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(54) **Adjustable strap fastener for brassieres and the like and method of making same**

Verstellbare Befestigungseinrichtung für Büstenhalter und Herstellungsverfahren

Dispositif de fermeture pour soutien-gorge et équivalent, méthode pour sa fabrication

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Description

[0001] My present invention relates to the strap fasteners of brassieres, lingerie and corsetry and particularly with so-called hook and eye strap fasteners of the type in which a fastener member on one strap can be affixed to a coupling member on another strap, usually adjustably, to secure the garment which can be a brassiere. The invention also relates to an improved method of making the new strap fastener.

[0002] While brassiere-type fasteners for conveniently and comfortably securing the two straps at the back of a brassiere together, usually adjustably, have been provided in many configurations heretofore, perhaps the most common utilize a hook and eyelet configuration. The male member of the strap fastener can be formed by one or more hooks on one of the straps while the female member is constituted by a plurality of eyelets spaced apart in a longitudinal direction to engage with the hook selectively for adjustable fastening of the brassiere. The eyelets may be metal, or powder-coated metal. Problems have been encountered in prior constructions of this type with respect to the uniform dying of the product since the tape was frequently provided with a lining or cover member by stitching and the tapes, the lining, the threads used for attaching coupling members or joining the lining to the tape, etc. all tended to dye differently. This applies also to the coupling members themselves. When the prior-art tape was fed to the strap fabric and cut parallel to the longitudinal dimension of the strap by ultrasonic means, a sharp edge was formed which was uncomfortable or injurious.

[0003] A known strap fastener and a method of making a strap fastener showing some of the aforementioned disadvantages is disclosed for example in US Patent 4,161,420.

[0004] It has thus been long sought in the brassiere, corsetry and lingerie field to be able to provide a strap fastener or brassiere-type closure which would not snag on other garments, which would not be damaged in the wash, which would be comfortable for the wearer, which could be dyed uniformly and preferably with the same dying characteristics as the garment and which would be simple to fasten and unfasten, especially since the fastener is often provided at the back of the wearer.

[0005] It is, therefore, the principal object of the present invention to provide an improved strap fastener, especially for brassieres but also suitable for garment closures of other types, e.g. for lingerie and corsetry, whereby these desiderata will be satisfied. Another object is to provide a method of making the fastener.

[0006] According to the present invention, these objects are attained by the method of claim 1 and the strap fastener of claim 15. The fastener can be made by fabricating a coupling half of the strap fastener with an inner or first web or tape of a woven or tricot knit fabric (or a woven fabric having a tricot knit facing layer) composed of thermoplastic yarn and bonding that tape or web to a second tape or web into which the first tape or web is at least partly enfolded, by ultrasonic seaming along the longitudinal edges of the tape and by providing the inner tape with its coupling member by a molding operation so that, in the construction of this fastener half, no stitching is required.

[0007] The application of the coupling members, which can be eyelets lining holes formed in the first tape by ultrasonic punching techniques, and the assembly of the two tapes together, as well as the severing of a length forming the fastener half form the continuous webs which are used to produce the successive lengths can all be effected by ultrasonic means so that no stitching is required, except, possibly, for attaching the fastener strip to the garment.

[0008] When all of the webs used are woven tapes or tricot knits (or layers of woven and knit tapes) of say a polyamide (nylon) yarn and the molded coupling members are themselves composed of polyamide (e.g. a nylon) all of the elements of the fastener have substantially identical dying characteristics and can be dyed with the garment without any significant difference being visible between the garment and the fastener.

[0009] The second web or tape into which the first tape is enfolded covers the eyelets from the back and thus provides a cushion against the skin of the wearer and, if desired, a further tape or strip, preferably also of a tricot knit fabric, can be inserted between the second web and the first if desired.

[0010] According to a feature of the invention, the first and second webs are longitudinally seamed at spaced apart locations by the ultrasonic welding, leaving turned over flaps of the fastener strip beneath which a portion of the garment can be inserted for attachment of the strip to the garment, e.g. also by ultrasonic seaming or, as is less preferred, by stitching.

[0011] The first web can be ultrasonically or mechanically pierced to form a succession of holes and the eyelets can be molded onto the first web around the holes. Of course, coupling members other than eyelets can be used although they are not preferred. The studs are also molded to the tape. Such coupling members can be hook and loop type fasteners, for example.

[0012] The webs can also be ultrasonically joined together along an end of the length formed by ultrasonically severing the lengths from the band.

[0013] The eyelets are preferably molded onto the first web in a succession of spaced apart groups of at least three eyelets per group.

[0014] The male fastener can comprise a hook molded onto a tape composed of thermoplastic yarn, preferably a woven polyamide. According to a feature of the invention, a succession of the hooks is molded onto the tape of the male fastener and the tape of the male fastener is severed ultrasonically between the hooks into respective male fastener lengths which are secured to the garment, the hooks, the eyelets and the webs and the tape being all composed of polyamide.

[0015] According to another aspect of the invention, the coupling members which are applied to the fabric tape are male and female members forming a press button which can be joined by pressing the male member into the female member.

[0016] According to another feature of this aspect of the invention, the female member is open laterally through a constriction and the male member can be slid transversely into engagement with the female member to connect the members together. Separation can be effected by pulling the male and female members apart or by sliding the male member out of the female member in a direction opposite to that in which the male member was inserted.

[0017] When a row of male members on one strap end and a row of female members on the other strap end form the back fastener of the brassiere, a high degree of flexibility is ensured by reason of the separation of the male and female members along the respective row.

[0018] In an important aspect of the invention, the continuous tape carrying the members may have rolled over edges which are ultrasonically seamed except at locations at which the rolled over edges are to be opened at least to a limited degree to insert the respective straps which then can be ultrasonically seamed to the tape.

[0019] The tape is cut transversely and runs in the direction of the longitudinal edges so that, upon cutting, rounded corners can be formed to protect the wearer against injury from sharp corner edges.

[0020] The fasteners of the invention are substantially thinner than metal hook and eyes or metal snap tapes.

[0021] The hook and eye fastener can comprise:

a male fastener half injection-moldable onto a first tape and adapted to be secured to one part of a garment, the male fastener half being formed with a generally flat circular body having an outer body portion on one side of the first tape and an inner body portion on another side of the first tape, a pin projecting generally centrally from the inner body portion, and a head formed on the pin; and

a female fastener half injection-moldable onto a second tape and adapted to be secured to another part of the garment, the female fastener half being formed with a generally flat circular body having an outer body portion on one side of the second tape and an inner body portion on another side of the second tape, the inner body portion having an eyelet dimensioned to receive and retain the head and an inlet slot leading to the eyelet through which the pin is laterally insertable, the head being withdrawable from the eyelet in a direction perpendicular to the tapes.

[0022] According to the invention, the slot has an inwardly convergent mouth and the head, which can be split for flexibility, is tapered from a narrow portion to a thick position in a direction of insertion of the pin into the eyelet through the slot. The inner portion of the female fastener half can have inclined flanks engaging the head and guiding the head into the eyelet.

[0023] As in our earlier fastener it is highly advantageous to provide the inner body portion of one of the fastener halves as a convex element and the inner body portion of the other fastener half as a concave element which receives the convex inner body portion of the first fastener half in a nested relationship.

[0024] According to another aspect of the invention, each of the tapes may have a plurality of the respective fastener halves spaced apart thereon in a row transverse to the aforementioned insertion direction and for adjustability of the back strap, at least the tape provided with the female fastener members may have a plurality of such rows longitudinally spaced thereon.

[0025] The tapes may each be covered at least on one side with a brushed fabric strip ultrasonically welded to the tape along the edges and the garment part can be stitched or otherwise fastened between the respective tape and the brushed fabric strips.

[0026] The tapes can be woven of a synthetic resin yarn and the fastener halves can be composed of polyoxymethylene (POM) or polyamide (PA).

[0027] One of the advantages of the method of the invention is that the free ends of the tape/strip assembly to which the respective portions of the back strap are connected can be separated from the respective hands by cold cutting so that they remain relatively soft. Having not been stiffened by a heated cutting tool there is less likelihood of injury to the wearer from the fastener parts. The halves, when they are joined together by hooking motion, form a relatively thin flat closure without the danger of pressing into the back of the wearer. The thinness of the closure makes it less likely that the back strap of the brassiere will show through the outer garment of the wearer. The parts of the fastener can be connected by the standard hook-and-eye motion to which brassiere wearers are accustomed, although opening of the brassiere can be facilitated because the parts of the closure can be separated by simply pulling the strap parts apart.

[0028] The above and other objects, features, and advantages will become more readily apparent from the following description, reference being made to the accompanying drawing in which:

FIG. 1 is a somewhat diagrammatic elevational view of a female fastener half for a strap fastener according to the invention;

FIG. 2 is a view similar to FIG. 1 of the reverse side;

FIG. 3 is a cross sectional view taken along the line III - III OF FIG. 1;

FIG. 4 is a cross sectional view taken along the line IV - IV of FIG. 1;

FIG. 5 is a cross sectional view taken along the line V - V of FIG. 1;

FIG. 6 is a view similar to FIG. 1 showing a portion

of the male half of the strap fastener;
FIG. 7 is a cross sectional view taken along the line VII - VII of FIG. 6;
FIG. 8 is a view similar to FIG. 1 showing the complete strap fastener as formed with a closure for the back of a brassiere;
FIG. 9 is a view similar to FIG. 8 showing the reverse of the fastener, i.e. the portion of the fastener which contacts the skin of the user;
FIG. 10 is a cross sectional view drawn to a larger scale taken along line X - X of FIG. 1;
FIG. 11 is an elevational view showing the formation of the successions of eyelets on the first web according to the invention;
FIG. 12 illustrates the continuous band after the application of the second web thereto;
FIG. 13 is an elevational view illustrating the step of severing the length of the fastener from the continuous band; and
FIG. 14 is a view similar to FIG. 5 but showing the insertion of an additional cushioning tape into the fastener.
FIG. 15 is a cross sectional view of a press button which can be provided on a tape according to a feature of the invention;
FIG. 16 is a plan view from the projection side of that male member;
FIG. 17 is a side elevational view thereof;
FIG. 18 is a cross sectional view through the female press bottom fastener;
FIG. 19 is a plan view thereof;
FIG. 20 is a side view of the female half of the press button;
FIG. 21 is a cross sectional view showing the press button parts fitted together and on respective tapes;
FIG. 22 is an elevational view showing a press button with a slide interfitting capability;
FIG. 23 is a view similar to FIG. 22 showing another embodiment;
FIG. 24 is a view similar to FIGS. 22 and 23 of an elongated female fastener member;
FIG. 25 is a side view of the male member cooperating with that female member;
FIG. 26 is a plan view of the male member of that fastener;
FIG. 27 is a view similar to FIG. 22 of another embodiment;
FIG. 28 is a diagram showing the taper of the thickness of the latter female member;
FIG. 29 is a plan view showing a tape having rows of the female member;
FIG. 30 shows the back fastener for a brassiere upon separation;
FIG. 31 is a similar view showing the male and female member connected together.
FIG. 32 is a plan view of a first tape covered with a brushed knit fabric strip which can be connected to one part of the back strap of a brassiere showing a plurality of female fastener halves according to a feature of the invention;
FIG. 33 is a perspective view of one of the female halves from its inner sides;
FIG. 34 is a plan view of the female fastener half;
FIG. 35 is a perspective view of the female fastener half from its outer side;
FIG. 36 is a view similar to FIG. 1 showing the tape portion with the male fastener half;
FIG. 37 is a perspective view of the male fastener half;
FIG. 38 is a plan view of the outer portion of the male fastener half;
FIG. 39 is a perspective view of the male fastener half as seen from the side of its inner portion;
FIG. 40 is an elevational view of the fastener;
FIG. 41 is a cross sectional view taken along the line XXXXI-XXXXI of FIG. 10;
FIG. 42 is a cross sectional view along the line XLII-XLII of FIG. 40;
FIG. 43 is a side elevational view of the female fastener half;
FIG. 44 is a bottom plan view thereof;
FIG. 45 is a top plan view thereof;
FIG. 46 is a rear view of the female member;
FIG. 47 is a cross sectional view thereof without the engagement of the head of the male half in the eyelet;
FIG. 48 is a side elevational view of the male fastener half;
FIG. 49 is a bottom view of the male fastener half;
FIG. 50 is a front view of the male fastener half;
FIG. 51 is a cross section through the male fastener half;
FIG. 52 is an elevational view of the back strap of a brassiere showing the application of the fastener thereto;
FIG. 53 is a view of one tape of the brassiere;
FIG. 54 is a view of the other tape;
FIG. 55 is a cross section through the tape of the male fastener half;
FIG. 56 is an elevational view of the back side of a female fastener half having a different configuration;
FIG. 57 is an elevational view of the front side of this latter fastener half;
FIG. 58 is a side view of the latter fastener half;
FIG. 59 is a diagrammatic illustration of the coupling of male and female fastener halves utilizing the wedge shaped projection;
FIG. 60 is a similar view showing the positions of the parts upon full coupling;
FIG. 61 is a cross sectional view drawn to an enlarged scale of the tape showing the cushioning strip;
FIG. 62 is a plan view of the tape from the woven fastener carrier side;
FIG. 63 is a plan view of this tape from the opposite

side; and

FIG. 64 shows the use of a thin soft flexible plastic film on which the fastener half is injection molded.

[0029] As can be seen from FIGS. 1 and 2, the strap fastener of the present invention comprises a female fastener half generally represented at 10 and having a first web or strip 11 of a tricot knit or woven polyamide (nylon) in which are ultrasonically or mechanically pierced, elongated holes 12 shown here to be three in number in a group and along the margins of each of which a frame or eyelet 13 is injection molded. The eyelet 13 is composed of a the same polyamide as constitutes the yarn from which the web 11 is fabricated. As can be seen from FIG. 10, the eyelet 13 surrounds the edge 14 of the hole and continues onto the flanks or faces 15 and 16 of the first web. The first web 11 is, in turn, partly enfolded in a second web or tape 17, also of a tricot knit of polyamide yarn which has a pair of edge portions 18 and 19 bent over onto the face 15 of the first web 11 and a further portion 20 covering the reverse face 16 of the web 11 (see FIGS. 3-5).

[0030] In the region of the group of eyelets 13, the bent over portions 18 and 19 are ultrasonically welded to the face 15 of the first web 11 and the first web 11 is welded to the web 17, the ultrasonically welding being represented at 21 by the light lines there shown and by the arrows 22 visible in FIG. 4, for example, Beyond the ultrasonic weld seams 21, the inwardly bent portions 18 and 19 form flaps as shown in FIG. 5 into which the edges of the garment can be inserted so that, by a further ultrasonic welding or by stitching, the strips shown at 10 in FIG. 1 and 2 can be fixed to the garment. The end of the strip 10 is rounded at 23 and can be formed with a further ultrasonic weld seam as represented at 24 to bond the two webs together.

[0031] As a comparison of FIGS. 1 and 2 will show, the portion 20 covers the eyelets 13 at the back of the strip to provide a protective layer between these eyelets and the skin of the user.

[0032] The male strip 30 comprises a tricot knit web 31 onto which the coupling member 32 is molded, the coupling member 32 (FIGS. 6 and 7) having a lip 33 which engages in the eyelet 13 beneath the bar 34 thereof while the shoulder 35 can snap against the bar 36 to retain the hook in the eyelet.

[0033] All of the tapes or webs described can be composed of the identical polyamide as can form the coupling members 13 and 32 so that the entire fastener has uniform dying characteristics.

[0034] As can be seen from FIG. 8, the two coupling strips 10 and 30 can be connected to parts 37 and 38 of the garment, e.g. by stitching at 39 or by ultrasonic welding so that the two parts of the garment can be held together in the position shown in FIG. 8. From the back, the fastener has only the smooth region 20 in contact with the skin (compare FIGS. 8 and 9).

[0035] Further cushioning against the back of the user can be afforded by a further strip 40 of tricot knit tape composed of the same polyamide yarn and inserted between the first web 11 and the portion 20 of the second web 17 as seen from FIG. 14.

[0036] The mode of fabrication can be seen from FIG. 11 in which a band of the first web 11 is fed along a path continuously and is ultrasonically punched to produce the holes 12 in groups of three and the eyelets 13 injection molded onto the web 11 around the holes 12. Further downstream along the same path or in a separate path, the second web 17 is partially enfolded around the first web so that the portions 18 and 19 overlie the web 11 and the ultrasonic weld seams 21 are formed at spaced apart locations but in the regions of the groups of eyelets the resulting band of interconnected webs can be ultrasonically cut at 41 to sever the length 42 from the remaining band 43 and form the transverse welds 23, the lengths 42 constituting the strips 10 previously described. The step represented in FIG. 13 is further downstream along the path represented by FIG. 12.

[0037] The male coupling strips are similarly fabricated in a fabrication line and the lengths of the two strips are applied to the garments as has previously been described.

[0038] FIGS. 15 - 21 show a press button connector which can be provided on respective tapes carrying the male and female members, the female member being formed as an eyelet in accordance with the principles previously described.

[0039] As can be seen from FIGS. 15 - 17, the male member 50 of the press button has a head 51 formed with a slot 52 in which the tape is received and a convex surface 53 which is formed with a depression 54. On the opposite side of this head, a projection 55 is provided which is surrounded by a concave portion or recess 56 whose curvature matches the convex curvature of the female member which is described in connection with FIGS. 18 - 20. As can be seen from FIGS. 16 and 17, the projection 55 has a shank 57 which is split at 58 and is formed with bulges 59 at its ends circular depressions or holes 60 angularly equipspaced around the head permit molding of the fastener member on the tape with greater security.

[0040] As can be seen from FIGS. 18 - 20, the female member 61 is disk shaped and is formed with a slot 62 in which the tape is received and has a hole 63 provided with a constriction 64 past which the projection 55 can be pressed so that the bulges 59 lie on the opposite side of the constriction from that on which the head of the male fastener is located (see FIG. 21).

[0041] To facilitate insertion and removal of the projection, the hole 63 has conical convergent and divergent flanks 65 and 66 on opposite sides of the constriction 64.

[0042] The curvature of the concave portion 67 of the female member 61 matches the curvature of the concavity 56 so that the overall thickness of the assembled press button (FIG. 21) is comparatively small and sub-

stantially less than 5mm.

[0043] The male member 50 is shown to be mounted on the tape 68 in FIG. 21 while the female member 61 is mounted on the tape 69 and the back of the fastener is additionally covered by a brushed or plush fabric strip at 70 to cushion the fastener toward the body of the user.

[0044] While the press button of FIGS. 15 - 21 is engaged by pressing the male member into the female member and released by pulling the members apart, the same principle can be used with a lateral engagement of the male member in the female member. In that case, the male member of the fastener may be that described in connection with FIGS. 15 - 17 while the female member 71 as shown in FIG. 22 has a lateral mouth 72 connected to the hole 73 by a constriction 74 passed which the projection of the male member can be pressed. The female member is formed on the tape 75 in this embodiment. Alternatively, the female member 76 can be elongated and provided with the constriction 77 passed which the projection can be forced, a funnel shaped guide 78 being provided to guide the projection into the female member. As can be seen from FIG. 28, the female member can be tapered so that the projection can be guided into the bore by feel since the user can readily discern the direction of insertion by the increased thickness in that direction.

