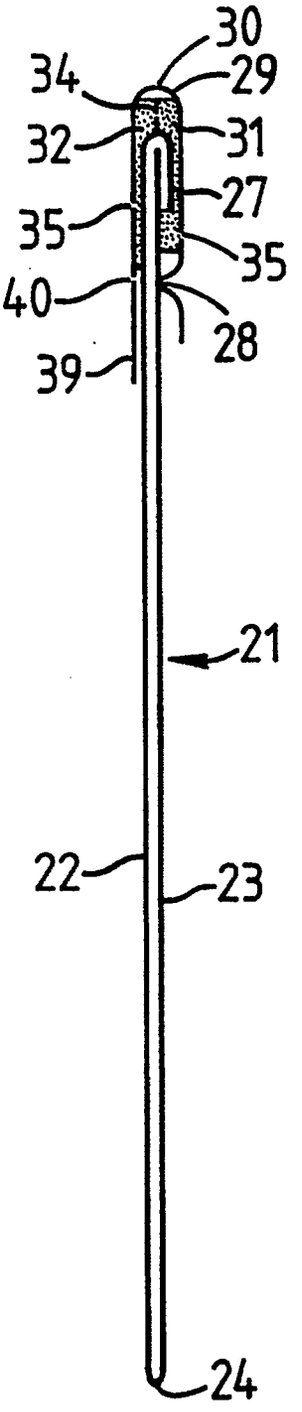

30
34
29
32
31
27
35
35
40
28
39
21
22
23
24

FIG.8

FIG.1

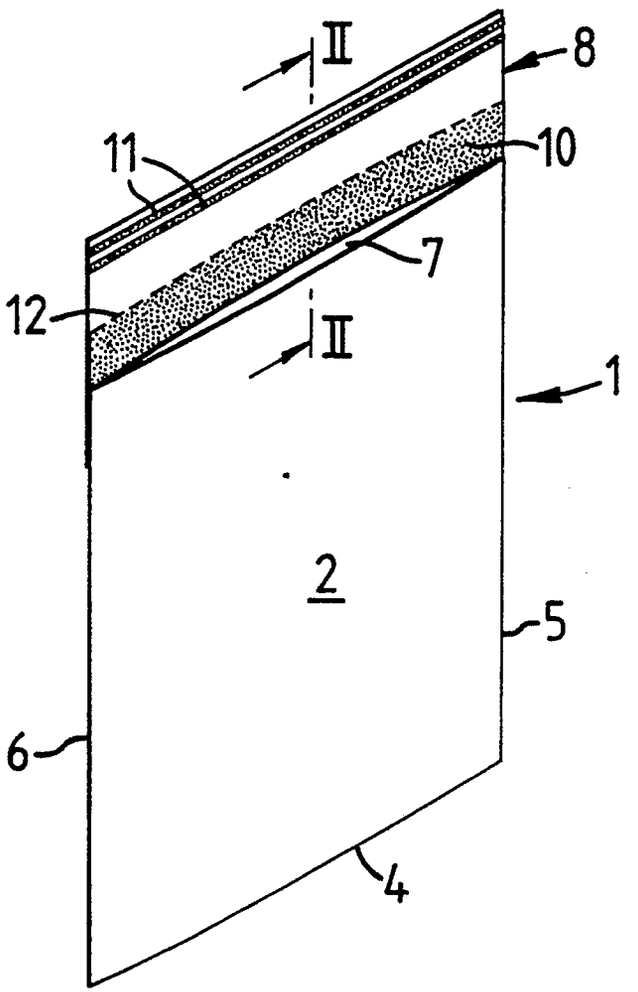


FIG.2

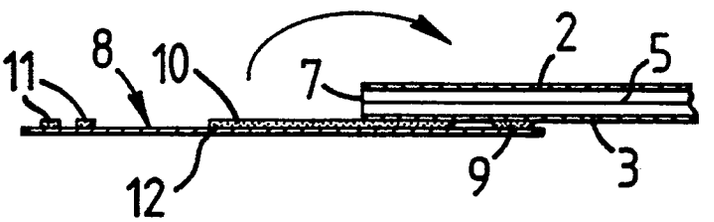


FIG.3

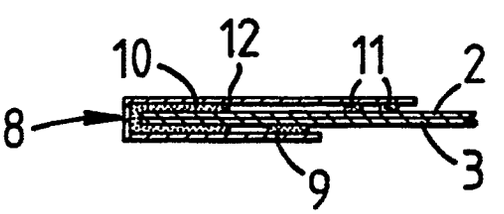
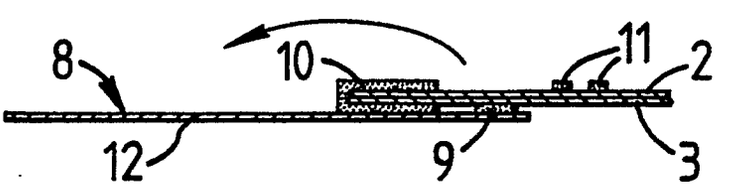


