



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<p>(21) International Application Number: PCT/GB93/00672 (22) International Filing Date: 31 March 1993 (31.03.93) (30) Priority data: 9207160.4 1 April 1992 (01.04.92) GB 9214660.4 10 July 1992 (10.07.92) GB 9219828.2 18 September 1992 (18.09.92) GB (71) Applicant (for all designated States except US): MINIPACK SYSTEMS LIMITED [GB/GB]; No. 8 Waterloo Industrial Estate, Flanders Road, Hedge End, Southampton, Hampshire SO3 4QT (GB). (72) Inventor; and (75) Inventor/Applicant (for US only) : EASTMAN, Harold [GB/GB]; 5 Frampton Way, Kingsworthy, Winchester, Hampshire SO23 7QE (GB).</p>		<p>(74) Agent: GILL JENNINGS &amp; EVERY; Broadgate House, 7 Eldon Street, London EC2M 7LH (GB). (81) Designated States: AT, AU, BB, BG, BR, CA, CH, CZ, DE, DK, ES, FI, GB, HU, JP, KP, KR, LK, LU, MG, MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SK, UA, US, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i></p>
<p>(54) Title: APPLICATORS, PARTICULARLY FOR PAINTS</p>		
<p>(57) Abstract</p> <p>An applicator (200) comprises storage means such as reservoir (226) for use in storing a non-gaseous fluid, applying means such as brush (234) for use in applying the fluid, and connecting means such as channel (224) for use in controlling flow of the fluid from the storage means to the applying means, the fluid preferably being paint, the channel (224) preferably including a line of weakness or a seal to be ruptured or otherwise broken open during use, and the brush (234) preferably being located in an initially sealed enclosure (230), with the entire applicator (200) preferably being held by just a single hand during use.</p>		

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APPLICATORS, PARTICULARLY FOR PAINTS

5           The present invention relates generally to applicators and is more especially but not exclusively concerned with applicators for use in applying liquids such as paints to surfaces such as wallpapers.

10           It has already been proposed for a paint applicator, of the type known as a tester, to include a container for storing the paint and a brush for applying the paint.

15           The brush and the container are separable to allow the container to be held by one hand whilst the brush is held by the other hand. However, for purposes of testing, only a small amount of paint need be provided. Thus, the container is small and, for reasons of compatibility, the brush is also small. The result is that use of the known paint applicator is very time-consuming.

20           According to one aspect of the present invention, however, an applicator comprises: storage means for use in storing a non-gaseous fluid, applying means for use in applying the fluid, and connecting means for use in preventing flow of the fluid from the storage means to the applying means until said connecting means has been  
25 ruptured or otherwise broken open.

          Preferably, the rate of flow of the fluid from the applicator is arranged to be such that the fluid covers a comparatively large area in a comparatively short time.

30           The storage means may include an open housing of stiff material which, after being filled with the fluid, is closed by a foil of flexible material. The housing may be formed of a plastics material and be sufficiently thin to deform when squeezed. The foil may be of a metallic material which is secured to selected portions of the  
35 housing by any convenient method such as ultrasonic welding, or heat sealing.

The applying means may include a block of a foam or a non-woven fabric.

The connecting means may include at least one channel extending from the storage means to the applying means.  
5 The storage means may be integral with the connecting means and there may be a parallel pair of the channels. The applying means may be secured to the connecting means over parts of the channels which may have been weakened to facilitate breaking.

10 Preferably, the connecting means is constituted by a lateral extension of the housing, in combination with a corresponding lateral extension of the foil. One face of the housing extension is sealed to the foil extension everywhere but at the channels. The other face of the  
15 housing extension is secured to the applying means by any convenient method such as adhesive.

For example, there may be a line of weakness in the housing extension, between the block of foam and the foil extension, which extends transversely of and intersects  
20 both of the channels, at enlarged exit portions of the channels.

It will be appreciated that, in use, folding or bending the connecting means, to bring the foil extension back upon itself, can be arranged to break at least  
25 selected portions of the housing extension by rupturing along the line of weakness, thereby breaking open the channels so that, when the housing is squeezed, the fluid is forced along the channels, out through the ruptured line of weakness and into the block of foam.

30 The fluid need not be as free flowing as a paint or other liquid, but could be of higher viscosity such as a paste, or lower viscosity such as a dye.

One modification is that, particularly if there is just a single channel, the connecting means does not  
35 include a line of weakness (initially closed but subsequently irreversibly broken open) but instead includes a

seal (initially closed but subsequently irreversibly broken open).

The seal may extend across the channel to separate a part of the channel always open to the housing (storage means) from a part of the channel always open to the block of foam (applying means).

The seal may be easily formed by securing the foil extension to the housing extension by any convenient method, such as ultrasonic welding or heat sealing, so that the seal acts to prevent the flow of the fluid from the housing to the block of foam until sufficient pressure has been applied to the housing to cause the fluid to break the seal open by forcing the foil extension away from the housing extension.

