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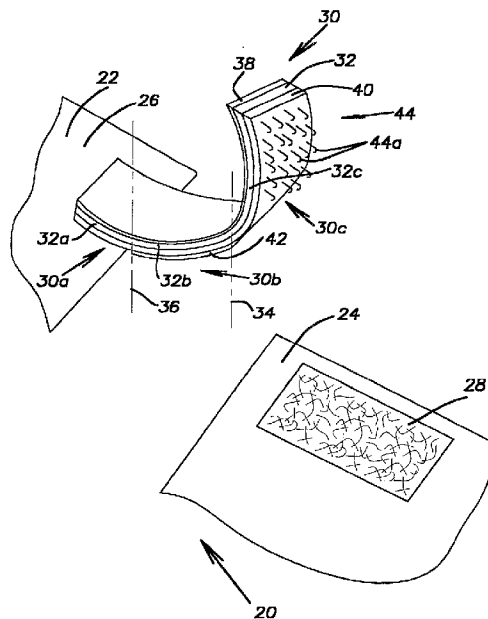
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(54) **AMELIORATIONS APORTEES A DES SYSTEMES DE
FERMETURE DE COUCHES-CULOTTES**

(54) **IMPROVEMENTS IN DIAPER FASTENER SYSTEMS**



(57) Cette invention concerne des systèmes d'attache permettant de fixer deux composants amovibles, lesquels systèmes comprennent une languette (30) et des éléments de réception (28). Dans une première variante, un élément languette plié en forme de Z possède une fixation mécanique (44) et adhésive (40). La languette (30) comprend une couche de bourre faciale (32), une couche adhésive (40), ainsi qu'un système ou un revêtement détachable (38, 42) situé sur chaque côté de la couche de bourre faciale (32).

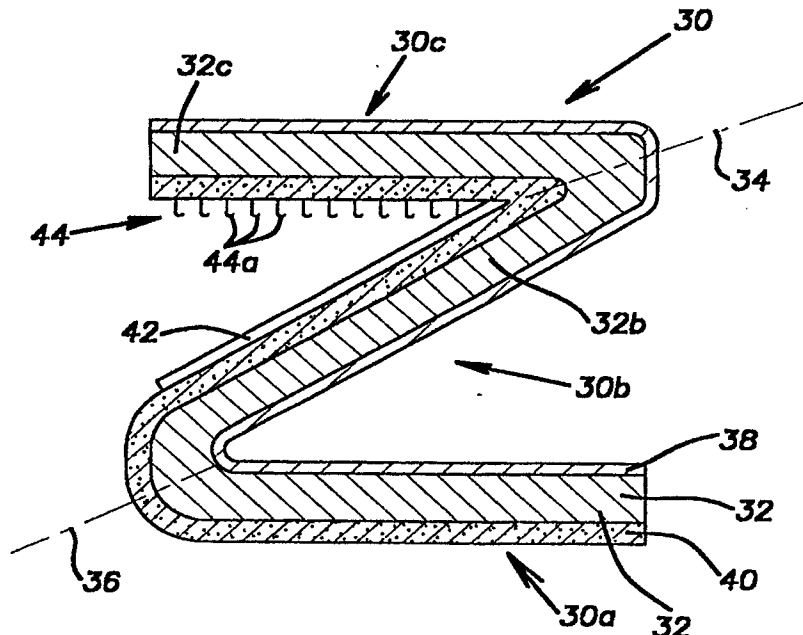
(57) Fastening systems for releasably securing two components together include a tab (30) and landing members (28). In a first arrangement, a z-fold tab member has combined mechanical (44) and adhesive (40) engagement. The tab (30) includes a face stock layer (32), an adhesive layer (40), and a release means or coating (38, 42) on either side of the face stock layer (32).

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(54) Title: IMPROVEMENTS IN DIAPER FASTENER SYSTEMS



(57) Abstract

Fastening systems for releasably securing two components together include a tab (30) and landing members (28). In a first arrangement, a z-fold tab member has combined mechanical (44) and adhesive (40) engagement. The tab (30) includes a face stock layer (32), an adhesive layer (40), and a release means or coating (38, 42) on either side of the face stock layer (32).

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1 IMPROVEMENTS IN DIAPER FASTENER SYSTEMS

2 This application claims the priority of US
3 Provisional Application No. 60/010,029, filed January 16,
4 1996.

5 BACKGROUND OF THE INVENTION AND RELATED ART

6 The present invention relates to closures for
7 fastening adjacent portions of materials or components
8 together. The closures are useful as fastening system
9 closures for disposable diapers.

10 Diapers of this general type are widely used. A
11 typical diaper construction comprises an absorbent pad or
12 batt or the like enclosed in an outer plastic shell or a
13 non-woven backsheet that is non-woven fabric laminated
14 with a water impermeable layer such as a polyethylene
15 film. A water permeable inner shell or liner is also
16 provided to promote separation of fluid from the user.

17 The fastener tape system generally includes adhesive
18 tabs fastened to one end of the diaper assembly
19 construction at each lateral side of the diaper in a
20 permanent "factory joint" by the diaper manufacturer
21 using adhesives or other techniques. The tabs have a
22 face coated with pressure-sensitive adhesive. The tabs
23 are releasably attachable to the other end of the diaper
24 at each lateral side in a "user joint". The attachment
25 is releasable both to allow permanent removal of the
26 diaper and to allow unfastening to inspect the diaper
27 followed by refastening if indicated.

28 The user joint may be formed by direct connection of
29 the tab to the diaper outer surface whether the latter is
30 formed of a plastic film or a non-woven backsheet. In
31 the case of plastic film shells, it is typical to provide
32 a "landing zone or member" formed of reinforcing tape or
33 the like for receiving the end of the tab to form the

AMENDED SHEET

1 user joint. The landing zone may provide a plastic
2 surface or a non-woven surface and may comprise a knit
3 type fabric landing pad.

4 The fastener tape system may rely solely upon
5 pressure-sensitive adhesive in the formation of the user
6 joint as shown in US Patents 4,795,456, 4,710,190,
7 4,020,842 and 3,833,456. The use of combined adhesive
8 and mechanical fastener systems is shown in US Patents
9 5,019,065, 5,053,028 and 4,869,724. The teachings of all
10 of these patents being incorporated herein by reference.

11 The use of extensible or stretchable tabs to promote
12 user comfort through better fit and more secure mounting
13 is also known in the art. The tabs operate as extensible
14 diaper side waistbands. Examples of such diaper
15 fastening systems are disclosed in US Patents 4,795,456,
16 4,066,081, 4,051,853 and 3,800,796. The teachings of
17 these patents being incorporated herein by reference.

18 Related art includes US Patents 4,465,717,
19 4,662,875, 5,051,259, 5,106,384, 5,133,707, 5,531,731,
20 5,591,521 and European Publication No. 0 191 355.

21 SUMMARY OF THE INVENTION

22 The present invention has a number of different
23 aspects relating to improvements in diaper tab fastening
24 systems. These improvements may be used alone or in
25 combination in a fastener system. The fastener system
26 may include an extensible or substantially nonextensible
27 element or tab member.

28 In a first aspect, the fastening system includes
29 overlying or spatially combined adhesive and mechanical
30 fastening attachments in a tab having an efficient Z-fold
31 configuration. Upon deployment of such tab arrangement
32 to close the diaper, the adhesive provides immediate tack
33 strength and the mechanical attachment provides improved
34 shear strength. The mechanical and adhesive attachments

1 each contribute to the total integrity or strength of the
2 diaper closure or user joint, and neither has to be fully
3 effective to provide the required total closure strength.

