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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 5 :		(11) International Publication Number:
B65D 33/34	A1	WO 91/04199
		(43) International Publication Date: 4 April 1991 (04.04.91)

(21) International Application Number: PCT/GB90/01432

(22) International Filing Date: 18 September 1990 (18.09.90)

(30) Priority data:
8921108.0 18 September 1989 (18.09.89) GB

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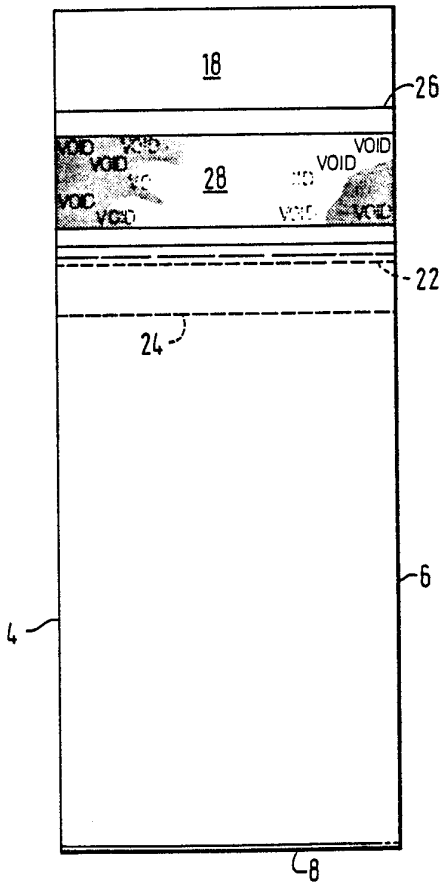
(81) Designated States: AT (European patent), AU, BE (European patent), BR, CA, CH (European patent), DE (European patent)*, DK (European patent), ES (European patent), FR (European patent), GB (European patent), IT (European patent), JP, LU (European patent), NL (European patent), SE (European patent), US.

Published
With international search report.

(54) Title: TAMPER INDICATING PACKAGE

(57) Abstract

A self-seal bag (2) having a closure comprising one sealing surface preferably a flap (20), which carries a layer of adhesive (34) and another surface onto which the flap is contacted to form a seal. The adhesive layer includes printed areas of different adhesivity, so that if the seal is peeled off part of the pattern is left on one surface whilst the other is left on the other surface, so that a printed message (30) becomes visible through the flap which is made from a transparent or translucent plastics material. The message remains visible if an attempt is made to reseal the bag. The flap may be formed integrally with the plastics material of the bag or it may be formed from a separate tape which is attached to one end of a strip of plastics material which is subsequently folded over to form the bag.



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"Tamper Indicating Package"

This invention relates to bags and packages adapted for the secure transportation of articles of value such as bank notes.

Various types of "tamper indicating" security bags have previously been proposed, and the general principle of operation of such bags is that when the bag has been opened correctly by an authorised person, it will have been cut at the indicate place, and the various welded and glued seals will still be intact. However, if the bag is tampered with, by an unauthorised person attempting to open and reseal it, the construction of the bag is such that this will be clearly evident.

One bag of this kind is shown in British Patent No. 2,145,997B, which discloses a security bag having an adhesive coated flap at its open end, formed by an extension of one of the walls beyond the open end, the adhesive area being partially overlaid by the other facing wall. In use, the adhesive area is covered by a protective peelable strip, until the bag is ready to be used, and when the peelable strip is removed, the overlapping portion of the front wall can be sealed against the adhesive, and the projecting flap can also be folded over the top edge of the front wall, so as to give a double seal.

In this type of bag it is common to use a hot melt pressure sensitive adhesive for the self sealing portion. Such adhesives are very strong at ambient temperature, but significantly weaker in hot or cold conditions: for example, if a normal hot melt seal is frozen to -40°C, the adhesive becomes brittle and snaps. The bag can then be opened easily and resealed. When the adhesive reaches normal temperature once again, it will be as effective as before,

and show no signs of having been tampered with.