The seal may be of very small area so that it is easily broken open in preference to any other position at which the foil or foil extension is secured to the housing or housing extension.

Another modification, again particularly if there is just a single channel, is that the connecting means may not be irreversibly broken open, as with a line of weakness or a seal, but may be ruptured or otherwise broken open each time that the applicator is used.

Repeatable rupturing is possible if the fluid in the channel dries out or sets to form a skin at an air/fluid boundary. The skin is more likely to form when the channel is of very small cross-section. The skin blocks the channel to prevent free flow of the fluid through the channel until sufficient pressure has been applied to the fluid to break the skin. In this example, the skin constitutes part of the connecting means because it prevents flow of the fluid from the storage means to the applying means until it has been ruptured or otherwise broken open.

A further modification is that the block of foam (located outwardly of the housing extension and foil extension) is replaced by bristles of natural or synthetic

material (located between the housing extension and foil extension).

The bristles may be secured together at or near one end in any manner intended to retain the bristles at the same time as allowing access of the fluid to the bristles.

The bristles may be located within a recessed portion of the housing extension, with the recessed portion possibly including a frangible connection (such as a line of reduced thickness).

The recessed portion of the housing extension may be covered by the foil extension not only to maintain cleanliness and avoid damage of the bristles but also to provide a sealed enclosure should the connecting means be inadvertently ruptured or otherwise broken open before an intended use of the applicator.

It will be appreciated that breaking the frangible connection in the recessed portion, by folding the foil extension back upon itself, will allow the bristles to protrude from the rest of the applicator in the manner of a brush.

The above-noted further modification need not necessarily incorporate connecting means of the kind hereinbefore defined.

According to other aspects of the present invention, therefore, an applicator comprises: storage means for use in storing a non-gaseous fluid, applying means for use in applying the fluid, and connecting means for use in controlling flow of the fluid from the storage means to the applying means; with the applying means being located in an initially sealed enclosure and/or the applying means being in the form of a brush and/or all of the storage means, applying means and connecting means being secured together and held together during use.

The connecting means, which preferably is a line of weakness which is irreversibly broken open in use, a seal which is irreversibly broken open in use or a seal which is broken open each time that the applicator is used, is

operable to control flow of the fluid from the storage means to the applying means by either resisting or allowing said flow, and by careful manipulation it may be possible for a skilled user to obtain a finer control of said flow.

5 Three applicators, in accordance with the present invention, will now be described in greater detail, by way of example only, with reference to the accompanying drawings, in which:-

10 Figure 1 is a perspective view from above of a first applicator;

Figure 2 is an underneath view of the first applicator;

15 Figures 3A to 3D are side views of the first applicator showing a sequential series of positions adopted during use;

Figure 4 is a perspective view from above of a second applicator;

Figure 5 is an underneath view of the second applicator;

20 Figure 6 is a side view showing a position adopted during use of the second applicator;

Figure 7 is a view from above, one side and one end of a third applicator;

25 Figure 8 is a view from the other end of the third applicator;

Figure 9 is a view from below of the third applicator; and

Figure 10 is a view from the other side of the third applicator.

30 As shown in Figure 1 of the accompanying drawings, a first applicator 10 comprises storage means 12 for use in storing a non-gaseous fluid, applying means 14 for use in applying the fluid, and connecting means 16 for use in preventing flow of the fluid from the storage means 12 to  
35 the applying means 14 until said connecting means 16 has been ruptured or otherwise broken open.

The applicator 10 is formed in part of a plastics material to present an open housing 18 and a housing extension 20. As shown in Figure 2, the lower face of the housing extension 20 is formed with ribs 22 defining the sides and closed ends of a pair of parallel channels 24, the other ends of the channels 24 opening without obstruction into a reservoir 26 defined by the housing 18. The applicator 10 also includes a single sheet of a metallic foil 28. Again as shown in Figure 2, the foil 28 is sealed to the housing 18 around the reservoir 26 and is also sealed to the housing extension 20 around the channels 24. Finally, the applicator 10 is provided with foamed plastics material shaped as a block 30.

It will be appreciated that: the storage means 12 is constituted by the reservoir 26; the applying means 14 is constituted by the block 30 of foamed material; and the connecting means 16 is constituted the channels 24.

The upper face of the housing extension 20, hidden in Figure 1 by the block 30 of foamed material, has a line of weakness 32 extending transversely of, and intersecting, the channels 24 and also has a pair of depressions 34, similar in construction to but very much smaller than the reservoir 26.