4 In a second aspect, the fastening system has a
5 combined adhesive closure system including both adhesive
6 and cohesive elastomers to effect closure. In this
7 manner, the aggressiveness of adhesives is attained as
8 well as the contaminate resistance of cohesives.

9 In a third aspect, the fastening system includes a
10 mechanical fastening system having mechanically engaging
11 elements adapted to be received in contoured or obliquely
12 extending apertures in the tab. The mechanical engaging
13 elements have shaped base portions extending to head
14 portions for interengagement within the apertures.

15 In a fourth aspect, the fastening system includes a
16 mechanical fastening system having an open mesh tab
17 adapted to receive a plurality of mechanical engaging
18 elements. The apertures and mechanical engaging elements
19 are sized and arranged to provide engagement of a
20 plurality of elements in each of the apertures.

21 In a fifth aspect, the fastening system includes a
22 color indication of proper adhesive engagement of the tab
23 and landing members.

24 BRIEF DESCRIPTION OF THE DRAWINGS

25 Fig. 1 is a fragmentary perspective view showing a
26 diaper having a fastener system including a tab member in
27 the deployed condition ready for securement to a landing
28 member in accordance with the present invention;

29 Fig. 2 is an elevational view of the tab member of
30 Fig. 1 in the storage position with the folded portions
31 slightly spaced for clarity of illustration;

32 Fig. 3 is a schematic perspective view of various
33 mechanical fastener elements that may be used in the
34 fastener system of Fig. 1,

1 Fig. 4 is a fragmentary perspective view showing a
2 diaper having a fastener system including a tab member in
3 the deployed condition ready for securement to a landing
4 member in accordance with another embodiment of the
5 present invention;

6 Fig. 5 is a fragmentary perspective view showing a
7 diaper having a fastener system including a tab member in
8 the deployed condition ready for securement to a landing
9 member in accordance with a further embodiment of the
10 present invention;

11 Fig. 6 is a fragmentary sectional view on an
12 enlarged scale taken along the line 6-6 in Fig. 5;

13 Fig. 7 is a fragmentary sectional view similar to
14 Fig. 6 showing the tab and landing members of Fig. 5 in a
15 securement position;

16 Fig. 8 is a fragmentary perspective view showing a
17 diaper having a fastener system including a tab member in
18 the deployed condition ready for securement to a landing
19 member in accordance with yet a further embodiment of the
20 present invention;

21 Fig. 9 is a fragmentary elevational view on an
22 enlarged scale showing the tab and landing members of
23 Fig. 8 in a securement position;

24 Fig. 10 is a fragmentary perspective view showing a
25 diaper having a fastener system including a tab member in
26 the deployed condition ready for securement to a landing
27 member in accordance with yet a further embodiment of the
28 present invention; and

29 Fig. 11 is a fragmentary sectional view on an
30 enlarged scale showing the tab and landing member of Fig.
31 10 adhesively engaged.

32 DETAILED DESCRIPTION OF THE INVENTION

33 Herein, pressure-sensitive adhesive layers or
34 applications are variously referred to in the tab

1 fastener systems. The adhesive layer or application may
2 be provided using known adhesive materials such as
3 pressure-sensitive adhesives including acrylic resin and
4 natural or synthetic based rubber adhesives. Preferred
5 adhesives include hot melt pressure-sensitive adhesives
6 of the A-B-A block copolymer type comprising an
7 elastomeric B-block derived from isoprene and
8 thermoplastic A-blocks derived from styrene as disclosed
9 in US Patent 3,932,328. Illustrative rubber based
10 adhesives include styrene-isoprene-styrene and styrene-
11 butadiene-styrene which may optionally contain diblock
12 components such as styrene isoprene and styrene
13 butadiene. The adhesives may be applied using hot-melt,
14 solvent or emulsion techniques.

15 The provision of extensible facestock layers and/or
16 tab constructions referred to herein may be formed or
17 provided in any of the following manners.

18 The facestock film may be made extensible or
19 stretchable by forming it of extrudable elastomers such
20 as the thermoplastic elastomers sold by the Shell
21 Chemical Company under the designation Kraton. These
22 elastomers may be SBS, SIS, SI, S(IS)_x and SEBS block
23 copolymers and mixtures thereof. The facestock may also
24 be formed of a polyurethane, polyethylene and
25 polypropylene copolymer or EVA polymer of suitable
26 elastic characteristics. The resulting facestock or tab
27 should have an extensibility or elasticity similar to
28 that of the films disclosed in US Patent 5,057,097 to
29 Gesp, and owned by the assignee herein.

30 The extensibility may also be provided by
31 coextrusion processing with combinations of extensible
32 and nonextensible polymers. More particularly, a side-
33 by-side coextrusion including adjacent portions of
34 extensible polymer film and nonextensible polymer film
35 may be made. The diaper tab may be cut from the

1 coextruded film and include one or more extensible film
2 portions extending across the width of the tab. The
3 coextrusion processing requires a matching or near
4 matching of the melt flow characteristics of the polymers
5 forming the facestock. Such matching and processing
6 techniques are known in the art and illustrated, for
7 example, in US Patent 3,800,796.

8 The facestock may comprise an extensible fabric such
9 as a stretchable non-woven or woven fabric. Preferably,
10 the fabric has a higher tensile modulus and is less
11 extensible in the fabric manufacture machine direction
12 than in the cross direction. This will facilitate
13 handling of the fabric web in adhesive coating and
14 cutting processing. The tabs may be cut across the width
15 or in the cross machine direction of fabric manufacture.
16 Suitable non-woven fabrics are commercially available.
17 For example, Kimberly-Clark Corporation of Neenah,
18 Wisconsin markets a suitable fabric under the name
19 Demique. A suitable polyurethane non-woven fabric is
20 sold by Kanebo Company of Japan. Suitable woven fabrics
21 are commercially by Bloomburg Mills of Bloomburg,
22 Pennsylvania and the Comco Company of Charlotte, North
23 Carolina.

24 The tab may be nonextensible and formed of
25 conventional polymers such as polypropylene, polyethylene
26 and blends of copolymers thereof. Such tabs typically
27 include an extruded facestock layer or film formed of
28 such polymers.

29 Referring to Figs. 1 and 2, a fastener system 20 for
30 releasably closing a diaper 22 having opposed
31 longitudinal ends 24 and 26 is shown. The fastener
32 system includes a landing member 28 mounted to the diaper
33 end 24 and a diaper tab 30 mounted to the diaper end 26.
34 The tab 30 includes an extensible facestock layer 32 have
35 intermediate fold lines or planes 34 and 36. The fold

1 lines 34 and 36 divide the tab 30 and facestock layer 32
2 into a terminal or mounting portion 30a and 32a, a
3 connecting or central portion 30b and 32b, and a terminal
4 or securement portion 30c and 32c. The facestock layer
5 32 is extensible and may be formed in any of the above
6 described manners.

7 Release means or coating 38, such as a silicone
8 coating, as are known in the art, extends along outer
9 face of the facestock layer 32. The other surface of the
10 facestock layer has an adhesive layer 40 extending along
11 its entire length comprising the inner faces of the
12 portions 30a, 30b and 30c. The adhesive layer 40 may
13 comprise a known pressure-sensitive adhesive suitable for
14 use in diaper tab applications as described above.