[0045] Another configuration of the female member has been shown at 79 in FIG. 27 and operates with the same principle as that of the female member 76 of FIGS. 23 and 28.

[0046] It will be noted that a number of such female members will normally be provided in a row transversely to the tape (FIGS. 29 - 31) in a brassiere fastener. However, it is possible to provide a single fastener 80 on the tape 81 at each location longitudinally of the tape and in that case, the fastener may be elongated but otherwise operates in accordance with the principles described, enabling the male member 82 (FIG. 25) with its projections 83 to engage behind the constriction 84 by laterally inserting the male member in the female member. The male and female members can be pulled apart like the press button in the manner already described.

[0047] From FIGS. 29 - 31 it will be apparent that rows 84 of the female members 71 can be provided on the tape 75 which can have rolled edges 85 provided with weld seams 86 holding those rolled edges in place. The welding seams are interrupted at 87 between groups of rows 84 and at which the tape is cut to secure each tape segment with say three rows on a respective brassiere back strap 88 (FIG> 30) for that purpose, after the tape 75 has been cut through in a region between groups of rows, the unseamed edge 87 is opened to receive a tongue of the strap 88 and then closed over that strap, whereupon weld seams 89 are provided to secure the tape to the brassiere strap. Simultaneously, a layer similar to that shown at 70 can be applied to cushion the strap where it contacts the back of the wearer.

[0048] Similarly, the row of male members 50 on the tape 68 can be attached to the brassiere strap 90 so that, by lateral insertion, the male members 50 can be inserted into the female members of one or the other row 84 (see FIG. 31).

[0049] When the tapes 75, 68 are severed transversely between the rows of male or female members or groups of such rows, the free corners can be rounded as has been shown at 91 and 92 in FIG. 30 to prevent injury to the user by the sharp corners. Thus not only are the tape edges rounded by reason of the rolled over edges 85, but the corners are rounded to prevent injury or snagging of garments.

[0050] As can be seen from FIG. 32, a plurality of female fastener halves 110 can be injection molded on a woven tape 111 of thermoplastic synthetic resin threads which is covered on one side by a knitted fabric strip as well be described in greater detail with reference to FIGS. 52 - 55, this strip being folded over onto the inner side of the tape at 112 and welded with a pair of longitudinal weld seams thereto. Each of the female fastener halves 110 (see FIG. 33) has an inner part 113 and an outer part 114 visible on opposite sides of the tape (not seen in FIGS. 33 - 35), the outer part or body 13 being formed with an eyelet 115 into which a slot 116 opens from the periphery of the inner part, this slot having an inwardly converging mouth 117.

[0051] Both the inner and outer parts can have throughgoing holes 18 which facilitate fastening of the injection molded body to the tape.

[0052] From the outer side, the eyelet appears as a hole 19 at a center of the injection molded body which may be composed of polyoxymethylene or polyamide.

[0053] The male fastener half 120 (FIG. 36) may be injection molded on a woven tape 121 which likewise can be covered on its outer side by a strip of knitted fabric, folded over at 122 and ultrasonically welded to the tape. The male fastener half can have an inner body portion 123 formed with a post or pin 124 and a head 125 which is provided with a split 126. The outer body portion is shown at 127 in FIG. 38 and can have a hole 128 at its center aligned with the post. The head 125 tapers from a narrow end 129 to a thick end 130 (FIG. 39) in an insertion direction into the respective eyelet.

[0054] From FIG. 41 it will be apparent that the inner body portion 113 of the female fastener half 110, shown in FIG. 41 to be injection molded onto the tape 111, is convex and received in the concave inner body portion 123 of the male fastener half 120 injection molded onto its tape 121.

[0055] From FIGS. 41 and 42 it will also be apparent that the thicker portion 130 of the head 125 of the pin 124 lies to the rear of the eyelet and is guided into this position by inclined surfaces 131 of the female fastener half 110 (FIG. 42). The female fastener half is shown in greater detail in FIGS. 43 - 47 and has a rim 132 surrounding the eyelet and beneath which the thin portion 129 of the head drops when the head is inserted into the eyelet in the direction of A (FIG. 44). Because the head

is split and can be squeezed together, the male fastener half can be pulled out of the female fastener half in a direction perpendicular to the tapes.

[0056] In FIGS. 48 - 51, the split 126 of the male fastener half 120 is shown in greater detail. From FIG. 51, moreover, the concavity 132 of the inner body portion of the male fastener head is shown in greater detail.

[0057] As will be apparent from FIGS. 52 - 55, the female fastener halves 110 may be provided in a succession of rows on the tape 111 which is covered by the brushed tricot strip 133 shown in FIG. 54 so that the folded over edges 112 can be fastened to the tape 111 by ultrasonic weld seams 134 which can have a stitch pattern. The free end of the resulting band can be cold cut at 135 to leave a soft fluffy edge while the opposite end may be open for insertion of the part 136 of the back strap of the brassiere which can then be stitched in place along the seam 137. Similarly, the back strap portion 138 of the brassiere can be inserted between the tape 131 of the male fastener halves 120 and the brushed tricot strip 139 and stitched in place by a stitch seam 140.

[0058] In FIG. 55 the brushed tricot strip 139 and the woven synthetic resin tape 121 have been shown in greater detail and in section.

[0059] From FIGS. 56 - 58, it will be apparent that the fastener halves and, for example, the female fastener half 150 can have annular configurations other than circular. For example, in FIGS. 56 - 58 the fastener half is shown to be oval and to be formed with body portions 151 and 152 injection molded on opposite sides of the woven fastener carrier (FIGS. 61 - 63) or on a thin soft flexible film 153 which may be transparent as shown in FIG. 64. The converging mouth 153 here leads to the central opening 154 which has a part 155 adapted to overhang the head of the male member in the manner previously described. In any of the embodiments, the female member 155, for example, can be provided with a wedge shaped projection 156 opposite the mouth 153 and positioned to engage in the crevice 157 formed in the head 158 when the male fastener half 159 is locked into the female fastener half as shown in FIG. 60, thereby causing the wedge 156 to cam the two parts of the head apart and increase the strength with which the male fastener half is returned in the female fastener half.

[0060] FIGS. 61 - 63 show the cushioning of the tape and, while illustrated with respect to a female fastener half 160 are applicable to both the male and the female fastener halves.

[0061] The tape 161 (FIG. 61) comprises the woven fastener carrier 162 on which the fastener halves 160, etc. are injection molded as previously described. The knitted outer strip 163 has overhanging edges 164 which are ultrasonically welded to the woven fastener carrier 162 and between these two strips is a cushioning strip which has been represented at 165 and can be a knitted tape, a nonwoven strip or even a foam material.

[0062] The edge of the tape can be cold cut transversely at 166 and the surface of the knitted cover strip turned toward the body of the wearer may be brushed at 167 to provide a particularly soft hand.

Claims

1. A method of making a strap fastener for articles of clothing including brassieres, lingerie and corsetry, comprising the steps of:

   (a) molding onto a first elongated knit web (11; 111) of a thermoplastic yarn, a succession of synthetic resin coupling members (13;61;71; 76;79;110;115;150;160) to form a fastener strip (10);
   (b) enfolding said fastener strip (10) in a second elongated knit web (17;133) of a thermoplastic yam so that edge portions (18,19;112) of said second web (17;133) overlie one face (15) of said fastener strip (11;111) alongside said succession of coupling members (13;61;71;76;79; 110;115;150;160) and another portion (20) of said second web (17;133) covers the other face (16) of said fastener strip (10);
   (c) ultrasonically joining said edge portions (18,19;112) to said fastener strip (10) and said fastener strip (10) to said other portion (20) of said second web (17;133) at longitudinally spaced-apart intervals along said fastener strip (10) at which said coupling members (13;61;71; 76;79;110;115;150;160) are located to form a fastener band; and
   (d) ultrasonically severing successive lengths from said band, each of said lengths including at least one of said coupling members (13;61; 71;76;79;110;115;150;160) whereby said lengths can be affixed to a garment for engagement of a complementary coupling member (32;50;82;120;159) in the respective coupling member (13;61;71;76;79;110;115;150;160) of the fastener band to secure the garment.

2. The method defined in claim 1 wherein the strap fastener is a metal-free strap fastener, said coupling members (13) are eyelets, said fastener strip (10) is a female-fastener strip and said complementary coupling member (32) is a male fastener.

3. The method defined in claim 2, further comprising the step of ultrasonically or mechanically piercing said first web (11) to form a succession of holes (12), said eyelets (13) being molded onto said first web (11) around said holes (12).

4. The method defined in claim 2 wherein said webs (11,17) are ultrasonically joined together along an end of the length formed by ultrasonically severing

said lengths from said band.

5. The method defined in claim 2 wherein said webs (11,17) are formed of woven or tricot knit fabrics or a woven tape covered with a tricot fabric tape.

6. The method defined in claim 5 wherein said webs (11,17) are formed from a polyamide synthetic resin and said coupling members (13) are molded from a polyamide synthetic resin.

7. The method defined in claim 1 wherein said webs (11,17) are composed of polyamide woven fabric and said coupling members (61;71;76;79) are composed of polyamide.

8. The method defined in claim 2 wherein between said locations, said edge portions (18,19) are not bonded to said strip so that, for attachment of said lengths to said garments, a strip of a garment is insertable under said edge portions (18,19) and said edge portions (18,19) are then secured to said strip.

9. The method defined in claim 2 wherein said eyelets (13) are molded onto said first web (11) in a succession of spaced-apart groups of at least three eyelets (13) per group.

10. The method defined in claim 2, further comprising the step of inserting a fabric tape (40;70) between said other portion (20) and said female-fastener strip (10).

11. The method defined in claim 2 wherein said male fastener (32) comprises a hook molded onto a tape (31) composed of a fabric of thermoplastic yam.

12. The method defined in claim 11 wherein a succession of said hooks is molded onto the tape (31) of said male fastener and said tape (31) of said male fastener is severed ultrasonically between said hooks into respective male fastener lengths which are secured to said garment, said hooks, said eyelets (13) and said webs (11,17) and said tape (31) being all composed of polyamide.

13. The method defined in claim 2, whereby
the molding is an injection molding;
said webs (111,133) are woven synthetic-resin fabric bands;
said male fastener (120; 159) is formed with a generally flat circular body having an outer body portion on one side of the second band and an inner body portion on another side of the second band, a pin (124) projecting generally centrally from said inner body portion, and a head (51;125) formed on said pin (124);
said female fastener (110; 150; 160) is formed with a generally flat circular body having an outer body portion on one side of the first band and an inner body portion on another side of the first band, said inner body portion having an eyelet (110;115;150; 160) dimensioned to receive and retain said head (125) and an inlet slot (116) leading to said eyelet through which said pin (124) is laterally insertable;
at least one side of each of said bands is covered with a strip of brushed knit fabric and the respective strip is ultrasonically welded to the respective band along opposite longitudinal edges thereof to form respective weld seams having gaps therein;
said second band is transversely severed at gaps in the weld seams thereof to form second tapes each having at least one of said male fastener (120; 159) thereon and said first band is transversely severed at gaps in the weld seams thereof to form first tapes each having at least one of said female fastener (110;115;150;160) thereon, openings being provided between each tape and the respective strip at an end of the respective tape; and
a respective garment portion is inserted into each of said openings and the respective garment portion is secured to the respective tape and strip.

14. The method defined in claim 13 wherein said portions are parts of a back strap of a brassiere and are stitched to the respective tape and strip.

15. A strap fastener for articles of clothing including brassieres, lingerie and corsetry, said fastener comprising:

a first elongated fabric web (11; 111) of a thermoplastic yarn having at least one coupling member (13;61;71;76;79;110;115;150;160) molded onto said first fabric web (11;111);
a pair of ultrasonic welding seams (21) along opposite longitudinal edges of said first web (11;111) at which the at least one coupling member is located and a second elongated fabric web (17;133) of a thermoplastic yarn joining an edge portion (18,19) of said second fabric web (17) to said first fabric web (11;111) and said first fabric web (11; 111) to another portion (20) to form one coupling tape; and
a third elongated fabric web (31) of a thermoplastic yarn having another coupling member (32;50;82;120) molded onto said third web (31) and engageable with said one coupling member (13;61;71;76;79;110;115;150;160), said third web (31) and
said other coupling member (32;50;82;120) forming another coupling tape, said coupling tapes being attachable to respective parts of a garment to be held together by said engagement of the coupling members of said tapes;

characterized in that
said first fabric web (11;111) is enfolded into said second elongated fabric web (17;133) and said second elongated fabric web (17;133) having a pair of said edge portions (18,19) of said second web (17; 133) overlying one face (15) of said first fabric web (11;111) at opposite sides of said coupling member (13;61;71;76;79;110;115; 150; 160), and said other portion (20) of said second fabric web (17;133) covering the other face (16) of said first fabric web (11; 111).

16. The strap fastener defined in claim 15 wherein said one coupling member (13) is an eyelet and said other coupling member (32) is a hook engageable in said eyelet (13), said eyelet (13), said hook (32), and said webs (11,17) all being composed of polyamide.

17. The strap fastener defined in claim 16 wherein said first web (11) is formed with an ultrasonically pierced hole (12) surrounded by said eyelet (13).

18. The strap fastener defined in claim 17 wherein each of said webs (11,17) is a woven tape which can be covered with a tricot knit fabric.

19. The strap fastener defined in claim 15, further comprising a fabric strip (40;70) received between said other portion (20) and said first fabric web (11).

20. The strap fastener defined in claim 15, whereby
said coupling member (61;71;76;79;110;115;150; 160) is a female member disposed on opposite sides of said tape, said female member (61;71;76; 79;110;115;150;160) having a generally flat body with a hole (63;73;78) formed with a constriction (64;74), said body having a peripheral slot (62;72; 78;116) receiving said one coupling tape and having a convex surface on at least one side thereof; and said other coupling member (50;82;120) is a male member having a disk-shaped head (51;125) disposed on opposite sides of said other coupling tape, said disk having a peripheral slot (52) receiving the respective tape and having on one side of the respective tape a pin (55;83;124) receivable resiliently in said hole (63;73;78) and, around said projection (55;83;124), a concavity matching a curvature of said convex surface and receiving said convex surface upon insertion of said projection (55;83; 124) into said hole (63;73;78).

21. The strap fastener defined in claim 20 wherein said members each have formations spaced about respective peripheries for anchoring said members to the respective tapes.

22. The strap fastener defined in claim 20 or 21 wherein said body is formed with a lateral opening communicating with said hole (63;73;78) and through which said pin (55;83; 124) is insertable into said hole (63;73;78).

23. The strap fastener defined in any of claims 20 - 22 wherein a plurality of the female members (61;71; 76;79;110;115;150;160) are mounted upon a respective tape in at least one row and the tape carrying said female members (61;71;76;79;110;115; 150;160) is secured to a brassiere strap.

24. The strap fastener defined in any of claims 20 - 23 wherein said female members (61;71;76;79;110; 115;150;160) are tapered in thickness and have increased thickness in a direction of lateral insertion of the pin (55;83;124) into a respective female member (61;71;76;79;110;115;150;160).

25. The strap fastener defined in any of claims 20 - 24 wherein a plurality of said female members (61;71; 76;79;110; 115; 150; 160) are provided in each of a plurality of transverse rows across the respective tape and a plurality of said rows are spaced apart longitudinally of the tape on said brassiere strap.

26. The strap fastener defined in any of claims 20 - 25 wherein said female members (61;71;76;79;110; 115;150;160) are circular.

27. The strap fastener defined in any of claims 20 - 26 wherein said female members (61;71;76;79;110; 115;150;160) are elongated in a direction of lateral insertion of the pin (55;83;124) into a respective female member (13;61;71;76;79;110;115;150;160).

28. The strap fastener defined in any of claims 20 - 27 wherein said female members (61;71;76;79;110; 115;150;160) are elongated transversely to a direction of lateral insertion of the pin (55;83;124) into a respective female member (61;71;76;79;110;115; 150;160).

29. The strap fastener defined in any of claims 20 - 28 wherein said pin (55;83;124) has a head (51;125) receivable behind said construction said female member (61;71;76;79;110;115; 150; 160) being formed with a wedge-shaped projection (156) engageable in a crevice in said head (51;125) to cam parts of said head (51;125) apart, upon insertion of said male member (50;82;120) into said female member (61;71;76;79;110;115;150;160).

30. The strap fastener defined in claim 29 wherein said slot (62;72;78; 116) has an inwardly convergent mouth (72;117;153).

31. The strap fastener defined in claim 30 wherein said

head (51;125) is tapered from a narrow portion to a thick portion in a direction of insertion of said pin (55;83; 124) into said hole (63;73;78) through said slot (62;72;78;116).

32. The strap fastener defined in claim 31 wherein an inner body portion of said female member (61;71; 76;79;110;115;150;160) has inclined flanks engaging said head (51;125) and guiding said head (51; 125) into said hole (63;73;78).

33. The strap fastener in one of claims 20 - 32 wherein said tapes are woven and are each provided with a brushed-fabric strip along a side of the fastener turned toward the body of a wearer.

34. The strap fastener defined in claim 33 wherein each of said strips is ultrasonically welded to the respective tape along opposite longitudinal edges thereof.

35. The strap fastener defined in claim 34, further comprising a cushioning strip (40;70; 165) received between each tape and the respective brushed-fabric strip.

36. The strap fastener in one of claims 20 - 32 wherein at least one of said tapes is a transparent soft plastic film (153).

Patentansprüche

1. Verfahren zur Herstellung einer Befestigungseinrichtung für Kleidungsartikel einschließlich Büstenhalter, Dessous und Miederwaren, aufweisend die Schritte aus:

(a) Formen einer Abfolge von Verbindungselementen (13; 61; 71; 76; 79; 110; 115; 150; 160) aus synthetischem Harz auf einer ersten gestreckten, geknüpften Bahn (11; 111) aus einem thermoplastischen Garn, um einen Befestigungsbandstreifen (10) zu bilden;
(b) Einfalten des Befestigungsbandstreifens (10) in eine zweite gestreckte, geknüpfte Bahn (17; 133) aus einem thermoplastischen Garn, so dass Randabschnitte (18, 19; 122) der zweiten Bahn (17; 133) über einer Fläche (15) des Befestigungsbandstreifens (11; 111) längsseits der Abfolge von Verbindungselementen (13; 61; 71; 76; 79; 110; 115; 150; 160) liegen, und ein anderer Abschnitt (20) der zweiten Bahn (17; 133) die andere Fläche (16) des Befestigungsbandstreifens (10) überdeckt;
(c) Verbinden der Randabschnitte durch Ultraschall (18, 19; 122) mit dem Befestigungsbandstreifen (10) und des Befestigungsbandstreifens (10) mit dem anderen Abschnitt (20) der zweiten Bahn (17; 133) an in Längsrichtung räumlich versetzten Intervallen entlang des Befestigungsbandstreifens (10), an welchem sich die Verbindungselemente (13; 61; 71; 76; 79; 110; 115; 150; 160) örtlich befinden, um ein Befestigungsband zu bilden; und
(d) Abtrennen durch Ultraschall von sukzessiven Längen von dem Band, wobei jede der Längen mindestens eines der Verbindungselemente (13; 61; 71; 76; 79; 110; 115; 150; 160) beinhaltet, wobei die Längen zum Eingreifen von komplementären Verbindungselementen (32; 50; 82; 120; 159) in die entsprechenden Verbindungselemente (13; 61; 71; 76; 79; 110; 115; 150; 160) des Befestigungsbands auf einem Kleidungsstück befestigt werden können, um das Kleidungsstück zu sichern.