In use, as is clear from Figures 3A to 3D, the applicator 10 is bent to bring the foil 28 back upon itself. The block 30 of foamed material thus remains on the outside. The act of bending causes the housing extension 20 to rupture along the line of weakness 32 at the depressions 34 thereby breaking open the channels 24. If the housing 18 is squeezed, the contents of the reservoir 26 (paint) are forced along the channels 24, out through the broken depressions 34 and into the block 30 of foamed material.

The comparatively large area of the block 30 of foamed material (in comparison to a small brush) means that paint can be applied thereby in a comparatively short time.



As shown in Figures 4 and 5 of the accompanying drawings, a second applicator 100 comprises storage means 112 for use in storing a non-gaseous fluid, applying means 114 for use in applying the fluid, and connecting means 116 for use in preventing flow of the fluid from the storage means 112 to the applying means 114 until said connecting means 116 has been ruptured or otherwise broken open.

The applicator 100 is formed in part of a plastics material to present an open housing 118 and a housing extension 120. The lower face of the housing extension 120 is formed with parallel ribs 122 defining the sides of a single channel 124. The channel 124 has a generally rectangular cross-section with a cross-sectional area of approximately 2 mm<sup>2</sup>, but could be of a different shape and size, such as a semi-cylindrical downwardly-opening groove visible on the upper face of the housing extension 120. The right hand end of the channel 124 opens into a reservoir 126 defined by the housing 118. The upper face of the housing extension 120 is formed with a recessed portion 128, with the left hand end of the channel 124 opening into a chamber 130 defined by the recessed portion 128.

The applicator 100 also includes a single sheet of a metallic foil 132 - the foil 132 covers the base of all of the applicator and is sealed to the housing 118 around the reservoir 126 and is sealed to the housing extension 120 around both the channel 124 and the chamber 130.

The applicator 100 is further provided with a brush 134 located within the chamber 130, with the brush including one or more bunches of bristles 134a held together near one end by an encircling band 134b (not clearly shown). The band 134b is preferably a tight fit in the chamber 130 and is itself preferably a tight fit around the bristles 134a. A particularly convenient arrangement, however, for allowing flow communication between the channel 124 and the bristles 134a, is to form the band

134b with corrugations defining fluid passageways. Access to the other end of the bristles 134a is via a frangible connection 136 in the form of a line of reduced thickness in the plastics material of the housing extension 120. The  
5 frangible connection 136 extends transversely of the recessed portion 128 and ends at a pair of opposed notches 138.

To prevent flow of any non-gaseous fluid, such as paint, from the reservoir 126 to the brush 134 until the  
10 connecting means 116 has been ruptured or otherwise broken open, the connecting means 116 includes, as indicated at 140, either a seal formed by securing the foil 132 across the channel 124, or a skin formed at an air/fluid boundary within the channel 124.

15 In use, as is clear from Figure 6, the foil 132 is bent back upon itself to break the frangible connection 136, thereby allowing free ends of the bristles to become exposed so that, upon application of sufficient pressure to the housing 118, the fluid breaks the seal/skin at  
20 location 140 and flows through the channel 124 to reach the brush 134.

As shown in the remaining Figures 7 to 10 of the accompanying drawings, a third applicator 200 is generally similar to the above-described applicator 100.

25 It is proposed to discuss only the more significant changes.

One change is that, instead of the brush 234 being retained in the chamber 230 by friction, positive location means is provided. The bristles 234a are not held together  
30 by an encircling band, but are instead gripped by a slotted metal bar 234b whose ends are retained in laterally extending pockets 242 formed in the housing extension 220. Flow communication between the bristles 234a and the channel 224, where the foil 232 is not sealed to the  
35 housing extension 220, is achieved by the provision of an upwardly extending pocket 244 in the housing extension 220.

Access to the other end of the bristles 234a could be via the frangible connection 236 previously disclosed such that bending the foil 232 back upon itself breaks the frangible connection 236 to allow the free ends of the  
5 bristles 234a to become exposed.

Another change, however, which allows a greater length of the bristles 234a to be exposed, is that the free end of the housing extension 220 is totally removed. The foil 232 has a line 246 printed thereon indicating where the foil  
10 232 is to be scored or slit, for example by a knife, so that the free end of the housing extension 220 can be waggled back and forth between the notches 238 and then torn off.

It is still preferable for the channel 224 to be of  
15 such small dimensions that a skin is formed at an air/fluid boundary in the channel 224. Nevertheless, any other arrangement which is effective in either resisting or allowing flow of the fluid from the reservoir 226 to the brush 234 would be equally acceptable. It is clearly  
20 undesirable for the fluid to reach the brush until the applicator is in use.

The applicator utilises thermoforming and plastics laminate technology to produce an integral pack facilitating clean and easy application of a fluid  
25 particularly by a brush. The applicator can be provided in different sizes and in different displays. The plastics material may be e.g. PVC/PVDC/PE, MONO BAREX or PS/EVOH/PE and the metallic foil may be e.g. metallised PET/PE, PET/FOIL/BAREX or PET/FOIL/PE. The applicator may carry  
30 printing in different colours as appropriate.