15 One portion of the adhesive layer 40 extending along
16 the terminal or mounting portion 30a is exposed to form a
17 factory joint with the diaper outer shell of the diaper
18 22. A release means or coating 42, which may be similar
19 to the release means 38, extends along the adhesive layer
20 40 across the central or connecting portion 30b of the
21 tab 30. Mechanical engagement member 44 is located
22 adjacent the terminal segment 30b, the portion of the
23 adhesive layer 40 and member 44 being coextensive along
24 such terminal or securement portion of the tab 30.

25 As shown, the member 44 comprises a plurality of
26 engagement elements 44a that project from the facestock
27 layer 32. The elements 44a may be integrally formed with
28 the facestock layer 32, or they may be separately formed
29 and subsequently attached thereto as a conventional hook
30 and loop fabric. It is also possible to embed separate
31 elements 44b, 44c or 44d in the adhesive layer 40 as
32 shown in Fig. 3. (A variety of such elements are shown in
33 US Patents 3,748,701 and 4,169,303.) The elements 44a-
34 44d extend a sufficient distance beyond the surface of
35 the adhesive layer 40 to provide mechanical engagement

1 with a locking or complimentary array of mechanical
2 elements, or with a fibrous material such as a non-woven
3 landing tape or member, or with a non-woven backsheet of
4 a diaper.

5 The tab 30 provides a known "Z-fold" configuration
6 as particularly shown in Fig.2. However, the added
7 advantages of extensibility and combined
8 mechanical/adhesive engagement are provided in accordance
9 with the invention.

10 Referring to Fig. 4, a second aspect of the present
11 invention is illustrated. Accordingly, a diaper tab 50
12 for use in closure of a diaper 52 is shown. The diaper
13 tab 50 includes a facestock film or member 54 and an
14 adhesive/cohesive layer 56. The tab 50 is arranged to
15 engage a landing zone tape or member 58 secured to the
16 opposite end of the diaper for closure thereof. The tape
17 58 includes a cohesive layer 59 carried by a supporting
18 facestock layer 57 adhered to the outer shell of the
19 diaper 50.

20 The adhesive/cohesive layer 56 includes adhesive
21 portions 56a and cohesive portions 56b. These portions
22 are shown in an alternating row or strip pattern,
23 however, any pattern may be used. The relative surface
24 areas of the portions 56a and 56b are not critical, but
25 each should be sufficient to achieve the desired
26 characteristic thereof. For example, a 1:1 surface area
27 ratio is generally satisfactory, but this may vary
28 depending upon the aggressiveness of the pressure-
29 sensitive adhesive, tack of the cohesive and/or the
30 contamination resistance of the cohesive.

31 The adhesive portions 56 may be formed of an above
32 described pressure-sensitive adhesive. The cohesive
33 portions may be formed of the cohesive elastomers
34 described in US Patent 5,085,655 to Mann, owned by the
35 assignee herein. Similarly, the cohesive layer 59 of the

1 landing zone tape 58 may also be provided in accordance
2 with the Mann patent.

3 The adhesive/cohesive layer 56 provides the
4 aggressiveness of pressure-sensitive adhesives and the
5 contaminate resistance of cohesives. Also, it should be
6 appreciated that the adhesive portions of the layer 56
7 allow the tab 50 to be secured to any available surface
8 of a soiled diaper that has been rolled-up for disposal.
9 The adhesive/cohesive layer 56 may be formed using the
10 side-by-side coextrusion process discussed above with
11 respect to the provision of extensible facestock or tab
12 constructions.

13 Referring to Figs. 5, 6 and 7, the fourth aspect of
14 the present invention is illustrated in connection with a
15 diaper tab 60 for use in the releasable closure of a
16 diaper 62. The diaper tab 60 includes a facestock film
17 or member 64 having a plurality of perforations or
18 apertures 66 in aligned rows and columns in a regular
19 array. The tab 60 is arranged to engage a landing zone
20 tape or member 68 secured to the opposite end of the
21 diaper 62 for closure thereof. The tape 68 includes a
22 substrate film 70 having a plurality of upstanding
23 engaging elements 72 arranged in a complementary pattern
24 or array and adapted to be received in the apertures 66
25 to secure the diaper closed. The substrate film 70 may
26 be secured to the diaper 60 by adhesive or other means
27 known in the art.

28 As best shown in Fig. 6, the facestock film 64 may
29 be provided with a non-planar configuration to better
30 present the apertures 66 for receipt of the elements 72.
31 For example, the aperture 66 extends in an angulated
32 portion 64a of the facestock film 64 which extends at an
33 angle relative to base portion 64b of the film 64. The
34 angulated portion 64a extends in a plane that intersects
35 the plane of the base portion 64b. Since the major

1 portion of the aperture 66 is within the angulated plane,
2 the aperture is said to be generally contained in the
3 angulated plane even though portions of the aperture
4 extend out of the plane.

5 The film 64 may be heat set by hot rolling to
6 provide the desired non-planar configuration and to
7 effectively sculpture the aperture in the direction of
8 element engagement and locking. The film 64 may be
9 formed of suitable polymer material to provide a
10 substantially nonextensible or an extensible tab as
11 particularly discussed below.

12 The apertures 66 may of circular cross section
13 (prior to heat setting) as shown. The aperture 66 has an
14 opening edge 66a including an upper edge portion 66b and
15 a lower edge portion 66c. The elements 72 project to a
16 height intermediate the upper and lower edge portions.
17 Accordingly for securement or diaper closure, the tab
18 member 60 is initially moved with tension in a lengthwise
19 direction (to the right in Fig. 7) over and past the
20 securement point, the tab member is then moved downwardly
21 to position the base portion 64b of the facestock film 64
22 on the substrate 70 of the landing member 68. Upon
23 relaxation of the tension, the tab member withdraws
24 slightly to the left as shown in Fig. 7, and the elements
25 72 are initially received in the apertures 66 adjacent
26 the upper edge portion 66b to facilitate engagement. The
27 lower edge portion 66c enhances retention of the elements
28 72. Further, the apertures 66 may be of key hole shape
29 including a narrowed end portion extending to a
30 relatively wider portion. The elements 72 are initially
31 received in the wider portion of the key hole shaped
32 aperture and then better trapped in the narrow portion of
33 the key hole to improve the security of the closure.
34 This improved entrapment is particularly effective when

1 the film 64 is extensible and tensioned in the closed
2 position.

3 The elements 72 may have any shape that is
4 conveniently snagged or received in the apertures 66 as
5 the tab 60 is pressed against and moved across the
6 landing zone tape 68. Preferably, the elements 72
7 comprise discrete non-fibrous members. The elements 72
8 are shown with a mushroom shape in Fig. 5, the enlarged
9 head operating to maintain engagement within the
10 aperture. In Fig. 7, landing zone tape 68' provides
11 elements 72' having a bowl shape. As illustrated, the
12 elements 72, 72' and apertures 66 are sized and arranged
13 to engage in pairs.

14 The number, size and distribution of the apertures
15 66 and elements 72 are not critical. The number of
16 engaged apertures and elements upon securement may range
17 from one to 500. The major dimensions of the apertures
18 66 and elements 72 may each range from about 0.005" to
19 0.5".

20 The landing zone tapes 68, 68' and/or the elements
21 72, 72' may be formed of any polymer of suitable
22 stiffness or rigidity to assure good mechanical shear
23 strength. For example, polyurethane, nylon, polyethylene
24 and polypropylene are sufficiently rigid. Also, these
25 polymers may be extruded onto a rotating mold to
26 simultaneously form the substrate film and the engaging
27 elements.