2. Das Verfahren wie in Anspruch 1 definiert, wobei die Befestigungseinrichtung eine metallfreie Befestigungseinrichtung ist, die Verbindungselemente (13) Ösen sind, der Befestigungsbandstreifen (10) ein Streifen eines weiblichen Verschlusses ist, und das komplementäre Verbindungselement (32) ein männlicher Verschluss ist.

3. Das Verfahren wie in Anspruch 2 definiert, weiterhin aufweisend den Schritt aus Lochen der ersten Bahn (11) mittels Ultraschall oder mechanisch, um eine Abfolge von Löchern (12) zu bilden, wobei die Ösen (13) auf die erste Bahn (11) um die Löcher (12) herum geformt werden.

4. Das Verfahren wie in Anspruch 2 definiert, bei dem die Bahnen (11, 17) durch Ultraschall entlang einem Ende der Länge, die durch Abtrennen durch Ultraschall der Längen von dem Band gebildet wurde, miteinander verbunden sind.

5. Das Verfahren wie in Anspruch 2 definiert, bei dem die Bahnen (11, 17) aus gewebten oder trikotgeknüpften Stoffen oder einem gewebten Tape, das mit einem Trikotstofftape bedeckt ist, gebildet sind.

6. Das Verfahren wie in Anspruch 5 definiert, wobei die Bahnen (11, 17) aus einem synthetischen Polyamidharz gebildet sind und die Verbindungselemente (13) aus einem synthetischen Polyamidharz gebildet sind.

7. Das Verfahren wie in Anspruch 1 definiert, bei dem die Bahnen (11, 17) aus einem gewebten Polyamid Stoff zusammengesetzt sind und die Verbindungselemente (61; 71; 76; 79) aus Polyamid zusammengesetzt sind.

8. Das Verfahren wie in Anspruch 2 definiert, bei dem zwischen den Orten die Randabschnitte (18, 19)

nicht auf den Bandstreifen gebondetsind, so dass zum Befestigen der Längen auf den Kleidungsstükken ein Bandstreifen eines Kleidungsstücks unter den Randabschnitten (18, 19) einführbar ist und die Randabschnitte (18, 19) dann an diesem Bandstreifen gesichert werden.

9. Das Verfahren wie in Anspruch 2 definiert, bei dem die Ösen (13) auf die erste Bahn (11) in einer Abfolge von räumlich versetzten Gruppen von mindestens drei Ösen (13) pro Gruppe geformt sind.

10. Das Verfahren wie in Anspruch 2 definiert, weiterhin aufweisend den Schritt aus Einführen eines Stofftapes (40; 70) zwischen dem anderen Abschnitt (20) und dem weiblichen Verschlussstreifen (10).

11. Das Verfahren wie in Anspruch 2 definiert, bei dem der männliche Verschluss (32) einen Haken aufweist, der auf ein Tape (31), das aus einem Stoff aus einem thermoplastischen Garn zusammengesetzt ist, geformt ist.

12. Das Verfahren wie in Anspruch 11 definiert, bei dem eine Abfolge der Haken auf das Tape (31) des männlichen Veraschlusses geformt ist und das Tape (31) des männlichen Verschlusses (31) durch Ultraschall zwischen den Haken in entsprechende männliche Verschluss Längen abgetrennt ist, welche an dem Kleidungsstück gesichert werden, wobei die Haken, die Ösen und die Bahnen (11, 17) und das Tape (31) alle aus Polyamid zusammengesetzt sind.

13. Das Verfahren wie in Anspruch 2 definiert, bei dem das Formen ein Spritzgießen ist;
die Bahnen (111, 133) gewebte Stoffbänder aus synthetischem Harz sind;
der männliche Verschluss (120; 159) mit einem im Allgemeinen flachen kreisförmigen Körper gebildet ist, der einen äußeren Körperabschnitt auf einer Seite des zweiten Bands und einen inneren Körperabschnitt auf einer anderen Seite des zweiten Bands besitzt, einen Pin (124), der im Allgemeinen zentral von dem inneren Körperabschnitt hervorsteht, und einen Kopf (51; 125), der auf dem Pin (124) gebildet ist;
der weibliche Verschluss (110; 150; 160) mit einem im Allgemeinen flachen kreisförmigen Körper gebildet ist, der einen äußeren Körperabschnitt auf einer Seite des ersten Bands und einen inneren Körperabschnitt auf einer anderen Seite des ersten Bands besitzt, wobei der innere Körperabschnitt eine Öse (110; 115; 150; 160) ist, die so dimensioniert ist, dass sie den Kopf (125) aufnehmen und zurückhalten kann und einen Einlassschlitz (116) besitzt, der zu der Öse führt, und durch den der Pin (124) lateral einführbar ist;
mindestens eine Seite von jedem der Bänder mit einem Bandstreifen aus gebürstetem, geknüpftem Stoff bedeckt ist, und der entsprechende Bandstreifen durch Ultraschall an das entsprechende Band entlang gegenüberliegender longitudinaler Ränder hiervon geschweißt ist, um entsprechende Schweißsäume zu bilden, die Lücken dazwischen besitzen;
das zweite Band transversal an Lücken in den Schweißsäumen hiervon getrennt ist, um zweite Tapes zu bilden, die jeweils mindestens einen der männlichen Verschlüsse (120; 159) hierauf besitzen, und das erste Band transversal an Lücken in den Schweißsäumen hiervon getrennt ist, um erste Tapes zu bilden, die jeweils mindestens einen der weiblichen Verschlüsse (110; 115; 150; 160) hierauf besitzen, wobei Öffnungen zwischen jeden Tapes zur Verfügung gestellt werden, und der entsprechende Bandstreifen an einem Ende des entsprechenden Tapes und ein entsprechender Abschnitt eines Kleidungsstücks in jede der Öffnungen eingeführt werden, und der entsprechende Abschnitt des Kleidungsstückes an dem entsprechenden Tape und Bandstreifen gesichert ist.

14. Das Verfahren wie in Anspruch 13 definiert, bei dem die Abschnitte Teile eines hinteren Trägerriemens eines Büstenhalters sind und an das entsprechende Tape und den Bandstreifen genäht sind.

15. Eine Befestigungseinrichtung für Kleidungsartikel einschließlich Büstenhalter, Dessous und Miederwaren, wobei die Befestigungseinrichtung aufweist:

eine erste gestreckte Bahn aus einem thermoplastischen Garn, das mindestens ein Verbindungselement (13; 61; 71; 76; 79; 110; 150; 160) besitzt, das auf die erste Bahn (11; 111) geformt ist;
ein Paar von Ultraschall-Schweißsäumen (21) entlang gegenüberliegenden Rändern der ersten Bahn (11; 111), an denen sich das mindestens eine Verbindungselement örtlich befindet, und eine zweite gestreckte Stoffbahn (17; 133) aus einem thermoplastischen Garn, die einen Randabschnitt (18, 19) der zweiten Stoffbahn (17) mit der ersten Stoffbahn (11; 111) und die erste Stoffbahn (11; 111) mit einem anderen Abschnitt (20) verbindet, um ein Verbindungstape zu bilden; und
eine dritte gestreckte Stoffbahn (31) aus einem thermoplastischen Garn, das ein anderes Verbindungselement (32; 50; 82; 120) besitzt, das auf die dritte Bahn (31) geformt ist und mit dem einen Verbindungselement (13; 61; 71; 76; 79; 110; 150; 160) in Eingriff bringbar ist, wobei die dritte Bahn (31) und das andere Verbindungselement (32; 50; 82; 120) ein anderes Verbin-

dungstape bilden; wobei die Verbindungstapes an entsprechende Teile eines Kleidungsstücks, die durch diesen Eingriff der Verbindungselemente der Tapes zusammenzuhalten sind, befestigbar sind;

dadurch gekennzeichnet dass
die erste Stoffbahn (11; 111) in die zweite gestreckte Stoffbahn (17; 133) eingefaltet ist und die zweite gestreckte Stoffbahn (17; 133) ein Paar der Randabschnitte (18, 19) der zweiten Bahn (17; 133) besitzt, die über einer Fläche (15) der ersten Stoffbahn (11; 111) an gegenüberliegenden Seiten des Verbindungselements (13; 61; 71; 76; 79; 110; 150; 160) liegen; und der andere Abschnitt (20) der zweiten Stoffbahn (17; 133) die andere Fläche (16) der ersten Stoffbahn (11; 11) bedeckt.

16. Die Befestigungseinrichtung wie in Anspruch 15 definiert, bei der das eine Verbindungselement (13) eine Öse ist und das andere Verbindungselement (32) ein Haken ist, der in dieser Öse (13) in Eingriff bringbar ist, wobei die Öse (13), der Haken (32) und die Bahnen (11, 17) aus Polyamid zusammengesetzt sind.

17. Die Befestigungseinrichtung wie in Anspruch 16 definiert, bei der die erste Bahn (11) mit einem durch Ultraschall gelochten Loch (12) gebildet wird, das durch die Öse (13) umgeben ist.

18. Die Befestigungseinrichtung wie in Anspruch 17 definiert, bei der jede der Bahnen (11, 17) ein gewebtes Tape ist, das mit einem trikotgeknüpften Stoff bedeckt sein kann.

19. Die Befestigungseinrichtung wie in Anspruch 15 definiert, weiterhin aufweisend einen Stoffbahnstreifen (40; 70), der zwischen dem anderen Abschnitt (20) und der ersten Stoffbahn (11) aufgenommen wird.

20. Die Befestigungseinrichtung wie in Anspruch 15 definiert, bei der
das Verbindungselement (61; 71; 76; 79; 110; 115; 150; 160) ein weibliches Element ist, das an gegenüberliegenden Seiten des Tapes aufgebracht ist, wobei das weibliche Element (61; 71; 76; 79; 110; 115; 150; 160) einen im Allgemeinen flachen Körper mit einem Loch (63; 73; 78) besitzt, der mit einer Konstriktion (63; 73; 78) ausgebildet ist, wobei der Körper einen peripheren Schlitz (62; 72; 78; 116) besitzt, der das eine Verbindungstape aufnimmt und eine konvexe Oberfläche auf mindestens einer Seite hiervon besitzt; und
das andere Verbindungselement (50; 82; 120) ein männliches Verbindungselement ist, das einen scheibenförmigen Kopf (51; 125) besitzt, der auf gegenüberliegenden Seiten des anderen Verbindungstapes aufgebracht ist, wobei die Scheibe einen peripheren Schlitz (52) besitzt, der das entsprechende Tape aufnimmt und der auf einer Seite des entsprechenden Tapes einen Pin (55; 83; 124) besitzt, der in diesem Loch (63; 73; 78) nachgiebig aufnehmbar ist, und, um diesen Vorsprung (55; 83; 124) herum, eine Konkavität, die an eine Krümmung der konvexen Oberfläche angepasst ist und die konvexe Oberfläche beim Einbringen desVorsprungs (55; 83 ; 124) in das Loch (63; 73; 78) aufnimmt.

21. Die Befestigungseinrichtung wie in Anspruch 20 definiert, bei der die Elemente jeweils Formationen zur Verankerung dieser Elemente an den entsprechenden Tapes besitzen, die sich über entsprechende Peripherien räumlich erstrecken.

22. Die Befestigungseinrichtung wie in Anspruch 20 oder 21 definiert, bei welcher der Körper mit einer lateralen Öffnung gebildet ist, die mit dem Loch (63; 73; 78) in Verbindung steht und durch welche der Pin (55; 83; 124) in das Loch (63; 73; 78) einführbar ist.

23. Die Befestigungseinrichtung wie in einem der Ansprüche 20 - 22 definiert, bei der eine Vielzahl von weiblichen Elementen (61; 71; 76; 79; 110; 115; 150; 160) auf einem entsprechenden Tape in mindestens einer Reihe angebracht sind, und das Tape, das die weiblichen Elemente (61; 71; 76; 79; 110; 115; 150; 160) trägt, an einem Tragriemen eines Büstenhalters gesichert ist.

24. Die Befestigungseinrichtung wie in einem der Ansprüche 20 - 23 definiert, bei der die weiblichen Elemente (61; 71; 76; 79; 110; 115; 150; 160) in ihrer Dicke getapert sind und eine zunehmende Dicke in einer Richtung einer lateralen Einbringung des Pins (55; 83; 124) in ein entsprechendes weibliches Element (61; 71; 76; 79; 110; 115; 150; 160) besitzen.

25. Die Befestigungseinrichtung wie in einem der Ansprüche 20 - 24 definiert, bei der eine Vielzahl von weiblichen Elementen (61; 71; 76; 79; 110; 115; 150; 160) vorgesehen ist in jeweils einer Vielzahl von transversalen Reihen über das entsprechende Tape, und eine Vielzahl von diesen Reihen in longitudinaler Richtung des Tapes auf dem Tragriemen des Büstenhalters räumlich versetzt ist.

26. Die Befestigungseinrichtung wie in einem der Ansprüche 20 - 25 definiert, bei der die weiblichen Elemente (61; 71; 76; 79; 110; 115; 150; 160) kreisförmig sind.

27. Die Befestigungseinrichtung wie in einem der An-

sprüche 20 - 26 definiert, bei der die weiblichen Elemente (61; 71; 76; 79; 110; 115; 150; 160) in einer Richtung einer lateralen Einbringung des Pins (55; 83; 124) in ein entsprechendes weibliches Element (61; 71; 76; 79; 110; 115; 150; 160) gestreckt sind.

28. Die Befestigungseinrichtung wie in einem der Ansprüche 20 - 27 definiert, bei der die weiblichen Elemente (61; 71; 76; 79; 110; 115; 150; 160) transversal zu einer Richtung einer lateralen Einbringung des Pins (55; 83; 124) in ein entsprechendes weibliches Element (61; 71; 76; 79; 110; 115; 150; 160) gestreckt sind.

29. Die Befestigungseinrichtung wie in einem der Ansprüche 20 - 28 definiert, bei welcher der Pin (55; 83; 124) einen Kopf (51; 125) besitzt, der hinter den Konstriktionen des weiblichen Elements (61; 71; 76; 79; 110; 115; 150; 160) aufnehmbar ist, und der mit einem keilförmigen Vorsprung (156) gebildet ist, der mit einer Spalte in dem Kopf (51; 125) in Eingriff bringbar ist, um Teile des Kopfs (51; 125) bei der Einbringung des männlichen Elements (50; 82; 120) in das weibliche Element (61; 71; 76; 79; 110; 115; 150; 160) aus dem Weg zu kämmen.

30. Die Befestigungseinrichtung wie in Anspruch 29 definiert, bei welcher der Schlitz (62; 72; 78; 116) einen nach Innen konvergenten Mund (72; 117; 153) besitzt.

31. Die Befestigungseinrichtung wie in Anspruch 30 definiert, bei welcher der Kopf (51; 125) von einem schmalen Abschnitt auf einem dicken Abschnitt in einer Richtung der Einbringung des Pins (55; 83; 124) in das Loch (63; 73; 78) durch den Schlitz (62; 72; 78; 116) getapert ist.

32. Die Befestigungseinrichtung wie in Anspruch 31 definiert, bei der ein innerer Körperabschnitt des weiblichen Elements (61; 71; 76; 79; 110; 115; 150; 160) geneigte Flanken besitzt, die den Kopf (51; 125) in Eingriff bringen und den Kopf (51; 125) in das Loch (63; 73; 78) führen.

33. Die Befestigungseinrichtung wie in einem der Ansprüche 20 - 32 definiert, bei der die Tapes gewebt sind und jeweils mit einem gebürsteten Stoffbandstreifen entlang einer Seite der Befestigungseinrichtung ausgestattet sind, die zum Körper eines Trägers hin gewendet ist.

34. Die Befestigungseinrichtung wie in Anspruch 33 definiert, bei der jeder der Bandstreifen durch Ultraschall an das entsprechende Tape entlang gegenüberliegenden Rändern hiervon geschweißt ist.

35. Die Befestigungseinrichtung wie in Anspruch 24 definiert, weiterhin aufweisend einen polsternden Bandstreifen (40; 70; 165), der zwischen jedem Tape und dem entsprechenden gebürsteten Stoffbandstreifen aufgenommen wird.

36. Die Befestigungseinrichtung wie in einem der Ansprüche 20 - 32 definiert, bei der mindestens eines der Tapes ein transparenter, weicher Plastikstreifen (153) ist.

Revendications

1. Un procédé de fabrication d'une attache de bretelle pour articles vestimentaires incluant soutiens-gorge, lingerie et corseterie, comprenant les étapes consistant à:

(a) mouler sur un premier voile tricoté allongé (11; 111) en fil thermoplastique, une succession d'organes de couplage en résine synthétique (13; 61; 71; 76; 79; 110; 115; 150; 160) pour former un ruban d'attache (10);
(b) envelopper ledit ruban d'attache (10) dans un deuxième voile tricoté allongé (17; 133) en fil thermoplastique, de sorte que les parties en bordure (18, 19; 112) dudit deuxième voile (17; 133) recouvrent une face (15) dudit ruban d'attache (11; 111) à côté de ladite succession d'organes de couplage (13; 61; 71; 76; 79; 110; 115; 150; 160), et une autre partie (20) dudit deuxième voile (17; 133) couvre l'autre face (16) dudit ruban d'attache (10);
(c) raccorder par ultrasons lesdites parties en bordure (18,19; 112) audit ruban d'attache (10) et ledit ruban d'attache (10) à ladite autre partie (20) dudit deuxième voile (17; 133) à intervalles longitudinalement espacés le long dudit ruban d'attache (10) auquel lesdits organes de couplage (13; 61; 71; 76; 79; 110; 115; 150; 160) sont placés pour former une bande d'attache ; et
(d) découper par ultrasons des longueurs successives de ladite bande, chacune desdites longueurs incluant au moins un desdits organes de couplage (13; 61; 71; 76; 79; 110; 115; 150; 160), lesdites longueurs pouvant être fixées à un vêtement pour l'engagement d'un organe de couplage complémentaire (32; 50; 82; 120; 159) dans l'organe de couplage respectif (13; 61; 71; 76; 79; 110; 115; 150; 160) de la bande d'attache pour fixer le vêtement.

2. Le procédé selon la revendication 1, dans lequel l'attache de bretelle est une attache de bretelle sans métal, lesdits organes de couplage (13) sont des oeillets, ledit ruban d'attache (10) est un ruban d'attache femelle et ledit organe de couplage complé-

mentaire (32) est une attache mâle.

3. Le procédé selon la revendication 2, comprenant en outre l'étape consistant à percer par ultrasons ou de façon mécanique ledit premier voile (11) pour former une succession de trous (12), lesdits oeillets (13) étant moulés sur ledit premier voile (11) autour desdits trous (12).

4. Le procédé selon la revendication 2, dans lequel lesdits voiles (11, 17) sont raccordés ensemble par ultrasons, le long d'une extrémité de la longueur formée, en découpant par ultrasons lesdites longueurs de ladite bande.

5. Le procédé selon la revendication 2, dans lequel lesdits voiles (11, 17) sont formés de tissus tissés ou tricotés machine ou d'une bandelette tissée couverte d'une bandelette de tissu tricoté.