C L A I M S

1. An applicator comprising: storage means for use in storing a non-gaseous fluid, applying means for use in  
5 applying the fluid, and connecting means for use in preventing flow of the fluid from the storage means to the applying means until said connecting means has been ruptured or otherwise broken open.
2. An applicator according to claim 1, in which the  
10 applying means is in the form of a brush.
3. An applicator comprising: storage means for use in storing a non-gaseous fluid, applying means for use in applying the fluid, and connecting means for use in  
15 controlling flow of the fluid from the storage means to the applying means, with the applying means being in the form of a brush.
4. An applicator according to any preceding claim, in which the applying means is located in an initially sealed enclosure.
- 20 5. An applicator comprising: storage means for use in storing a non-gaseous fluid, applying means for use in applying the fluid, and connecting means for use in controlling flow of the fluid from the storage means to the applying means, with the applying means being located in  
25 an initially sealed enclosure.
6. An applicator according to any preceding claim, in which the storage means, applying means and connecting means are secured together and held together during use.
7. An applicator comprising: storage means for use in  
30 storing a non-gaseous fluid, applying means for use in applying the fluid, and connecting means for use in controlling flow of the fluid from the storage means to the applying means, with all of the storage means, applying means and connecting means being secured together and held  
35 together during use.
8. An applicator according to any one of claims 1 to 7, in which there is a line of weakness which is irreversibly

broken open in use to allow flow of the fluid from the storage means to the applying means.

9. An applicator according to any one of claims 1 to 7, in which there is a seal which is irreversibly broken open  
5 in use to allow flow of the fluid from the storage means to the applying means.

10. An applicator according to any one of claims 1 to 7, in which there is a seal which is broken open each time that the applicator is used to allow flow of the fluid from  
10 the storage means to the applying means.

11. An applicator according to any preceding claim, in which the storage means includes an open housing of stiff material which, after being filled with the fluid, is closed by a foil of flexible material.

12. An applicator according to claim 11, in which the connecting means includes a lateral extension of the housing in combination with a corresponding lateral extension of the foil, said lateral extensions being secured together to define at least one channel extending  
15 from the storage means to the applying means.

13. An applicator according to claim 12, in which the housing and housing extension are formed of a plastics material, the foil and foil extension are formed of a metallic material, and the housing extension and the foil extension are secured together by ultrasonic welding or  
20 heat sealing.

14. An applicator according to any preceding claim, in which the non-gaseous fluid is in the form of paint.

Fig. 1.

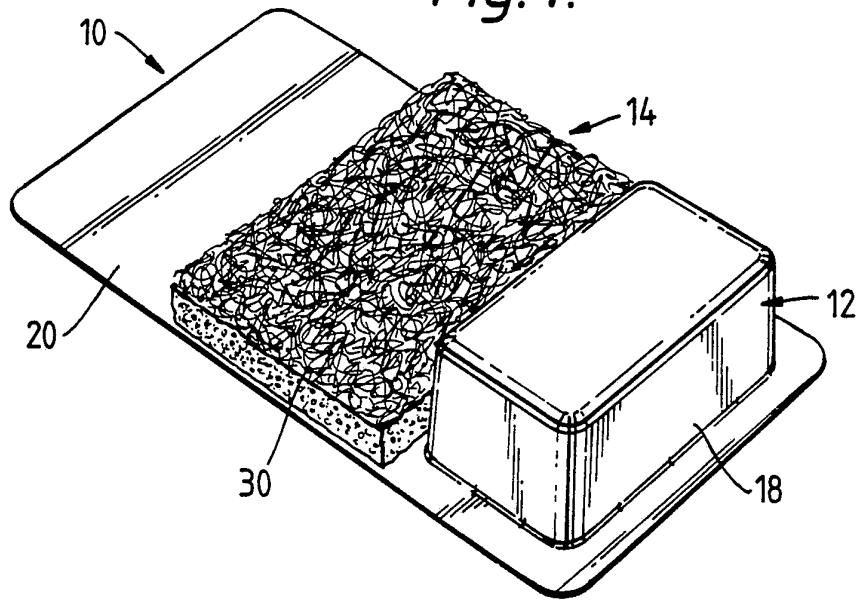
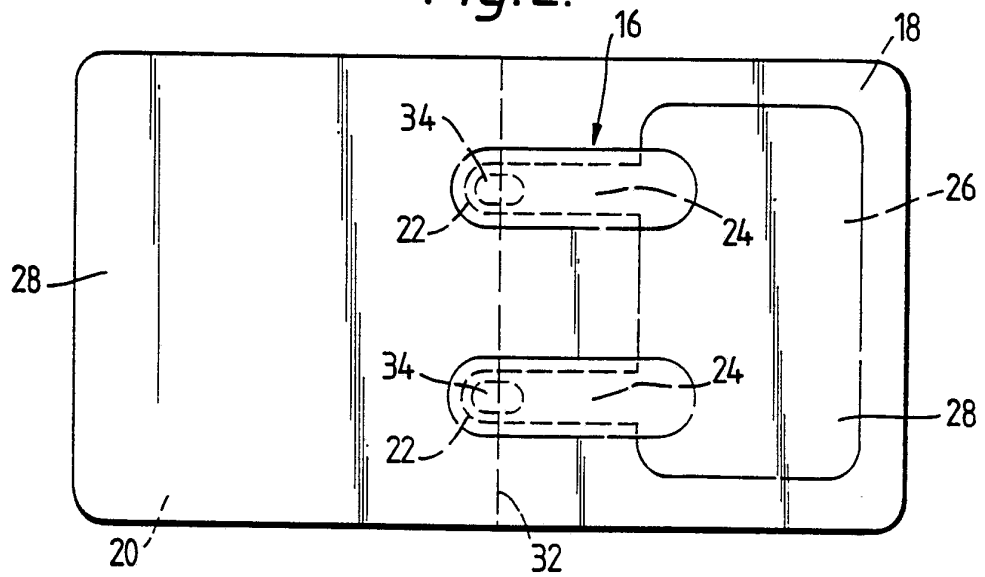