Accordingly, the present invention seeks to provide a security bag having a seal with improved "tamper detection" characteristics. Accordingly, the present invention provides a "self-seal" bag having a closure comprising one sealing surface carrying a layer of adhesive, and another surface which is adapted to be brought into contact with the adhesive so as to form a seal; the adhesive layer including patterned areas of different adhesivity, so that subsequent peeling of the seal causes part of the pattern to be left on one surface, whilst the other is left on the other surface; and at least a part of the seal portion being transparent or translucent, so that the disruption of the adhesive layer is clearly evident, if the bag is then resealed.

The patterned areas may be formed from a white or coloured ink and may cover all or only part of the seal area. Preferably, the main body of the bag comprises an opaque plastics material, and the adhesive layer is carried on a transparent flap which is welded or otherwise attached to the bag at or near one end which is initially open, so that the flap can be folded over the end to form a seal. The general structure of the bag may be as shown in patent no. 2,145,997, with the patterned adhesive layer applied to the foldable flap 18 of the bag, or alternatively, the adhesive layer may be carried on a separate flap which is welded to the bag or attached by means of a suitable adhesive and formed of inherently transparent material.

The bag may be formed from a continuous strip of polythene which is cut into lengths equal to about twice the intended length of the finished bag. An area of the strip can then be cut-out and replaced by a closure panel, including an adhesive layer with patterned areas of different adhesivity as set out above. The strip is then folded in half, and the free edges are welded together to

form a bag, so that the closure panel is formed on one face of the bag, rather than being at the end. Alternatively, the various panels of the bag may be assembled from separate pieces of polythene, with the "closure panel" cut from a continuous tape on a reel.

Preferably, the adhesive area is covered by a peelable strip to protect it from accidental adhesion, before the bag is intended to be closed.

The bag may also be constructed in accordance with patent no. 2,009,707, and may incorporate "micro-security printing", to facilitate detection of tampering with other side seals of the bag, for example. This may also be applied in the seal area, as well as around the edges of the bag.

Some embodiments of the invention will now be described by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a plan view of a security bag in accordance with the invention;

Figure 2 is a side edge elevation of the bag of Figure 1;

Figure 3 is an enlarged perspective view of the closure flap portion of the bag of Figures 1 and 2; and

Figure 4 is a cross-sectional view showing the component layers of the closure flap of Figure 3.

Figure 5 is a cross-sectional view showing an alternative arrangement of component layers;

Figure 6 is a cross-sectional view showing a further alternative arrangement;

Figure 7 shows a further alternative;

Figures 8a, 8b, 8c, 8d and 8e show various stages in the formation of an alternative bag in accordance with the invention; and

Figures 9a, 9b, 9c, 9d, 9e, and 9f illustrate a further alternative way of making a bag in accordance with

the invention.

Referring to the drawings, and particularly to Figures 1 and 2, the security bag 2 comprises closed side edges 4 and 6, and the end 8 of the bag is also closed, usually by a fold formed in manufacture. The side edges may be welded, and may carry so called "micro-security" printing to facilitate detection of unauthorised tampering with these edges.

The rear wall 10 of the bag is made longer than the front wall 12, so as to form a flap 14 which extends beyond the opening 16 of the bag, through which the contents are inserted in use. As shown, the extreme end portion 18 of the flap 14 is made as a detachable "receipt" portion, and a separate closure flap 20 is welded or otherwise adhesively attached in the opening of the bag, at an area 22 near its lower edge, so that the extreme lower edge 24 is within the mouth of the bag, whilst its upper portion 26 projects out of the mouth of the bag, and carries an adhesive area 28 on its outwardly facing surface.

The arrangement of the closure flap and its adhesive coating are shown more clearly in Figures 3 and 4. Whereas the main body of the bag will normally be made of an opaque material, so as to obscure the contents, the closure flap 20 is made of a clear plastics material, which is preferably a film of low density polyethylene, of about 70 microns thick. The surface of the flap is treated by corona discharge, and a pattern of wording, such as a repeated pattern of the word "void", is printed on the outer surface, in a clear tight release silicone acrylate. This print layer is indicated at 30 in Figure 4.