6. Le procédé selon la revendication 5, dans lequel lesdits voiles (11, 17) sont formés d'une résine synthétique de polyamide, et lesdits organes de couplage (13) sont moulés en une résine synthétique de polyamide.

7. Le procédé selon la revendication 1, dans lequel lesdits voiles (11, 17) sont constitués de tissu tissé de polyamide, et lesdits organes de couplage (61; 71; 76; 79) sont constitués de polyamide.

8. Le procédé selon la revendication 2, dans lequel entre lesdits emplacements, lesdites parties en bordure (18, 19) ne sont pas collées audit ruban, de sorte que, pour la fixation desdites longueurs auxdits vêtements, un ruban d'un vêtement est insérable sous lesdites parties en bordure (18,19), et lesdites parties en bordure (18, 19) sont alors fixées audit ruban.

9. Le procédé selon la revendication 2, dans lequel lesdits oeillets (13) sont moulés sur ledit premier voile (11) en une succession de groupes espacés d'au moins trois oeillets (13) par groupe.

10. Le procédé selon la revendication 2, comprenant en outre l'étape consistant à insérer une bandelette de tissu (40; 70) entre ladite autre partie (20) et ledit ruban d'attache femelle (10).

11. Le procédé selon la revendication 2, dans lequel ladite attache mâle (32) comprend un crochet moulé sur une bandelette (31) constituée d'un tissu en fil thermoplastique.

12. Le procédé selon la revendication 11, dans lequel une succession desdits crochets est moulée sur la bandelette (31) de ladite attache mâle, et ladite bandelette (31) de ladite attache mâle est découpée par ultrasons entre lesdits crochets dans les longueurs d'attache mâle respectives qui sont fixées audit vêtement; lesdits crochets, lesdits oeillets (13), lesdits voiles (11, 17) et ladite bandelette (31) étant tous constitués de polyamide.

13. Le procédé selon la revendication 2, dans lequel

- le moulage est un moulage par injection;
- lesdits voiles (111, 133) sont des bandes de tissu en résine synthétique tissées,
- ladite attache mâle (120 ; 159) est formée avec un corps circulaire généralement plat ayant une partie de corps extérieure sur un côté de la seconde bande et une partie de corps intérieure sur un autre côté de la seconde bande, une broche (124) faisant saillie généralement du centre de ladite partie de corps intérieure, et une tête (51; 125) formée sur ladite broche (124) ;
- ladite attache femelle (110; 150; 160) est formée avec un corps circulaire généralement plat ayant une partie de corps extérieure sur un côté de la première bande, et une partie de corps intérieure sur un autre côté de la première bande, ladite partie de corps intérieure ayant un oeillet (110; 115; 150 ; 160) dimensionné pour recevoir et retenir ladite tête (125), et une encoche d'entrée (116) menant audit oeillet. à travers lequel ladite broche (124) est insérable latéralement ;
- au moins un côté de chacune desdites bandes est couvert d'un ruban en tissu brossé, et le ruban respectif est soudé par ultrasons à la bande respective le long des bords longitudinaux opposés de celui-ci, pour former des joints de soudure respectifs ayant des espaces à l'intérieur ;
- ladite seconde bande est découpée transversalement aux espaces dans les joints de soudure de celle-ci, pour former des secondes bandelettes chacune ayant au moins une de ladite attache mâle (120; 159) dessus, et ladite première bande est découpée transversalement aux espaces dans les joints de soudure de celle-ci pour former des premières bandelettes, chacune ayant au moins une de ladite attache femelle (110; 115; 150; 160) dessus, des ouvertures étant prévues entre chaque bandelette et le ruban respectif à une extrémité de la bandelette respective; et
- une partie de vêtement respective est insérée dans chacune desdites ouvertures, et la partie de vêtement respective est fixée à la bandelette et au ruban respectifs.

14. Le procédé selon la revendication 13, dans lequel lesdites parties sont les parties d'une bretelle arriè-

re d'un soutien-gorge et sont cousues à la bandelette et au ruban respectifs.

15. Une attache de bretelle pour articles vestimentaires incluant soutiens-gorge, lingerie et corseterie, ladite attache comprenant :

- un premier voile de tissu allongé (11; 111) en fil thermoplastique ayant au moins un organe de couplage (13; 61; 71; 76; 79; 110; 115; 150; 160) moulé sur ledit premier voile de tissu (11; 111);
- une paire de coutures par soudure ultrasonique (21) le long de bords longitudinaux opposés dudit premier voile (11; 111) sur lequel se situe au moins un organe de couplage et un deuxième voile de tissu allongé (17; 133) en fil thermoplastique, raccordant une partie en bordure (18, 19) dudit deuxième voile de tissu (17) audit premier voile de tissu (11; 111) et ledit premier voile de tissu (11; 111) à une autre partie (20) pour former une bandelette de couplage; et
- un troisième voile de tissu allongé (31) en fil thermoplastique ayant un autre organe de couplage (32; 50; 82; 120) moulé sur ledit troisième voile (31) et engageable avec ledit organe de couplage (13; 61; 71; 76; 79; 110; 115; 150; 160), ledit troisième voile (31) et ledit autre organe de couplage (32; 50; 82; 120) formant une autre bandelette de couplage, lesdites bandelettes de couplage étant attachables aux parties respectives d'un vêtement pour être maintenues ensemble par ledit engagement des organes de couplage desdites bandelettes;

caractérisée en ce que

- ledit premier voile de tissu (11; 111) est enveloppé dans ledit deuxième voile de tissu allongé (17; 133), et ledit deuxième voile de tissu allongé (17; 133) a une paire desdites parties en bordure (18,19) dudit deuxième voile (17; 133) recouvrant une face (15) dudit premier voile de tissu (11; 111) sur des côtés opposés dudit organe de couplage (13; 61; 71; 76; 79; 110; 115; 150; 160), et ladite autre partie (20) dudit deuxième voile de tissu (17; 133) couvrant l'autre face (16) dudit premier voile de tissu (11; 111).

16. L'attache de bretelle selon la revendication 15, dans laquelle ledit organe de couplage (13) est un oeillet, et ledit autre organe de couplage (32) est un crochet engageable dans ledit oeillet (13); ledit oeillet (13), ledit crochet (32) et lesdits voiles (11, 17) étant tous constitués de polyamide.

17. L'attache de bretelle selon la revendication 16, dans laquelle ledit premier voile (11) est formé avec un trou percé par ultrasons (12) entouré par ledit oeillet (13).

18. L'attache de bretelle selon la revendication 17, dans laquelle chacun desdits voiles (11, 17) est une bandelette tissée qui peut être couverte d'un tissu tricoté machine.

19. L'attache de bretelle selon la revendication 15, comprenant en outre un ruban de tissu (40; 70) reçu entre ladite autre partie (20) et ledit premier voile de tissu (11).

20. L'attache de bretelle selon la revendication 15, dans laquelle

- ledit organe de couplage (61; 71; 76; 79; 110; 115; 150; 160) est un élément femelle disposé sur des côtés opposés de ladite bandelette, ledit élément femelle (61; 71; 76; 79; 110; 115; 150; 160) ayant un corps généralement plat avec un trou (63; 73; 78) formé avec une constriction (64; 74), ledit corps ayant une encoche périphérique (62; 72; 78; 116) recevant ladite bandelette de couplage et ayant une surface convexe sur au moins un côté de celle-ci; et
- ledit autre organe de couplage (50; 82; 120) est un élément mâle ayant une tête en forme de disque (51; 125) disposée sur des côtés opposés de ladite autre bandelette de couplage, ledit disque ayant une encoche périphérique (52) recevant la bandelette respective et ayant sur un côté de la bandelette respective une broche (55; 83; 124) recevable élastiquement dans ledit trou (63; 73; 78) et, autour de ladite saillie (55; 83; 124), une concavité correspondant à une courbure de ladite surface convexe et recevant ladite surface convexe lors de l'insertion de ladite saillie (55; 83; 124) dans ledit trou (63; 73; 78).

21. L'attache de bretelle selon la revendication 20, dans laquelle lesdits éléments ont chacun des formations espacées autour de leurs périphéries respectives pour ancrer lesdits éléments aux bandelettes respectives.

22. L'attache de bretelle selon la revendication 20 ou 21, dans laquelle ledit corps est formé avec une ouverture latérale communiquant avec ledit trou (63; 73; 78) et à travers laquelle ladite broche (55; 83; 124) est insérable dans ledit trou (63; 73; 78).

23. L'attache de bretelle selon l'une quelconque des revendications 20 à 22, dans laquelle une pluralité des éléments femelles (61; 71; 76; 79; 110; 115; 150; 160) sont montés sur une bandelette respec-

tive dans au moins une rangée, et la bandelette portant lesdits éléments femelles (61; 71; 76; 79; 110; 115; 150; 160) est fixée à une bretelle de soutien-gorge.

24. L'attache de bretelle selon l'une quelconque des revendications 20 à 23, dans laquelle lesdits éléments femelles (61; 71; 76; 79; 110; 115; 150; 160) sont amincis en épaisseur et ont une épaisseur augmentée dans une direction d'insertion latérale de la broche (55; 83; 124) dans un élément femelle respectif (61; 71; 76; 79; 110; 115; 150; 160).

25. L'attache de bretelle selon l'une quelconque des revendications 20 à 24, dans laquelle une pluralité desdits éléments femelles (61; 71; 76; 79; 110; 115; 150; 160) sont prévus dans chacune d'une pluralité de rangées transversales à travers la bandelette respective, et une pluralité desdites rangées sont espacées longitudinalement et séparées de la bandelette sur ladite bretelle de soutien-gorge.

26. L'attache de bretelle selon l'une quelconque des revendications 20 à 25, dans laquelle lesdits éléments femelles (61; 71; 76; 79; 110; 115; 150; 160) sont circulaires.

27. L'attache de bretelle selon l'une quelconque des revendications 20 à 26, dans laquelle lesdits éléments femelles (61; 71; 76; 79; 110; 115; 150; 160) sont allongés dans une direction d'insertion latérale de la broche (55; 83; 124) dans un élément femelle respectif (13; 61; 71; 76; 79; 110; 115; 150; 160).

28. L'attache de bretelle selon l'une quelconque des revendications 20 à 27, dans laquelle lesdits éléments femelles (61; 71; 76; 79; 110; 115; 150; 160) sont allongés transversalement dans une direction d'insertion latérale de la broche (55; 83; 124) dans un élément femelle respectif (61; 71; 76; 79; 110; 115; 150; 160).

29. L'attache de bretelle selon l'une quelconque des revendications 20 à 28, dans laquelle ladite broche (55; 83; 124) a une tête (51; 125) recevable derrière ladite construction, ledit élément femelle (61; 71; 76; 79; 110; 115; 150; 160) étant formé avec une saillie en forme de coin (156) engageable dans une fente dans ladite tête (51; 125) afin de séparer par effet de came les parties de ladite tête (51; 125), lors de l'insertion dudit élément mâle (50; 82; 120) dans ledit élément femelle (61; 71; 76; 79; 110; 115; 150; 160).

30. L'attache de bretelle selon la revendication 29, dans laquelle ladite encoche (62; 72; 78; 116) a une ouverture convergente vers l'intérieur (72; 117; 153).

31. L'attache de bretelle selon la revendication 30, dans laquelle ladite tête (51; 125) est amincie d'une partie épaisse à une partie étroite dans une direction d'insertion de ladite broche (55; 83; 124) dans ledit trou (63; 73; 78) à travers ladite encoche (62; 72; 78; 116).

32. L'attache de bretelle selon la revendication 31, dans laquelle une partie de corps intérieure dudit élément femelle (61; 71; 76; 79; 110; 115; 150; 160) a des flancs inclinés s'engageant avec ladite tête (51; 125) et guidant ladite tête (51; 125) dans ledit trou (63; 73; 78).

33. L'attache de bretelle selon l'une quelconque des revendications 20 à 32, dans laquelle lesdites bandelettes sont tissées et sont pourvues chacune d'un ruban de tissu brossé, le long d'un côté de l'attache tournée vers le corps de la personne qui porte le vêtement.

34. L'attache de bretelle selon la revendication 33, dans laquelle chacun desdits rubans est soudé par ultrasons à la bandelette respective, le long des bords longitudinaux opposés de celle-ci.

35. L'attache de bretelle selon la revendication 34, comprenant en outre un ruban matelassé (40; 70; 165) reçu entre chaque bandelette et le ruban en tissu brossé respectif.

36. L'attache de bretelle selon l'une quelconque des revendications 20 à 32, dans laquelle au moins une desdites bandelettes est un film en plastique mou transparent (153).

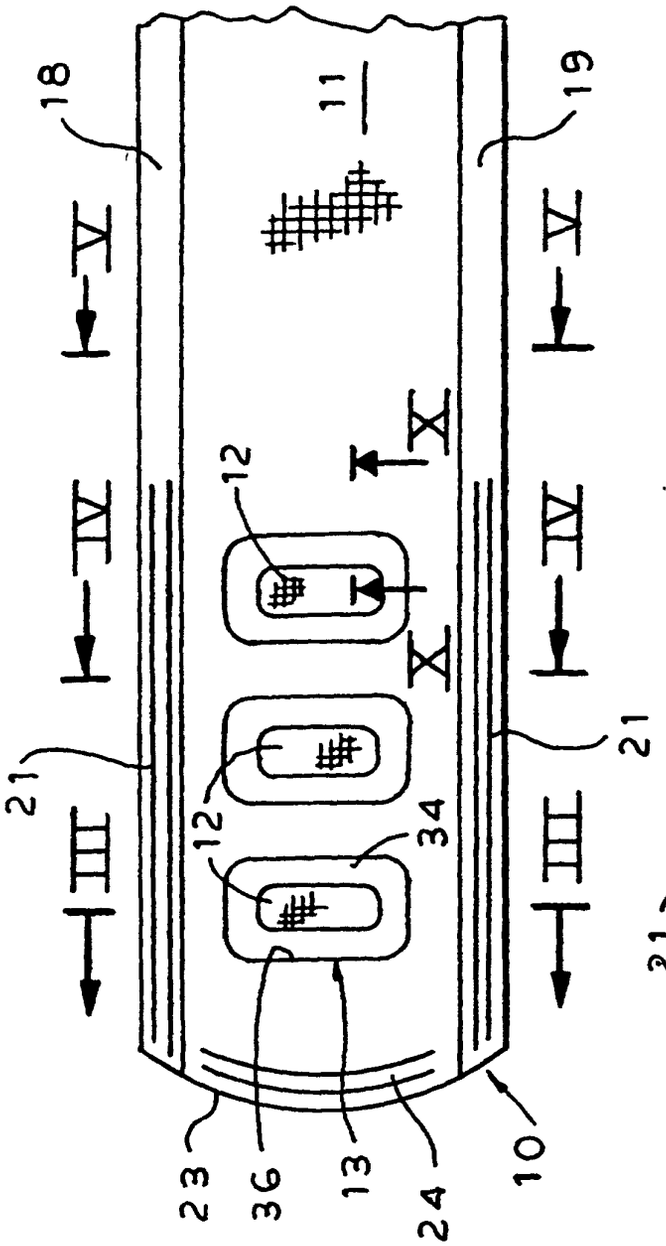

18
11
19
V
V
IV
IV
X
X
12
12
34
21
21
III
III
23
36
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24
10

FIG. 1

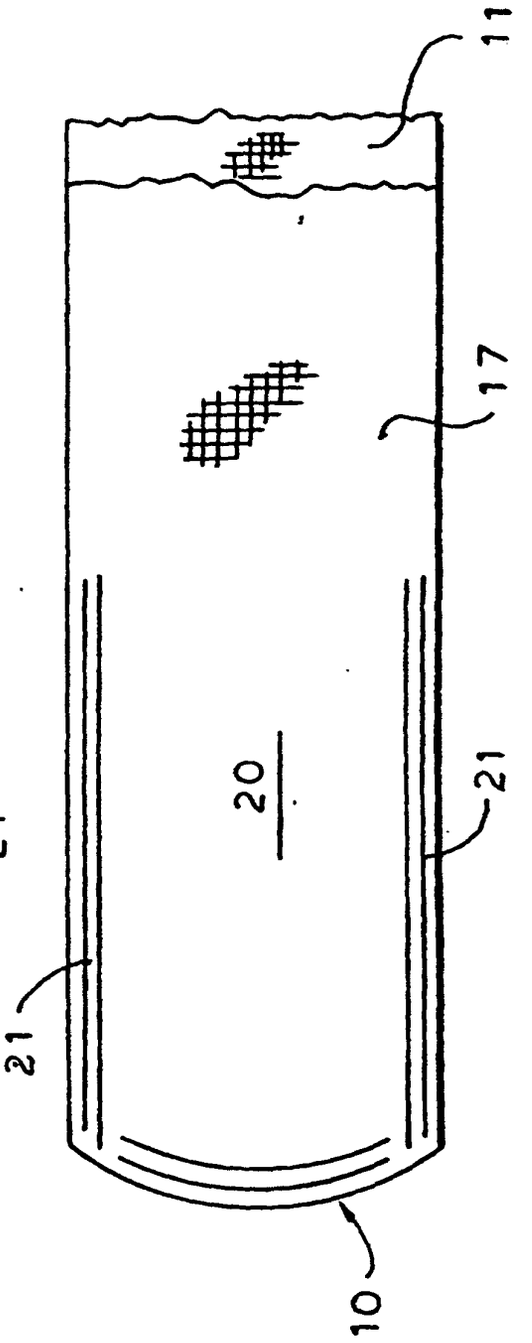

11
17
20
21
21
10

FIG. 2

FIG.5

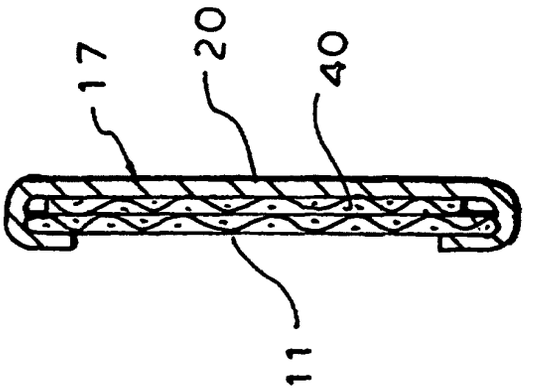
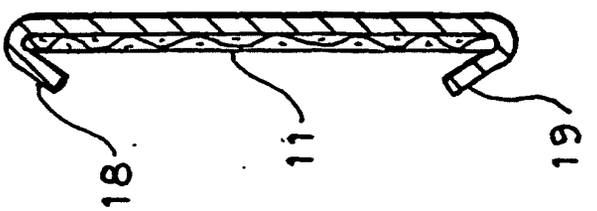