Fig. 2.



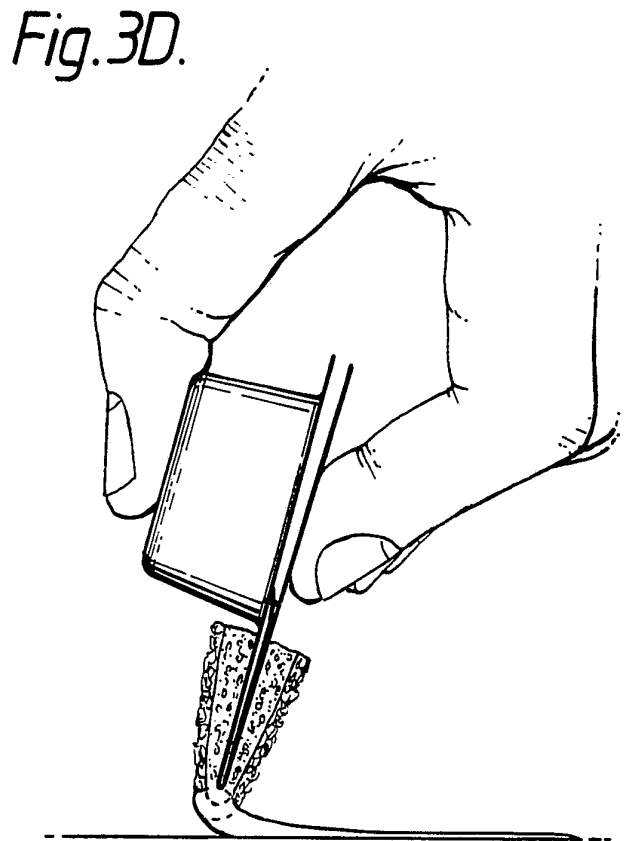
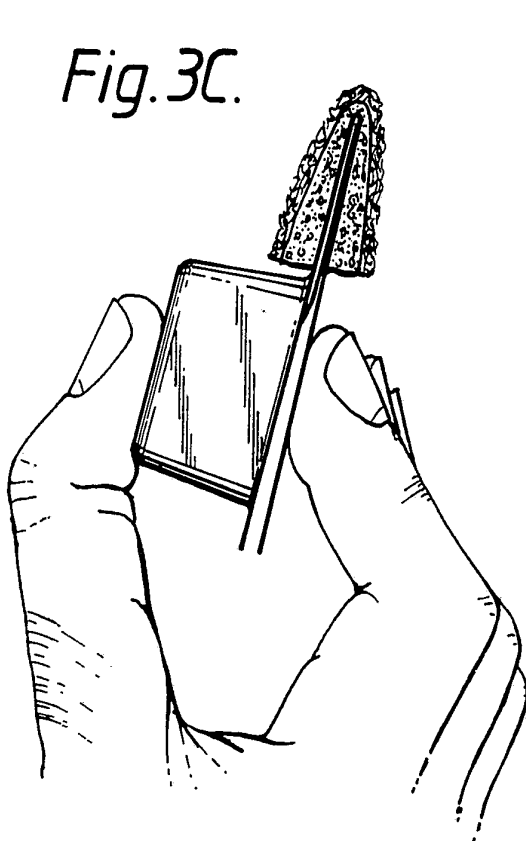
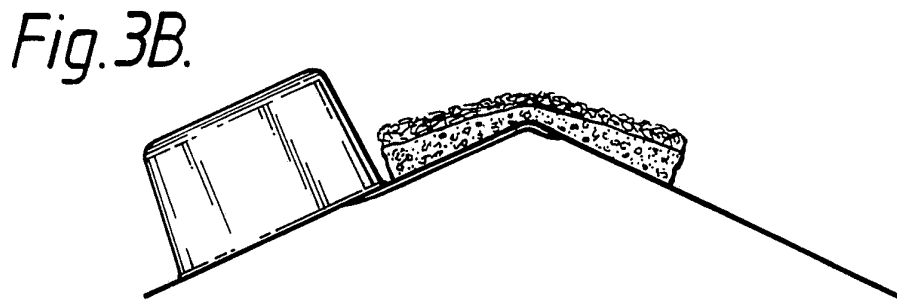
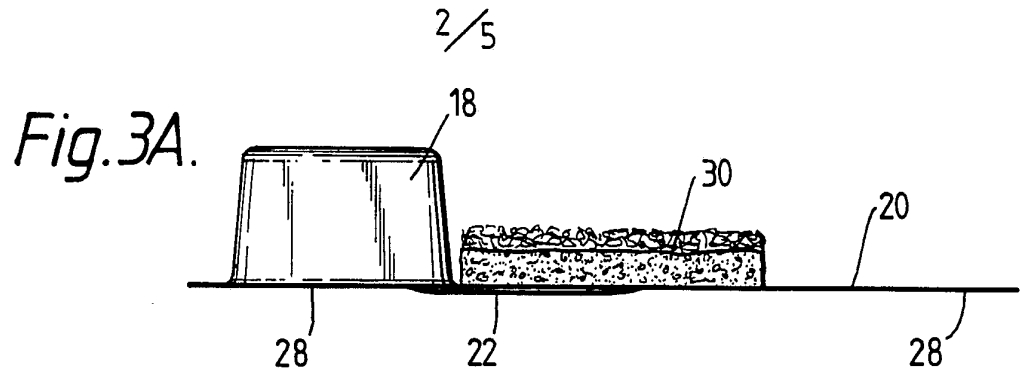