A solid layer of white or coloured ink 32 is then applied over the print pattern, this layer being formulated so as to have good opacity, and also to provide a good surface for adhesive to bond to. The layer may then be overprinted with "scatter" print, carrying a warning of the

presence of the security seal. It will be appreciated that the printed messages will normally be in reverse print, so as to be correctly readable through the transparent base film.

A layer 4 of hot melt adhesive is then applied over the ink layer 32, and a silicone release tape 36 is applied over the adhesive layer to protect it from accidental adhesion to other surfaces, before the bag is required to be sealed. Most of the surface area of the reverse side of the flap 20,except for an area 40 where it is welded to be bag, is also coated with a silicone layer 38, so as to avoid too much of the flap from being welded to the body of the bag.

In use, after the contents of the bag have been inserted, the release tape 36 is peeled from the adhesive area 28 of the flap, exposing the hot melt adhesive 34. The area of the adhesive preferably extends below the top edge of front wall 12 of the bag, as previously proposed in the arrangement of British Patent No. 2,145,997, so that the top edge of the front wall can be pressed onto the adhesive, once the release tape 36 has been removed. The flap 20 is then folded over the top edge of front wall 12, so as to adhere to the upper part 44 of the outer surface of front wall 12. The hot melt adhesive 34 is so formulated as to bond strongly to the outer surface of the bag and is, of course, already strongly bonded to the ink layer 32. Consequently, if any attempt is made to peel the flap 20 from the front of the bag, the printed pattern of clear silicone acrylate immediately becomes obvious, since a corresponding pattern of ink remains attached to the hot melt adhesive, rather than remaining on the base film. The layer of white ink is so disrupted by the action of unpeeling the flap 20, that any attempt to reseal the bag is immediately obvious by the appearance of the ink pattern, through the transparent film of the flap.

It will be appreciated that a number of other variations of construction are possible, such as the use of different types of adhesive or double sided tape and different relative positioning of the layers of "micro-security" printing and the ink pattern. Thus the sealer print may be applied over the layer 32, or below it. These layers may also cover all or only part of the seal area. Although the examplary bag is described as being formed from low density polyethylene film it is also envisaged that it may be constructed from other suitable film or sheet materials.

Figures 5 and 6 illustrate how additional "scatter print", may be applied as a layer 50 superimposed on the "patterned" layer, as shown in Figure 5, or alternatively beneath it, as shown in Figure 6. In addition, as shown in Figure 7, the layer 32 may be discontinuous, and may be applied in areas corresponding to the discrete areas 30 (cf. Figure 4).

Figure 8 illustrates a method of making an alternative form of bag. A continuous sheet of polythene 60 having a width equal to the finished width of the bag, is cut into lengths corresponding to about twice the length of a finished bag, and a section 62, near one end of the length, is cut out. A portion of closure tape 64, having a cross-section of the kind shown in Figures 4 to 7, is then welded or otherwise adhesively attached, over this area. The other end 66 of the sheet is then folded over as shown in figure 8(e), and the side edges sealed together, so that the panel 64 then forms a flap with a security closure, in a similar manner to the bag of Figure 1.

Alternatively, as shown in Figure 9, the process may start with a somewhat shorter length of polythene 70, Figure 9a, to which one side of the closure tape 72 is attached as shown in Figure 9c. Finally, as shown in Figure 9e, a further panel 74 of polythene is attached to the other

side of the closure tape, providing a similar arrangement to that of Figure 8c.

CLAIMS

1. A self seal bag having a closure comprising one sealing surface carrying a layer of adhesive, and another surface which is adapted to be brought into contact with the adhesive so as to form a seal, characterised in that the adhesive layer includes patterned areas of different adhesivity, so that subsequent peeling of the seal causes part of the pattern to be left on one surface, whilst the other is left on the other surface; and at least part of the seal portion being transparent or translucent, so that the disruption of the adhesive layer is clearly evident, if the bag is then resealed.

2. A bag according to claim 1 in which the patterned areas are formed with white ink.

3. A bag according to claim 1 or claim 2 in which the body of the bag comprises an opaque plastics material, and the adhesive layer is carried on a transparent flap which is either integral therewith or is welded or otherwise attached to the bag, at or near one end which is initially open, so that the flap can be folded over the end to form a seal.