28 Referring to Figs. 8 and 9; a fourth aspect of the
29 invention is illustrated in connection with a diaper tab
30 80 for use in closure of a diaper 82. The diaper tab 80
31 includes a facestock film or member 84 having a plurality
32 of perforations or apertures 86 arranged in a regular
33 array of aligned rows and columns. The tab 80 is
34 arranged to engage a landing zone tape 88 secured to the
35 opposite end of the diaper 82 for closure thereof. The

1 tape 88 includes a substrate film 90 having a plurality
2 of upstanding engaging elements 92 adapted to be received
3 in the apertures 86 to secure the diaper closed.
4 Preferably, the elements 92 comprise discrete non-fibrous
5 members. The substrate film 90 may be secured to the
6 diaper 80 by adhesive or other means known in the art.

7 The apertures 86 in the facestock film 84
8 substantially provide the latter with an open, mesh type
9 construction. As compared with the tab 60, the tab 80 is
10 substantially more open, the apertures 86 being
11 relatively larger than the apertures 66. Although the
12 apertures 86 are shown with a rectangular shape, they may
13 have any configuration.

14 The elements 92 have a mushroom configuration, the
15 mushroom head enhancing interlocking within the apertures
16 86. The elements 92 may have any shape that is
17 conveniently received in the apertures 86 as the tab 80
18 is pressed against and moved across the landing zone tape
19 88.

20 The apertures 86 and elements 92 are relatively
21 sized and arranged to engage more than one element in an
22 aperture. In Fig.9, two elements 92 are received in each
23 aperture 86. However, three or more elements may be
24 received in a single aperture. The actual size of the
25 apertures and elements may be similar to those last
26 described above.

27 The tab 80 and landing zone tape 88 may be formed of
28 materials similar to those described above in respect to
29 the tab 60 and tape 68. Also, similar processing
30 techniques may be used to make the tab and tape.

31 Referring to Figs. 10 and 11, a fastener system 100
32 includes a diaper tab member 102 deployed for engagement
33 with a landing member 104 to releasably close the diaper

1 106. The diaper tab 102 includes a facestock film or
2 member 108 having a pressure-sensitive adhesive layer
3 110. The tab 102 may be nonextensible or extensible.
4 The landing member 104 includes a facestock film or
5 member 112 secured to the outer shell of the diaper 106
6 in a suitable manner such as by pressure-sensitive
7 adhesive layer 114.

8 The facestock film 108 is clear or transparent and
9 the adhesive layer 110 is tinted to provide it with a
10 suitable color, e.g. a yellow color, which may be viewed
11 through the facestock film 108. The transparency of the
12 film 108 may be achieved by omission of typical
13 opacifying agents. The coloration of the adhesive layer
14 110 may be provided by the addition of suitable dyes or
15 pigments to the adhesive composition.

16 The facestock layer 112 of the landing member 104
17 provides an exposed or outer adherent surface 116 having
18 a color that cooperates with the color of the layer 110
19 when viewed through the transparent facestock layer 108
20 to provide a color indication of proper adhesive
21 engagement and diaper closure. To that end, the
22 facestock layer 112 and/or the adherent surface 116
23 thereof may be colored by conventional dyes or pigments
24 incorporated in the facestock composition during
25 manufacture or later applied to the adherent surface 116.
26 For example, the adherent surface 116 may be colored
27 blue.

28 The color intensities are selected so that upon
29 placement of the tab 102 and landing member 104 in close
30 overlying relationship characterizing proper or desired
31 adhesive engagement and diaper securement, the tab 102
32 appears to be green when viewed through the clear
33 facestock film 108. For example, referring to Fig. 11,
34 the diaper tab 102 and the landing member 104 are shown
35 in cross-section. When secure engagement is provided,

1 the tab 102 assumes a green color when viewed in the
2 direction of the arrow A.

3 As an alternative to color change, the tab 10 may
4 have a hazy or cloudy appearance which becomes clear or
5 transparent upon secure engagement with the landing
6 member 104.

7 It should be evident that this disclosure is by way
8 of example and that various changes may be made by
9 adding, modifying or eliminating details without
10 departing from the fair scope of the teaching contained
11 in this disclosure. The invention is therefore not
12 limited to particular details of this disclosure except
13 to the extent that the following claims are necessarily
14 so limited.

WHAT IS CLAIMED IS:

1 1. A fastening system for releasably securing first
2 and second components together, said fastening system
3 including tab and landing members respectively mounted to
4 said first and second components, said tab member
5 including a facestock member having a base portion
6 extending to at least one angulated portion with an
7 aperture generally disposed therein, said base portion
8 extending in a base plane and said angulated portion
9 extending in an angulated plane intersecting said base
10 plane, said landing member including a substrate portion
11 having a generally flat configuration extending in a
12 substrate plane and a mechanical securement portion, said
13 mechanical securement portion comprising at least one
14 mechanical engaging element projecting from said
15 substrate and substrate plane, said mechanical engaging
16 element being received in said aperture when said
17 fastening system is joining said components with said
18 base portion of said tab member disposed in overlying
19 relationship with said substrate portion of said landing
20 member and said angulated plane intersecting said
21 substrate plane.

1 2. A fastening system as in claim 1, wherein said
2 facestock base portion includes a plurality of said
3 angulated portions with apertures therein, and said
4 landing member includes a plurality of said mechanical
5 engaging elements for engagement with said apertures.

1 3. A fastening system as in claim 1, wherein said
2 facestock base portion includes a plurality of said
3 angulated portions with apertures therein, said apertures
4 and angulated portions being arranged aligned rows, and
5 said landing member includes a plurality of said
6 mechanical engaging elements arranged in a complementary

7 pattern aligned rows for engagement with said rows of
8 aligned apertures.

1 4. A fastening system as in claim 3, wherein said
2 tab has a length adapted to extend toward said landing
3 member for engagement therewith, and said rows of said
4 apertures and angulated portions are transversely
5 disposed at spaced locations along said tab length.

1 5. A fastening system as in claim 2, wherein said
2 tab member is extensible.

1 6. A fastening system as in claim 2, wherein said
2 tab has a length adapted to extend toward said landing
3 member and relative movement of said tab and landing
4 members in the direction of said tab length providing
5 engagement and disengagement of said members with said
6 tab base portion being superimposed on said landing
7 member substrate portion, each of said apertures having
8 an opening edge generally disposed in said angulated
9 plane with a lower edge portion and an upper edge
10 portion, each of said mechanical engaging elements
11 projecting from said substrate portion to a height
12 intermediate said lower edge and upper edge portions of
13 said aperture.

1 7. A fastening system as in claim 6, wherein each
2 of said apertures and mechanical engaging elements major
3 lateral dimensions range from about 0.005 to about 0.5
4 inches.

1 8. A fastening system as in claim 1, wherein said
2 first and second components comprise opposed ends of a
3 diaper, one of said tab members being mounted at each
4 lateral edge adjacent one end of the diaper and said

5 landing member being mounted adjacent the other end of
6 said diaper.

1 9. A fastening system for releasably securing first
2 and second components together, said fastening system
3 including tab and landing members respectively mounted to
4 said first and second components, said tab member
5 including a facestock member comprising a substantially
6 continuous film having a plurality of apertures therein,
7 said landing member including a substrate portion having a
8 generally flat configuration and a plurality of mechanical
9 engaging elements projecting from said substrate in a
10 regular pattern, said mechanical engaging elements having
11 a base portion extending to an engagement head portion for
12 interengaging with said facestock member, said mechanical
13 engaging elements being received in said apertures when
14 said fastening system is joining said components with said
15 tab member disposed in overlying relationship with said
16 substrate portion of said landing member and said
17 mechanical engagement head portions projecting above said
18 facestock member, and a plurality of said mechanical
19 engaging elements received in each of said apertures, said
20 apertures and mechanical engaging elements being sized and
21 arranged to provide engagement of a preselected maximum
22 number of said mechanical engaging elements in each of
23 said apertures.