Fig.4.

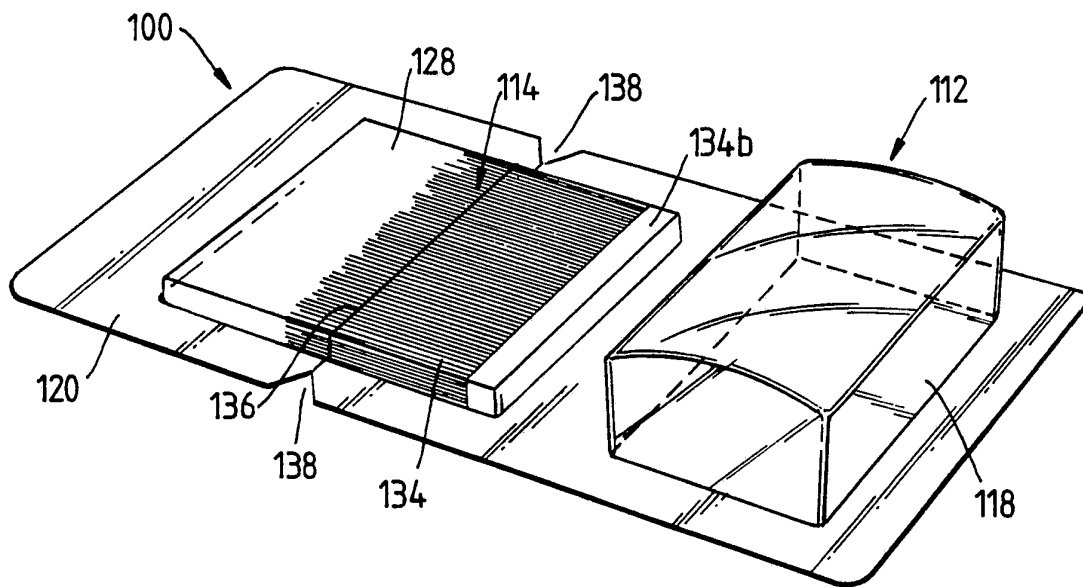


Fig.5.