4. A bag according to claim 3 in which the adhesive area of the flap is partly overlaid by the opposite wall of the bag, before the bag is closed, whereby a double seal is formed upon closure of the bag.

5. A bag according to any preceding claim further comprising a peelable release tape which covers the adhesive area before the bag is closed.

6. A bag according to any preceding claim in which at least part of the surface opposite to that carrying the

adhesive is coated with a silicone release layer.

7. A tamper-indicating sealing tape or label comprising:

(a) a base film (20) of transparent or translucent flexible plastics material, having one surface treated to facilitate the application of printed indicia;

(b) a pattern printed on said treated surface, in a clear tight release silicone acrylate;

(c) a layer of opaque ink applied over said pattern; and

(d) a layer of adhesive applied over said opaque ink.

8. A tape according to claim 7 further comprising: a further layer of "scatter print" which is applied either before or after said opaque ink layer, in a contrasting colour, and before application of said adhesive.

9. A tape according to claim 7 or claim 8 further comprising a protective silicone release tape which is applied over said adhesive and can be peeled off to enable a seal to be made.

10. A tape or label according to any one of claims 7 to 9 in which the reverse surface is treated with a silicone release layer.

11. A bag according to any one of claims 1 to 6 in which said closure comprises a tape or label according to any one of claims 7 to 9.

12. A bag according to claim 11 which is formed by folding an elongate strip of plastics material across its width and heat-sealing the superimposed long side edges

together so as to form an open mouth at one end.

13. A bag according to claim 12 in which security printing is applied along said sealed edges.

FIG.1

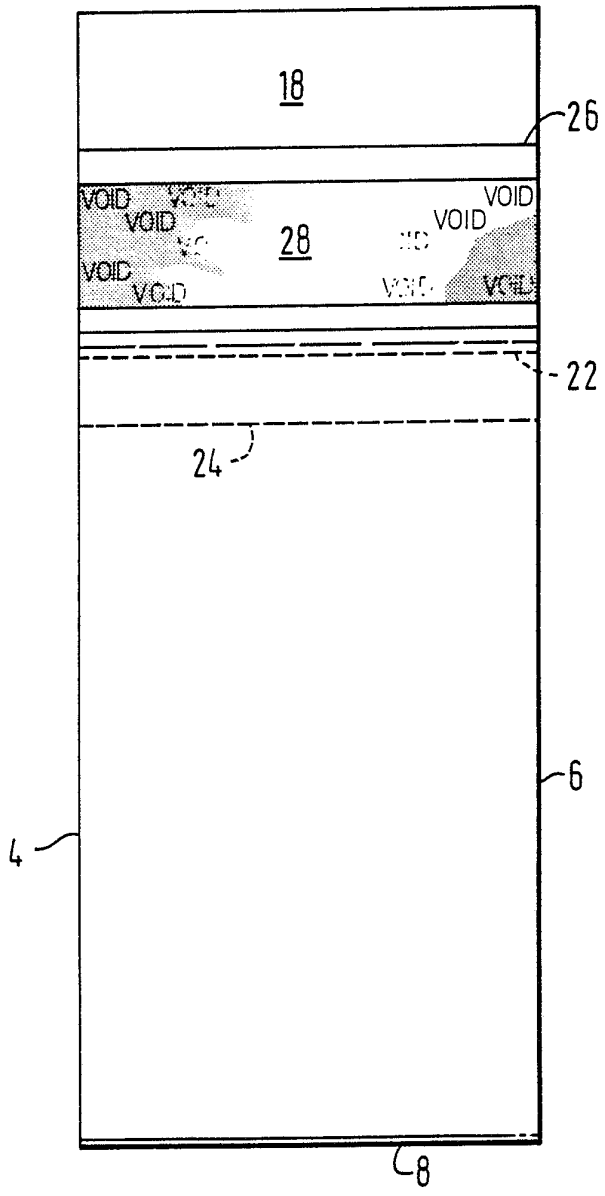

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VOID
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FIG.2

