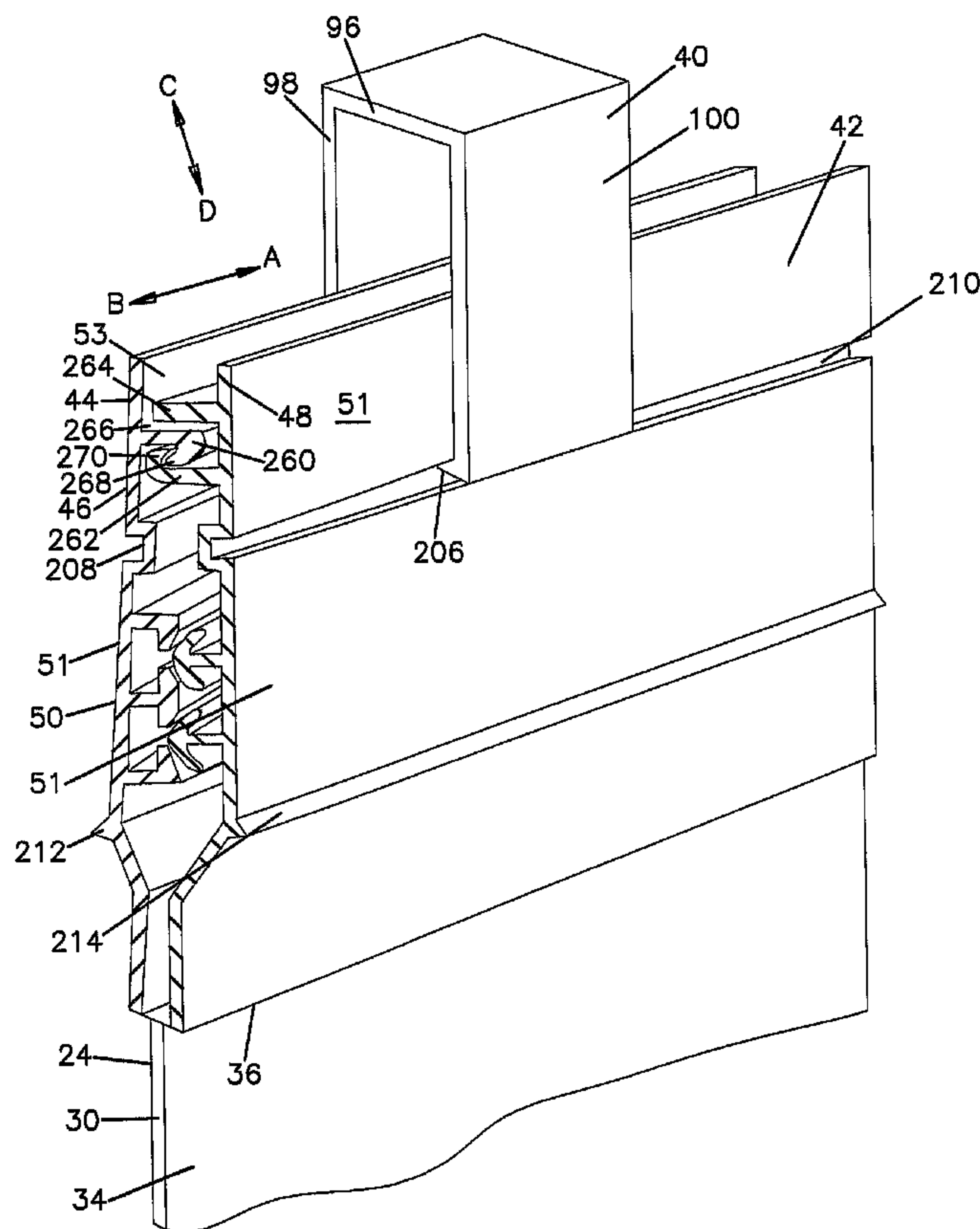




(86) Date de dépôt PCT/PCT Filing Date: 2006/10/31
 (87) Date publication PCT/PCT Publication Date: 2007/05/10
 (45) Date de délivrance/Issue Date: 2014/07/15
 (85) Entrée phase nationale/National Entry: 2008/04/29
 (86) N° demande PCT/PCT Application No.: US 2006/042528
 (87) N° publication PCT/PCT Publication No.: 2007/053633
 (30) Priorité/Priority: 2005/11/01 (US60/732,376)