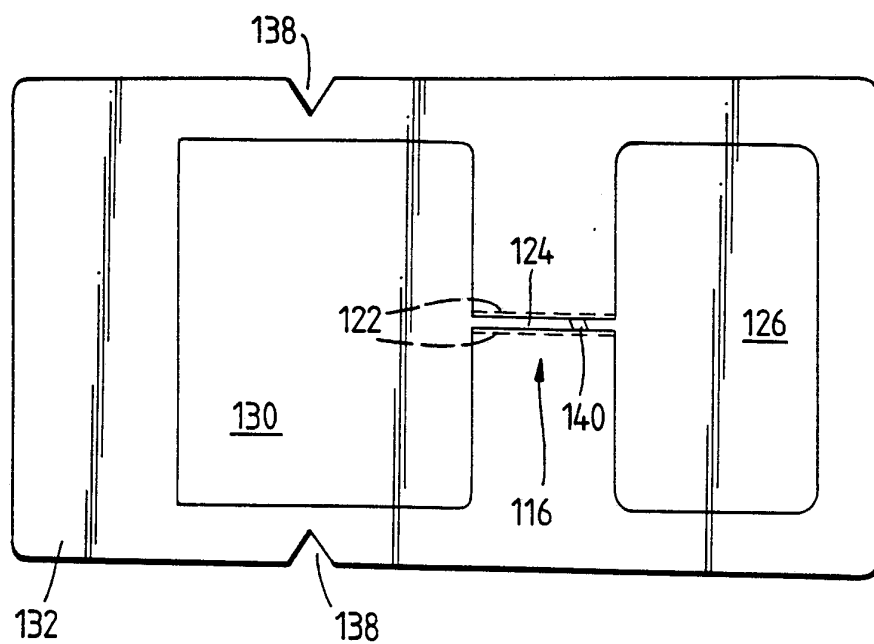




Fig. 6.

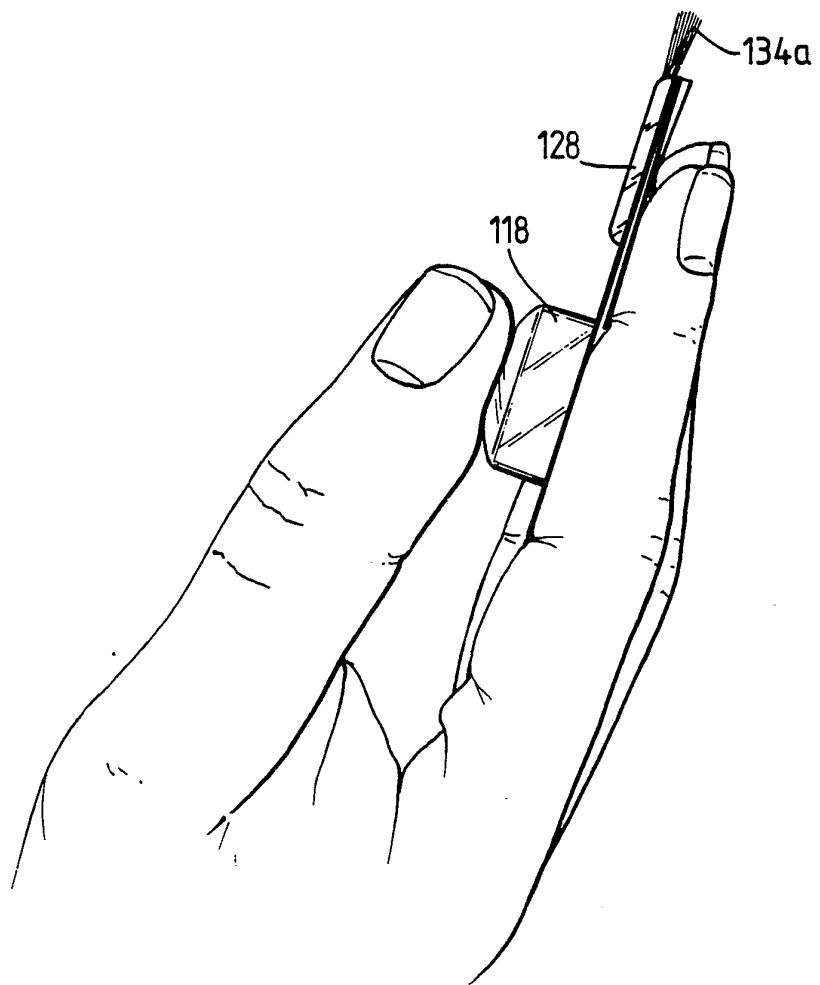


Fig. 7.

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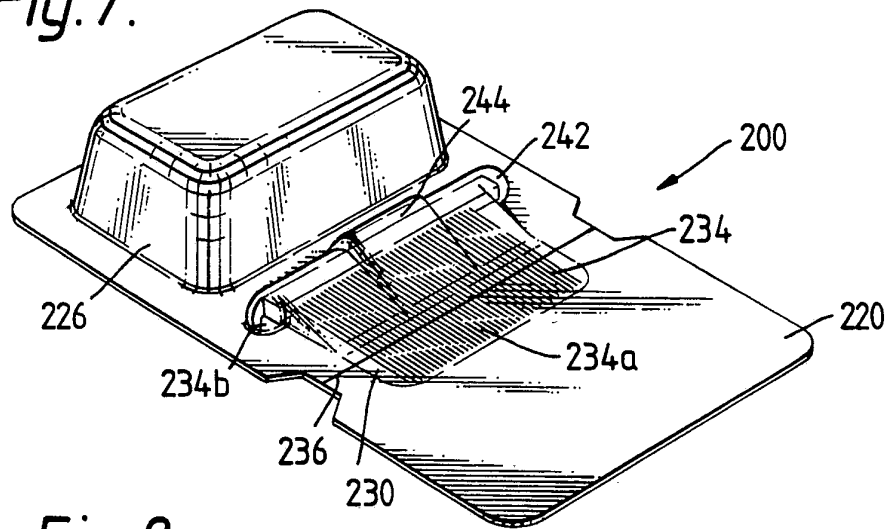


Fig. 8.



