

FLEXIBLE CONTAINER

ABSTRACT OF THE DISCLOSURE

[0060] A flexible container comprises a mesh material layer and a thermoplastic layer that forms a wall of the flexible container and is disposed external to the mesh material layer. A flexible handle is disposed external to the mesh material layer. The mesh material layer, the thermoplastic layer, and the flexible handle are joined by a set of stitching disposed therethrough.

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TITLE

FLEXIBLE CONTAINER

[0001] Blank.

[0002] Blank.

[0003] Blank.

FIELD OF THE INVENTION

[0004] The present invention relates generally to a container, and more particularly to a flexible container that has a flexible handle and attachment of the flexible handle to the container.

BACKGROUND OF THE INVENTION

[0005] A flexible container may be used to carry a variety of items, for example, clothes, books, blankets, groceries, and baby supplies. A typical flexible container may have one or more flexible handles, which may make the container easier to carry. Such flexible handles are made from paper, thermoplastic, burlap, and other materials.

[0006] One type of flexible container includes an open end and patches of reinforcing material, such as cardboard, adhesively attached to oppositely disposed gusseted sidewalls

proximate the open end. Hand apertures are disposed through each sidewall and the attached patch of reinforcing material. Each patch has a first line of slits disposed therethrough that extends along the entire length thereof and a second line of slits disposed therethrough that extends partially across a central portion of the patch. The first line of slits defines a first fold line in each patch for closing the container and the second line of slits defines a second fold line about which locking flaps can be folded such that the flaps fit through respective hand apertures. Folding the locking flaps through the hand apertures creates a reinforced handle for carrying the flexible container.

[0007] Another flexible container is manufactured from an extrudable heat sealable material and includes front and rear walls, a bottom wall, and gusseted side walls. A heat seal region joins the front and rear walls at a top portion thereof. A cut-out handle flap that is formed through the heat seal region is folded over to provide a handle. A further similar flexible container includes a front wall and a back wall made from a flaccid polymeric material such as a polyethylene film. Top portions of the front and back walls are joined by first and second lines of horizontal securement. A continuous curvilinear slit is disposed through the front and back walls between the first and second lines of horizontal securement. The slit is downwardly concave in a center portion thereof and upwardly concave on end portions thereof such that the slit forms two flaps that are folded to provide a handle.

[0008] Yet another flexible container includes a main tubular body portion and an extension thereto and is made of a flexible sheet material. A top edge of the main portion is folded inwardly over a strip of additional material to form a reinforced hem. The extension includes material in the form of a tube attached to an interior side of the reinforced hem. A strap handle also made from the same material as the main body portion and the extension is attached between the hem and the extension by a line of stitching that extends through the extension, the strap handle, and the reinforced hem.

[0009] A further flexible container is made of a heavy duty plainwoven fabric, such as a burlap weave. Lifting loops are made of the same plainwoven material as the flexible container and are longitudinally folded at least twice to form three layers that are stitched together to form lifting members. In one embodiment, lifting members are stitched inside a

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vertical hem that is formed by folding over an edge of a side panel of the flexible container. In another embodiment, lifting members are stitched between a horizontal hem that is formed by folding over a top edge of each side panel and a layer of webbing exterior to the hem.

[0010] A still further flexible container is made of a plastic sheet folded to form sidewalls. Each sidewall of the flexible container is folded inwardly along a fold line at a top edge of the flexible container to form a horizontal hem and a pair of slits is disposed through the fold line on each of two opposing sidewalls. Ends of strap handles are disposed through the pairs of slits and sandwiched between horizontal reinforcement straps disposed within each hem. Adhesive is applied between the strap handles, the reinforcing straps, and interior surfaces of the hem to secure the strap handles to the flexible container.

[0011] A common problem associated with flexible handles is a lack of lifting capacity, because the flexible handles have a tendency to fail under stress. For example, the flexible handles may rip apart, tear the flexible container at a point of attachment, or simply disengage from the flexible container. The use of burlap or other heavy material may inhibit failure, but also may add excessively to the cost of manufacture and may not be appropriate for use on mass-produced flexible containers made from paper or thermoplastic. There is a need for a flexible handle that is economical, has increased lifting capacity, and is applicable to mass-produced flexible containers.

SUMMARY OF THE INVENTION

[0012] According to one aspect of the invention, a flexible container comprises a mesh material layer and a thermoplastic layer that forms a wall of the flexible container and is disposed external to the mesh material layer. A flexible handle is disposed external to the mesh material layer. A reclosable fastener is provided for closing and opening to an interior of the flexible container. The mesh material layer, the thermoplastic layer, and the flexible handle are joined by a set of stitching disposed therethrough. The set of stitching is disposed proximate to a first edge of the mesh material layer, and the reclosable fastener is disposed along a second edge of the mesh material layer.

[0013] According to another aspect of the invention, a flexible container comprises a mesh material layer and a binding material layer disposed external to the mesh material layer. A thermoplastic layer that forms a wall of the flexible container is disposed external to the mesh material layer and a flexible handle is disposed external to the mesh material layer. A portion of the mesh material layer is positioned adjacent to a portion of the binding material layer, a portion of the binding material layer is positioned adjacent to a portion of the thermoplastic layer, and a portion of the thermoplastic layer is positioned adjacent to a portion of the flexible handle. A set of stitching passes through (i) the portion of the mesh material layer, (ii) the portion of the binding material layer, (iii) the portion of the thermoplastic layer, and (iv) the portion of the flexible handle, such that the portions are joined together.

[0014] According to yet another aspect of the present invention, a flexible container comprises a layer of flexible material, a first flexible handle layer disposed external to the layer of flexible material, a first thermoplastic layer disposed external to the first flexible handle layer, and a binding material layer disposed external to the first thermoplastic layer. The layer of flexible material, the first flexible handle layer, the first thermoplastic layer, and the binding material layer are joined by a first set of stitching disposed therethrough. The first flexible handle layer and the first thermoplastic layer are folded over the binding material layer to provide a second thermoplastic layer that forms a wall of the flexible container and is disposed external to the binding material layer and a second flexible handle layer that is disposed external to the second thermoplastic layer. The layer of flexible material, the first flexible handle layer, the first thermoplastic layer, the binding material layer, the second thermoplastic layer, and the second flexible handle layer are joined by a second set of stitching disposed therethrough.

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BRIEF DESCRIPTION OF THE DRAWINGS

- [0015] FIG. 1A is a top isometric view of a front side of a flexible container;
- [0016] FIG. 1B is a top isometric view of a rear side of the flexible container of FIG. 1A;
- [0017] FIG. 1C is a bottom isometric view of the front side of the flexible container of FIG. 1A;
- [0018] FIG. 1D is a top isometric view of the flexible container of FIG. 1A in a collapsed state;
- [0019] FIG. 1E is a top isometric view of the flexible container of FIG. 1A in an open state;
- [0020] FIG. 2 is a fragmentary cross-sectional view taken generally along the lines 2-2 of FIG. 1 depicting a first attachment for connecting a flexible handle to the container of FIGS. 1A-1E;

[0021] FIG. 2A is a fragmentary cross-sectional view taken generally along the lines 2A-2A of FIG. 2 depicting a method for stitching layers of material together;

[0022] FIG. 3A is a fragmentary cross-sectional view taken generally along the lines 2-2 of FIG. 1 of a second attachment for connecting a flexible handle to the container of FIGS. 1A-1E;

[0023] FIG. 3B is a fragmentary cross-sectional view taken generally along the lines 2-2 of FIG. 1 showing a third attachment for connecting a flexible handle to the container of FIGS. 1A-1E;

[0024] FIG. 4A is a fragmentary cross-sectional view taken generally along the lines 2-2 of FIG. 1 illustrating a fourth attachment for connecting a flexible handle to the container of FIGS. 1A-1E;

[0025] FIG. 4B is a fragmentary cross-sectional view taken generally along the lines 2-2 of FIG. 1 depicting a fifth attachment for connecting a flexible handle to the container of FIGS. 1A-1E;

[0026] FIGS. 5A-5D illustrate a first method of folding a sheet of thermoplastic material to form a flexible handle;

[0027] FIGS. 6A-6E illustrate a second method of folding a sheet of thermoplastic material to form a flexible handle;

[0028] FIGS. 7A-7C illustrate a method of layering multiple sheets of thermoplastic material to form a flexible handle; and

[0029] FIG. 8 is plan view of a flexible handle that includes a visible indicium and is attached to the flexible container of FIGS. 1A-1E.

[0030] Other aspects and advantages of the present disclosure will become apparent upon consideration of the following detailed description, wherein similar structures have the same reference numerals throughout.

DETAILED DESCRIPTION

[0031] The present invention is directed to a flexible container that has a flexible handle attached thereto. While specific embodiments are discussed herein, it is understood that the present disclosure is to be considered only as an exemplification of the principles of the present invention. Therefore, the present disclosure is not intended to limit the invention to the embodiments illustrated.

[0032] A flexible container 100 having six panels is illustrated in FIGS. 1A-1E. The panels include first, second, third and fourth side walls 102, 104, 106, 108, a bottom panel 110 and a top panel or cover 112. The cover 112 is permanently attached to one of the walls, for example, the fourth wall 108 and encloses an interior 111 of the container 100, as shown in FIG. 1E. Three outer edges 113a-113c of the cover 112 include first elements 114a-114c of a reclosable fastener 115. A continuous mesh material layer 116 is attached to each of the first, second, and third walls 102, 104, 106 along a first or bottom end 117a-117c, respectively, of the mesh material layer 116, wherein such attachment will be described in greater detail hereinafter. Second or top ends 119a-119c of the mesh material layer 116 include second elements 121a-121c, respectively, of the reclosable fastener 115. The first and second elements 114a-114c, 121a-121c of the reclosable fastener 115 join together to close the flexible container 100 and the mesh material layer 116 provides ventilation for the flexible container 100 when closed. Two closure elements 122a, 122b are disposed on the first and second elements 114a-114c, 121a-121c of the reclosable fastener 115 to open and close same, wherein the two closure elements 122a, 122b allow the reclosable fastener 115 to be closed at any point. Optionally, only one closure element 123 may be utilized, as shown in FIG. 1C.

[0033] Each of the panels is made of a flexible material, for example a thermoplastic film. Optionally, the panels may be made of any other flexible material, such as a woven material, fabric, or any other flexible material known in the art. Each of the panels may be formed of independent sheets of material that are joined to one another at edges thereof or may be formed integrally of a single sheet of material folded to form two or more of the other

panels. In one embodiment, the cover 112 is integral with the bottom panel 110 via the fourth wall 108 and the first wall 102 is integral with the third wall 106 via the second wall 104. Any of the panels may be joined together by heat sealing, stitching, adhesive, or by any other means known to one having skill in the art. The mesh material layer 116 is made from criss-crossed woven strands, for example strands of vinyl, string, wire, or other flexible stranded material known to one having skill in the art. In addition, the mesh material layer 116 may be replaced by a layer of flexible material that does not include a mesh structure. A container including such a layer of flexible material lacks the ventilation provided by the mesh material layer 116. The reclosable fastener 115 may be a zipper, a hook and loop type fastener, a continuous tongue and groove type fastener, or other type of fastener as known to one having skill in the art.

[0034] In the flexible container 100 illustrated in FIGS. 1A-1C, flexible handles 118a, 118b are attached to the first and third walls 102, 106, respectively. Each of the flexible handles 118a, 118b includes an aperture 120a, 120b disposed therethrough and is made of a flexible material, for example, a textile, rubber, wire mesh, a thermoplastic film, or other material that is known to one having skill in the art. Although two flexible handles 118a, 118b are depicted, any number of flexible handles 118a, 118b may be utilized. Also, the flexible handles 118a, 118b may be attached to any of the walls 102, 104, 106, 108, as described in greater detail hereinafter.

[0035] In other embodiments (not shown), the flexible container may be formed of any number of side walls with or without a bottom panel and/or cover, a cylindrical wall with a circular bottom panel and cover, and/or side walls forming any polygonal shape. A flexible handle may be attached to one or more walls, for example, by stitching, adhesive, thermoplastic welding, or other method of attachment as known to one having skill in the art. Further, a cover may be permanently attached to any wall or removably attached to one or more walls, for example, via a reclosable fastener.

[0036] FIG. 2 illustrates an attachment for connecting the flexible handle 118a to the wall 102, for example, which is made of a thermoplastic layer of film. At a point of attachment 125 of the handle 118a to the wall 102, the bottom end 117a of the mesh material layer 116 is

disposed internal to and adjacent a top end 127 of the wall 102 and a first end 129 of the flexible handle 118a is disposed external to and adjacent the top end 127 of the wall 102. The bottom end 117a of the mesh material layer 116, the top end 127 of the wall 102, and the first end 129 of the flexible handle 118a are joined by stitching 131 disposed therethrough. The stitching 131 preferably extends across an entire connecting edge 132 of the handle 118a, as shown in the FIGS. 1A-1C and 1E, and may include string, wire, stranded vinyl, other flexible stranded material as known to one having skill in the art, or combinations thereof. The stitching 131 is preferably a single line of lock stitching that uses two pieces of flexible stranded material 133a, 133b that loop over one another at points 133c, as illustrated in FIG. 2A. Alternatively, the stitching 131 may be any type of stitching as known in the art.

[0037] FIG. 3A illustrates a further attachment for connecting the flexible handle 118a to the wall 102. At the point of attachment 125, the bottom end 117a of the mesh material layer 116 is disposed internal to and adjacent a first binding material layer 124. The binding material may be, for example, fabric, canvas, polyester, polyethylene, or other material. The top end 127 of the wall 102 is disposed external to and adjacent the binding material layer 124 and the first end 129 of the flexible handle 118a is disposed external to and adjacent the top end 127 of the wall 102. The bottom end 117a of the mesh material layer 116, the binding material layer 124, the top end 127 of the wall 102, and the first end 129 of the flexible handle 118a are joined by the stitching 131 disposed therethrough.

[0038] A further attachment is illustrated in FIG. 3B that is similar to the attachment described hereinabove with respect to FIG. 3A except for the following differences. A second binding material layer 128 is disposed internal to and adjacent the bottom end 117a of the mesh material layer 116. The first and second binding material layers 124, 128 may be two independent pieces of material or may be a unitary piece of material folded over the bottom end 117a of the mesh material layer 116, as illustrated in FIG. 3B. The second binding material layer 128, the bottom end 117a of the mesh material layer 116, the first binding material layer 124, the top end 127 of the wall 102, and the first end 129 of the flexible handle 118a are joined by the stitching 131 disposed therethrough.