(51) Cl.Int./Int.Cl. *B65D 33/25* (2006.01)
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(54) Titre : FERMETURE DE PAQUET ET PROCEDE
 (54) Title: PACKAGE CLOSURE AND METHOD



(57) Abrégé/Abstract:

A reclosable tamper-evident package is opened and closed repeatedly by opening and closing a first closure (46) of a package, and when it is desired to close the package and provide an indication of further opening, a second closure (50) is closed that cannot readily be opened. The tamper evident package has a closure assembly (38) that includes a zipper closure arrangement (42) with a slider device (40).

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

(19) World Intellectual Property Organization
International Bureau(43) International Publication Date
10 May 2007 (10.05.2007)

PCT

(10) International Publication Number
WO 2007/053633 A1(51) International Patent Classification:
B65D 33/25 (2006.01)(21) International Application Number:
PCT/US2006/042528

(22) International Filing Date: 31 October 2006 (31.10.2006)

(25) Filing Language: English

(26) Publication Language: English

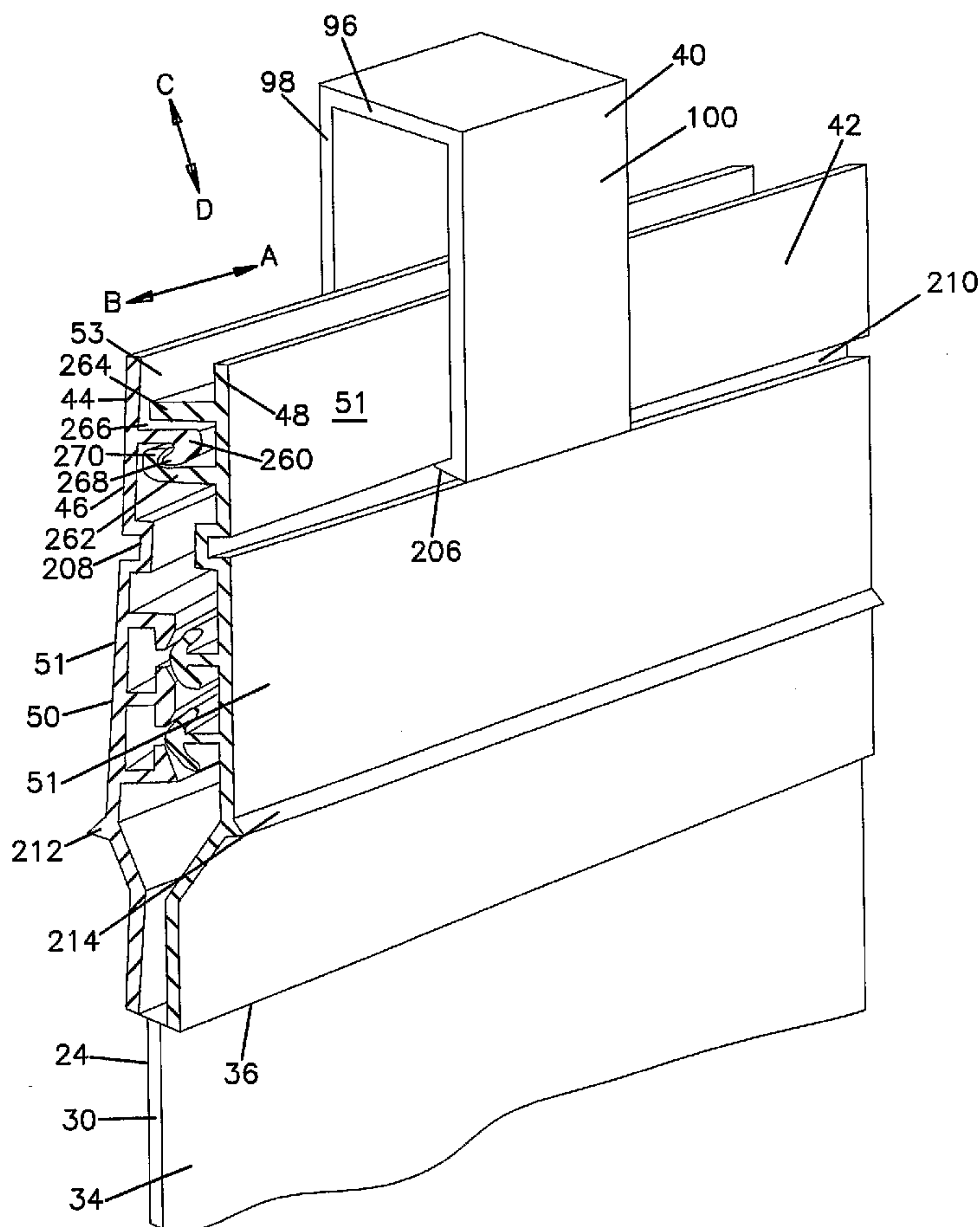
(30) Priority Data:
60/732,376 1 November 2005 (01.11.2005) US(71) Applicant (for all designated States except US):
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P.C., P.O. BOX 2903, Minneapolis, MN 55402-0903 (US).(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS,
JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS,
LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY,
MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS,
RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT,
RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA,
GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: PACKAGE CLOSURE AND METHOD