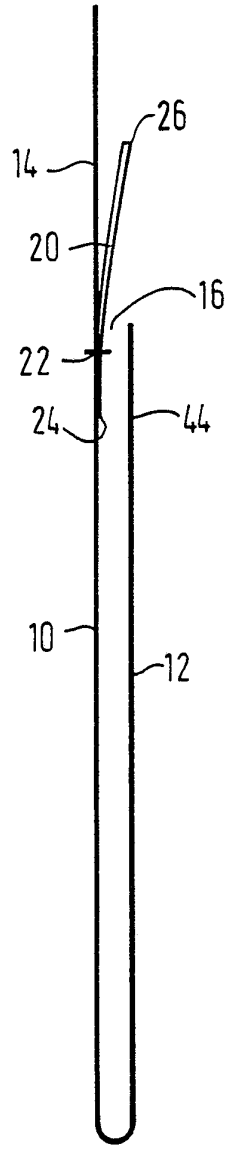

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12

FIG.3

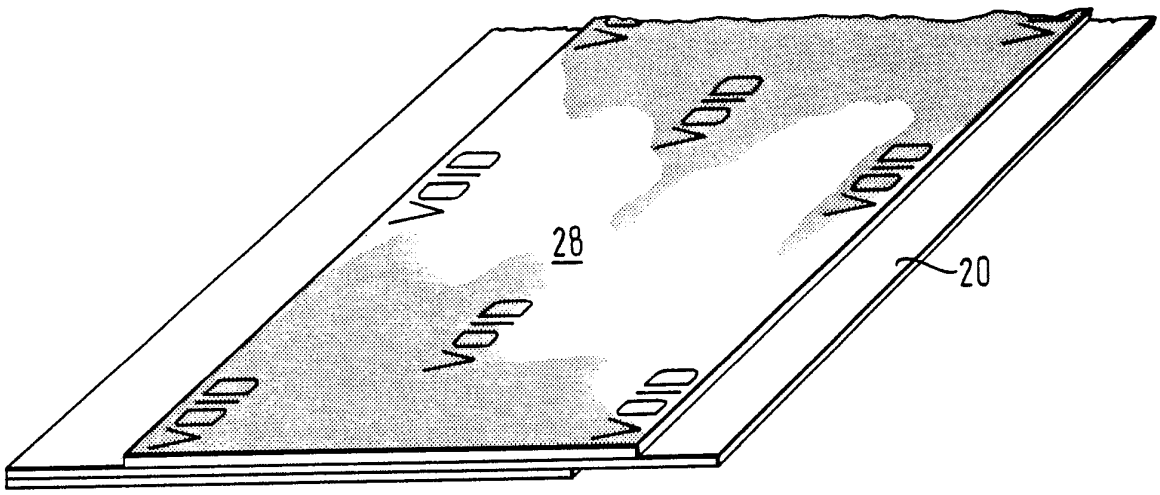