[0039] In a further attachment for connecting the flexible handle 118a to the wall 102, illustrated in FIG. 4A, the bottom end 117a of the mesh material layer 116 is disposed internal to and adjacent a first flexible handle layer 218, which is formed by the first end 129 of the flexible handle 118a. A first thermoplastic layer 220 formed by the top end 127 of the wall 102 is disposed external to and adjacent the first flexible handle layer 218 and a first binding material layer 224 is disposed external to the first thermoplastic layer 220. The bottom end 117a of the mesh material layer 116, the first flexible handle layer 218, the first thermoplastic layer 220, and the first binding material layer 224 are joined by a first set of stitching 231 disposed therethrough. A second thermoplastic material layer 302 is disposed external to and adjacent the first binding material layer 224 and is integral with the first thermoplastic material layer 220, as illustrated in FIG. 4A, wherein the second thermoplastic material layer 302 is formed by an intermediate portion 227 of the wall 102. A second flexible handle layer 318 is disposed external to and adjacent the second thermoplastic layer 302, wherein the second flexible handle layer 318 is integral with the first flexible handle layer 218 and is further formed by an intermediate portion 229 of the flexible handle 118a. The bottom end 117a of the mesh material layer 116, the first flexible handle layer 218, the first thermoplastic layer 220, the first binding material layer 224, the second thermoplastic layer 302, and the second flexible handle layer 318 are joined by a second set of stitching 331 disposed therethrough.

[0040] In another embodiment, the mesh material layer 116 illustrated in FIG. 4A may be replaced by a layer of flexible material that does not include a mesh structure. For example, in one embodiment, the mesh material layer 116 may be replaced by a thermoplastic layer to form an extension of the wall 102. In fact, such an extension may be integral with the top end 127 of the wall 102 illustrated in FIG. 4A and may wrap around (not shown) an end of the first flexible handle layer 218.

[0041] FIG. 4B illustrates another attachment for connecting the flexible handle 118a to the wall 102, that is similar to the embodiment described hereinabove with respect to FIG. 4A except for the following differences. A second binding material layer 228 is disposed internal to the mesh material layer 116. The first and second binding material layers 224, 228 may be two independent pieces of material or may be a unitary piece of material folded over

the bottom end 117a of the mesh material layer 116, the first flexible handle layer 218, and the first thermoplastic layer 220, as illustrated in FIG. 4B. The second binding material layer 228, the mesh material layer 116, the first flexible handle layer 218, the first thermoplastic layer 220, and the first binding material layer 224 are joined by the first set of stitching 231 disposed therethrough. Further, the second binding material layer 228, the mesh material layer 116, the first flexible handle layer 218, the first thermoplastic layer 220, the first binding material layer 224, the second thermoplastic layer 302, and the second flexible handle layer 318 are joined by the second set of stitching 331 disposed therethrough.

[0042] Any of the attachments described in FIGS. 2, 3A, 3B, 4A, and 4B may be utilized to connect a flexible handle 118a, 118b to any of the side walls 102, 104, 106, 108 of the flexible container 100. Further, if more than one flexible handle 118a, 118b is utilized for a flexible container 100, the same attachment need not necessarily be utilized for all of such flexible handles 118a, 118b.

[0043] The flexible container 100 may be collapsed, as depicted in FIG. 1D. In particular, the container 100 is folded by collapsing the opposing walls 102, 106 inwardly along horizontal creases 350, 352, respectively, as indicated by the arrows 362. As the walls 102, 106 are collapsed inwardly, the opposing walls 104, 108 are also collapsed inwardly along horizontal creases 354, 356 and diagonal creases 358, 360, respectively, as indicated by the arrow 364. This collapsed state minimizes the space need for the container 100 when not in use by minimizing a distance between the bottom and top panels 110, 112.

[0044] A flexible handle, for example the flexible handle 118a, includes the first and second flexible handle layers 218 and 318 described hereinabove and may be made from a unitary sheet of thermoplastic material or multiple sheets of thermoplastic material. For example, a flexible handle 400 as illustrated in FIG. 5D, is made from a unitary sheet of thermoplastic material 402 as illustrated in FIGS. 5A-5C. Referring to FIG. 5A, the sheet 402 is generally rectangular with notched corners 404 and includes first and second slits 406, 408 that define first and second handle flaps 410, 412, respectively. Third and fourth slits 414, 416 are disposed through the sheet 402 generally parallel with and spaced generally equidistant from the first and second slits 406, 408. First and second apertures 418, 420 are

disposed through the sheet 402 and are bisected by the third and fourth slits 414, 416, respectively. Each of the first and second apertures 418, 420 includes a top edge contour 422 that has a shape that matches curved end portions 421a of the first slit 406 and a symmetrical bottom edge contour 424 that has a shape that matches curved end portions 421b of the second slit 408.

[0045] Fold lines 426 connect ends 427 of each of the third and fourth slits 414, 416 to corners 429 of the notches 404, as shown by the dashed lines in FIG. 5B. Side flaps 431 defined by the fold lines 426 are folded forwards as indicated in FIG. 5B such that the top and bottom edge contours 422, 424 are coincident with the end portions 421a, 421b of the first and second slits 406, 408, respectively. For example, the lower right side flap 431 is folded forwards along the fold line 426 to form region A, which, after the folding operation, comprises two layers of thermoplastic material.

[0046] As illustrated in FIG. 5C, each of the side flaps 431 defined by the fold lines 426 is folded forwards along respective fold lines 426 to form the region A and regions B, C, and D, wherein all of such regions comprise two layers of thermoplastic material. The first and second handle flaps 410, 412 are thereafter folded forwards and toward one another to form first and second apertures 428, 430, respectively. A top portion 432 of the sheet 402 is folded forwards over a bottom portion 434 of the sheet 402 such that the handle flaps 410, 412 are adjacent one another to yield a final shape for the flexible handle 400 such that the first and second apertures 428, 430 are coincident, as illustrated in FIG. 5D. The resultant handle 400 includes regions E, F, and G, wherein each region E, F, and G includes four layers of thermoplastic material. The four layers of material at the regions E, F, and G provide structural integrity to the handle 400 to prevent ripping, stretching, and/or breakage of the handle 400. A first set of stitching 436 extends continuously around the first and second apertures 428, 430 and a second set of stitching 438 extends around a portion of the perimeter of the handle 400, preferably excluding an edge 439 of the handle 400. The stitching 436, 438 may be formed using string, wire, stranded vinyl, or other flexible stranded material as known to one having skill in the art.

[0047] A further flexible handle 500, as illustrated in FIG. 6E, is made from a unitary sheet of thermoplastic material 502 as illustrated in FIGS. 6A-6D. The handle 500 and the sheet of thermoplastic material 502 are similar to the handle 400 and the sheet of thermoplastic material 402 described hereinabove with respect to FIGS. 5A-5D, wherein identical reference numerals refer to identical features, except for the following differences. Referring to FIG. 6A, the sheet 502 lacks the notches 404 of FIGS. 5A and 5B at corners thereof. Instead, corner slits 504 are disposed through the sheet 502 and extend diagonally inwardly from each corner to form triangular shaped flaps 506. As illustrated in FIG. 6B, each of the triangular shaped flaps 506 is folded forwards as indicated to form the notches 404. Following the steps described with respect to FIG. 5B, each of regions A', B', C', and D' in FIGS. 6C and 6D are formed, wherein each region A', B', C', and D' comprises two layers of thermoplastic material. In addition, each of the regions H, I, J, and K illustrated in FIGS. 6C and 6D comprises four layers of thermoplastic material.

[0048] As illustrated in FIG. 6D and 6E, a top portion 532 of the sheet 502 is folded forwards over a bottom portion 534 of the sheet 502 to yield a final shape for the flexible handle 500 of FIG. 6E such that the first and second apertures 428, 430 are coincident. Each region E', F', and G of the handle 500 comprises four layers of thermoplastic material; however, in this embodiment, regions L and M comprise eight layers of thermoplastic material.

[0049] It is also contemplated that another embodiment of a flexible handle 550 may be made from a unitary sheet of thermoplastic material, as illustrated in FIGS. 7A-7C. Referring to FIG. 7A, a blank of thermoplastic material 552 is divided by fold lines 554 and 556 into any number of regions, for example, three regions, 558, 560, and 562. The blank 552 is folded over onto itself, for example by folding the region 558 under the region 560 and folding the region 562 over the region 560 to form three layers. Other patterns of folding the regions over one another may also be utilized.

[0050] Referring to FIG. 7B, corners 564 and 566 of the folded blank 552 are sliced off along cut lines 568 and 570, respectively, and a central aperture 572 that is defined by an edge 574 is stamped out of the folded blank 552. Referring to FIG. 7C, the edge 574 and a

peripheral edge 576 of the folded blank 552 are heat sealed. A first set of stitching 578 is applied through the folded blank 552 around the edge 574. A second set of stitching 580 is applied through the folded blank 552 along at least a portion of the peripheral edge 576 to complete the flexible handle 550.

[0051] It is also contemplated that a further embodiment of a flexible handle (not shown) may be made from multiple sheets of thermoplastic material. Referring to FIG. 7A, instead of being folded along the fold lines 554 and 556, the blank 552 of the present embodiment could alternatively be sliced along the fold lines 554 and 556 to yield multiple sheets of thermoplastic material that may be layered over one another and subsequently sliced and stamped (as discussed above with respect to FIG. 7B). Following the heat sealing and stitching steps (as discussed above with respect to FIG. 7C), such a completed flexible handle made from multiple sheets of thermoplastic would appear very similar to the prior described flexible handle 550 made from a unitary piece of thermoplastic material. Although three sheets or layers of thermoplastic material are depicted in FIGS. 7A-7C as regions 558, 560, and 562, any number of sheets or layers may be utilized.

[0052] The flexible handles 400, 500, and 550 of FIGS. 5D, 6E, and 7C, respectively, are illustrative and are not intended to limit the disclosure to the patterns of slits and folds described herein. Other flexible handles may include, for example, multiple sheets of thermoplastic material layers disposed upon one another as described hereinabove, multiple sheets of thermoplastic material layers disposed upon one another and subsequently folded, multiple apertures disposed therethrough, adhesives used in addition to stitching, and/or other patterns and combinations.

[0053] FIG. 8 illustrates a flexible container 600 having a flexible handle 602 attached to a wall 604 of the flexible container 600. A first edge 605 of a mesh material layer 606 is attached to a first edge 607 of the wall 604 by a line of stitching 608 that also attaches the flexible handle 602 to the wall 604. A second edge 609 of the mesh material layer 606 is attached to a first element 610 of a reclosable fastener 611, a second element 612 of which is attached to a cover 613 (seen edge on in FIG. 8). Two closure elements 617, 619 are disposed on the first and second elements 610, 612 of the reclosable fastener 611 to open and

close same, wherein the two closure elements 610, 612 allow the reclosable fastener 611 to be closed at any point. Optionally, only one closure element, for example, the closure element 617 may be utilized.

[0054] A second edge 614 of the wall 604 is attached to a bottom panel 615 (seen edge on in FIG. 8). The flexible handle 602 includes an aperture 616 disposed therethrough and is attached to the wall 604 such that the aperture 616 lies between the bottom panel 615 and the line of stitching 608. The flexible handle 602 further includes stitching 618 that extends continuously around the aperture 616 and stitching 620 that extends around a portion of the perimeter of the handle 602.

[0055] It is contemplated that because a thermoplastic material may be used in the manufacture of the flexible handles 400, 500, 602, and the thermoplastic material is transparent or at least transmissive, the flexible handles 400, 500, 602 may be used to display an indicium, for example, a label, a logo, or a combination of words and/or images. For example, as illustrated in FIG. 8, a piece of material 622 has an indicium 624 printed or otherwise embossed on a surface thereof. The material 622 may be, for example, paper, cardboard, plastic, cloth, or any material that can be printed upon or embossed with the indicium 624 as known to one having skill in the art. As indicated by the arrow 626, the piece of material 622 is disposed within layers of the flexible handle 602 as shown at position 628. The indicium 624 is thus held within the handle 602 and is visible from outside of the handle 602. The indicium 624 may be held within the handle 602 at any desired region between the layers of the flexible handle 602, for example, as shown at position 628 or at any of positions X, Y, and Z and/or overlapping one or more of these regions. The indicium 624 may be inserted within the handle 602 during manufacture thereof or a slit or other opening 629 may be formed within the handle 602 such that a user may insert the indicium 624 therein. Further, any number of indicium 624 may be utilized within any location in the handle 602 and in any number of handles within a container.

[0056] Although the flexible containers and components thereof may be described herein with respect to particular orientations (e.g., top, bottom, etc.), such orientations are for

descriptive purposes only. It should be understood that such flexible containers and components thereof need not be positioned in a particular orientation.

[0057] Further, although various specific embodiments have been shown and described herein, this specification explicitly includes all possible permutations of combinations of the features, structures, and components of all the embodiments shown and described.

INDUSTRIAL APPLICABILITY

[0058] A flexible container is presented that includes a layer of mesh material that provides ventilation for the flexible container and forms a reinforced attachment for connecting a flexible handle to a thermoplastic wall of the flexible container. A binding material layer may be added such that the thermoplastic wall, the flexible handle, the mesh layer, and the binding material layer are attached together to provide increased lifting capacity to the flexible handle. The flexible handle may be made from a unitary sheet of thermoplastic material folded over and stitched to itself or multiple sheets of thermoplastic material layered and stitched therethrough to further provide increased lifting capacity to the flexible handle.

[0059] Numerous modifications to the present disclosure will be apparent to those skilled in the art in view of the foregoing description. Accordingly, this description is to be construed as illustrative only and is presented for the purpose of enabling those skilled in the art to make and use the disclosure and to teach the best mode of carrying out same. The exclusive rights to all modifications which come within the scope of the appended claims are reserved. All patents, patent publications and applications, and other references cited herein are incorporated by reference herein in their entirety.

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WE CLAIM:

1. A flexible container comprising:
a mesh material layer;
a thermoplastic layer that forms a wall of the flexible container and is disposed external to the mesh material layer;
a flexible handle disposed external to the mesh material layer; and
a reclosable fastener for closing an opening to an interior of the flexible container,
wherein the mesh material layer, the thermoplastic layer, and the flexible handle are joined by a set of stitching disposed therethrough, and
wherein the set of stitching is disposed proximate to a first edge of the mesh material layer, and the reclosable fastener is disposed along a second edge of the mesh material layer.
2. The flexible container of claim 1, wherein the flexible handle is disposed external to the thermoplastic layer.
3. The flexible container of claim 1, wherein the flexible handle includes a sheet of thermoplastic material folded over and stitched to itself by at least a second set of stitching.
4. The flexible container of claim 1, wherein the flexible handle includes an aperture disposed therethrough.
5. The flexible container of claim 4, wherein the wall formed by the thermoplastic layer is a first thermoplastic wall, and the flexible container further includes second, third, and fourth thermoplastic walls, a thermoplastic bottom, and a

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thermoplastic cover extending from one of the first, second, third, and fourth thermoplastic walls, and

wherein the cover includes the reclosable fastener disposed along an edge thereof to join with top portions of three of the first, second, third, and fourth thermoplastic walls to close the flexible container.

6. The flexible container of claim 5, wherein the flexible handle is attached to the first thermoplastic wall such that the aperture lies between the thermoplastic bottom and the set of stitching.