(57) Abstract: A reclosable tamper-evident package is opened and closed repeatedly by opening and closing a first closure (46) of a package, and when it is desired to close the package and provide an indication of further opening, a second closure (50) is closed that cannot readily be opened. The tamper evident package has a closure assembly (38) that includes a zipper closure arrangement (42) with a slider device (40).

WO 2007/053633 A1

WO 2007/053633 A1



Published:

- *with international search report*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

TECHNICAL FIELD

The present disclosure relates generally to closure arrangements for packages, and, in particular, to a closure arrangement for recloseable tamper-evident packages, and methods of using tamper-evident packages.

BACKGROUND

10 Reclosable packages are convenient because they can be closed and sealed to preserve and contain the enclosed contents. Reclosable packages are also advantageous because they may be opened and closed multiple times. However, in certain applications such as where it is desired to maintain the security and integrity of the contents of the package, it may be desired that a reclosable package be capable of being opened and closed multiple times, and also be capable of being closed in such a way that it cannot be readily opened again. In this way, the package is tamper-evident because it cannot be opened again without being damaged. For example, it may be desired to place evidence for use in a legal proceeding in a package. This may require opening and closing the package multiple times to deposit contents into the package, and when it is desired that the contents no longer be accessed, then closing the package in a manner that prevents the evidence contained within from being accessed or tampered with without damaging the package. Similarly, it may be desired to place cash or financial instruments in a package where the package is capable of being opened and closed multiple times before being closed in a manner that prevents reopening without damaging the package. Other applications for security packages exist.

20 Consequently, a need exists for a package that can be opened and closed multiple times, and can be closed in such a way that the package cannot readily be re-opened.

SUMMARY

According to the present invention, there is provided a closure assembly for use with a flexible package; the closure assembly comprising:

- (a) a zipper closure arrangement having first and second zipper profiles constructed and arranged to selectively interlock; the zipper closure arrangement including first and second closures defined by the first and second zipper profiles;
- (b) a slider device oriented to slide laterally along the zipper closure arrangement and oriented to be axially moveable from a first axial position to a second axial position;
 - (i) the first closure being constructed and arranged to mate when the slider device is in the first axial position and is moved laterally along the zipper closure arrangement in a first direction; and
 - (ii) the second closure being constructed and arranged to mate when the slider device is in the second axial position and is moved laterally along the zipper closure arrangement in the first direction; the second closure being constructed and arranged not to mate when the slider device is in the first axial position.