FIG.4



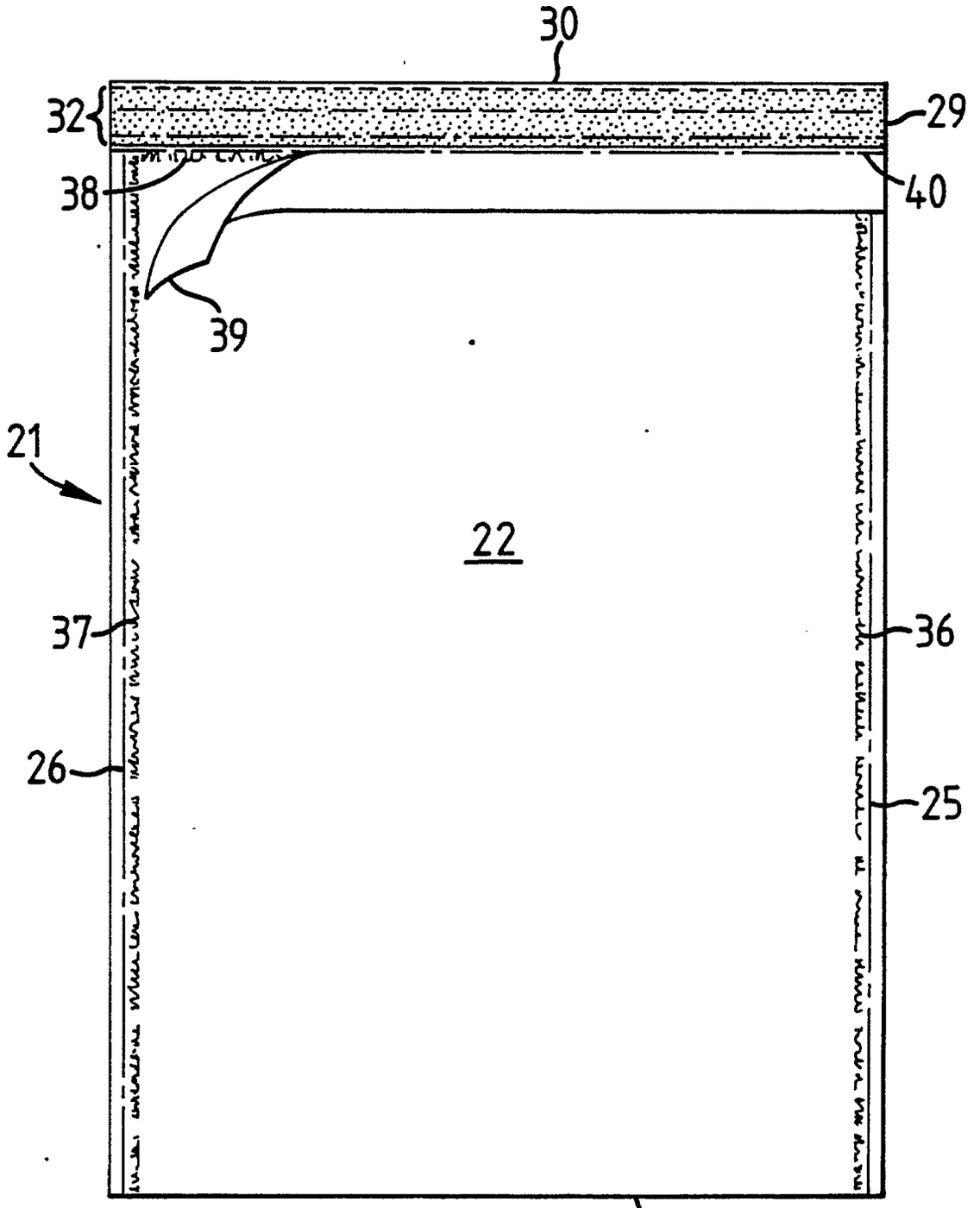


FIG.6

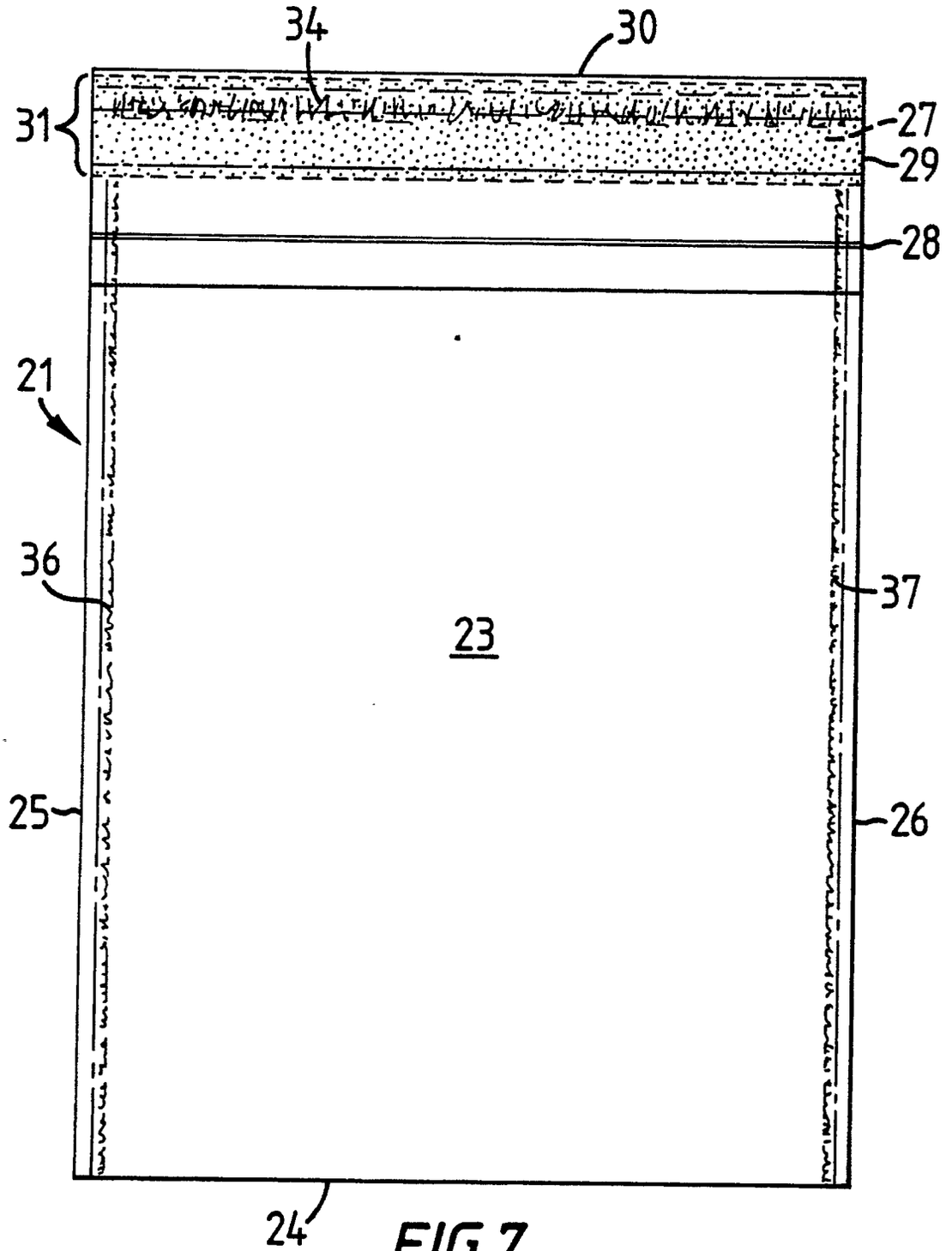


FIG.7

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 90 30 2862

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	AU-B- 523 051 (CAROSELLI) * Page 4, lines 7-13; page 4, line 21 - page 5, line 3; page 5, line 16 - page 6, line 20; figures 1-3 *	1	B 65 D 27/30
Y		2-10	
Y	GB-A-1 536 784 (JENNINGS) * Page 2, lines 57-82; figure 2 *	2,3	
Y	DE-A-1 486 340 (BOK) * Page 6, paragraphs 1,2; figures 6,7 *	3	
Y	US-A-2 181 252 (VOGEL) * Page 1, column 2, line 43 - page 2, column 1, line 58 *	4,5,8	
Y	US-A-4 483 018 (WHELAN) * Column 6, lines 11-59; figures 1-3 *	6,7	
Y	EP-A-0 259 068 (WATSON) * Column 3, lines 4-21; column 4, lines 5-26; fig. *	9,10	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

B 65 D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	09-07-1990	VANTOMME M.A.

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)