7. A flexible container comprising:
a mesh material layer;
a binding material layer disposed external to the mesh material layer;
a thermoplastic layer that forms a wall of the flexible container and is disposed external to the mesh material layer; and
a flexible handle disposed external to the mesh material layer,
wherein a portion of the mesh material layer is positioned adjacent to a portion of the binding material layer, a portion of the binding material layer is positioned adjacent to a portion of the thermoplastic layer, and a portion of the thermoplastic layer is positioned adjacent to a portion of the flexible handle, and
wherein a set of stitching passes through (i) the portion of the mesh material layer, (ii) the portion of the binding material layer, (iii) the portion of the thermoplastic layer, and (iv) the portion of the flexible handle, such that the portions are joined together.

8. The flexible container of claim 7, wherein the flexible handle and the thermoplastic layer are disposed external to the binding material layer.

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9. The flexible container of claim 8, wherein the flexible handle is disposed external to the thermoplastic layer.

10. The flexible container of claim 9, wherein the binding layer is a first binding material layer, and the flexible container further includes a second binding material layer disposed internal to the mesh material layer, and

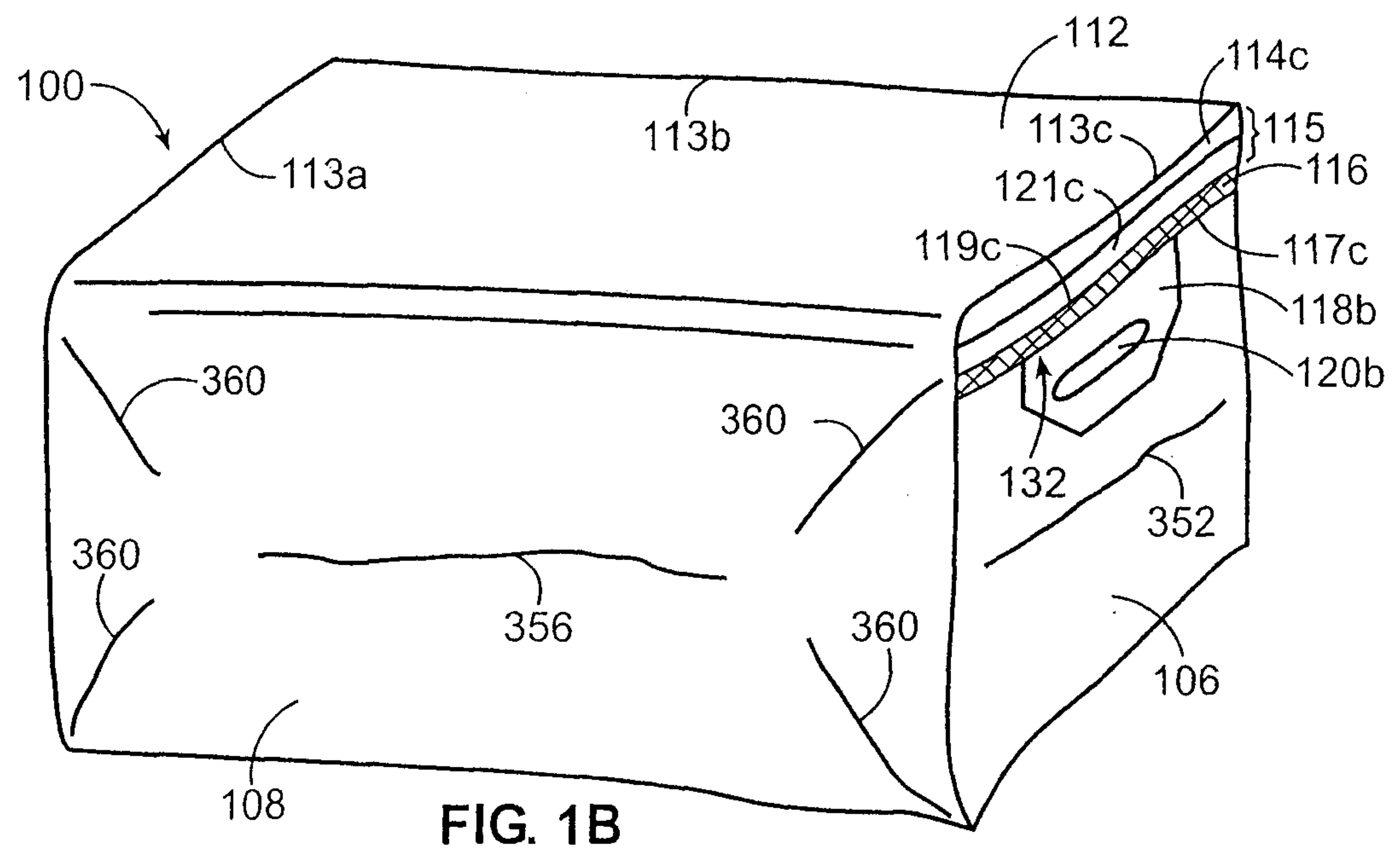
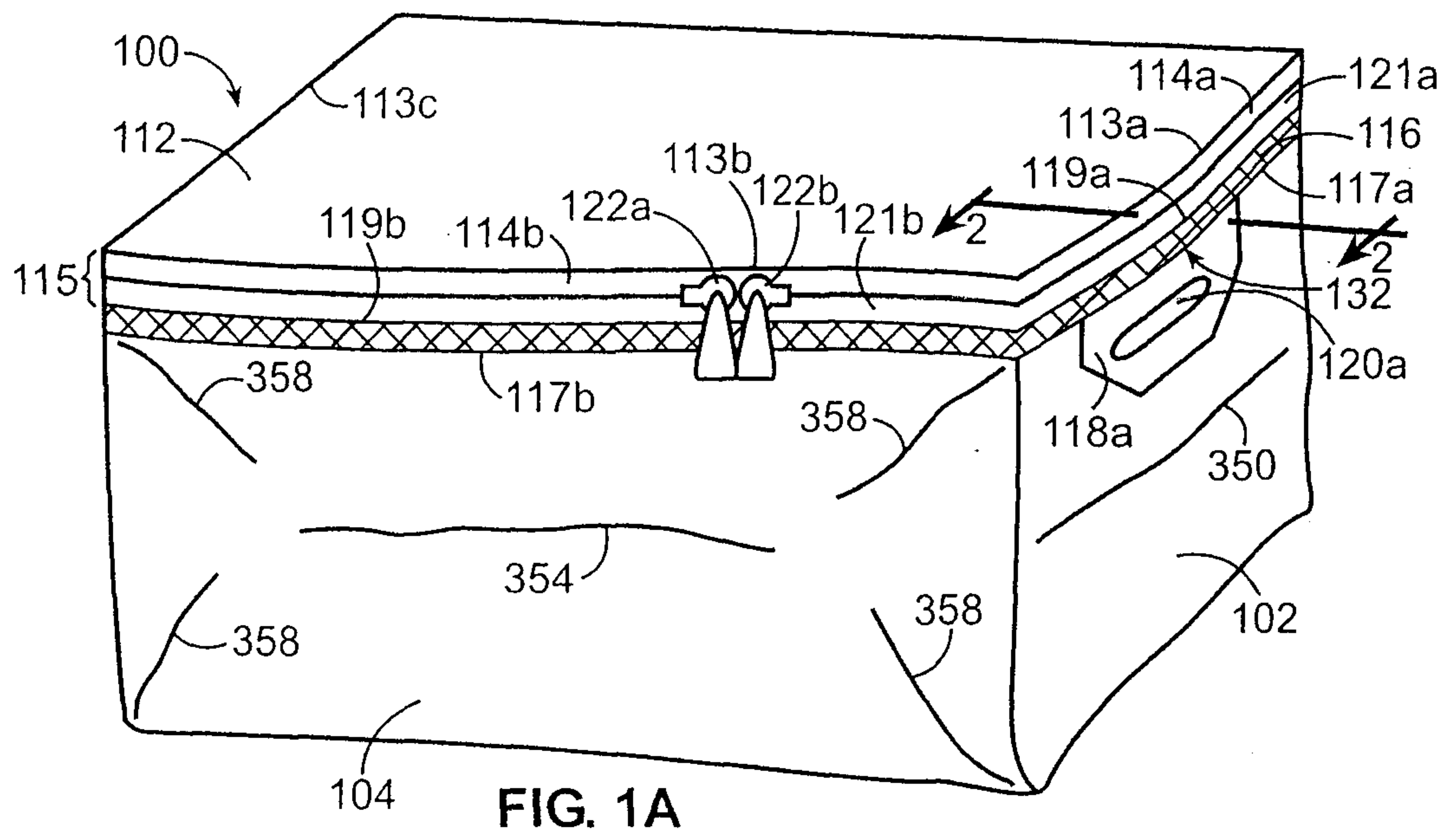
wherein a portion of the second binding material layer, the portion of the mesh material layer, the portion of the first binding material layer, the portion of the thermoplastic layer, and the portion of the flexible handle are joined by the set of stitching disposed therethrough.

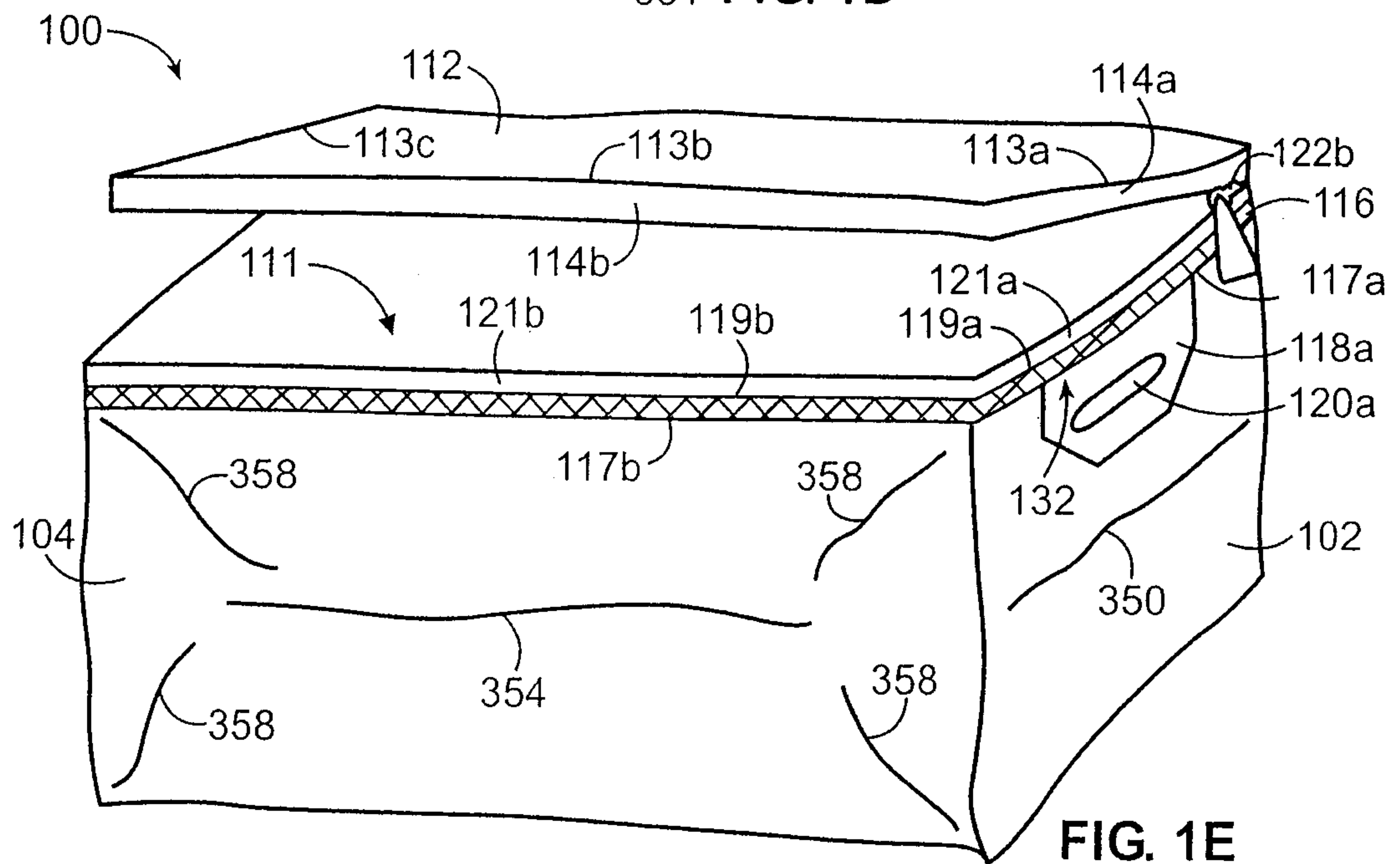
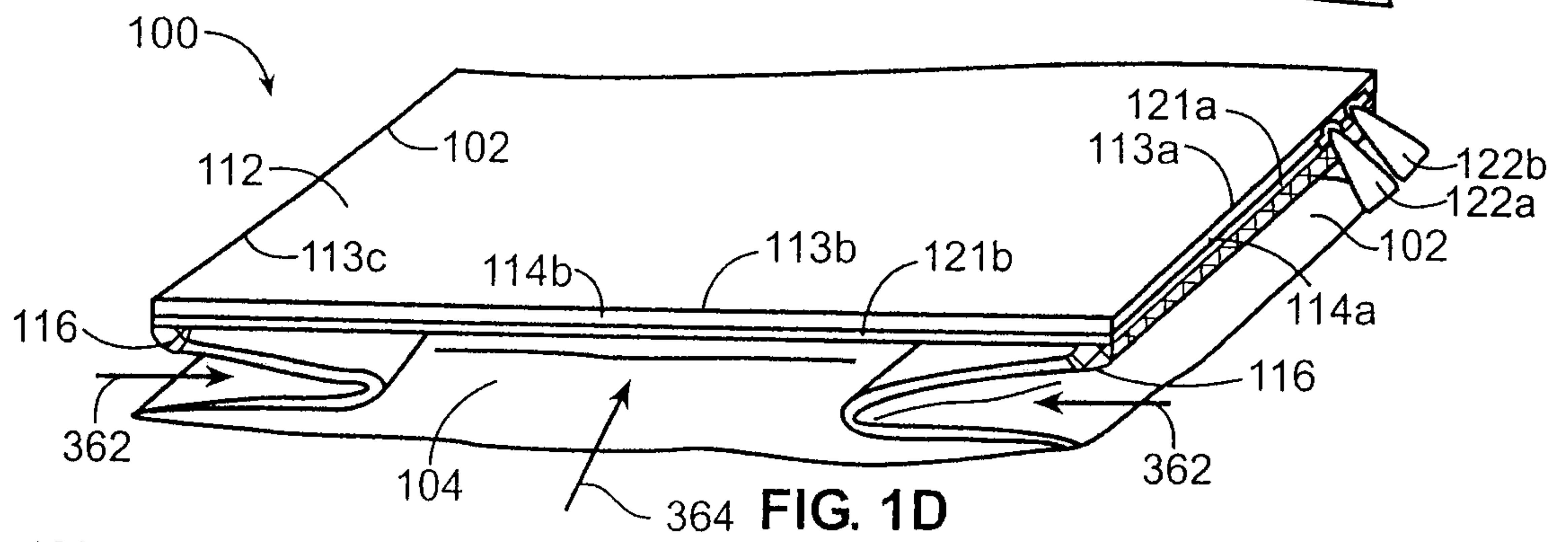
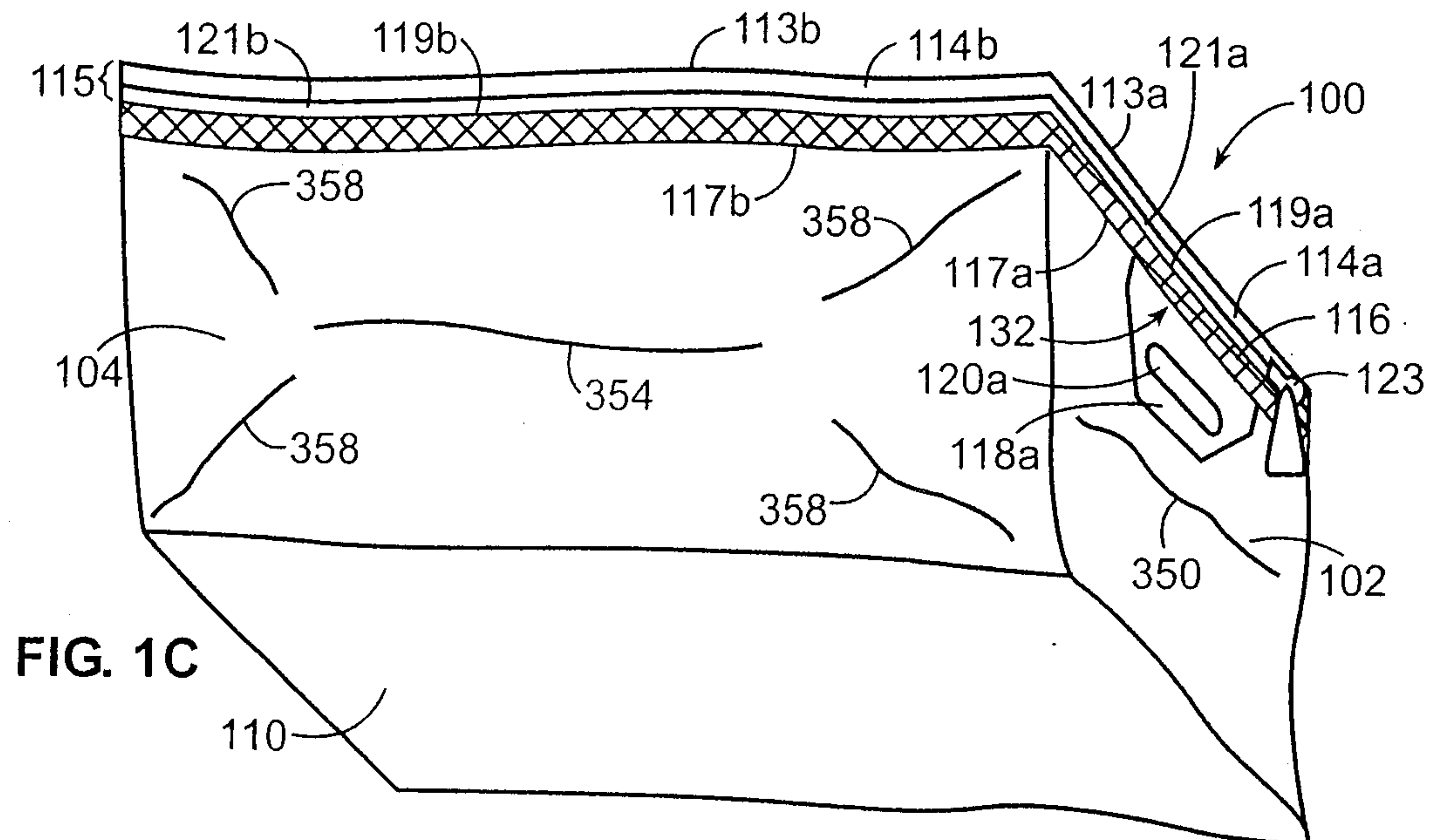
11. The flexible container of claim 10, wherein the first and second binding material layers are formed by a unitary piece of binding material folded over an end of the mesh material layer.