FIG.14



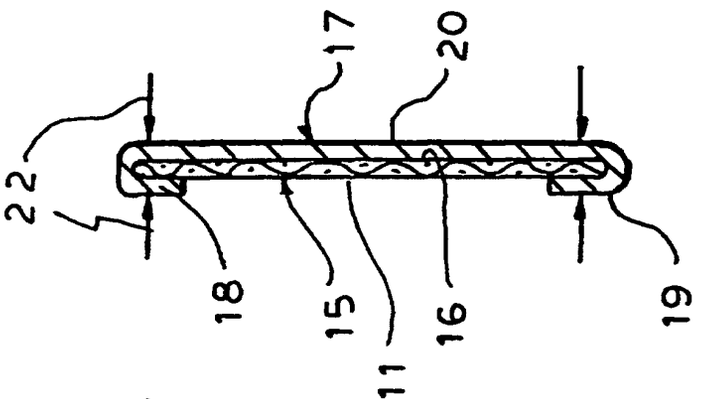
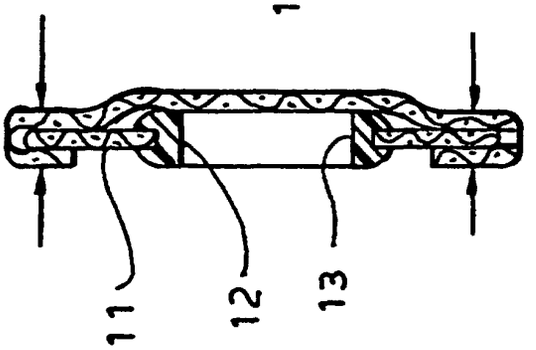


FIG.4

FIG.3



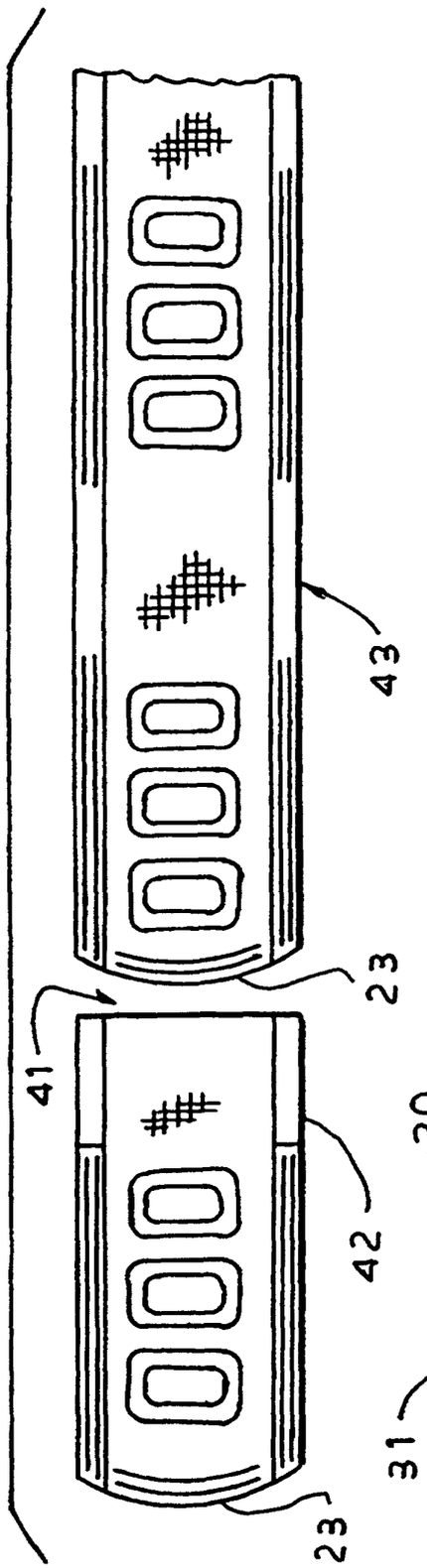


FIG.13

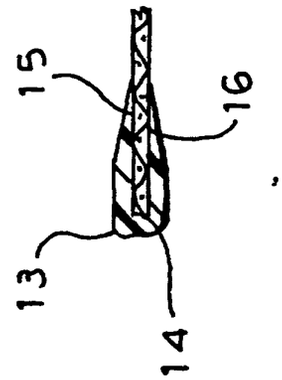


FIG.10

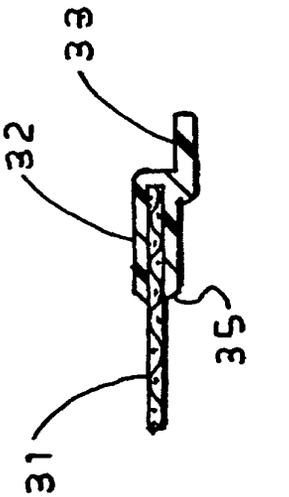


FIG.7

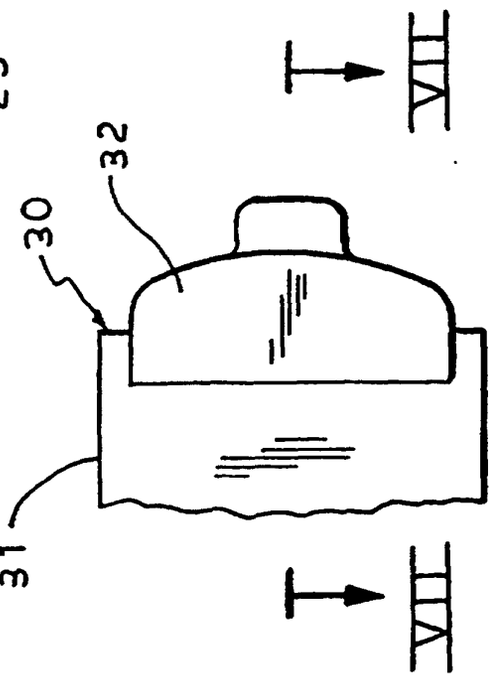


FIG.6

FIG.8

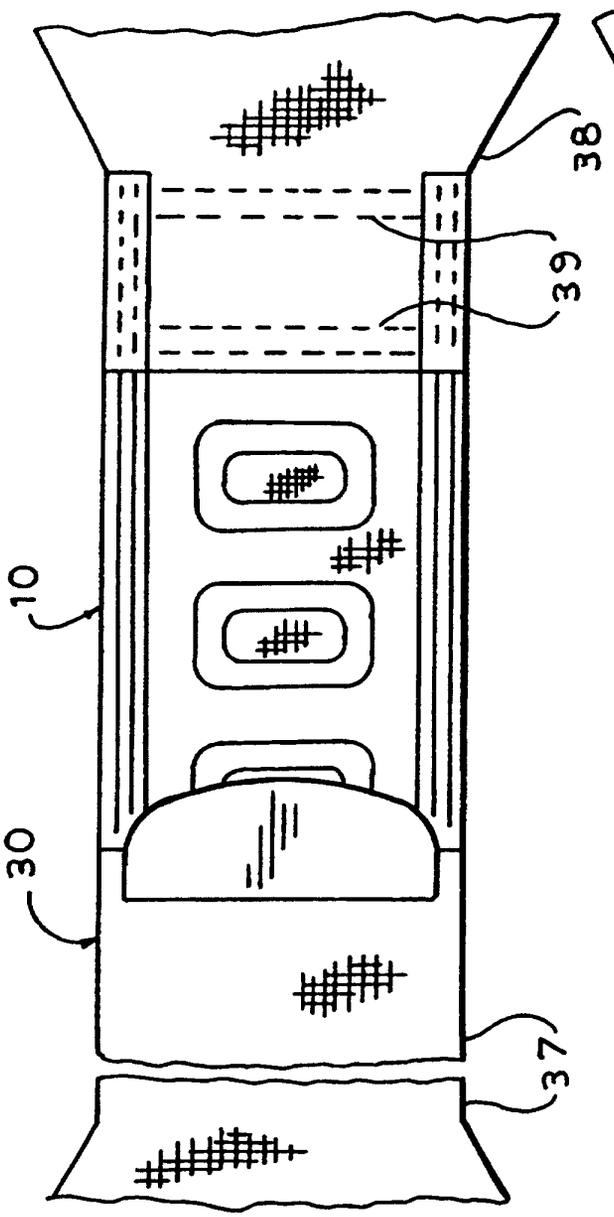


FIG.9

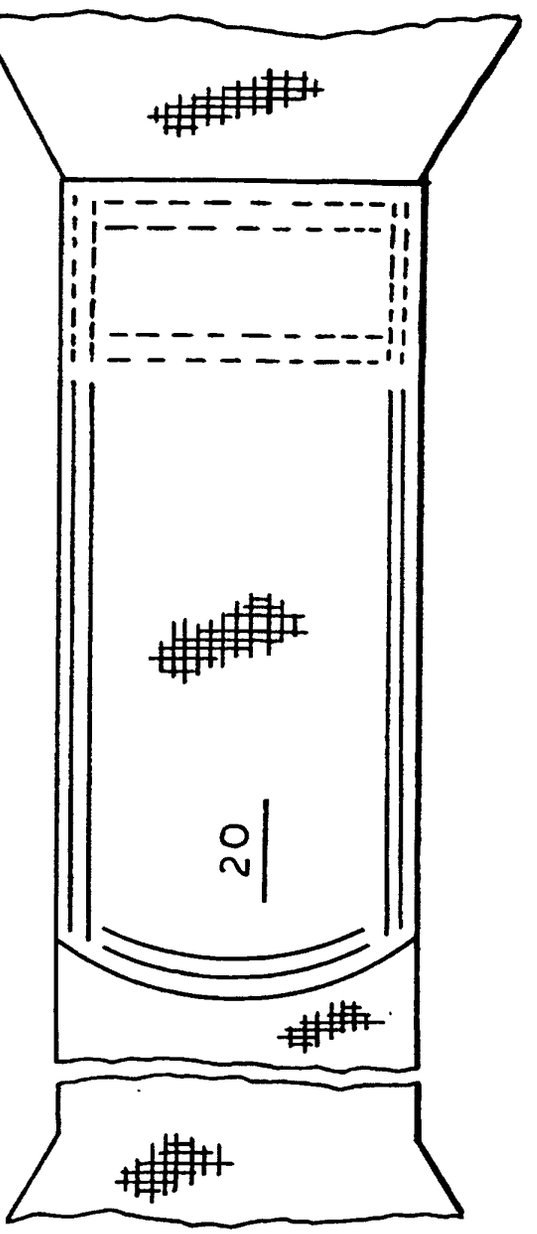


FIG.11

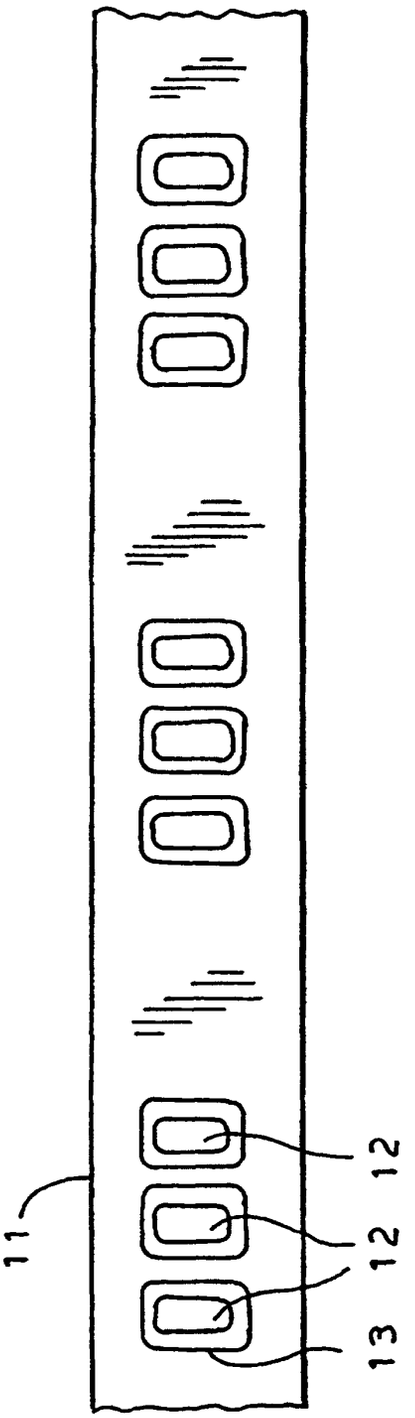


FIG.12

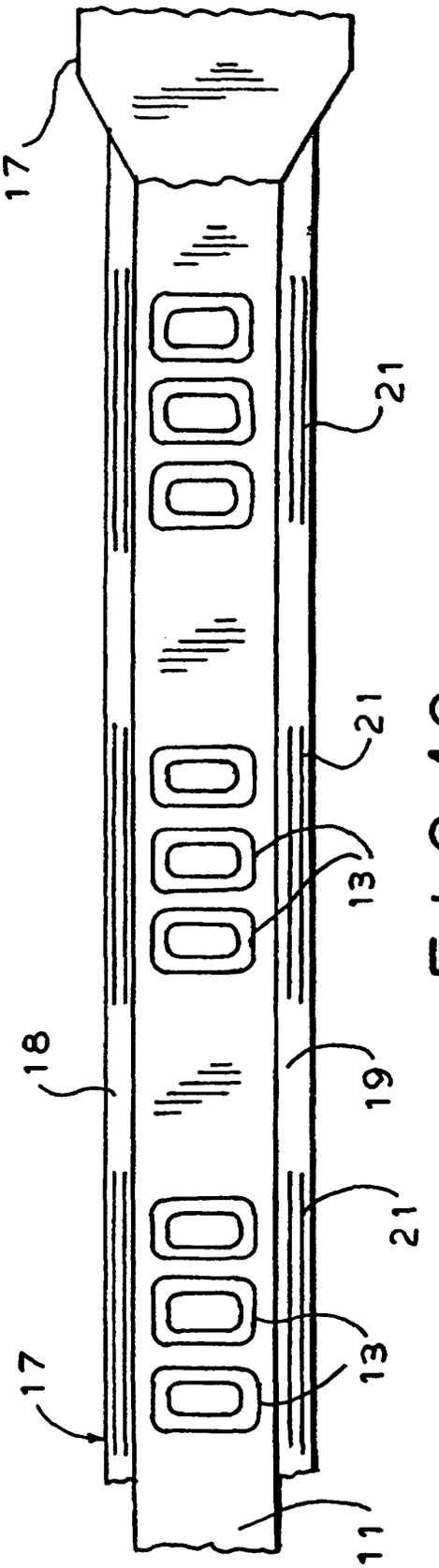


FIG.15

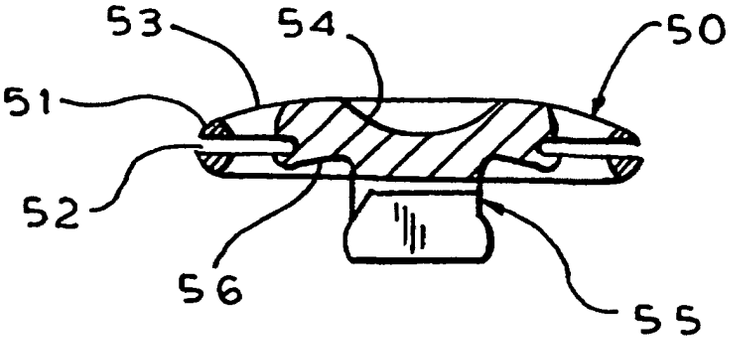


FIG.16

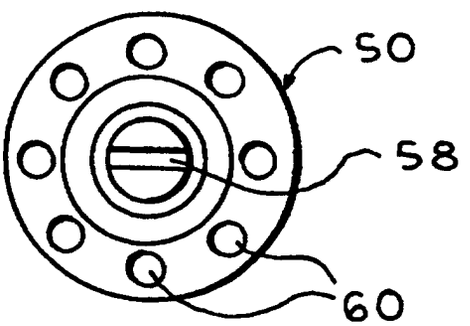
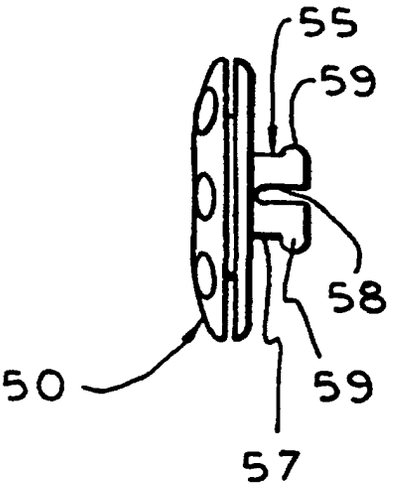