According to the present invention, there is also provided a closure assembly for use with a flexible package; the closure assembly comprising:

- (a) a zipper closure arrangement having first and second zipper profiles constructed and arranged to selectively interlock into first and second mated positions;
 - (i) the first mated position including the first and second zipper profiles being interlocked and being capable of being selectively unmated; and
 - (ii) the second mated position including the first and second zipper profiles being interlocked and not being capable of being unmated; and
- (b) a slider device oriented to slide laterally along the zipper closure arrangement to move the zipper closure arrangement from the first mated position to the second mated position.

Preferably, in one aspect, there is disclosed a closure assembly for use with a flexible package that has a zipper closure arrangement having first and second zipper profiles constructed and arranged to selectively interlock, where the zipper closure arrangement includes first and second closures defined by the first and second zipper profiles. The

closure assembly also includes a slider device that is oriented to slide laterally along the zipper closure arrangement and is oriented to be axially moveable from a first axial position to a second axial position. The first closure defined by the first zipper profile is constructed and arranged to mate when the slider device is in the first axial position and is moved laterally along the zipper closure arrangement in a first direction. The second closure defined by the second zipper profile is constructed and arranged to mate when the slider device is in the second axial position and is moved laterally along the zipper closure arrangement in the first direction, and when the slider device is in the first axial position, the second closure is constructed and arranged not to mate.

10 According to the present invention, there is also provided a zipper closure arrangement comprising:

- (a) first and second zipper profiles constructed and arranged to selectively interlock; the first and second zipper profiles defining first and second closures;
 - (i) the first closure being reclosable and constructed and arranged to repeatedly selectively mate and unmate; and
 - (ii) the second closure being constructed and arranged to selectively mate and wherein, the second closure cannot be unmated after being mated;
- (b) the second closure including the first zipper profile having:
 - (i) a first closure member having a neck terminating with a head wider than
 - 20 the neck;
 - (ii) a first arm terminating with a finger; and
 - (iii) a second arm terminating with a finger;
 - (A) the first closure member being between the first arm and second arm;
- (c) the second closure including the second zipper profile having:
 - (i) a first leg terminating with a pair of hooks; and
 - (ii) a second leg terminating with a pair of hooks;
- (d) the second closure, in a mated position, including:

- (i) the first leg being between the first arm and the first closure member; the first leg pair of hooks engaging the head and the first arm finger; and
 - (ii) the second leg being between the second arm and the first closure member; the second leg pair of hooks engaging the head and the second arm finger;
 - (e) the first closure including a first hooked profile member on the first zipper profile; and
 - (f) the first closure including a second hooked profile member on the second zipper profile;
- 10 (i) the first and second hooked profile members being constructed and arranged to selectively mate and separate.

Preferably, in another aspect, a zipper closure arrangement is disclosed that includes first and second zipper profiles constructed and arranged to selectively interlock and that define first and second closures. The first closure is constructed and arranged to selectively mate and unmate and the second closure is constructed and arranged to selectively mate, and once mated, cannot be unmated.

According to the present invention, there is also provided a slider device for use with a recloseable package having a zipper closure arrangement; the slider device comprising:

- (a) a top wall;
- 20 (b) a first sidewall depending from the top wall;
- (c) a second sidewall depending from the top wall;
 - (i) the first and second sidewalls having a plurality of grooves to operatively receive protrusions on an external surface of a zipper closure arrangement; and
 - (ii) the top wall, first sidewall, and second sidewall defining a cavity to operatively receive a zipper closure arrangement; and
- (d) a clip secured to at least one of the top wall, first sidewall, and second sidewall; the clip being moveable from a first, inoperative position to a second position;

- (i) the second position including the clip being operatively oriented to engage the zipper closure arrangement.