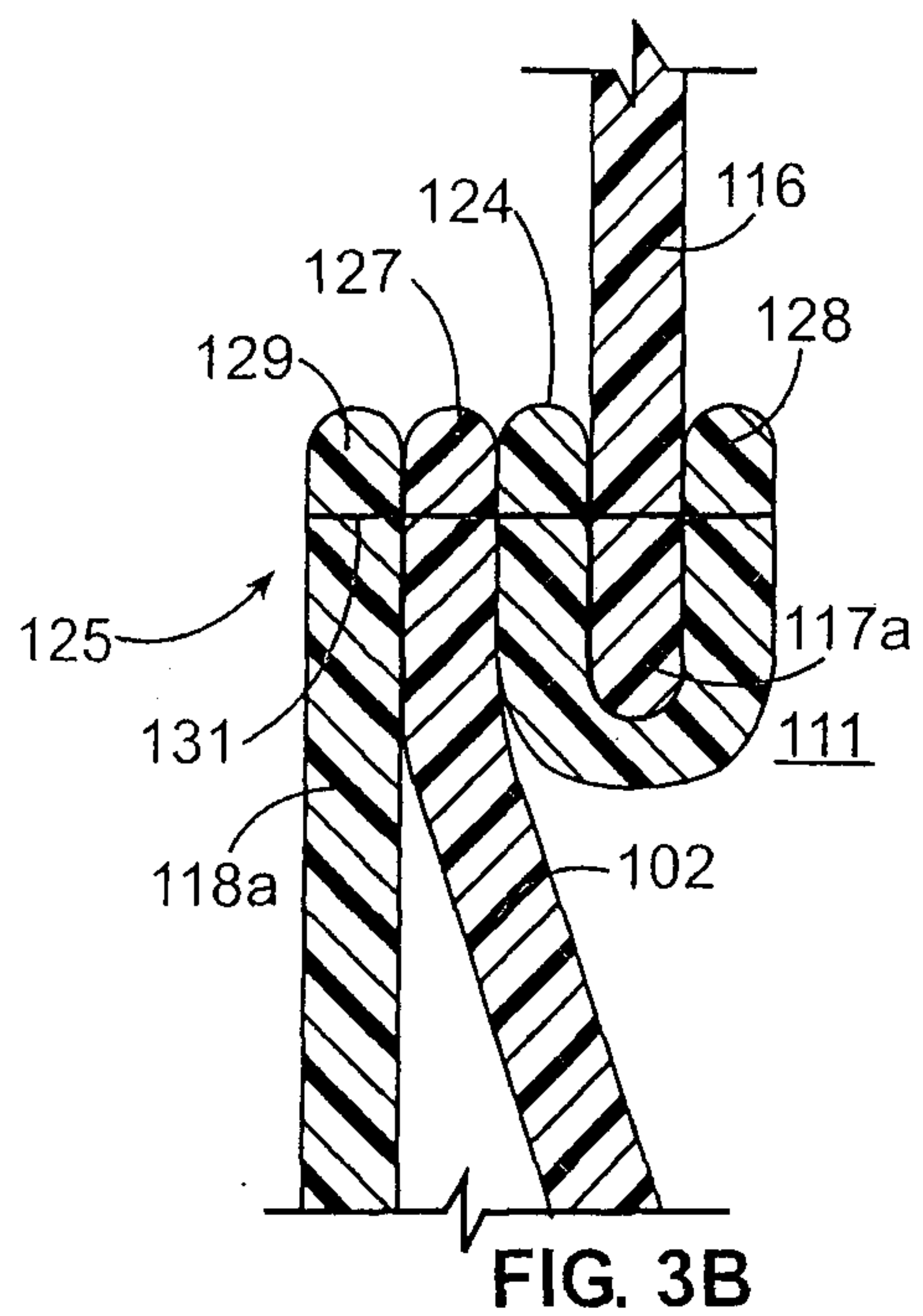
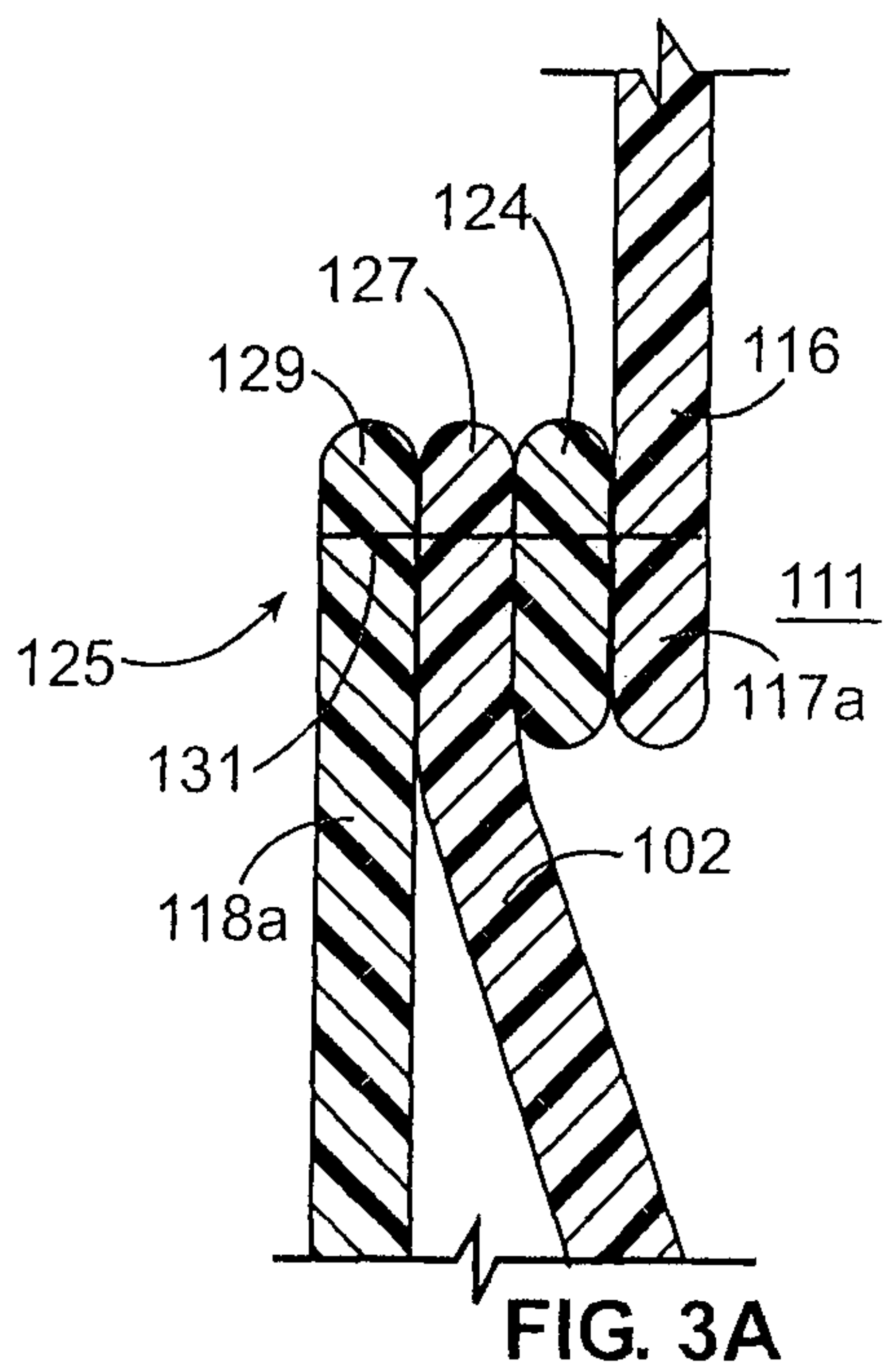
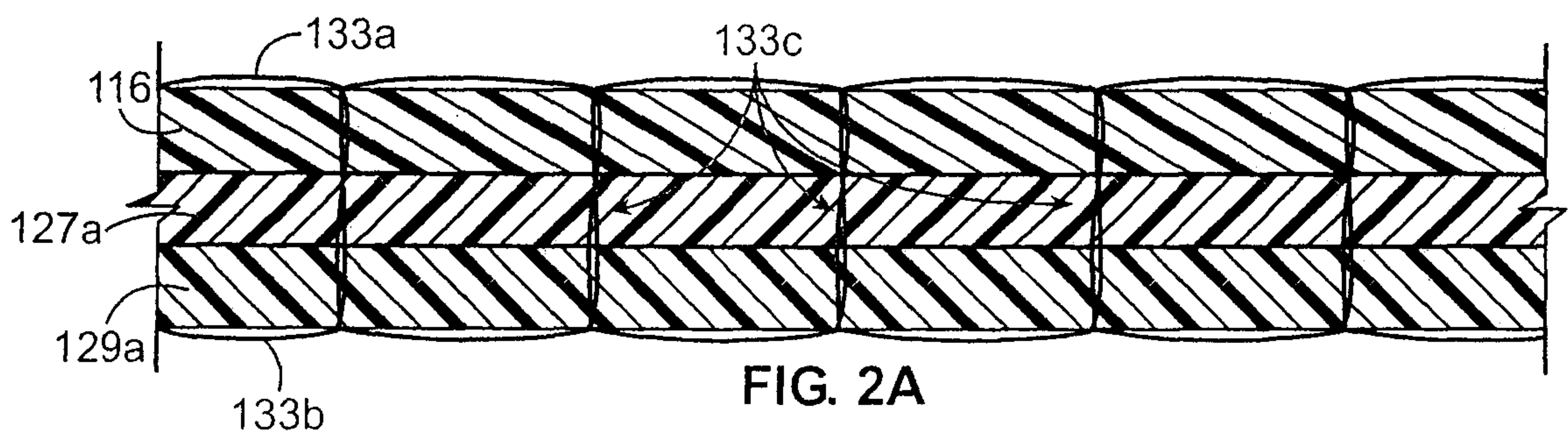
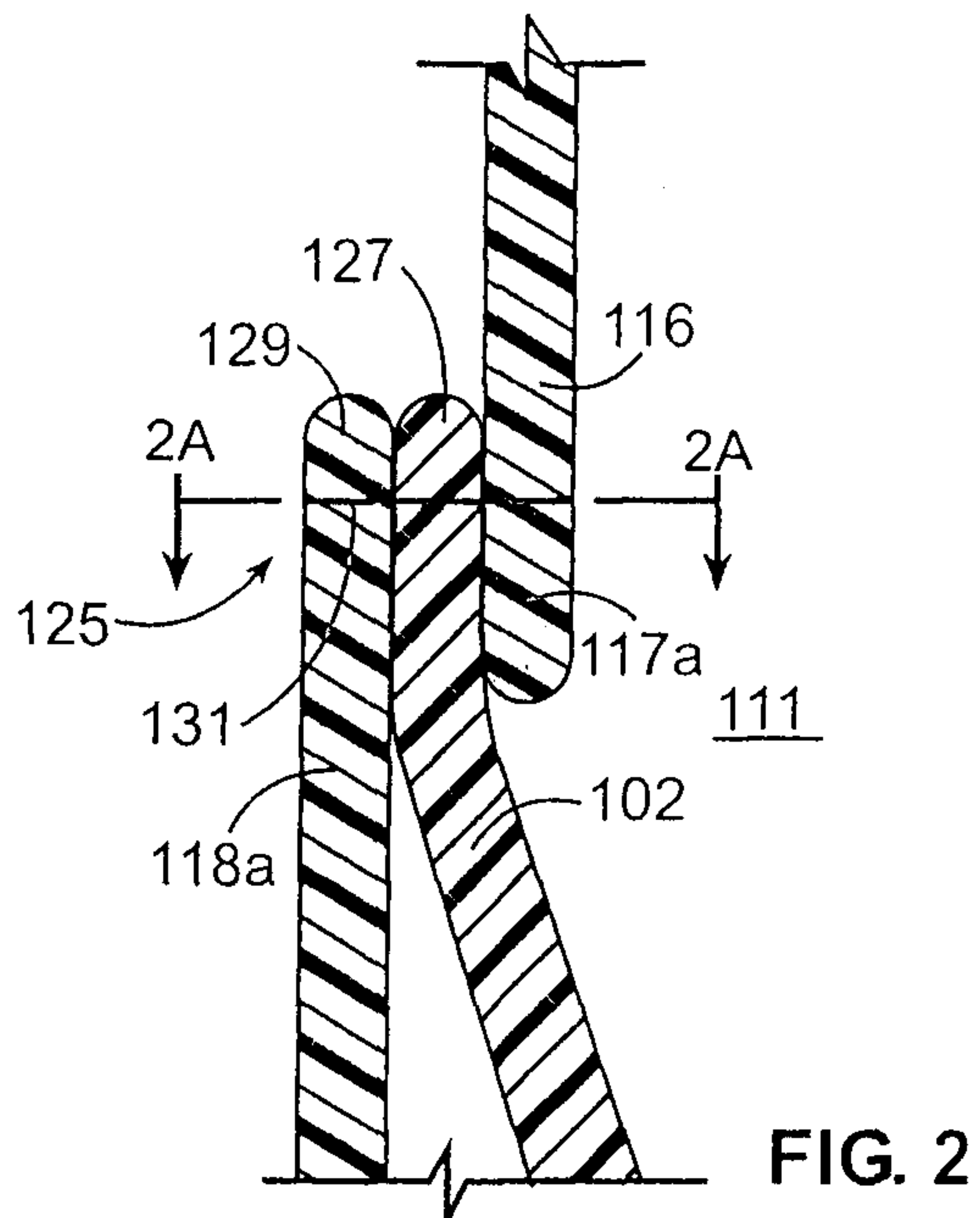
12. The flexible container of claim 11, wherein the set of stitching is disposed proximate to a first edge of the mesh material layer and a reclosable fastener is disposed along a second edge of the mesh material layer, and