FIG.17



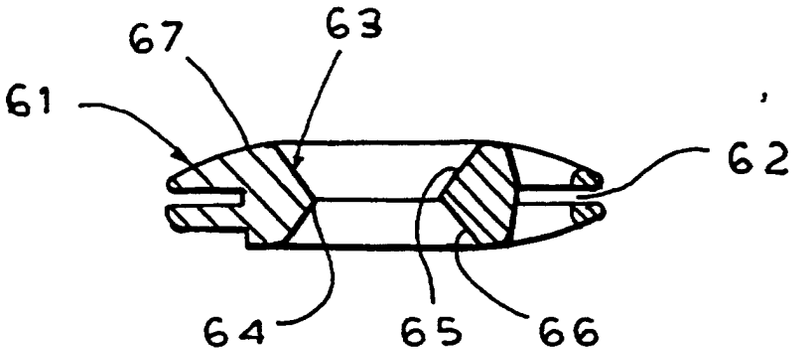


FIG.18

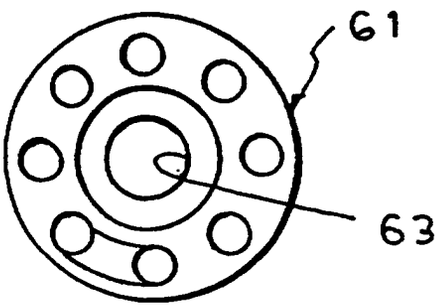


FIG.19

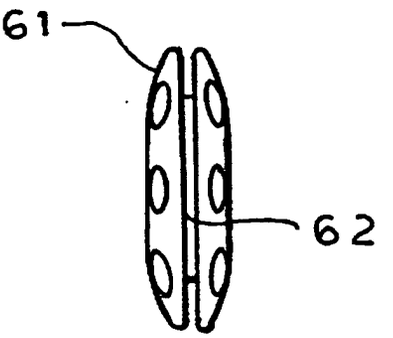


FIG.20

FIG.21

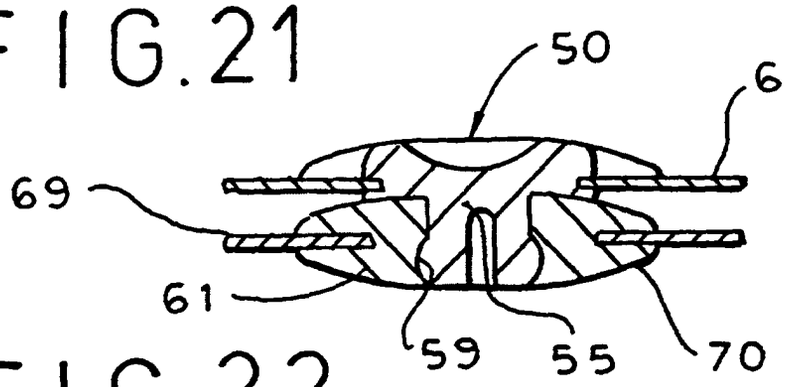


FIG.22

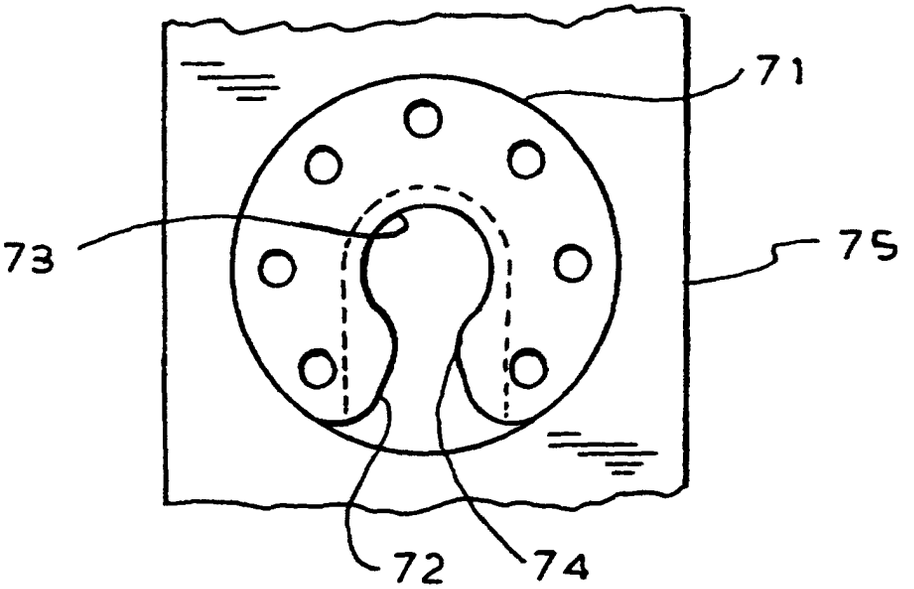


FIG.23

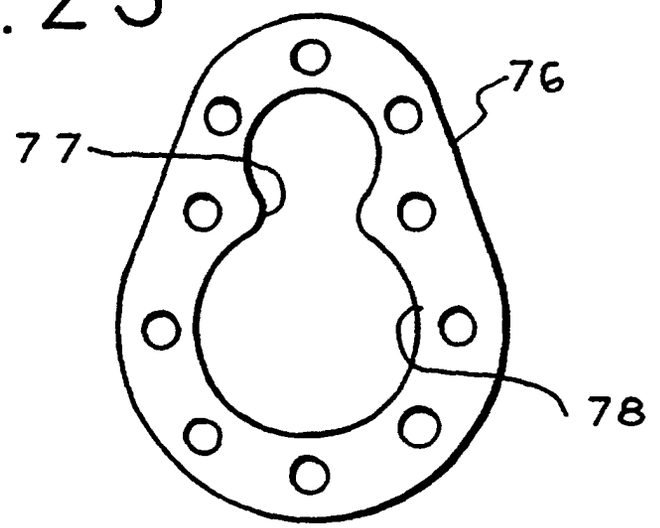


FIG.26

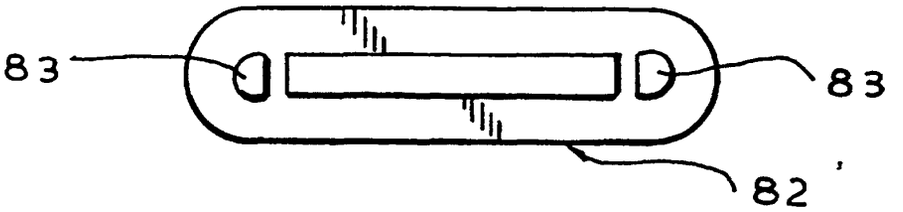


FIG.25

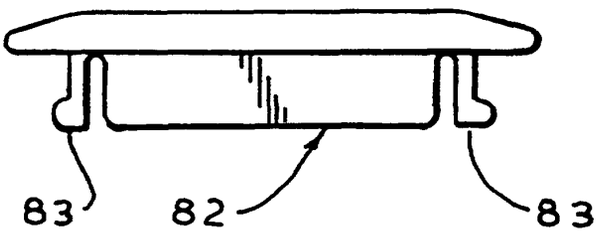
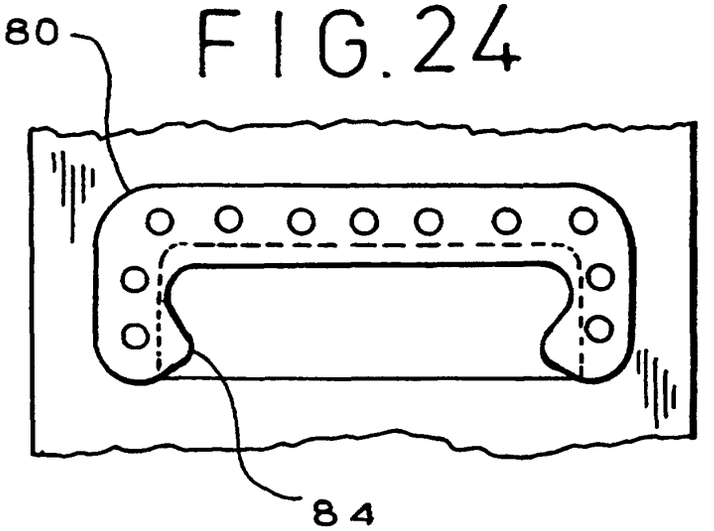


FIG.24



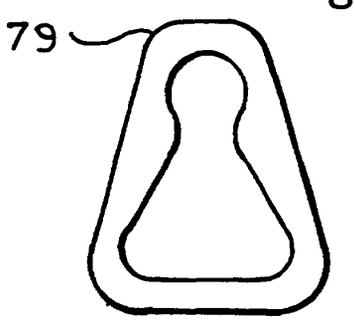


FIG.27

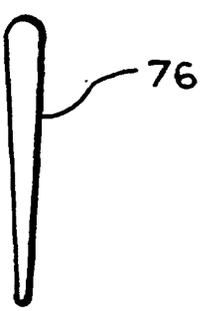


FIG.28

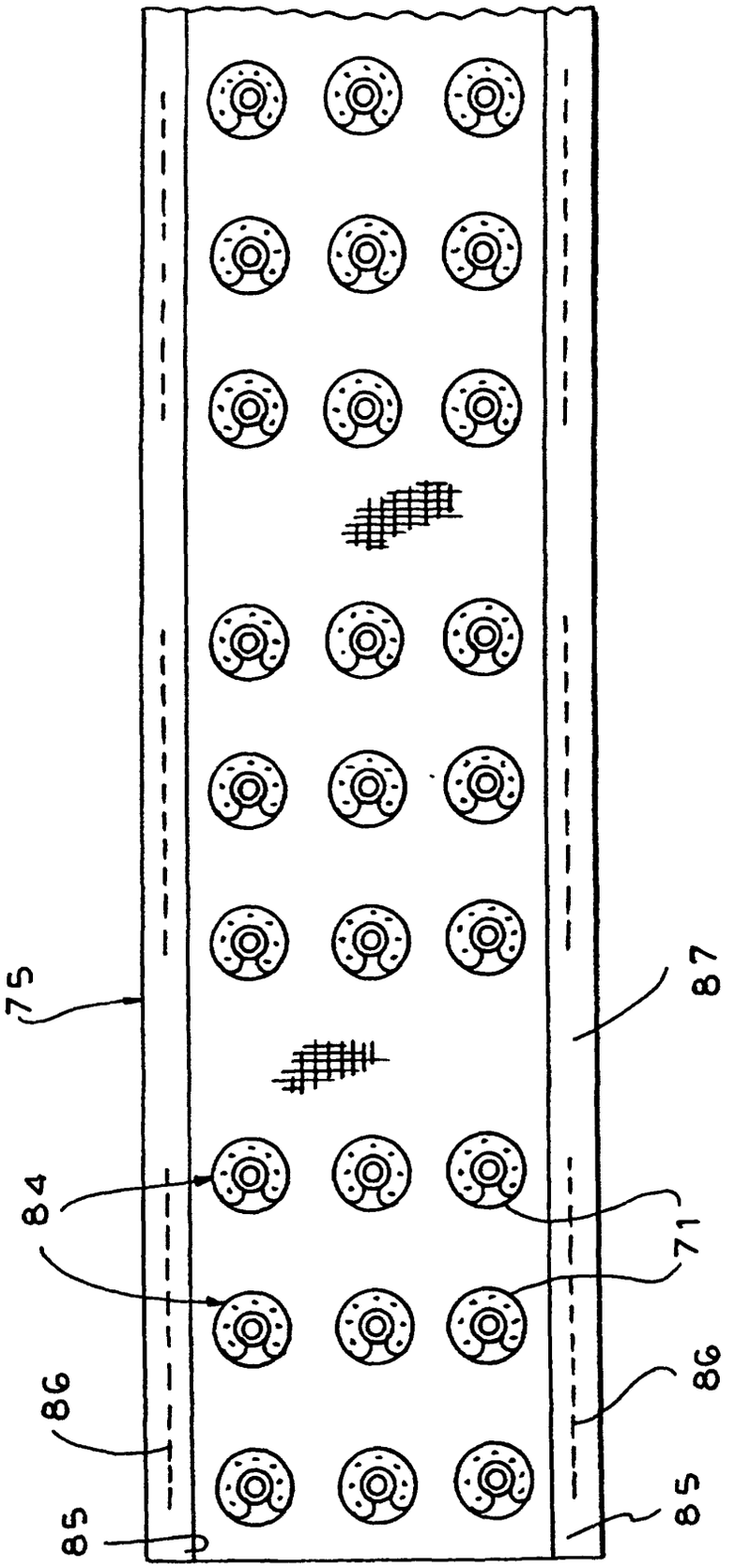


FIG.29

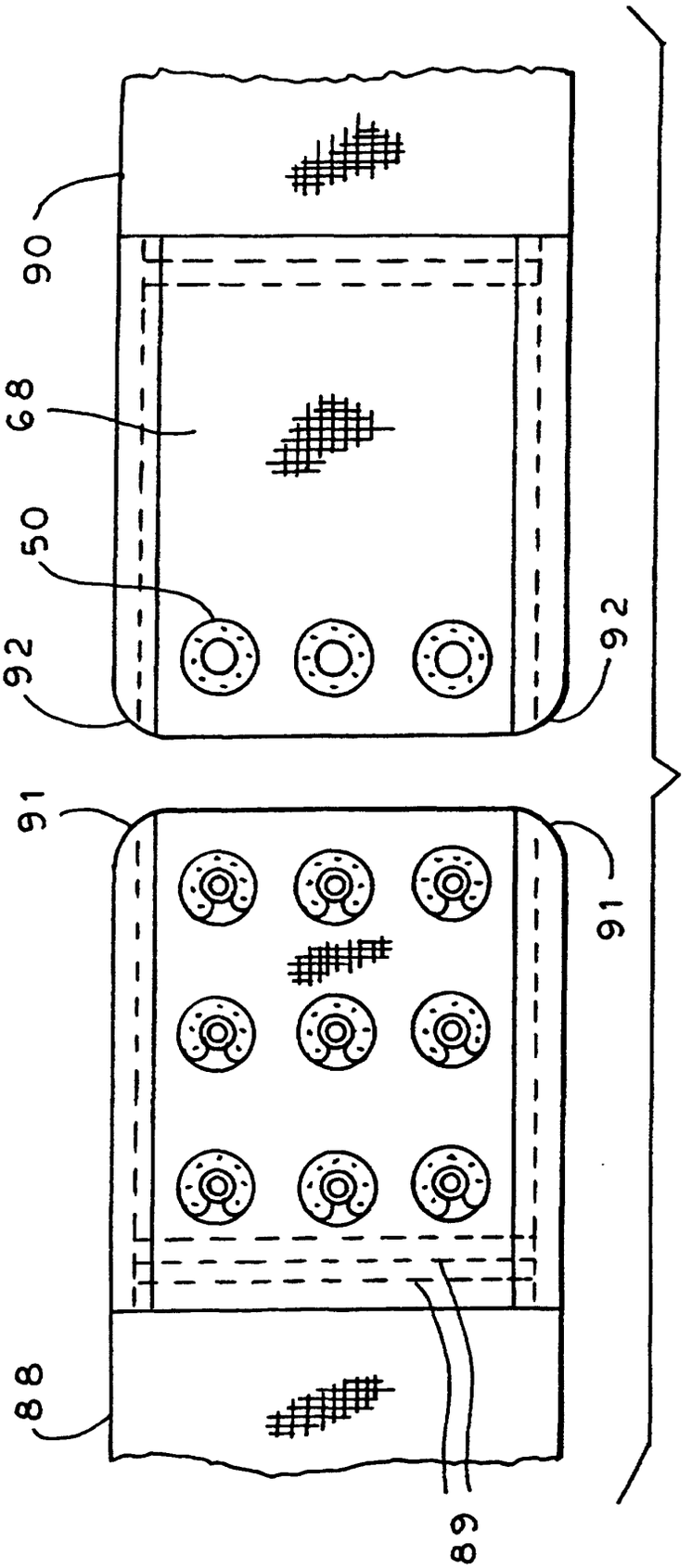


FIG. 30

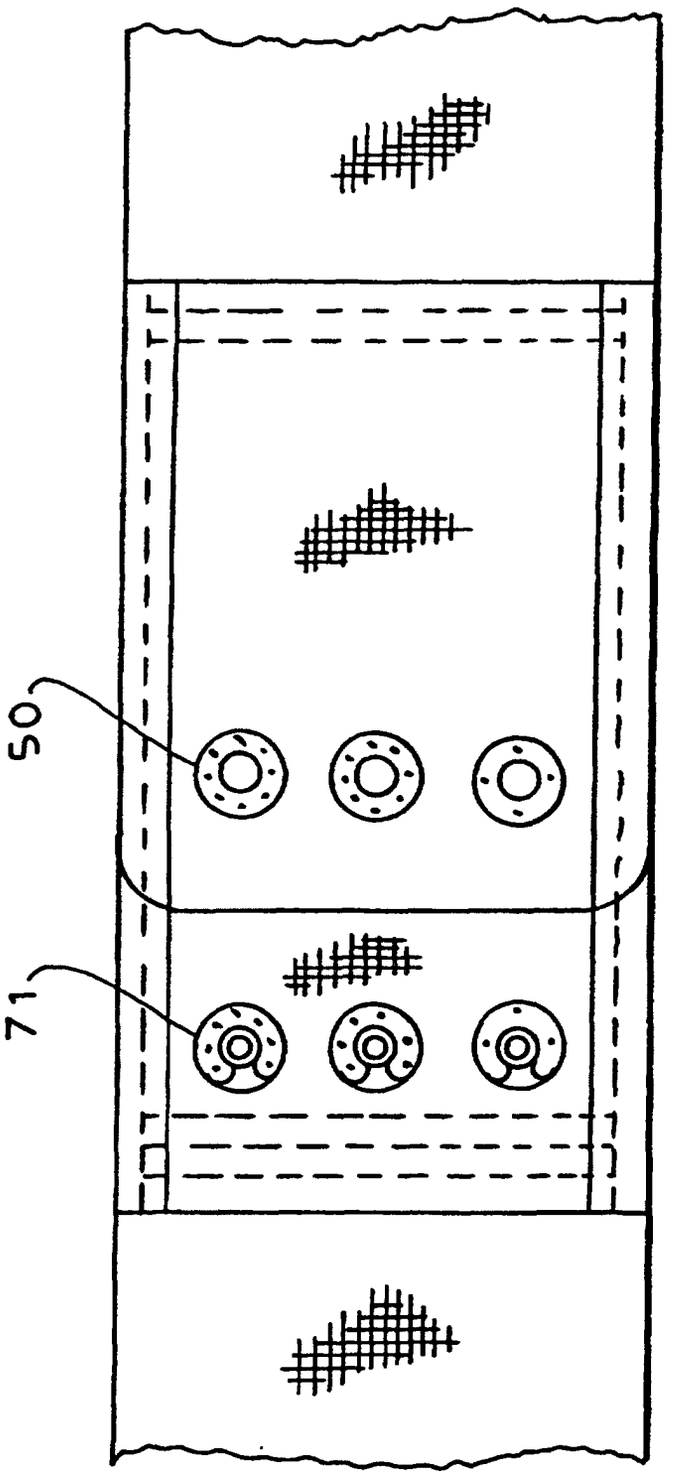


FIG. 31

FIG. 33

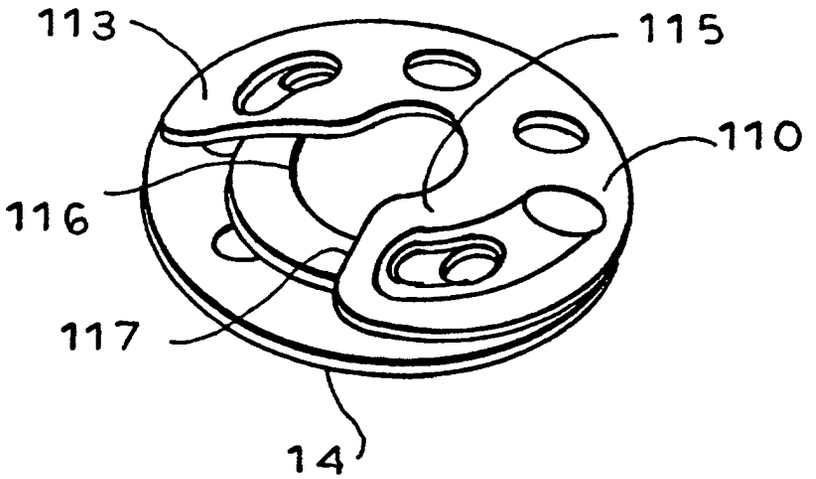


FIG. 34

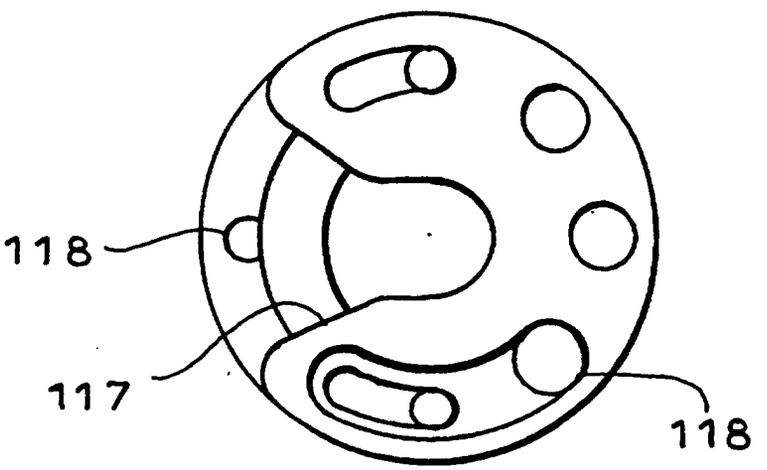


FIG. 35

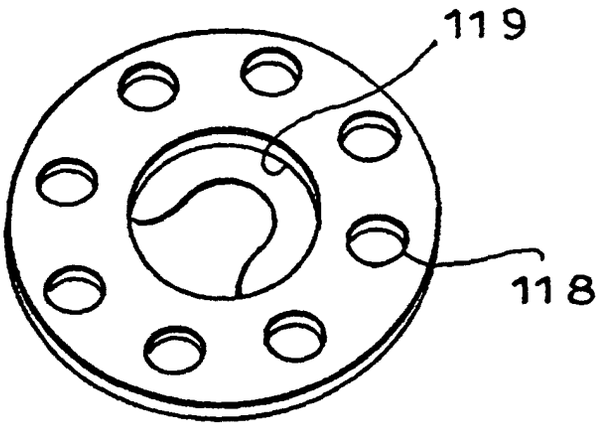
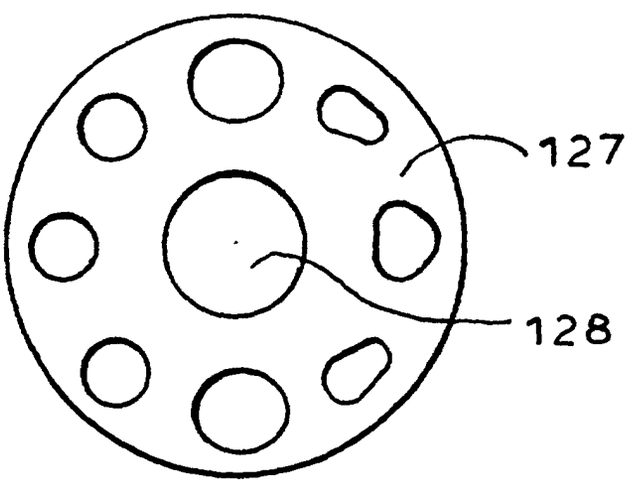