FIG.4

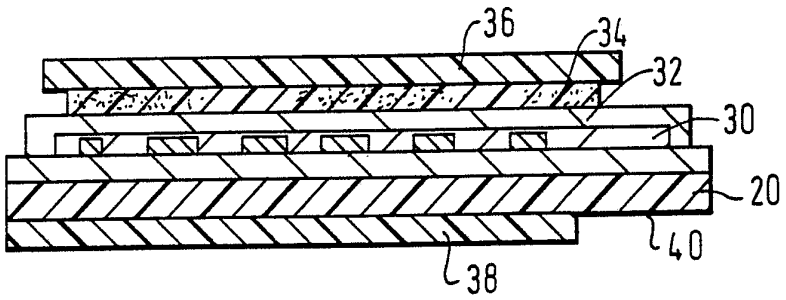


FIG.5

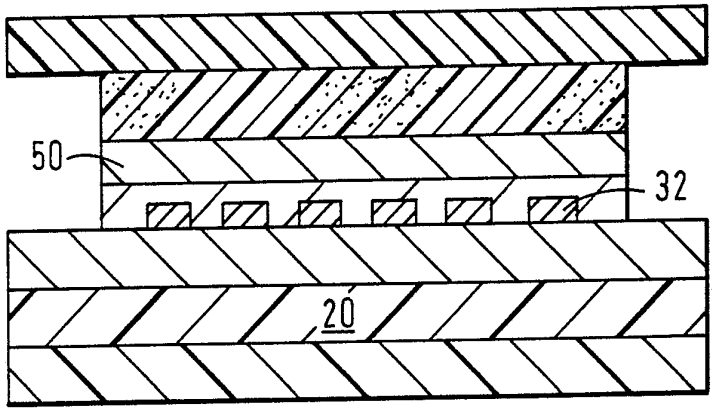


FIG.6

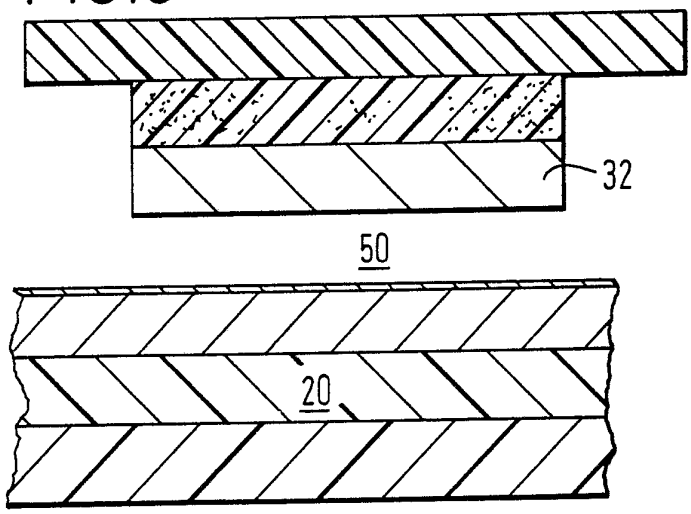