wherein the flexible handle includes an aperture disposed therethrough, and the flexible handle is attached to the wall such that the set of stitching lies between the reclosable fastener and the aperture.

13. The flexible container of claim 7, wherein the flexible handle includes a sheet of thermoplastic material folded over and stitched to itself by a second set of stitching.







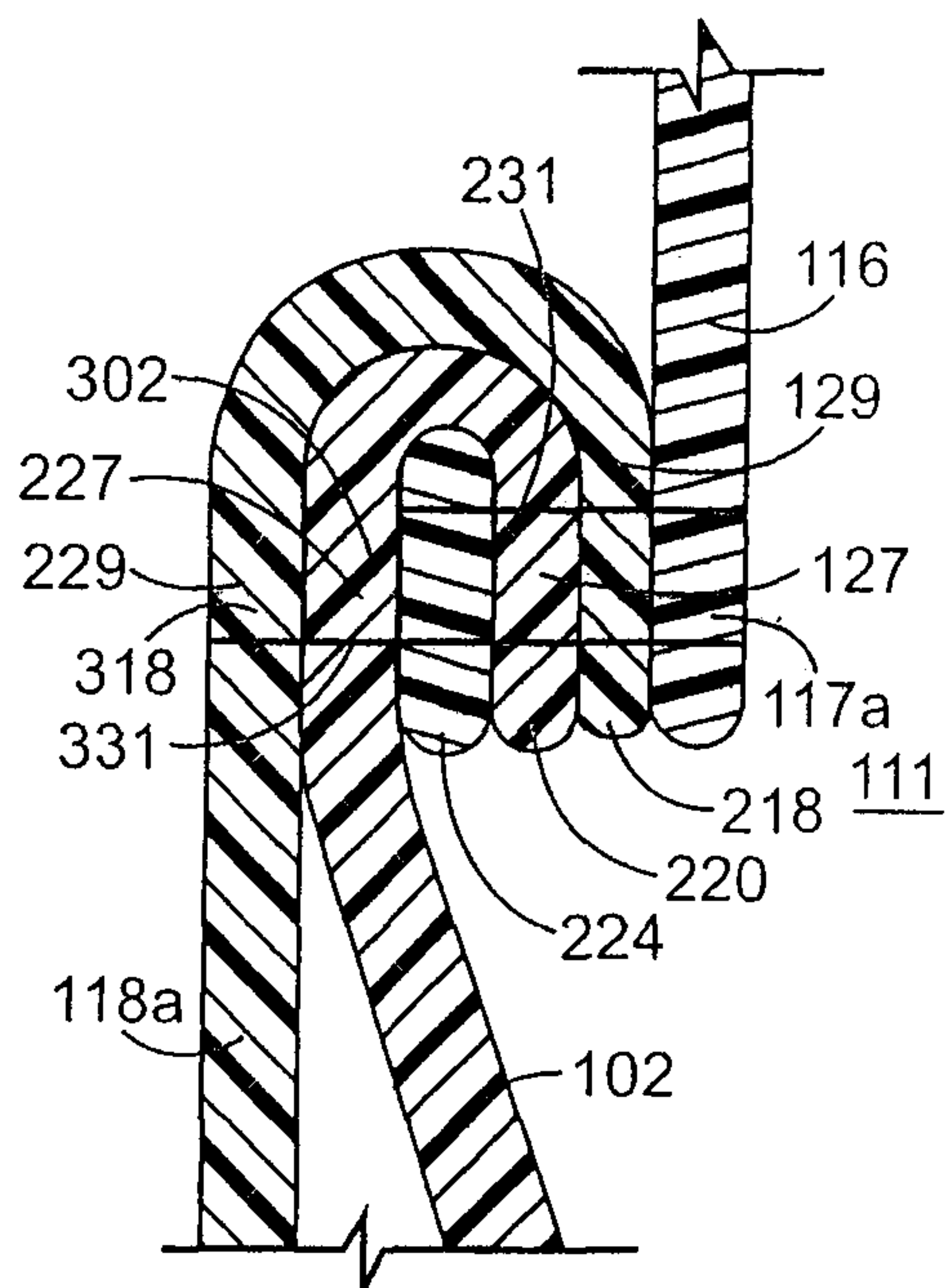


FIG. 4A

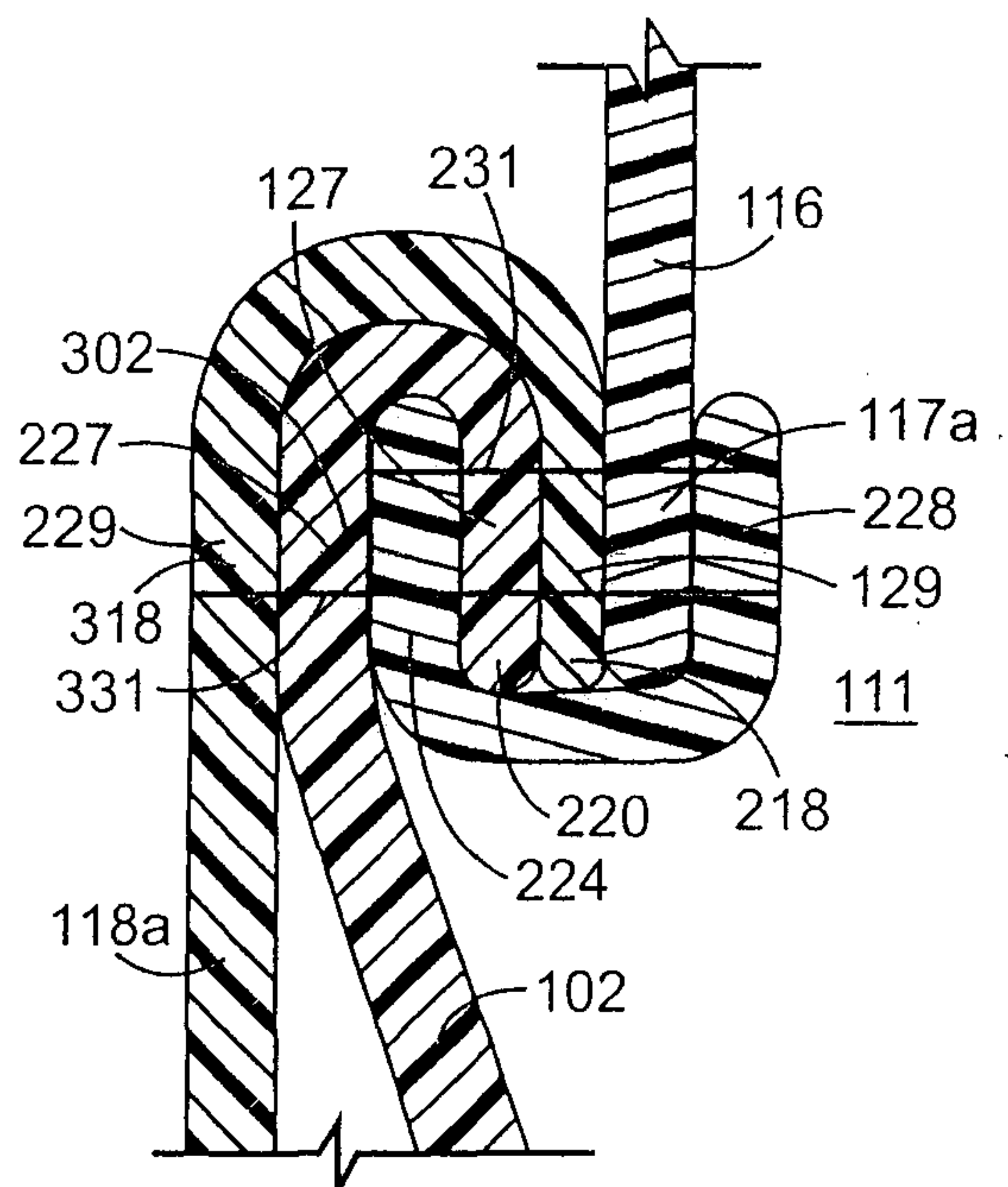


FIG. 4B

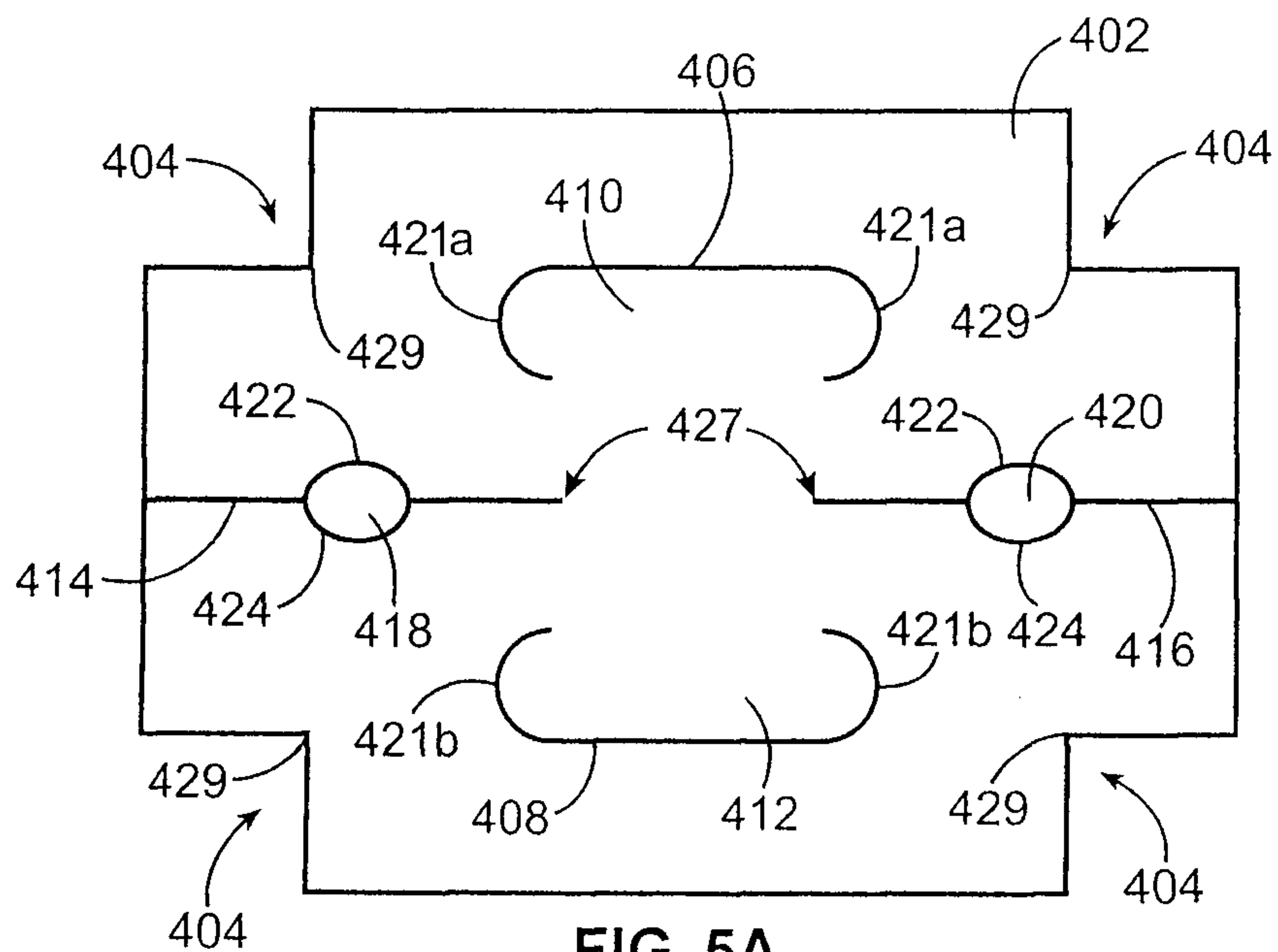


FIG. 5A

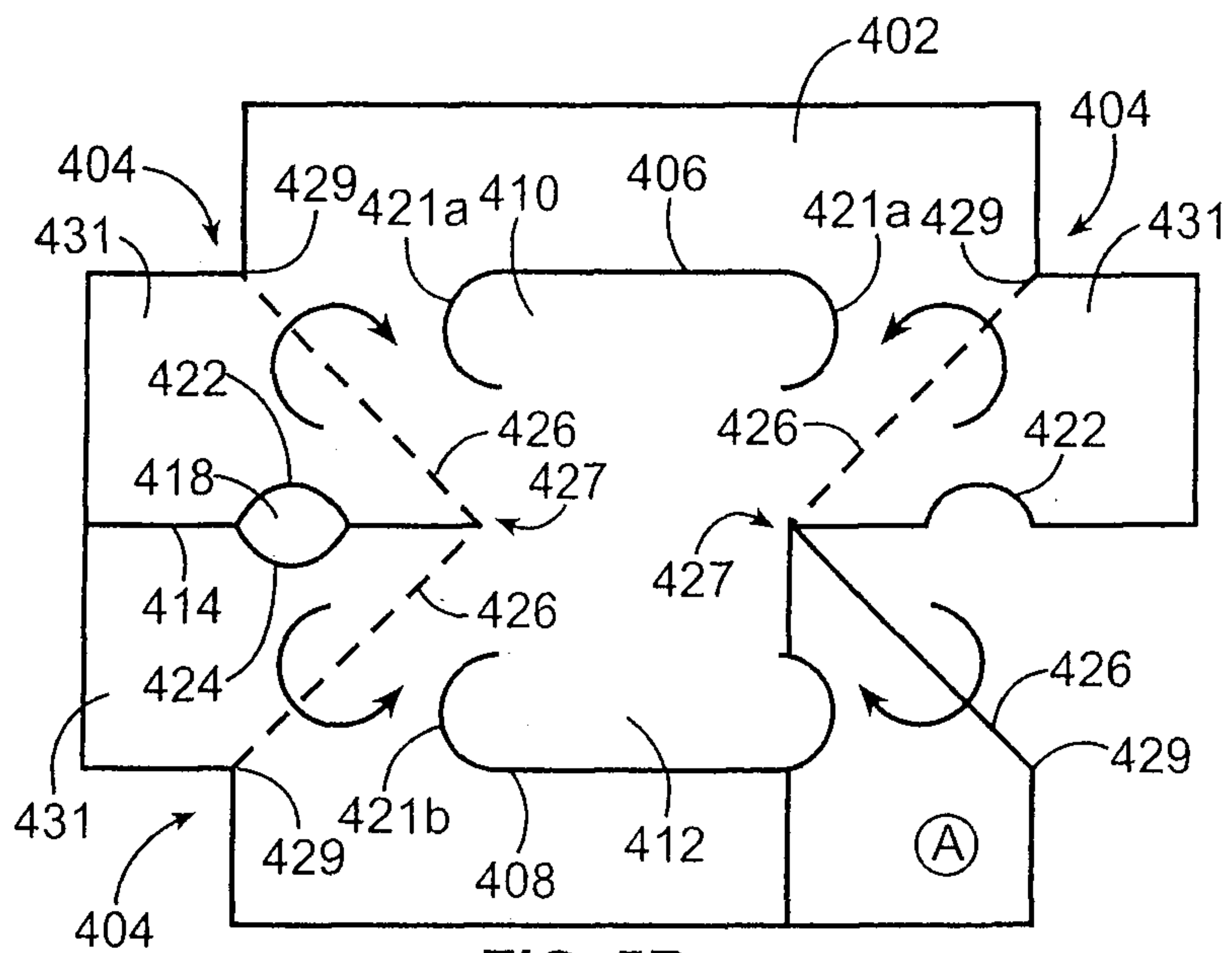


FIG. 5B

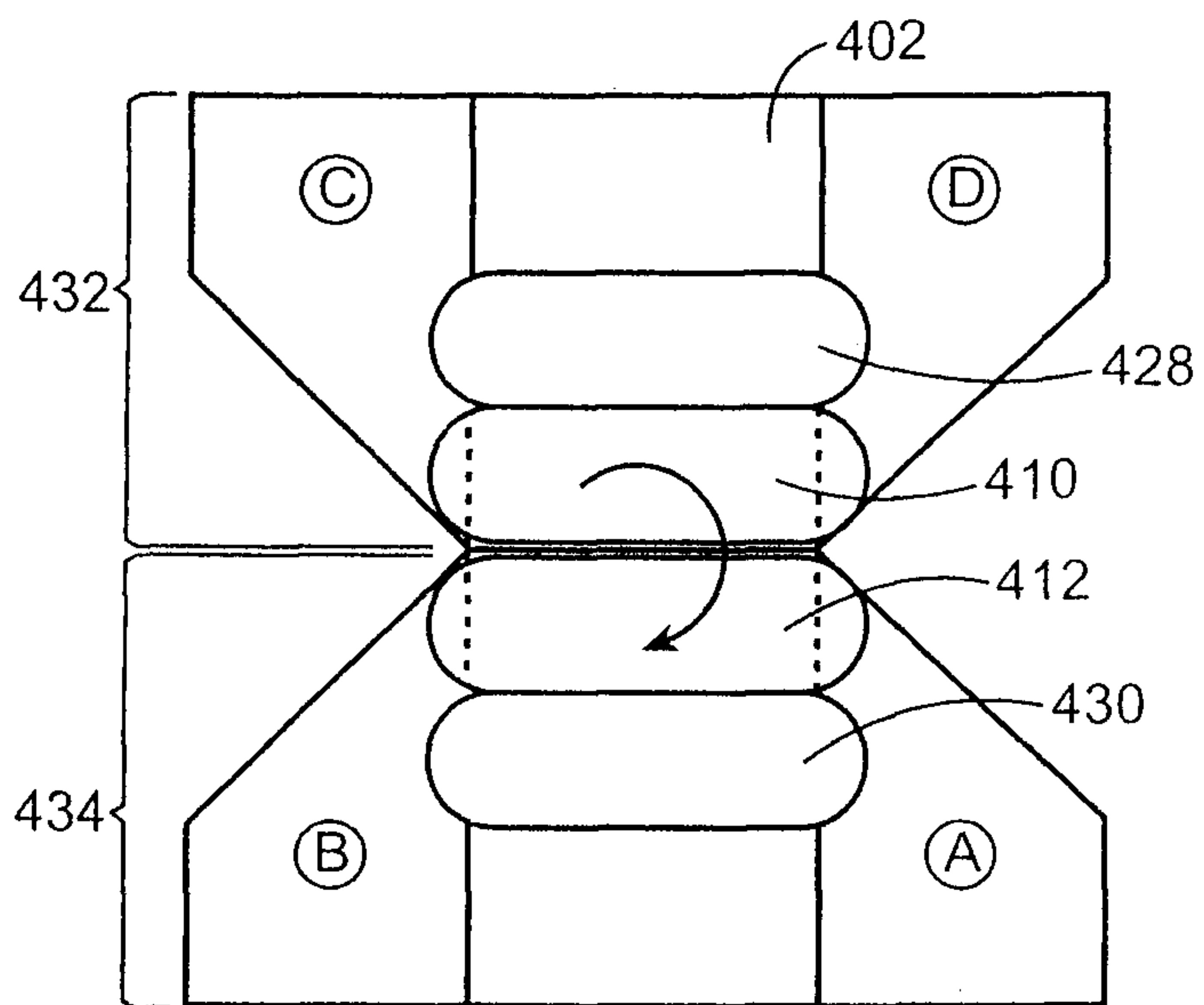


FIG. 5C

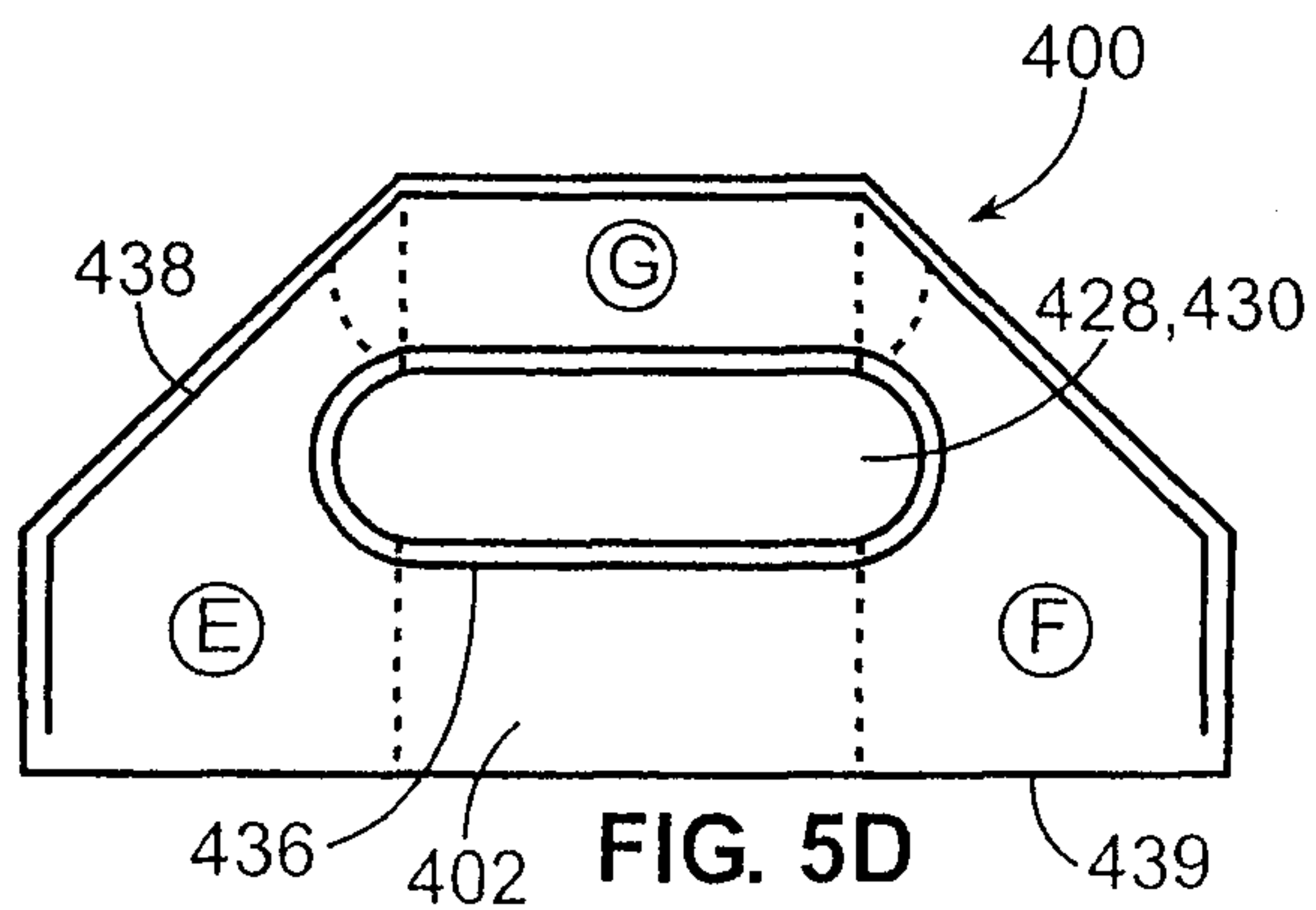
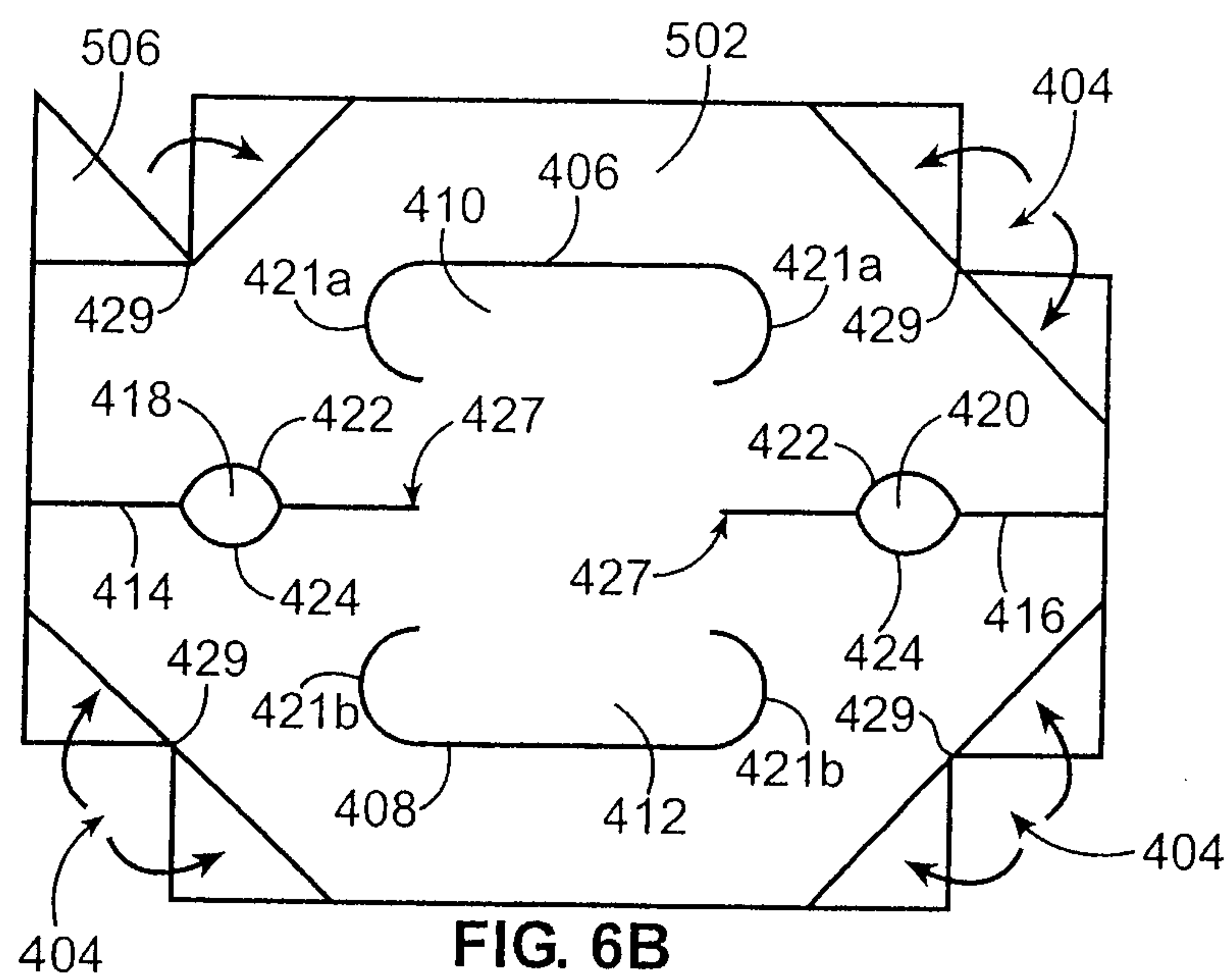
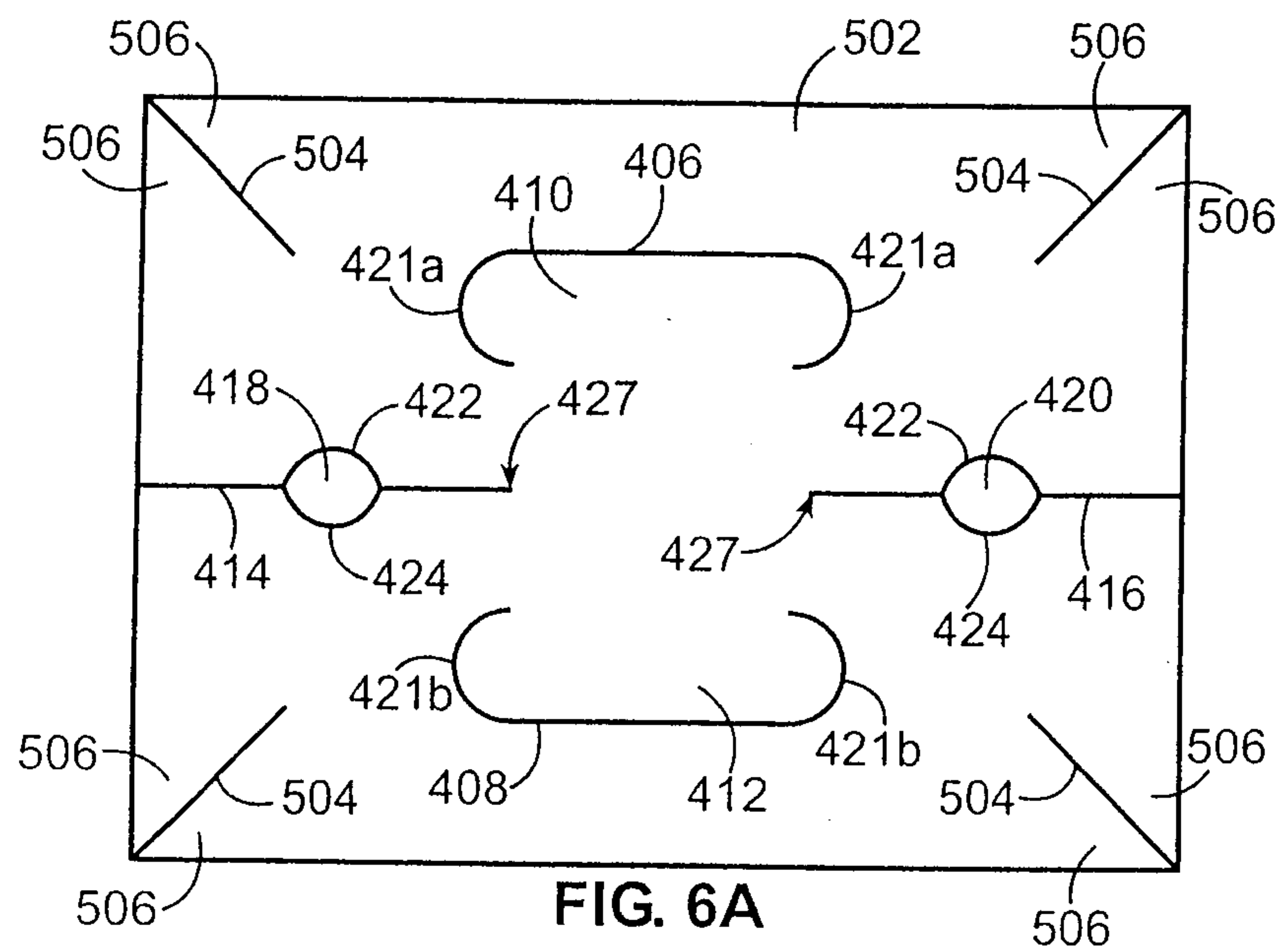