Fig. 9.

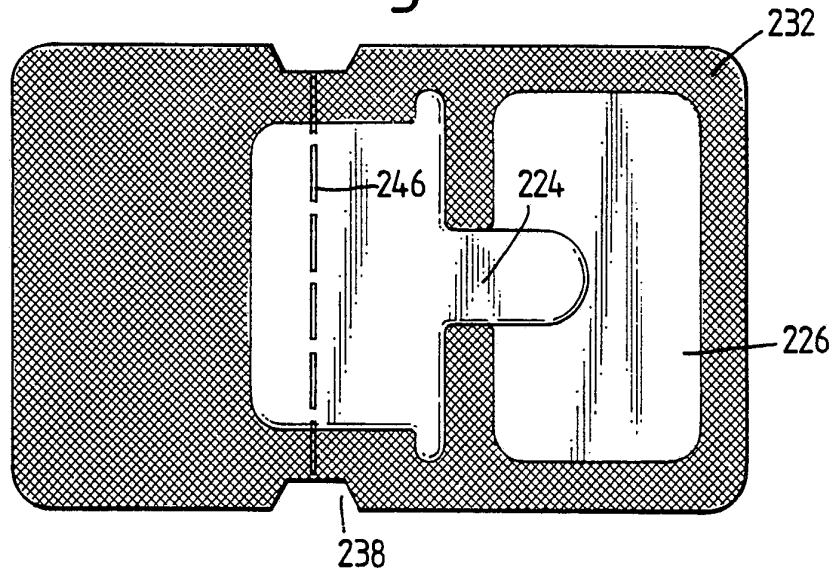
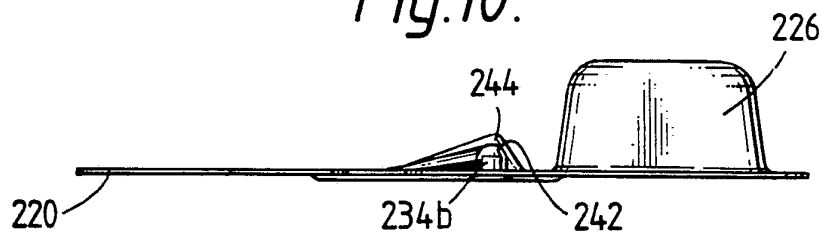


Fig. 10.



SUBSTITUTE SHEET

**INTERNATIONAL SEARCH REPORT**

International Application No

PCT/GB 93/00672

<b>I. CLASSIFICATION OF SUBJECT MATTER</b> (if several classification symbols apply, indicate all) <sup>6</sup>		
According to International Patent Classification (IPC) or to both National Classification and IPC Int.Cl. 5 B05C17/00;                      A46B11/00		
<b>II. FIELDS SEARCHED</b>		
Minimum Documentation Searched <sup>7</sup>		
Classification System	Classification Symbols	
Int.Cl. 5	B05C ;                      A46B	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched <sup>8</sup>		
<b>III. DOCUMENTS CONSIDERED TO BE RELEVANT<sup>9</sup></b>		
Category <sup>o</sup>	Citation of Document, <sup>11</sup> with indication, where appropriate, of the relevant passages <sup>12</sup>	Relevant to Claim No. <sup>13</sup>
X	WO,A,8 100 196 (KAUFMAN) 5 February 1981 see the whole document -----	1-14
A	US,A,3 918 820 (KIM) 11 November 1975 see column 3, line 44 - line 65; figure 1 see column 6, line 16 - line 38 -----	2,3
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<b>IV. CERTIFICATION</b>		
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report	
29 JUNE 1993	13.07.93	
International Searching Authority	Signature of Authorized Officer	
EUROPEAN PATENT OFFICE	GUASTAVINO L.	

**ANNEX TO THE INTERNATIONAL SEARCH REPORT  
ON INTERNATIONAL PATENT APPLICATION NO.**

GB 9300672  
SA 72120

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on  
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO-A-8100196	05-02-81	CA-A- 1164412	27-03-84
		GB-A, B 2066672	15-07-81
		US-A- 4430013	07-02-84
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US-A-3918820	11-11-75	None	
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