1 10. A fastening system as in claim 9, wherein said
2 preselected maximum number is from about 2 to about 500.

1 11. A fastening system as in claim 10, wherein said
2 facestock member has a thickness and said mechanical
3 engaging element base portion projects from said substrate
4 portion a distance at least equal to about said thickness.

1 12. A fastening system as in claim 11, wherein said
2 tab member is extensible.

1 13. A fastening system as in claim 11, wherein said
2 apertures in said base portion of said facestock are
3 arranged in a regular grid array.

1 14. A fastening system as in claim 9, wherein said
2 first and second components comprise opposed ends of a
3 diaper, one of said tab members being mounted at each
4 lateral edge adjacent one end of the diaper and said
5 landing member being mounted adjacent the other end of
6 said diaper.

1 15. A fastening system for releasably securing
2 first and second components together, said fastening
3 system including tab and landing members respectively
4 mounted to said first and second components, said tab
5 member including a facestock member having a tab contact
6 securement layer comprising first and second portions,
7 said first portion comprising a tab layer of pressure-
8 sensitive adhesive and said second portion comprising a
9 tab layer of cohesive, said landing member comprising a
10 landing contact securement layer comprising a receiving
11 layer of cohesive, said tab and landing securement layers
12 being superimposed when joining said components together
13 with said tab layers of pressure-sensitive adhesive and
14 cohesive in contact with said receiving layer of
15 cohesive.

1 16. A fastening system as set forth in claim 15,
2 wherein said first and second portions of said tab
3 securement layer have surfaces disposed in a common
4 plane.

1 17. A fastening system as set forth in claim 16,
2 wherein said first and second portions of said tab
3 securement layer are arranged in a repeating pattern.

1 18. A fastening system as set forth in claim 17,
2 wherein said repeating pattern comprises alternating
3 stripes of said pressure-sensitive adhesive and cohesive.

1 19. A fastening system as in claim 15, wherein said
2 first and second components comprise opposed ends of a
3 diaper, one of said tab members being mounted at each
4 lateral edge adjacent one end of the diaper and said
5 landing member being mounted adjacent the other end of
6 said diaper.

1 20. A fastening system for releasably securing
2 first and second components together, said fastening
3 system including tab and landing members respectively
4 mounted to said first and second components, said tab
5 member being foldable to a Z-shape in the storage
6 position and being deployable to a securement position to
7 provide combined mechanical and adhesive securement with
8 said landing member, said tab member including a
9 facestock member having integral mounting, connecting and
10 securement portions, each of said portions having first
11 faces extending in a first plane to form a first surface
12 of said facestock member and opposed second faces
13 extending in a second plane to form a second surface of
14 said facestock member, a mounting adhesive layer
15 extending along said first face of said mounting portion,
16 a securement adhesive layer extending along said first
17 face of said securement portion, release means extending
18 along said first face of said mounting portion,
19 mechanical fastening elements projecting from said

20 adhesive layer extending along said securement portion,
21 said second face of said mounting portion being folded
22 toward said second face of said connecting portion with
23 said mounting adhesive layer secured to said first
24 component and said first face of said securement portion
25 being folded toward said release means and first face of
26 said connecting portion when said tab member is folded in
27 the storage position, said first face of said securement
28 portion being folded away from said release means to
29 expose said securement adhesive and mechanical, fastening
30 elements upon deployment of said tab member to said
31 securement position, and said landing member including
32 contact surface means and mechanical engaging means for
33 providing combined adhesive and mechanical and adhesive
34 secure securement with said tab member.

1 21. A fastening system as in claim 20, wherein said
2 adhesive layer extends along said first face of said
3 connecting portion and said release means is carried by
4 an outer surface of said adhesive layer extending along
5 said connecting portion.

1 22. A fastening system as in claim 21, wherein said
2 mechanical fastening elements comprise hooks.

1 23. A fastening system as in claim 21, wherein said
2 mechanical fastening elements comprise separate elements
3 embedded in said securement adhesive layer.

1 24. A fastening system as in claim 21, wherein said
2 tab member is extensible.

1 25. A fastening system as in claim 20, wherein said
2 first and second components comprise opposed ends of a
3 diaper, one of said tab members being mounted at each

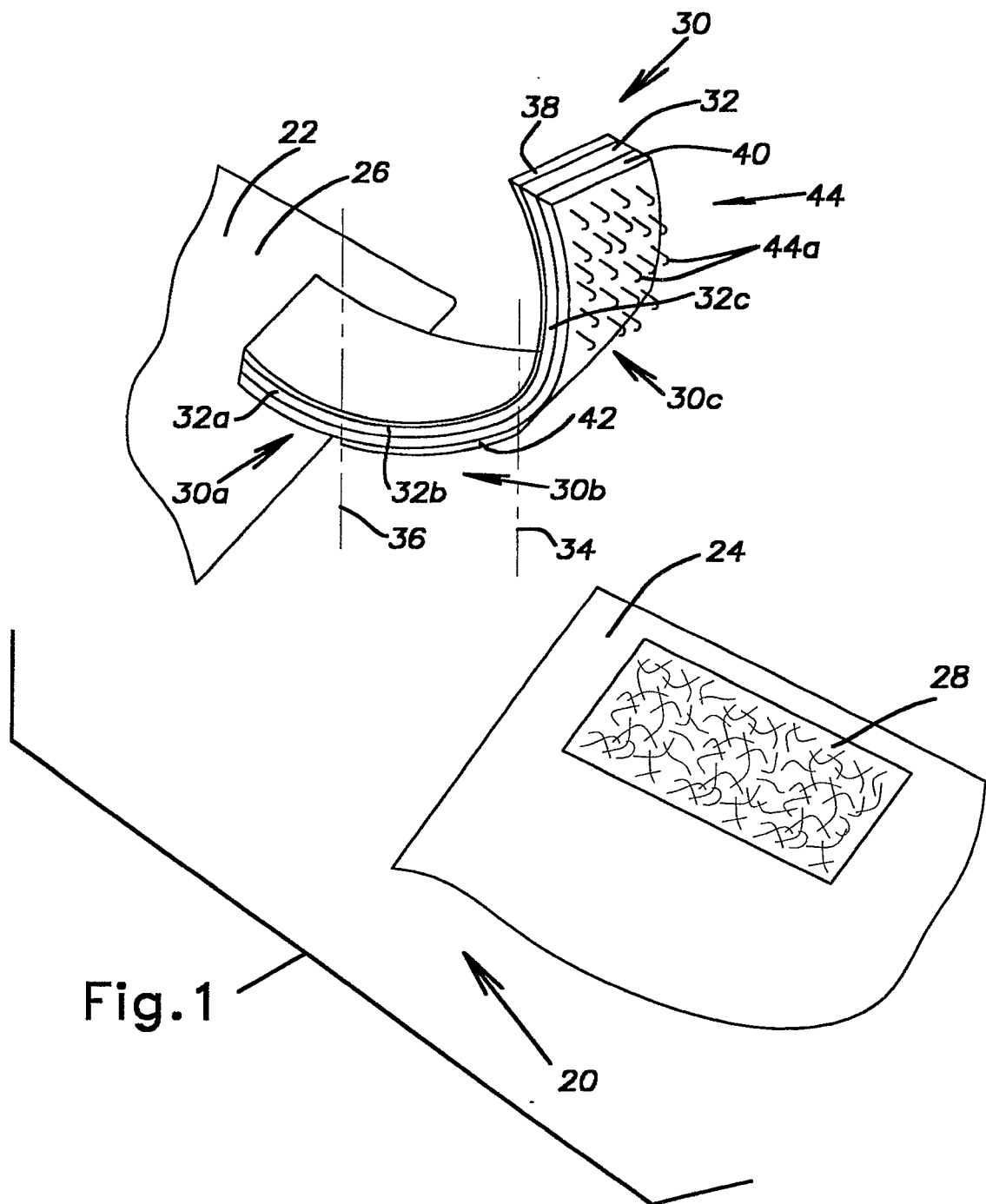
4 lateral edge adjacent one end of the diaper and said
5 landing member being mounted adjacent the other end of
6 said diaper.