FIG. 5D



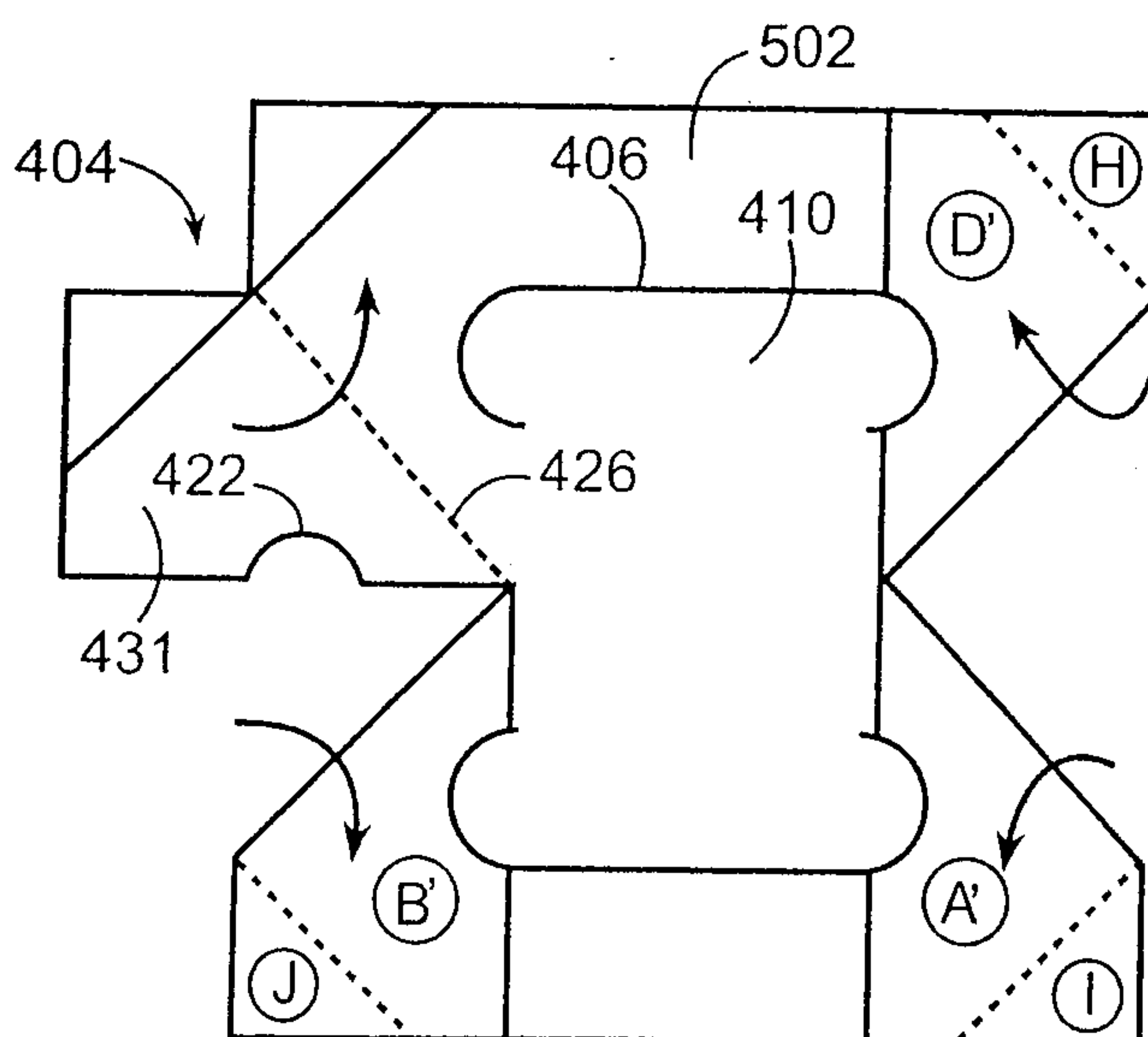


FIG. 6C

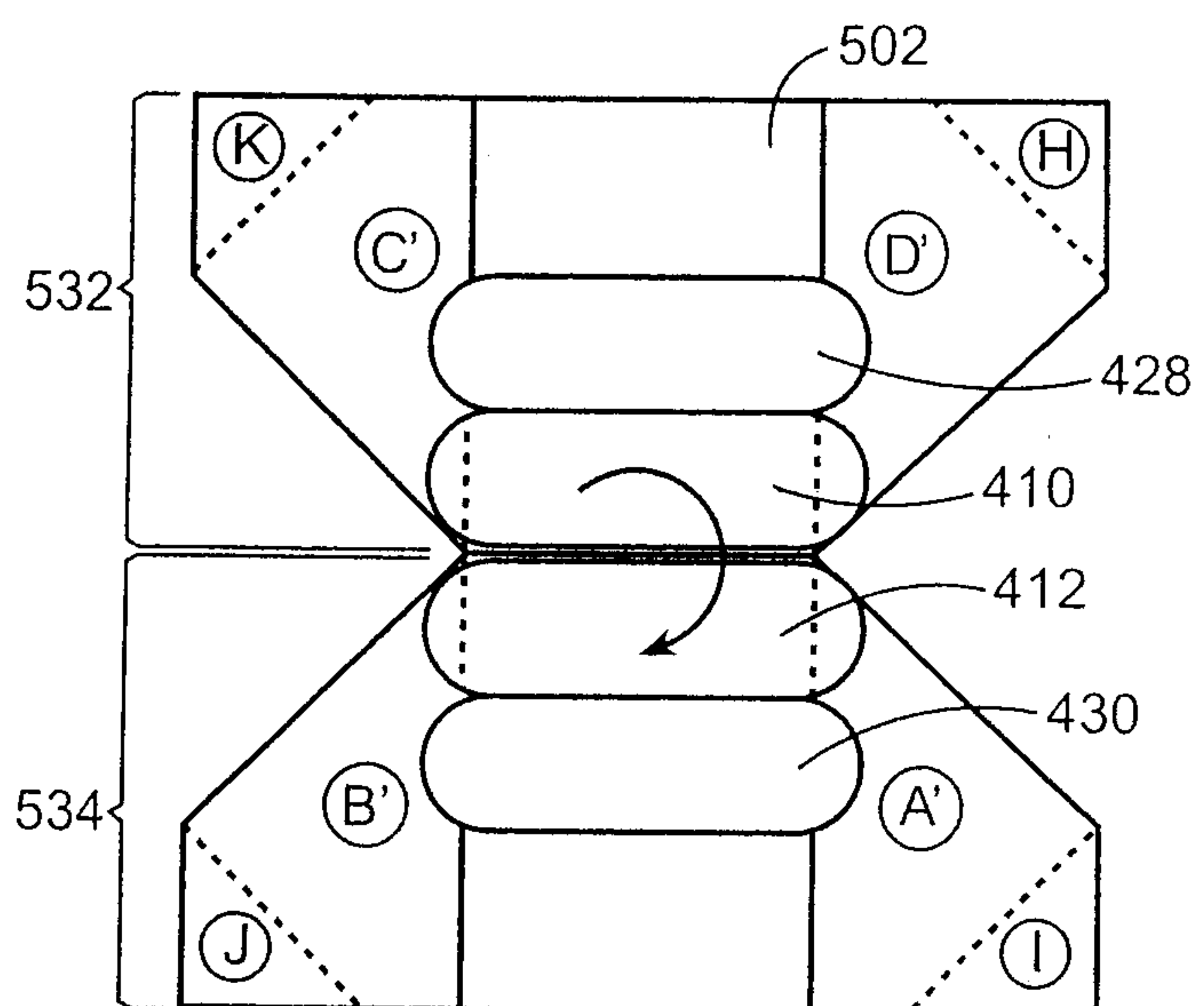


FIG. 6D

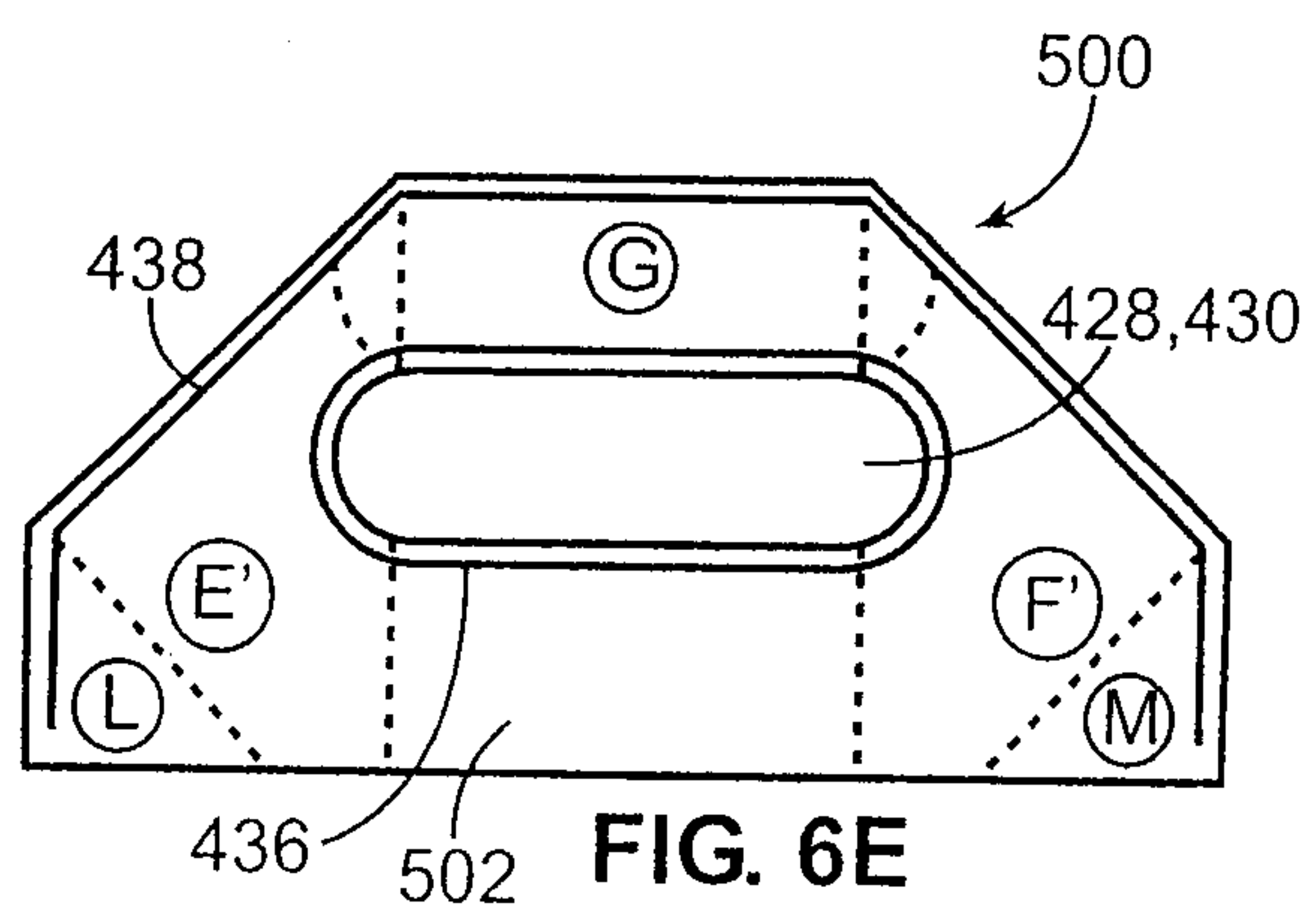