FIG. 38



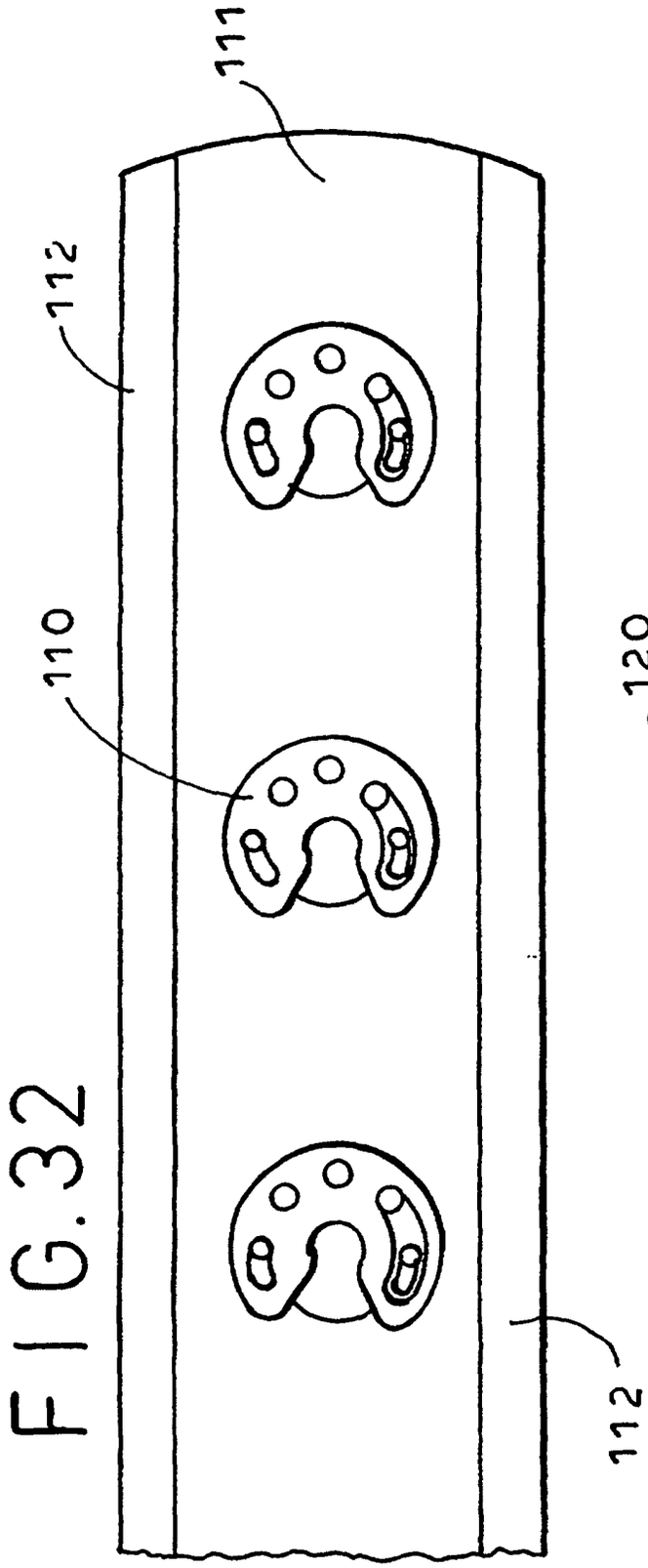


FIG.32

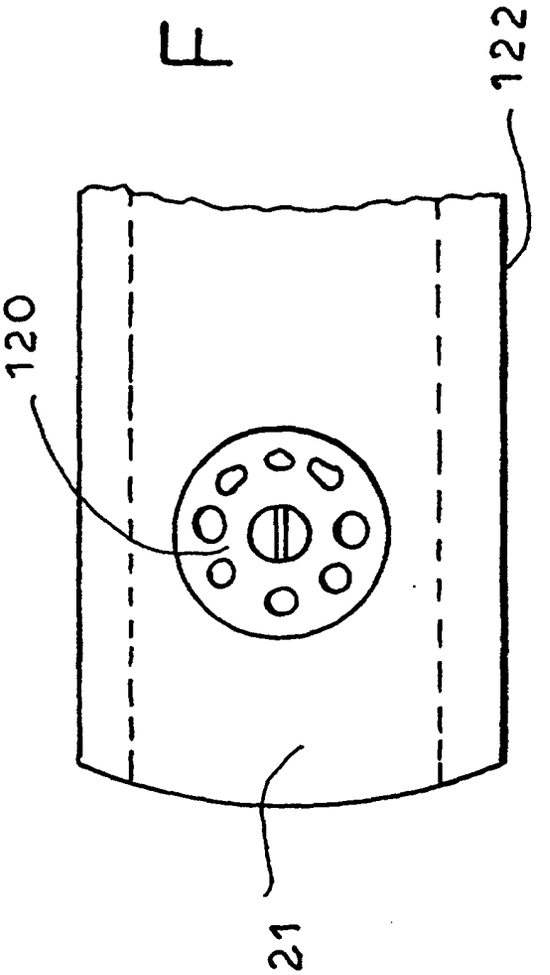


FIG.36

FIG.37

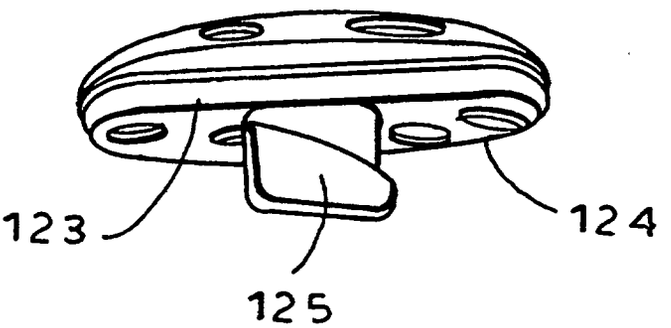


FIG.39

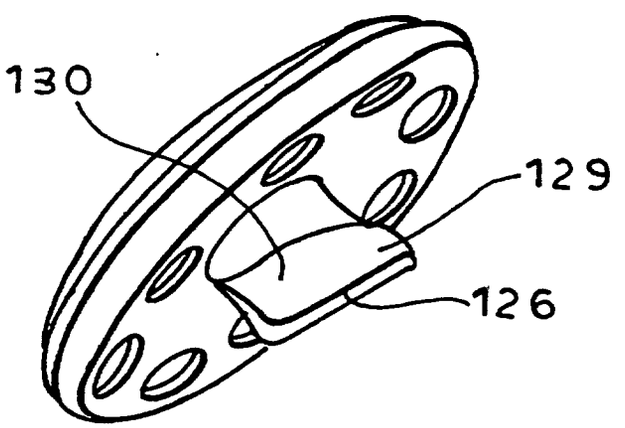


FIG.41

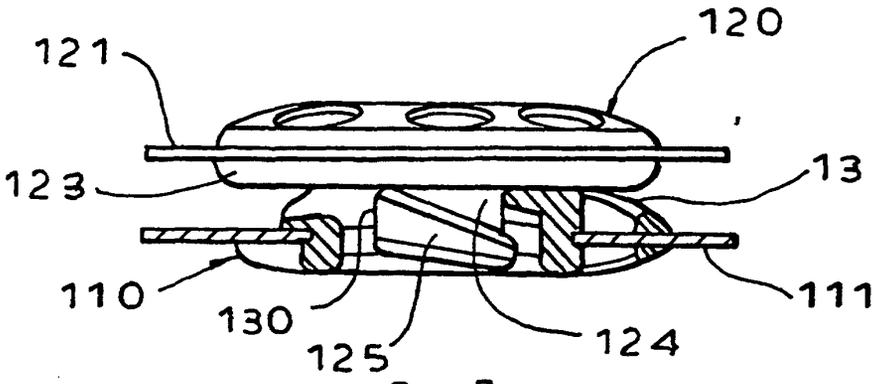


FIG.42

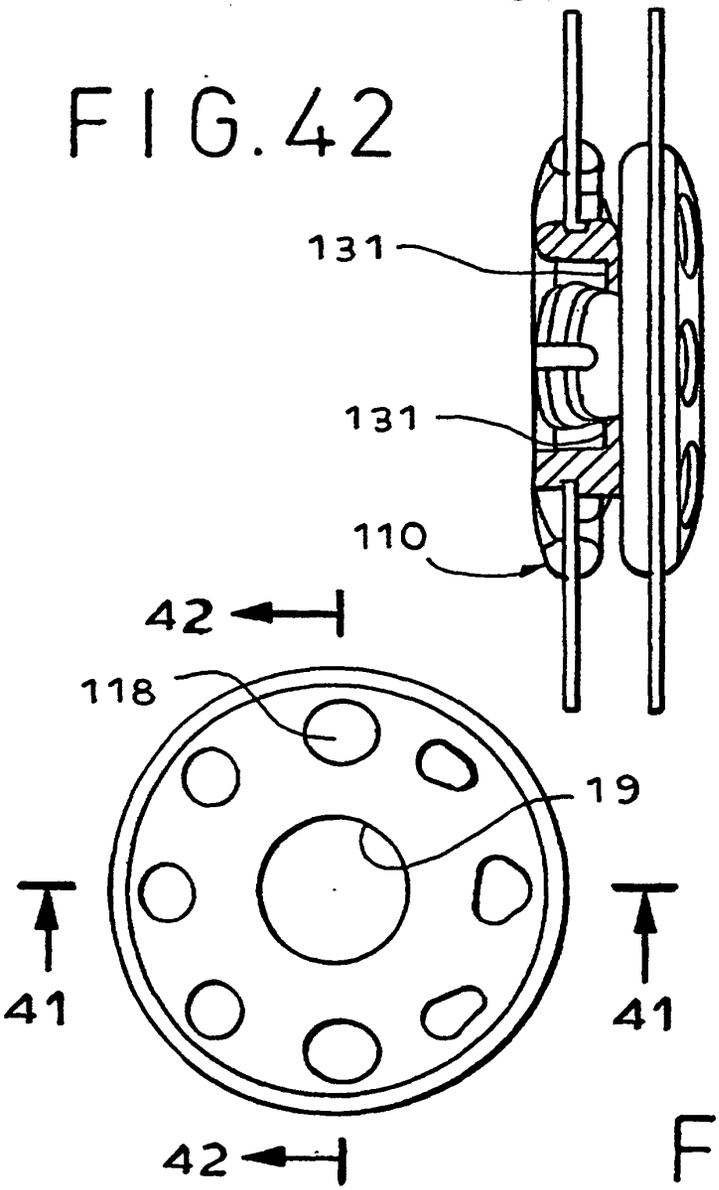


FIG.40

FIG. 47

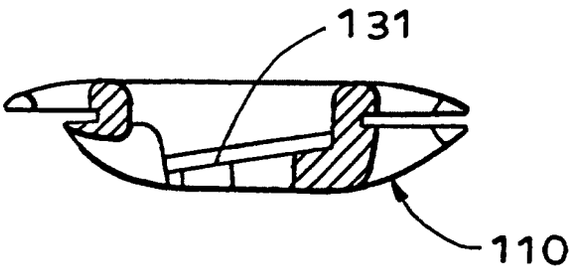


FIG. 45

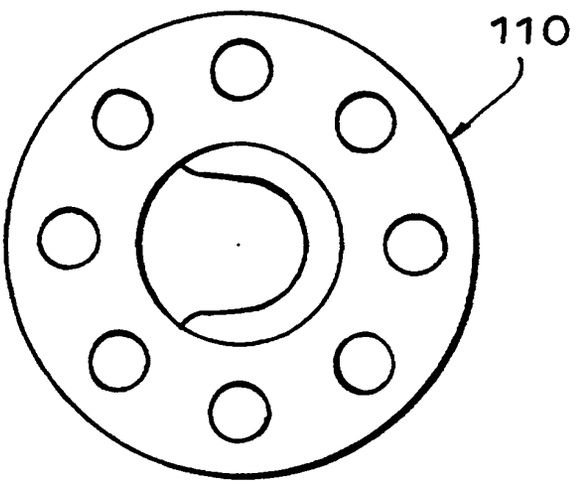


FIG. 43

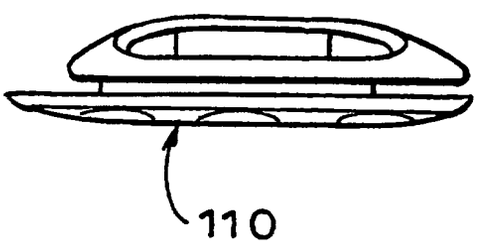


FIG. 50

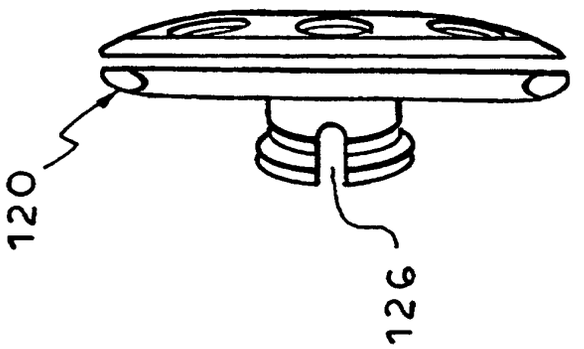


FIG. 46



FIG. 44

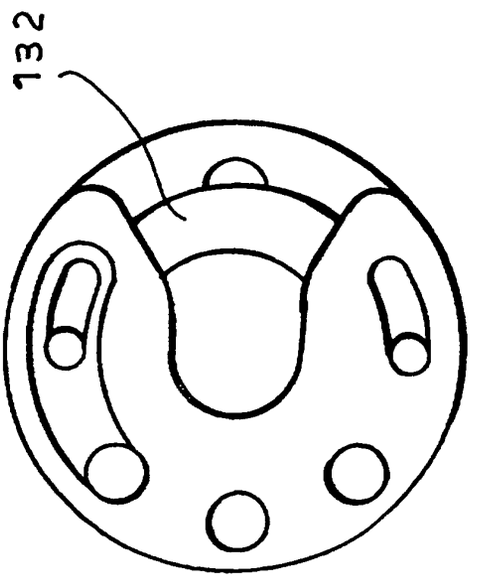


FIG.51

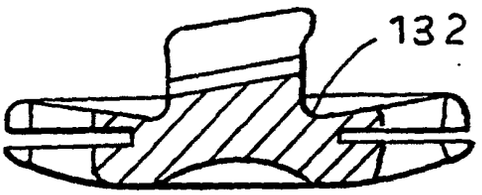


FIG.49

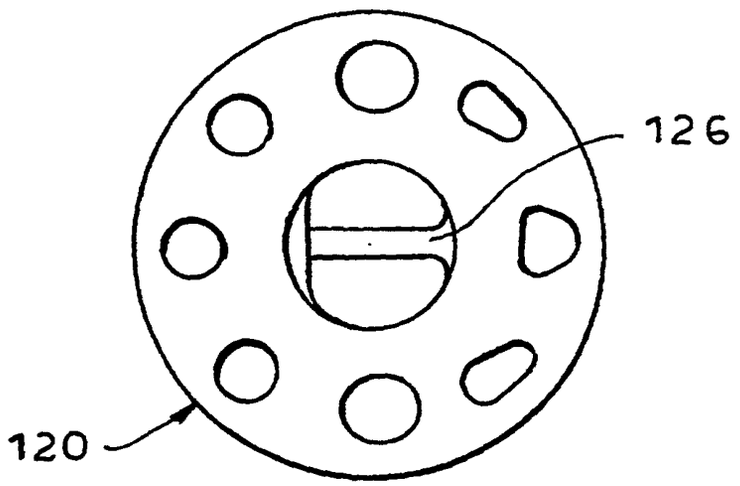


FIG.48

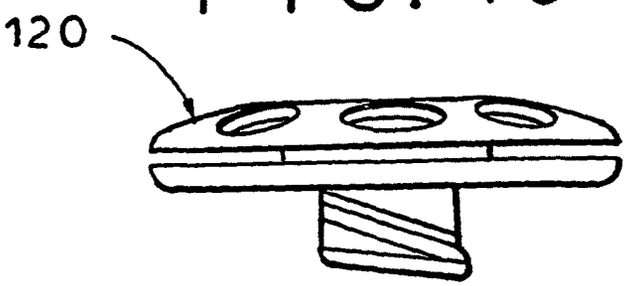


FIG.52

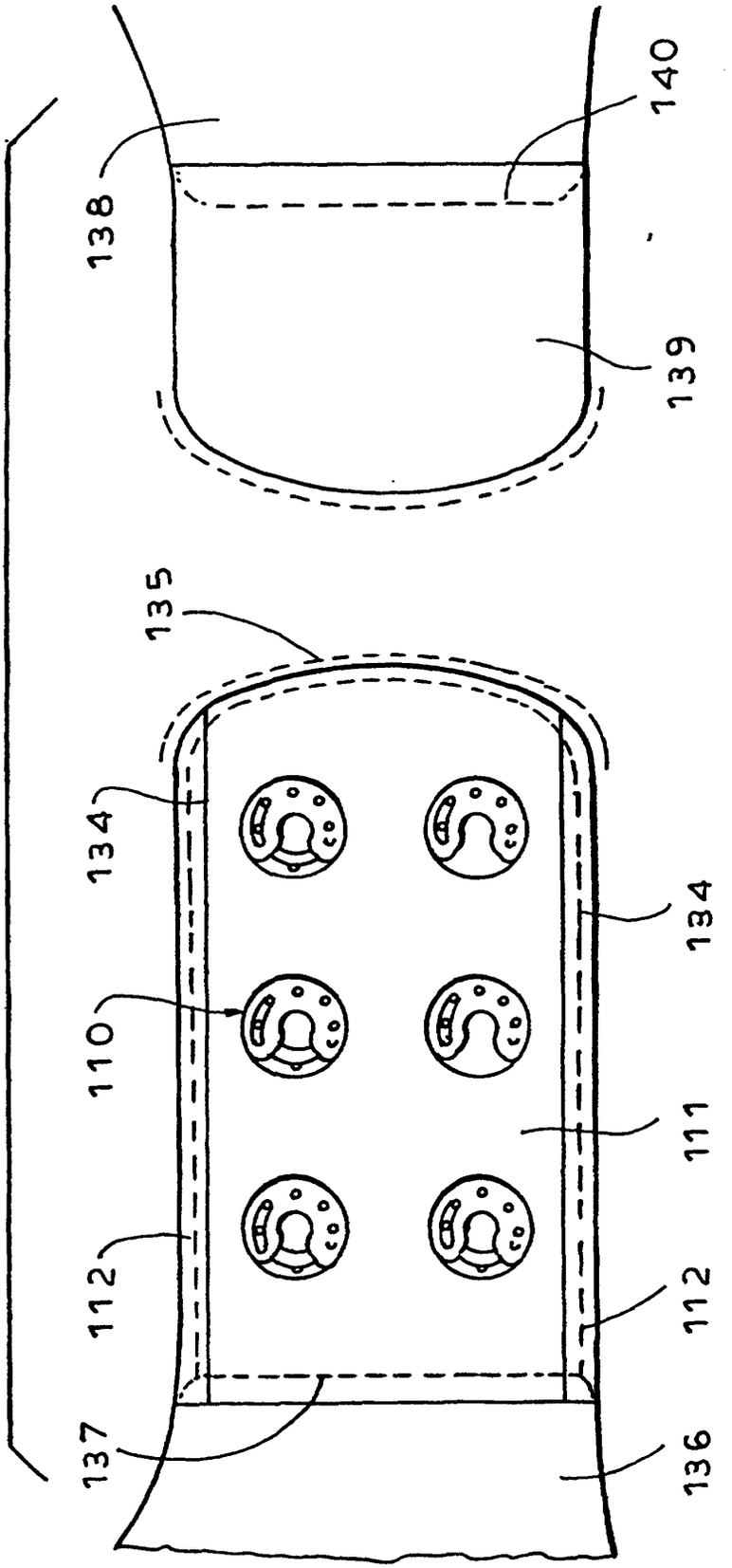
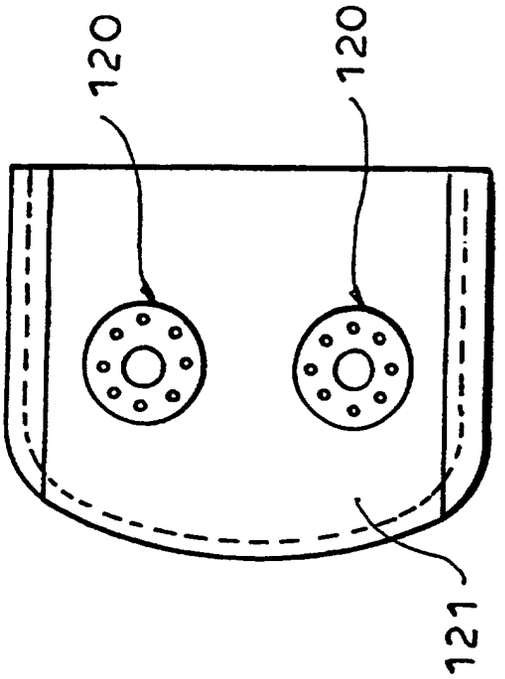