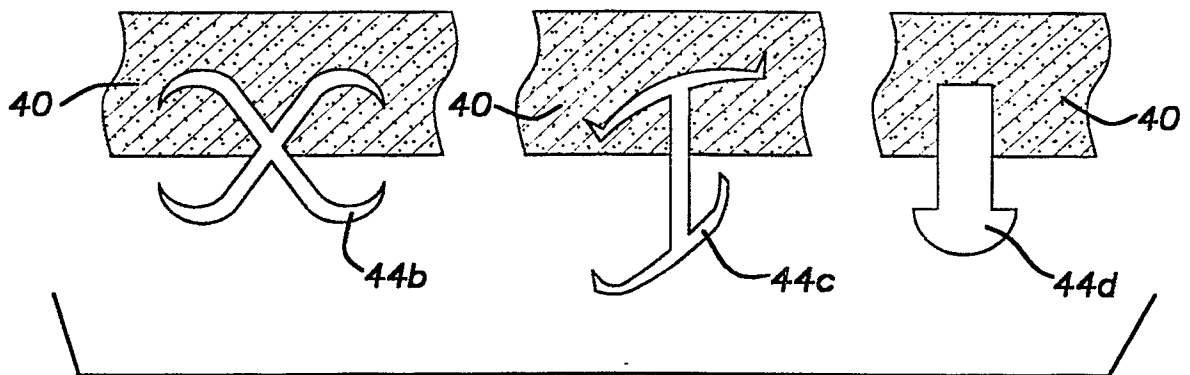
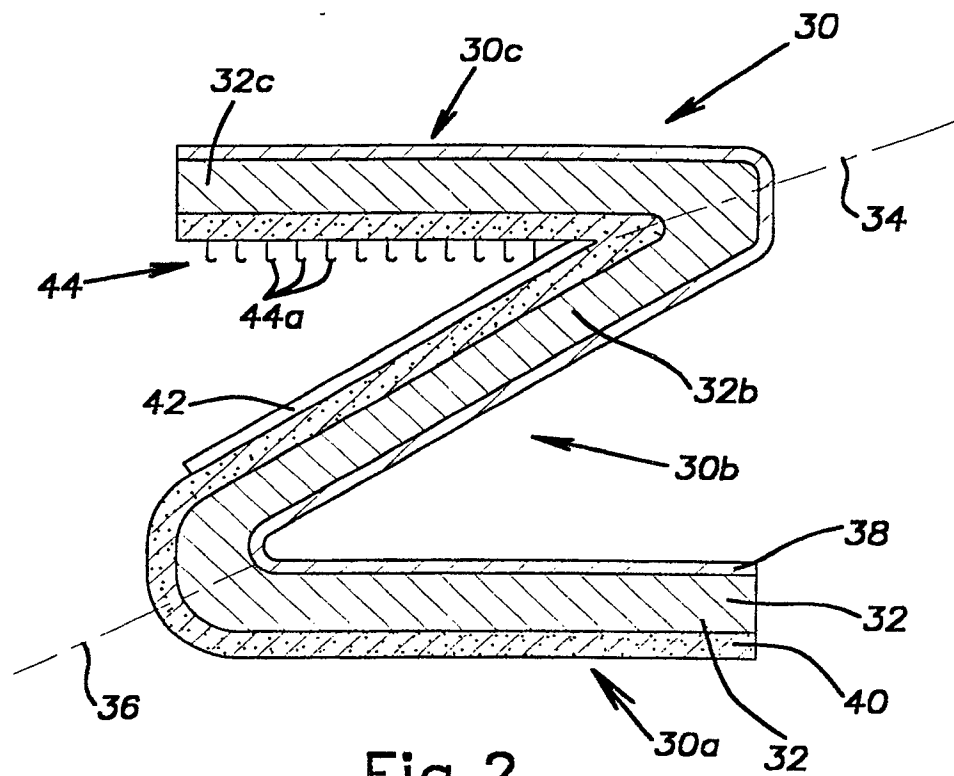
1 26. A fastening system for releasably securing
2 first and second components together, said fastening
3 system including tab and landing members respectively
4 mounted to said first and second components, said tab
5 member comprising a facestock member including a
6 transparent portion having first and second faces, a tab
7 adhesive layer on one face of said facestock member
8 extending along at least said transparent portion, said
9 tab adhesive layer having a first color as viewed through
10 said transparent layer, a landing member including an
11 adherent face adapted to be adhesively engaged by said
12 tab adhesive layer to secure said components together,
13 said adherent face having a second color, said first and
14 second colors cooperating when said tab adhesive layer is
15 adhesively engaged with said adherent face to provide a
16 color indication visually perceptible through said
17 transparent layer confirming adhesive engagement of said
18 tab adhesive layer and adherent face.