FIG.7

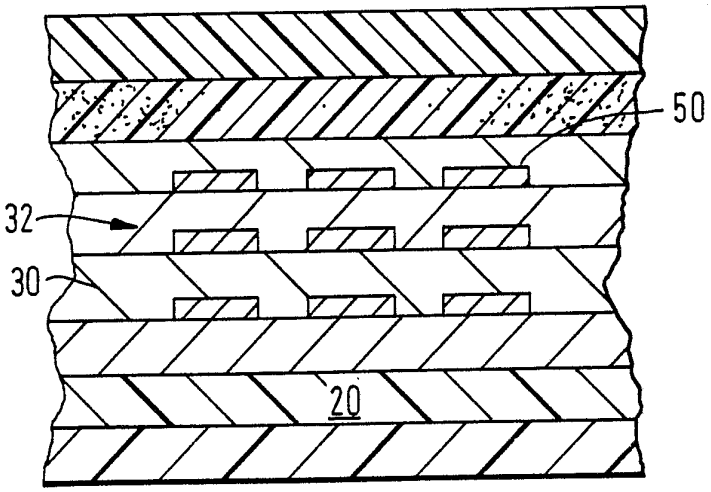


FIG.8

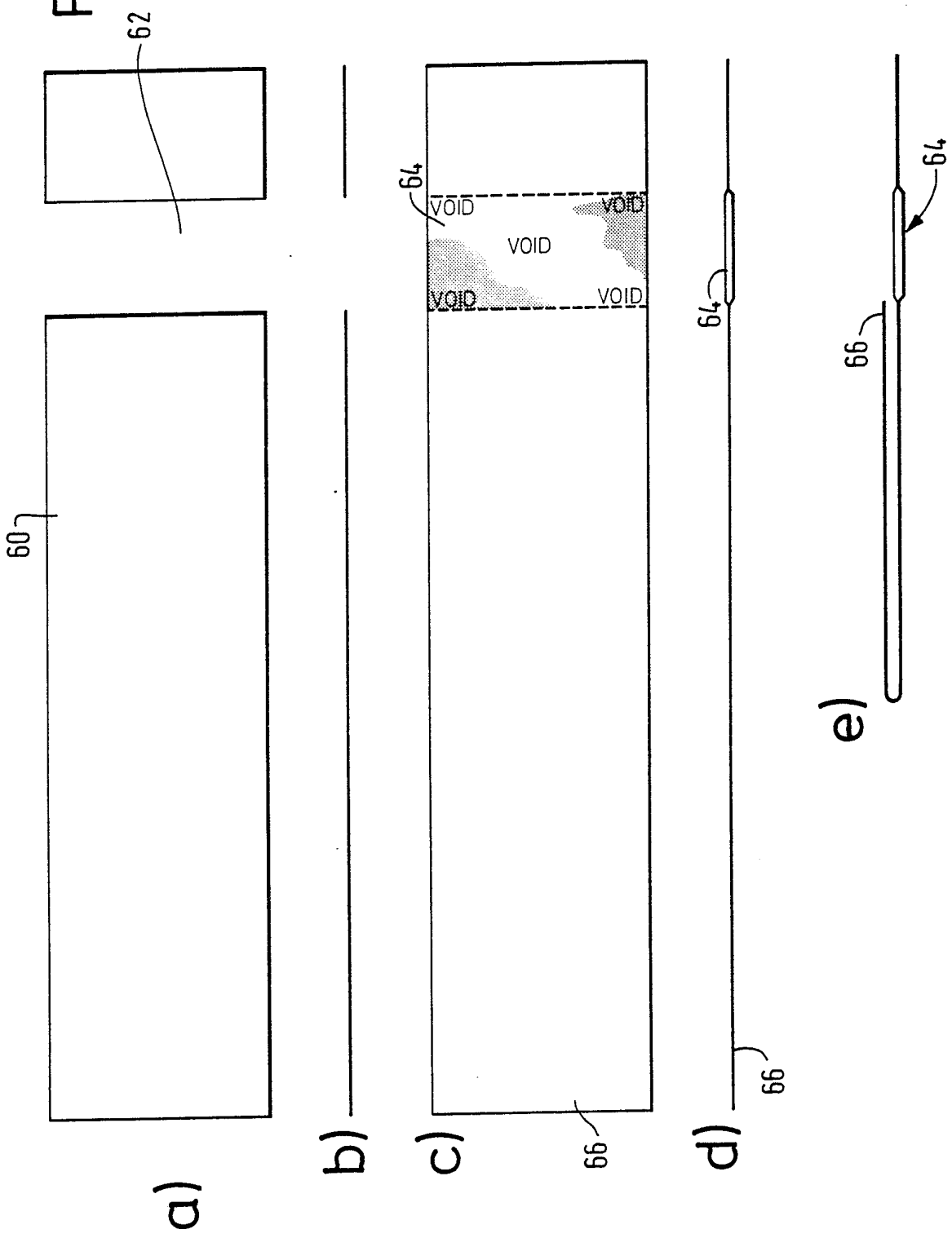
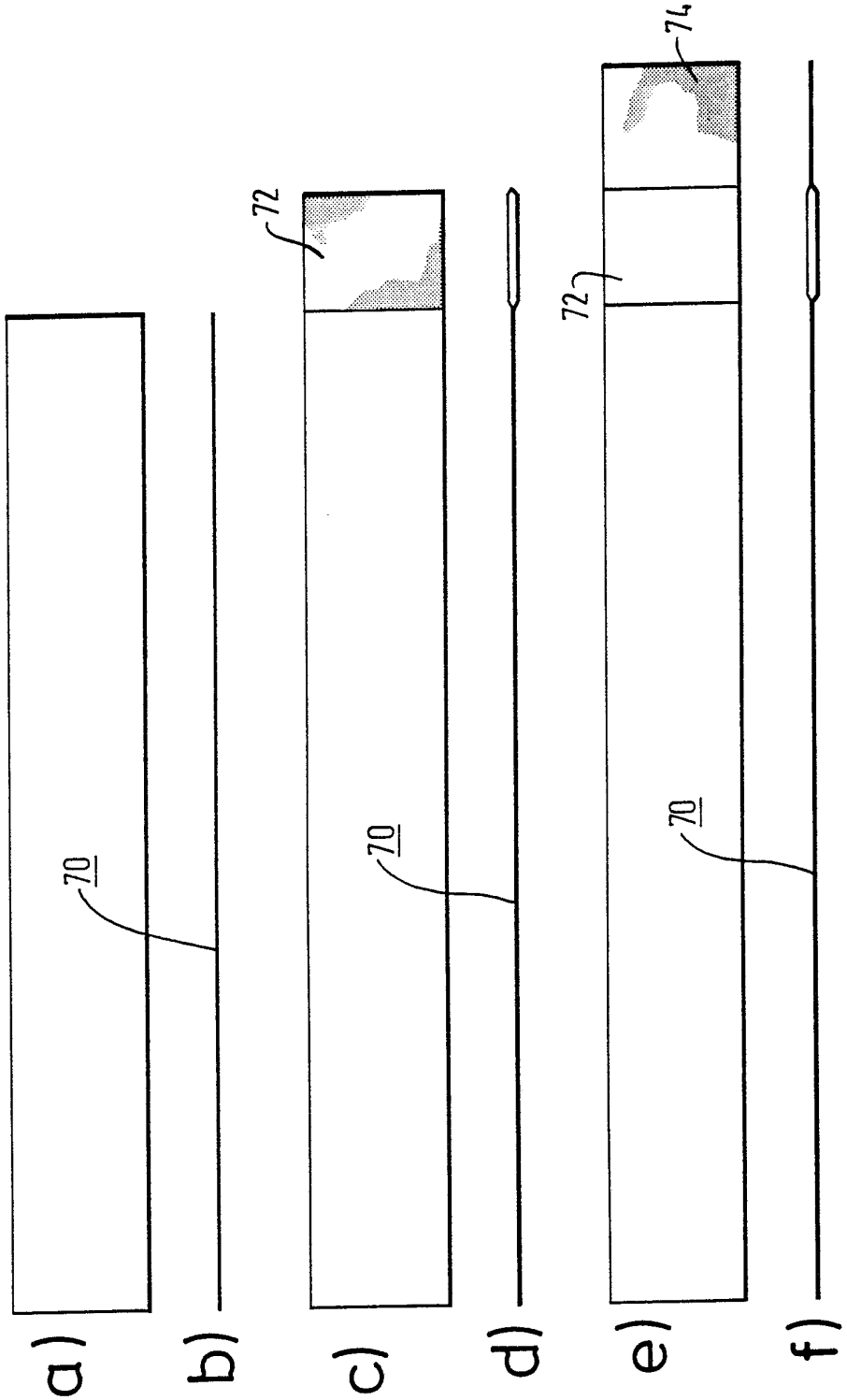