FIG.53



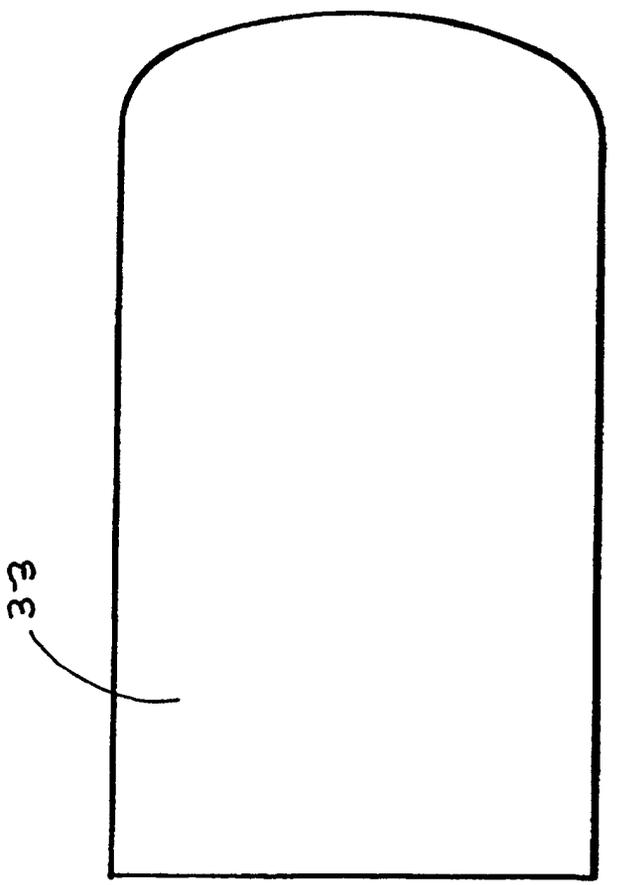
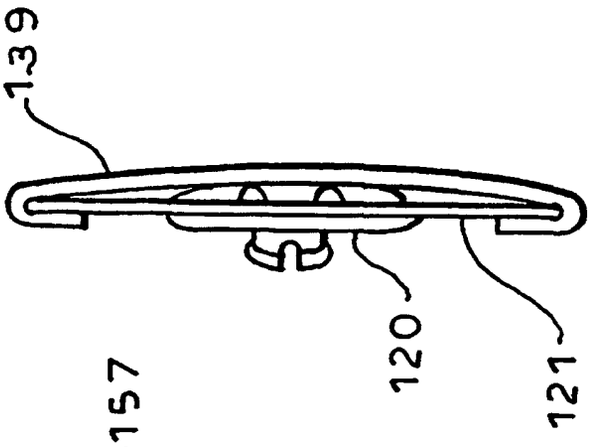


FIG.54

FIG.55



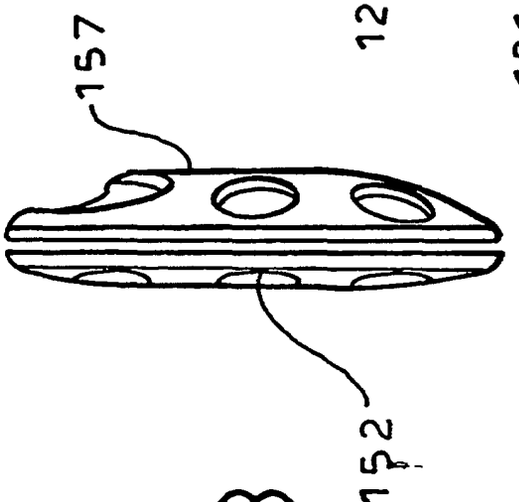


FIG.58

FIG.56

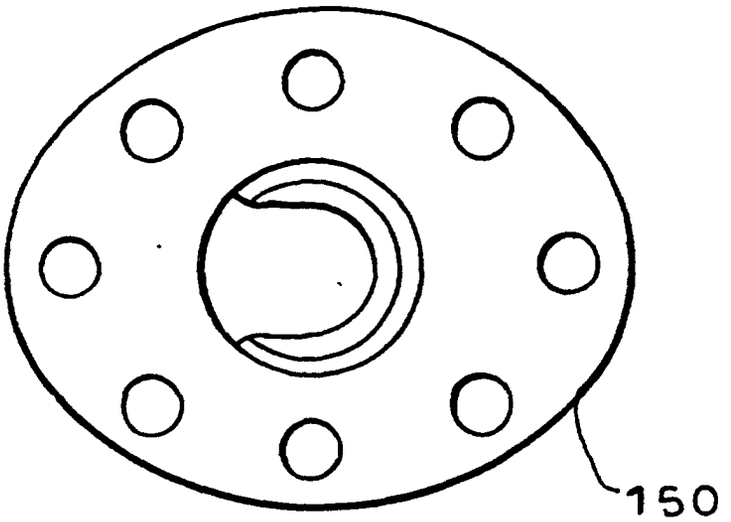


FIG.57

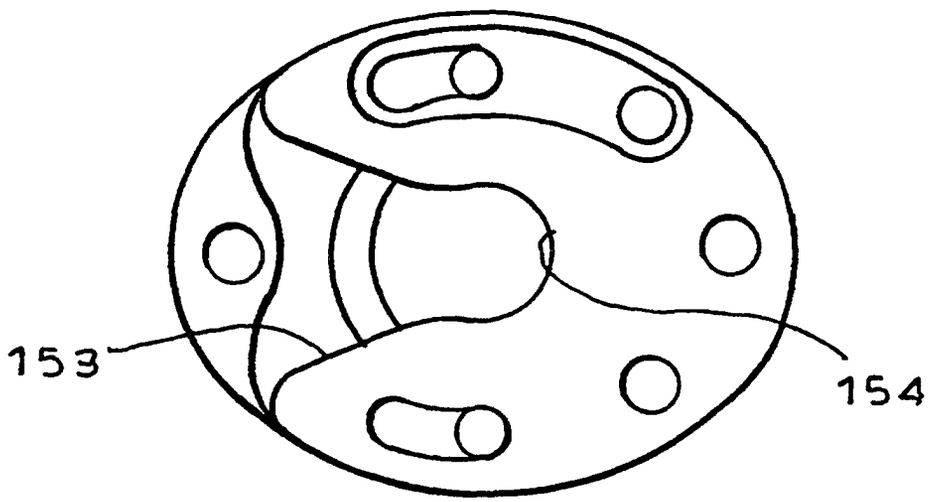
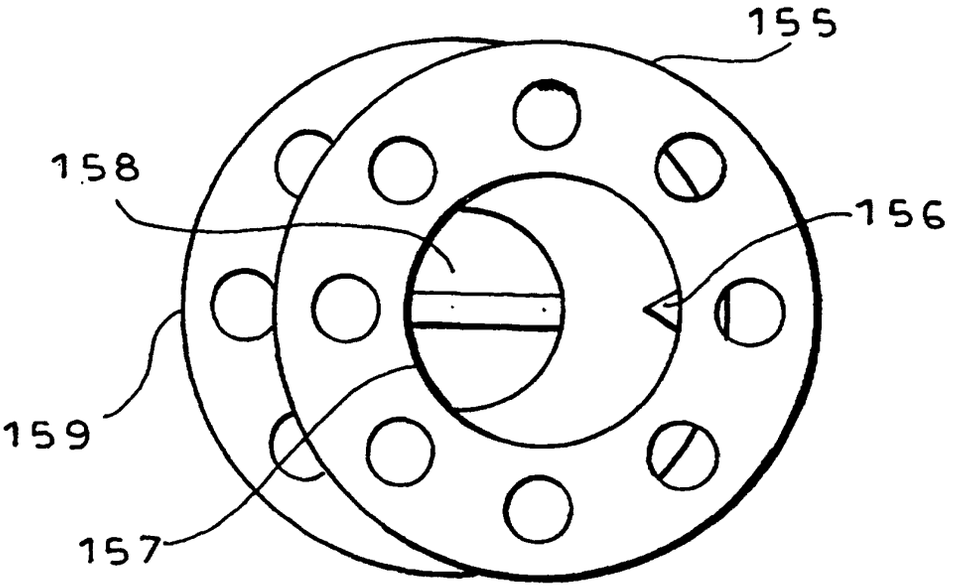


FIG.59



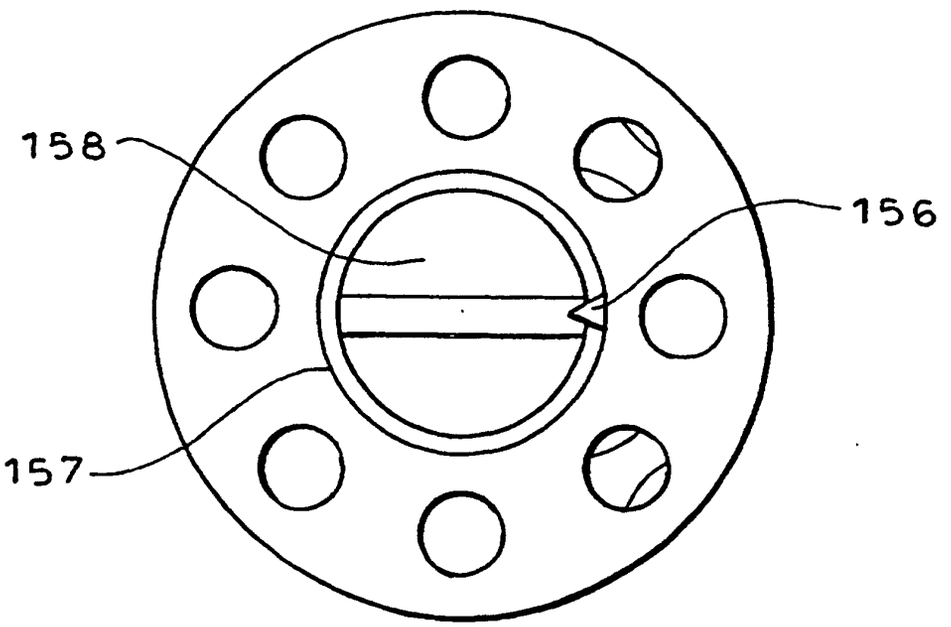


FIG.60

FIG.61

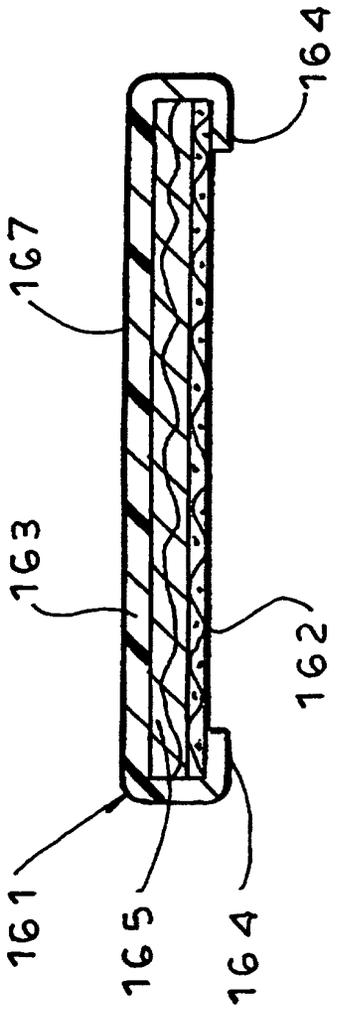


FIG.62

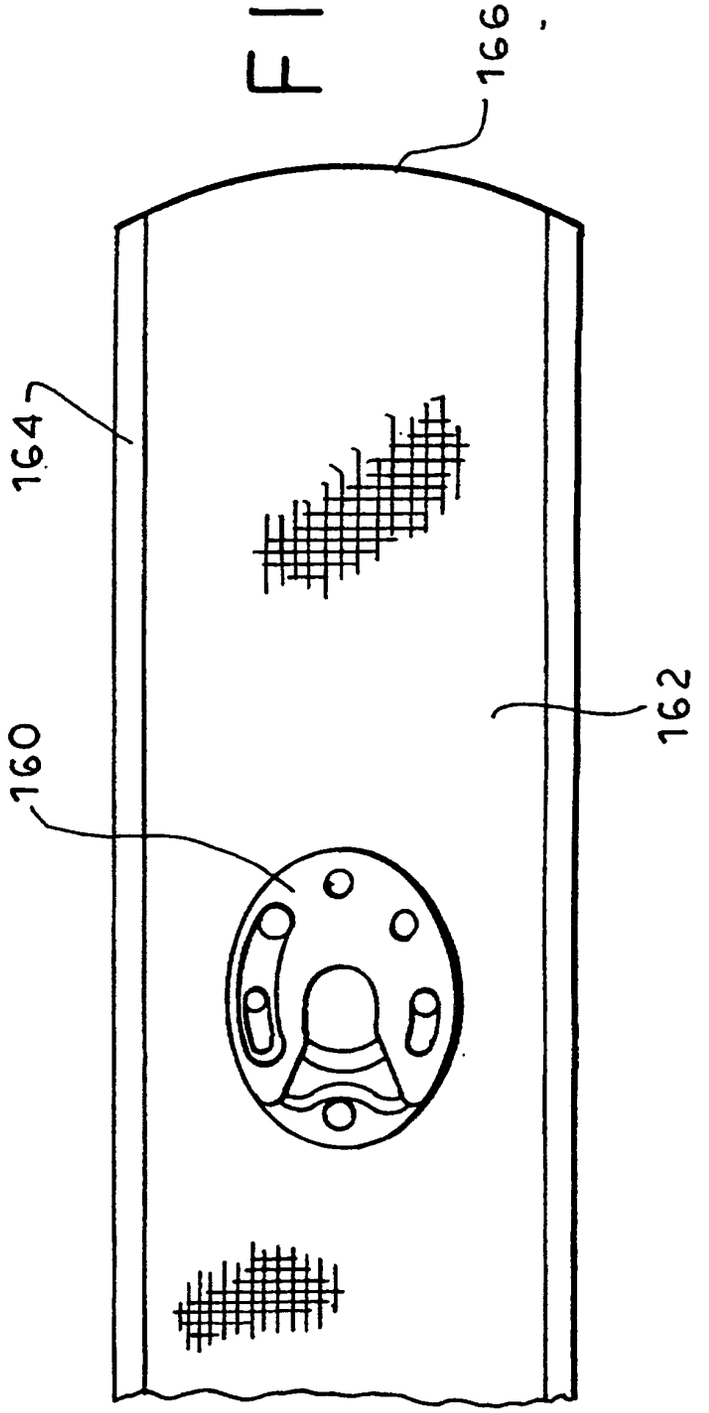


FIG.63

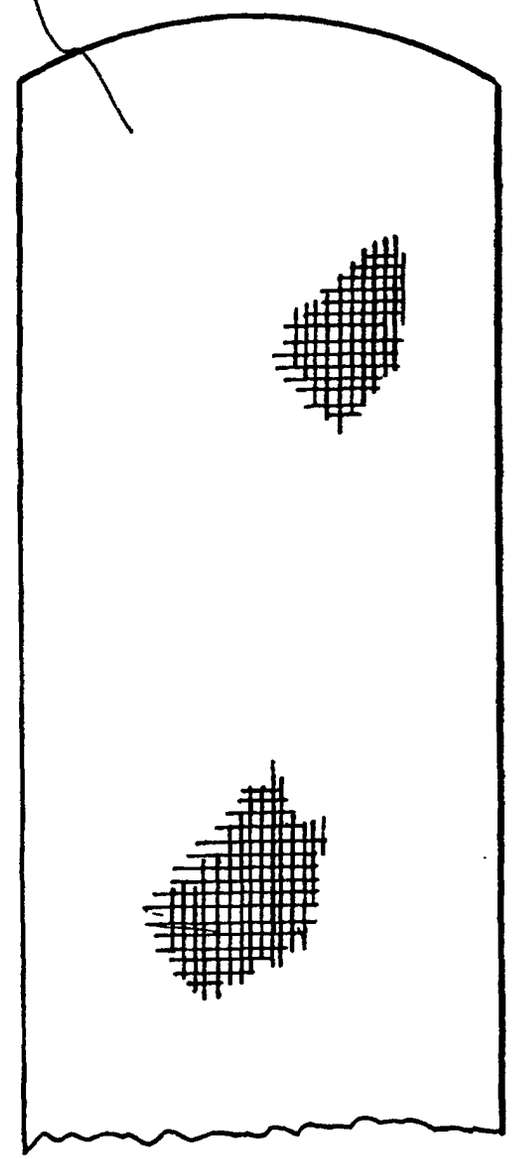


FIG.64