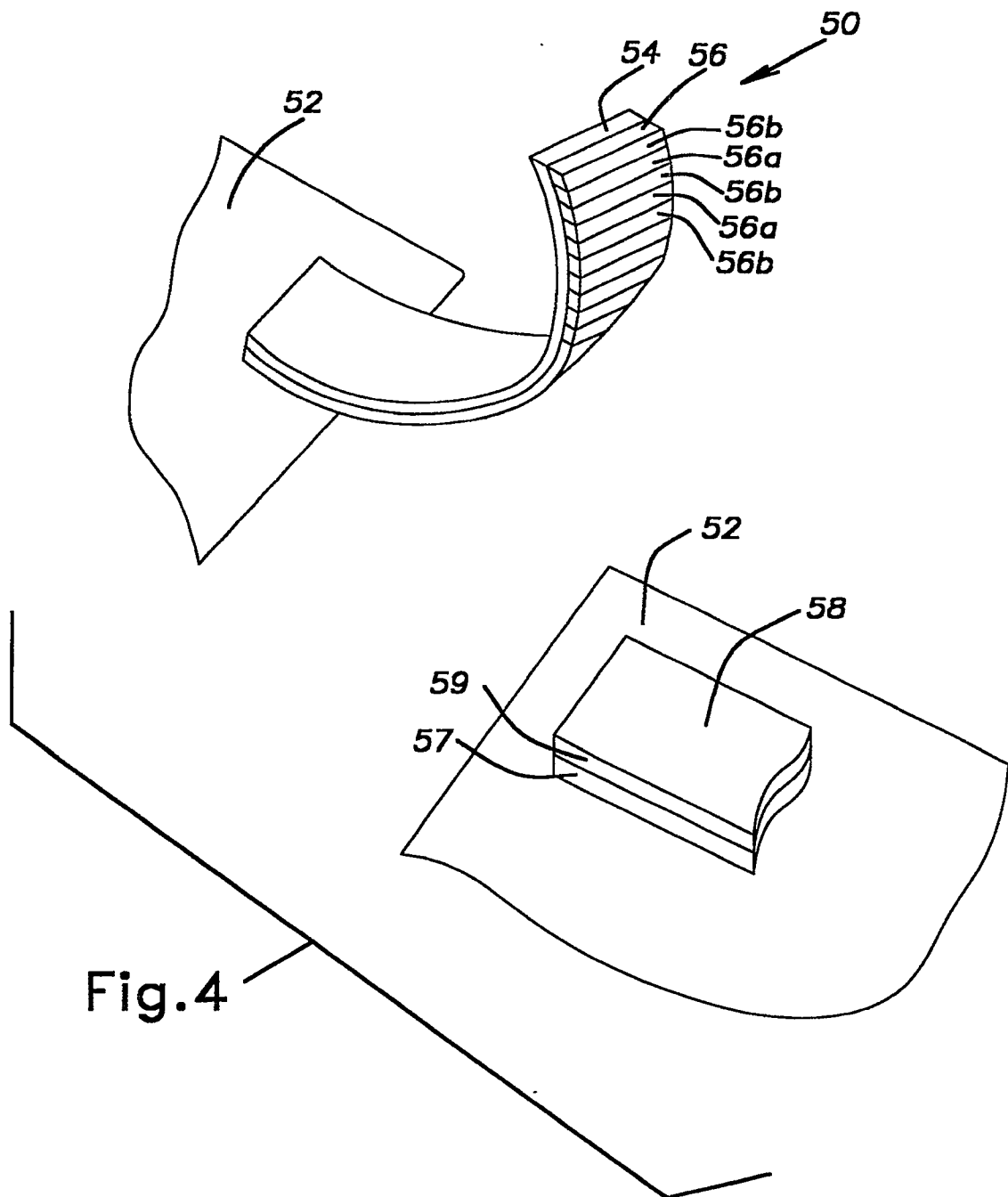
1 27. A fastening system as in claim 26, wherein said
2 color indication comprises a visually perceptible third
3 color when viewed through said transparent layer, said
4 third color being different from said first and second
5 colors.

1 28. A fastening system as in claim 26, wherein said
2 second color is different from said first color.

1 29. A fastening system as in claim 26, wherein said
2 first and second components comprise opposed ends of a
3 diaper, one of said tab members being mounted at each
4 lateral edge adjacent one end of the diaper and said
5 landing member being mounted adjacent the other end of
6 said diaper.