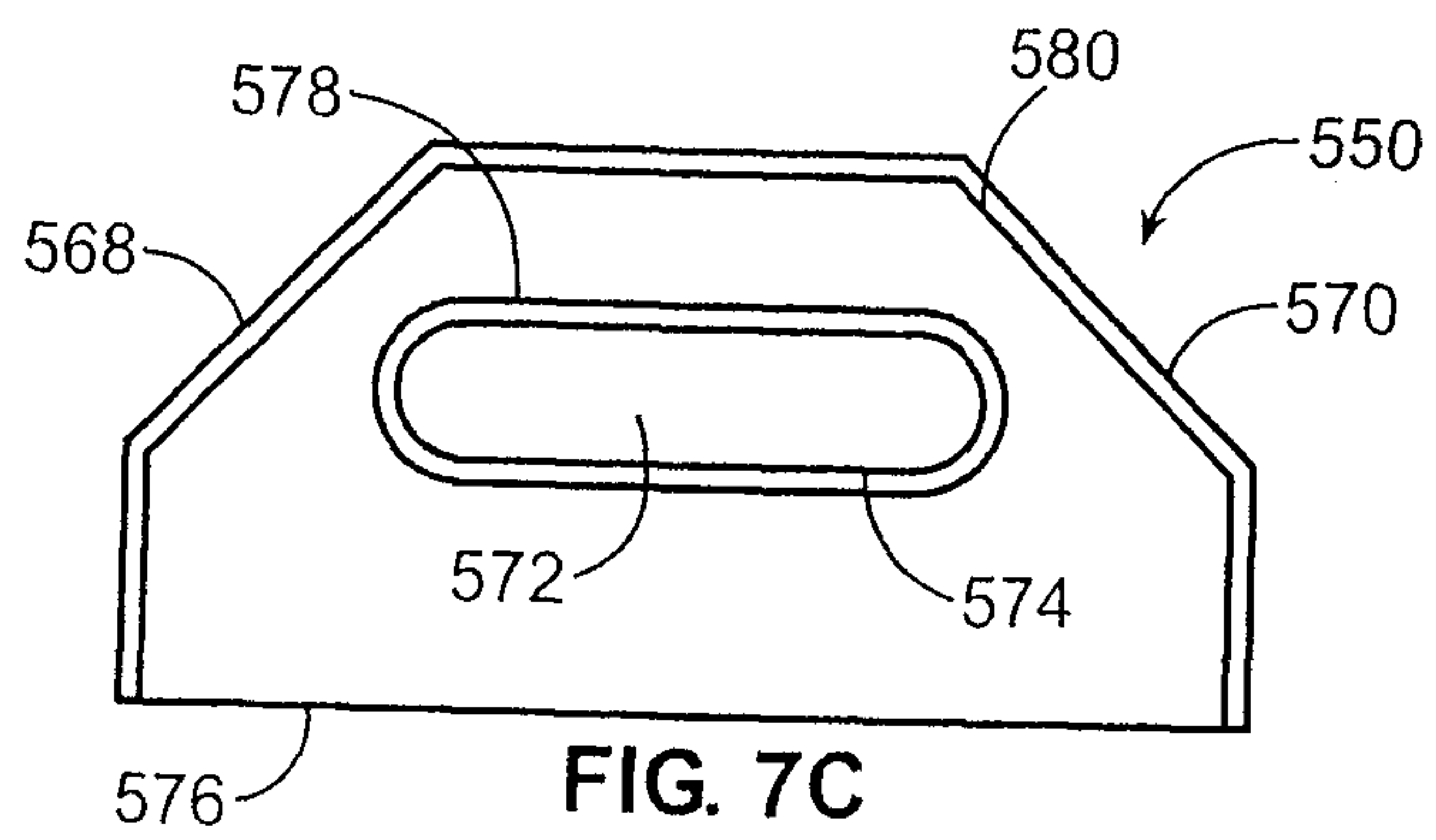
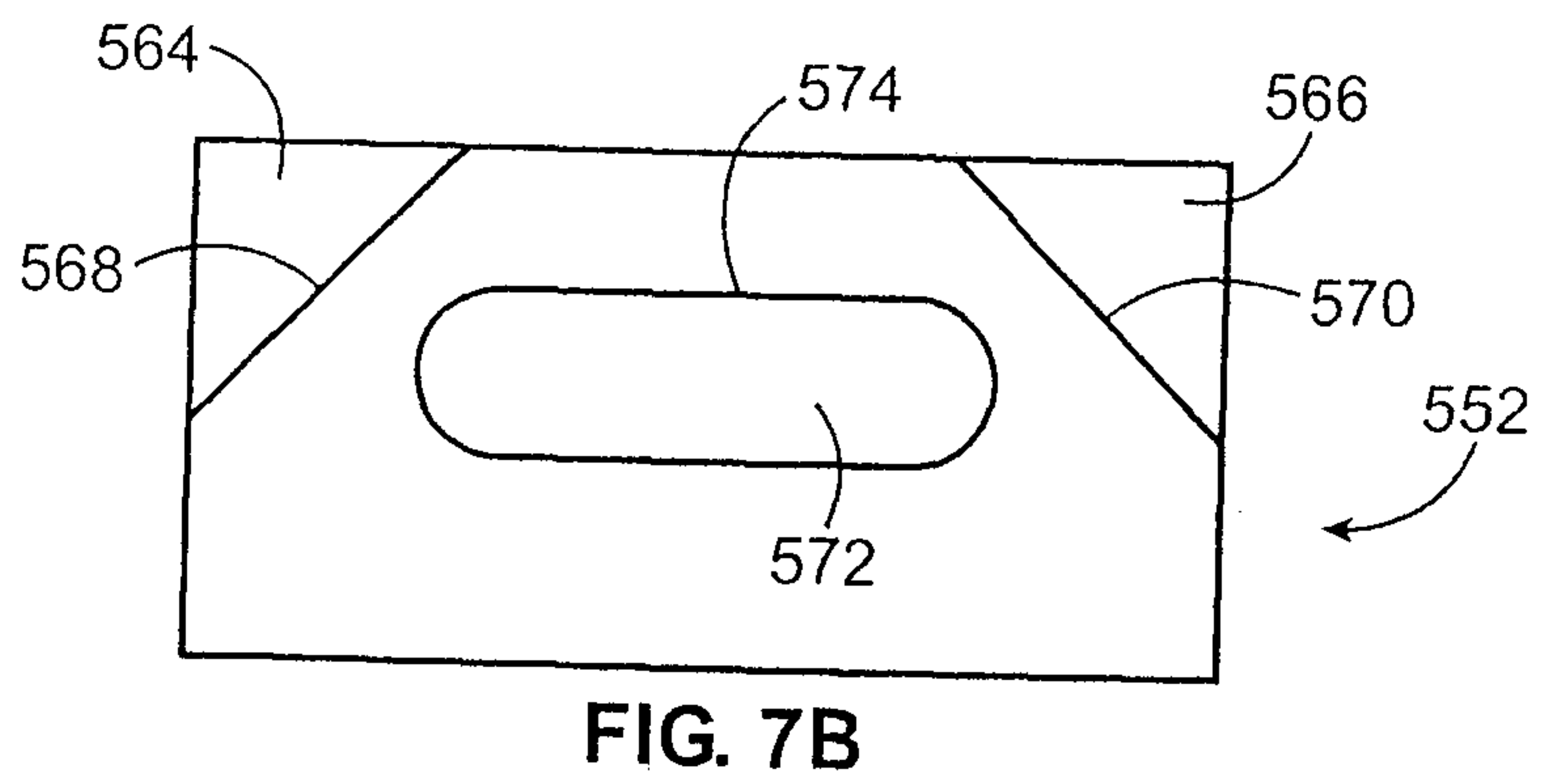
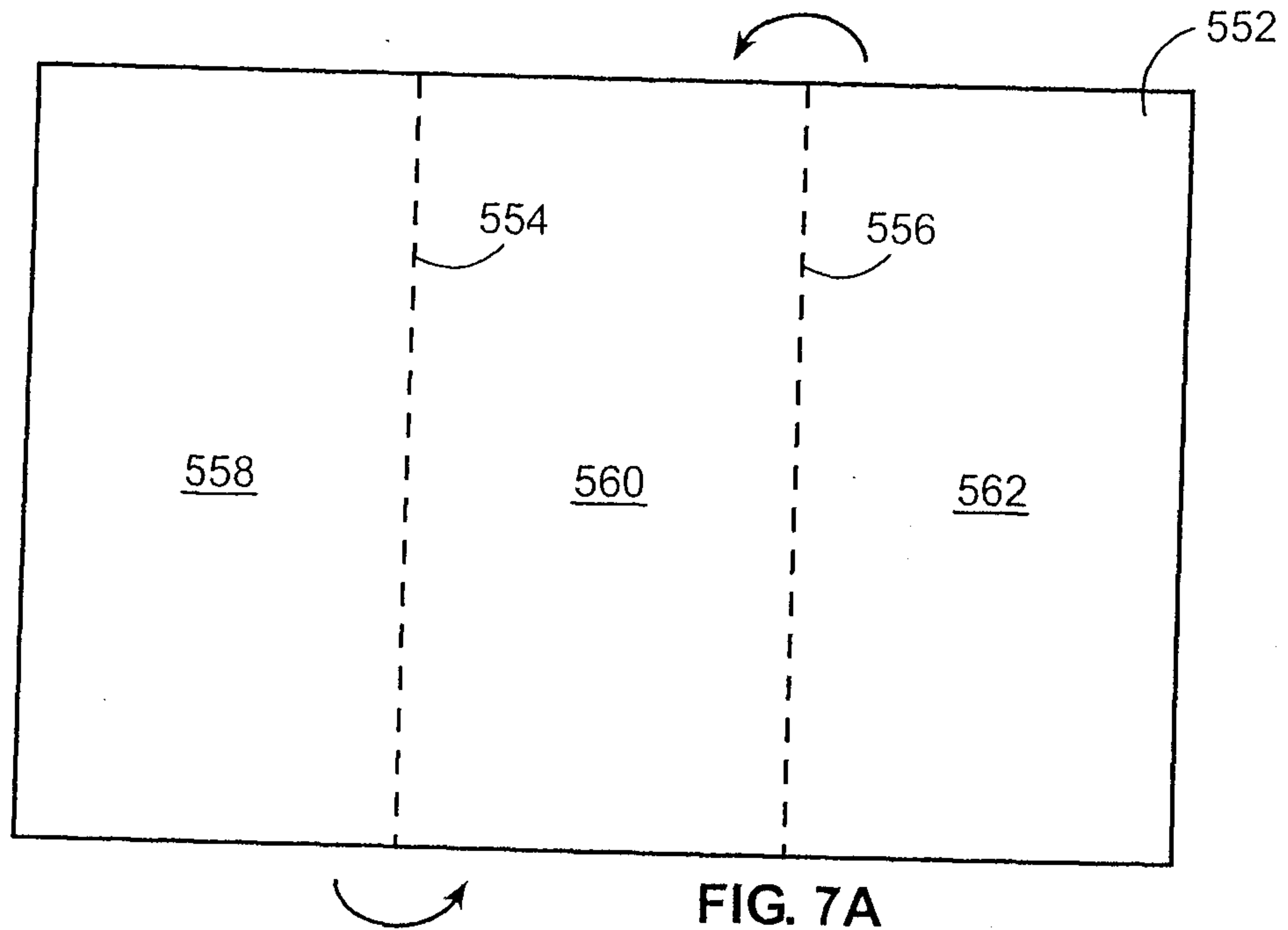


FIG. 6E



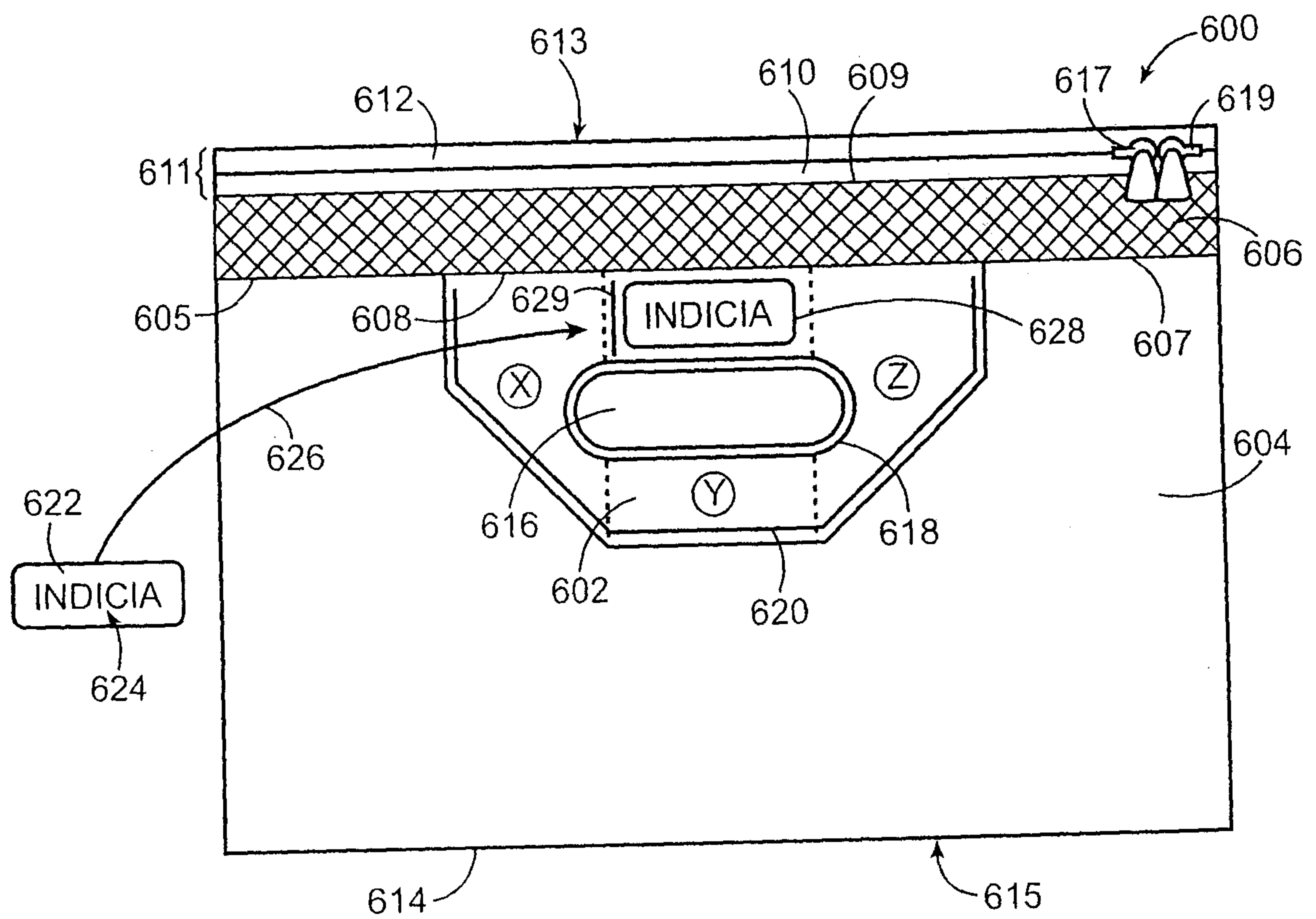


FIG. 8