FIG.9



INTERNATIONAL SEARCH REPORT

International Application No PCT/GB 90/01432

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) [6]

According to International Patent Classification (IPC) or to both National Classification and IPC

IPC[5]: B 65 D 33/34

II. FIELDS SEARCHED

Minimum Documentation Searched [7]

Classification System	Classification Symbols
IPC[5]	B 65 D

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched [8]

III. DOCUMENTS CONSIDERED TO BE RELEVANT [9]

Category *	Citation of Document, [11] with indication, where appropriate, of the relevant passages [12]	Relevant to Claim No. [13]
X,P	EP, A, 0341699 (SEALCRAFT) 15 November 1989 see column 3, lines 20-33; column 6, lines 38-45; column 11, lines 18-45; column 7, lines 40-47; figures 1-17; claims 1,15	1-5,7
A	US, A, 4838708 (HOLCOMB) 13 June 1989 see column 4, lines 25-23,47-52; columns 9,10, examples 1,2	6,10,11

* Special categories of cited documents: [10]

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IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
12th November 1990	06 DEC 1990
International Searching Authority	**Signature of Authorized Officer**
EUROPEAN PATENT OFFICE	Mme N. KUIPER

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON INTERNATIONAL PATENT APPLICATION NO. GB 9001432

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP-A- 0341699	15-11-89	JP-A- 2045347	15-02-90
US-A- 4838708	13-06-89	AU-A- 3352089	05-10-89
		WO-A- 8908586	21-09-89
		US-A- 4937040	26-06-90