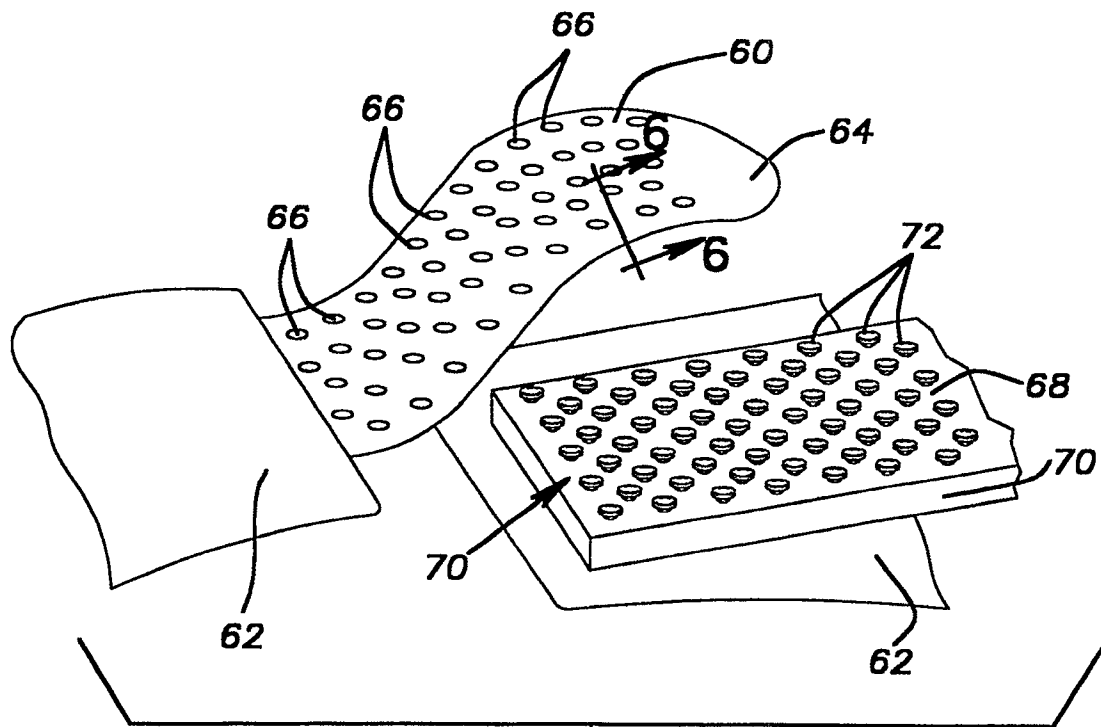


Fig. 5

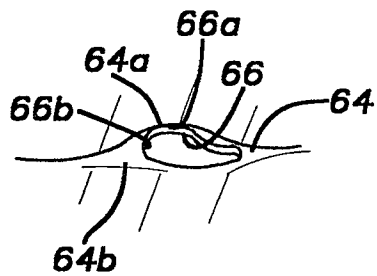


Fig. 6

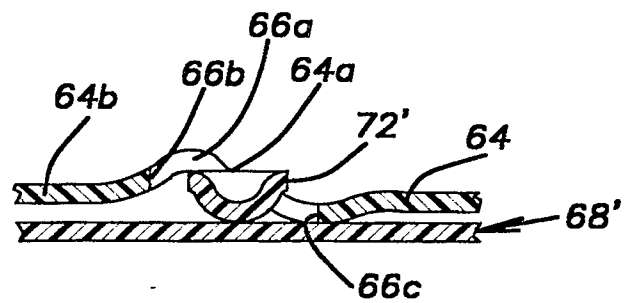


Fig. 7

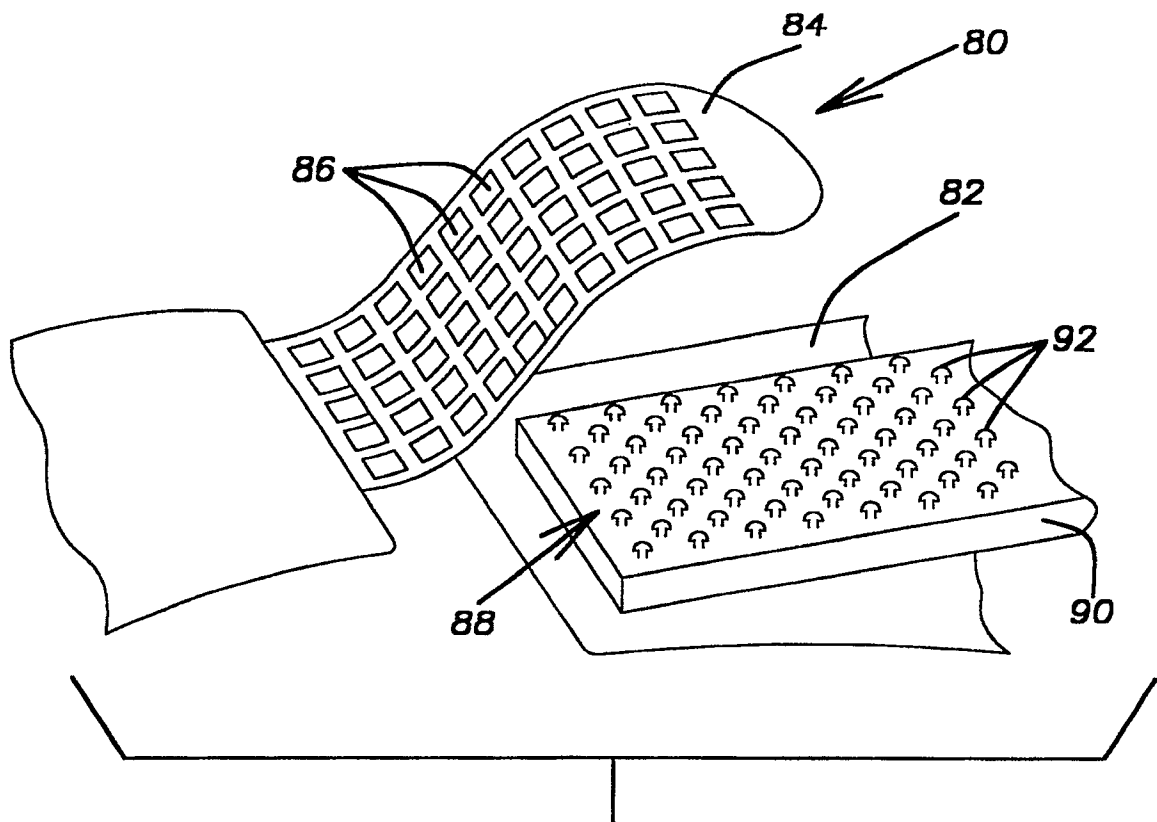


Fig. 8

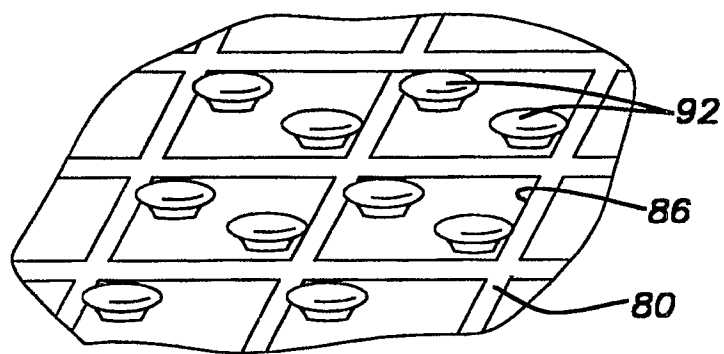


Fig. 9

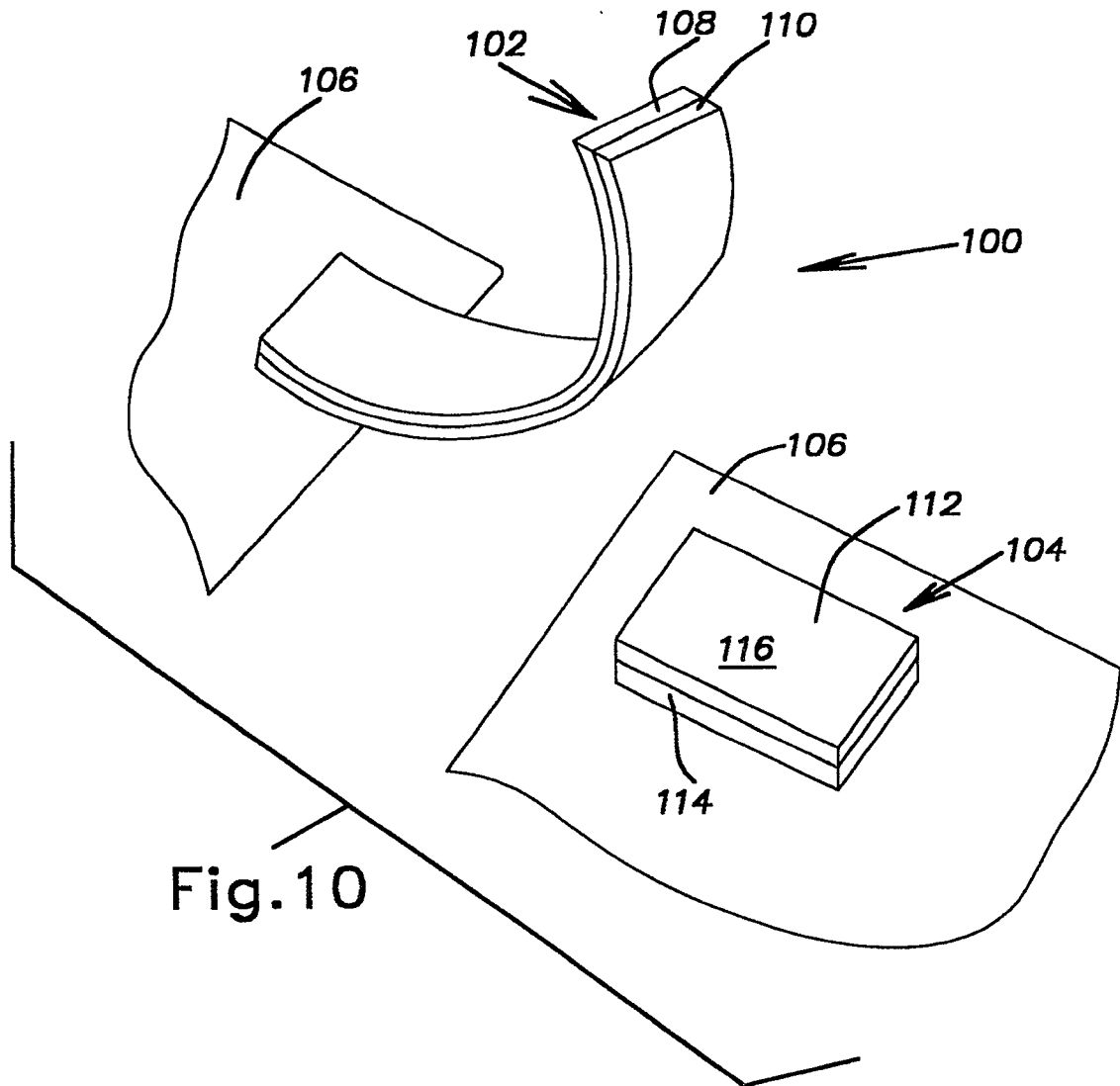


Fig. 10

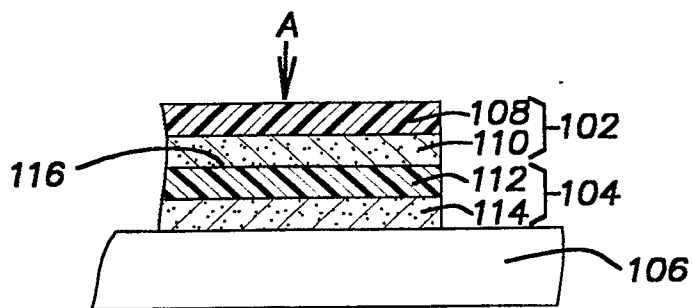


Fig. 11