Preferably, in another aspect, a flexible package is disclosed that includes a surrounding wall that defines a bottom, an interior volume, and a mouth to provide access to the interior volume. The flexible package also includes a closure assembly oriented at the mouth. The closure assembly includes a zipper closure arrangement having first and second zipper profiles constructed and arranged to selectively interlock and that define first and second closures. A slider device is oriented to slide laterally along the zipper closure arrangement and is oriented to be axially moveable from a first axial position to a second axial position. The first closure is constructed and arranged to mate when the slider device is in the first axial position and is moved laterally along the zipper closure arrangement in a first direction. The second closure is constructed and arranged to mate when the slider device is in the second axial position and is moved laterally along the zipper closure arrangement in the first direction, and when the slider device is in the first axial position, the second closure is constructed and arranged not to mate.

Preferably, in yet another aspect, a method of using a package is disclosed. The package includes a package surrounding wall defining an interior volume, a mouth, and a closure assembly oriented at the mouth. The closure assembly includes a zipper closure arrangement and a slider device operably oriented on the zipper closure arrangement. The method of using the package includes grasping a slider device and pushing the slider device axially relative to the zipper closure arrangement to engage the slider device against the zipper closure arrangement, where the zipper closure arrangement includes a first closure and a second closure. The method further includes moving the slider device laterally in a first direction to close the first closure and to permanently close the second closure.

Preferably, in a further aspect, a closure assembly for use with a flexible package is disclosed. The closure assembly includes a zipper closure arrangement having first and second zipper profiles constructed and arranged to selectively interlock into first and second mated positions. The first mated position includes the first and second zipper profiles being

interlocked and being capable of being selectively unmated. The second mated position includes the first and second zipper profiles being interlocked and not being capable of being unmated. A slider device is oriented to slide laterally along the zipper closure arrangement to move the zipper closure arrangement from the first mated position to the second mated position.

10 Preferably, in another aspect, a flexible package is disclosed. The flexible package includes a surrounding wall defining a bottom, an interior volume, and a mouth to provide access to the interior volume. The flexible package also includes a closure assembly oriented at the mouth, where the closure assembly includes a zipper closure arrangement comprising first and second zipper profiles constructed and arranged to selectively interlock into first and second mated positions. The first mated position includes the first and second zipper profiles being interlocked and being capable of being selectively unmated. The second mated position includes the first and second zipper profiles being interlocked and not being capable of being unmated. A slider device is oriented to slide laterally along the zipper closure arrangement to move the zipper closure arrangement from the first mated position to the second mated position.

20 Preferably, in yet another aspect, a method of using a package is disclosed. The package includes a package surrounding wall defining an interior volume, a mouth, and a closure assembly oriented at the mouth. The closure assembly includes a zipper closure arrangement and a slider device operably oriented on the zipper closure arrangement, and the zipper closure arrangement includes a first mated position and a second mated position. The method of using the package includes grasping the slider device and moving the slider device laterally in a first direction to move the zipper closure arrangement from the first mated position to the second mated position.

The above summary of the present invention is not intended to describe each illustrated embodiment or every implementation of the present invention. The figures and detailed description that follow more particularly exemplify these embodiments.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a package having a closure assembly including a zipper closure arrangement and a slider device.

FIG. 2 is a perspective view of the closure assembly depicted in FIG. 1.

FIG. 3 is a cross-sectional view of the zipper closure arrangement depicted in FIG. 1 with the slider device in a first axial position.

FIG. 4 is a cross-sectional view of the zipper closure arrangement depicted in FIG. 1 with the slider device in a second axial position.

FIG. 5 is a perspective view of the slider device depicted in FIG. 1.

10 **FIG. 6** is an alternative perspective view of the slider device depicted in FIG. 1.

FIG. 7 is a cross-sectional view of an alternative embodiment of a zipper closure arrangement.

FIG. 7A is a cross-sectional view of a first zipper profile of the zipper closure arrangement depicted in FIG. 7.

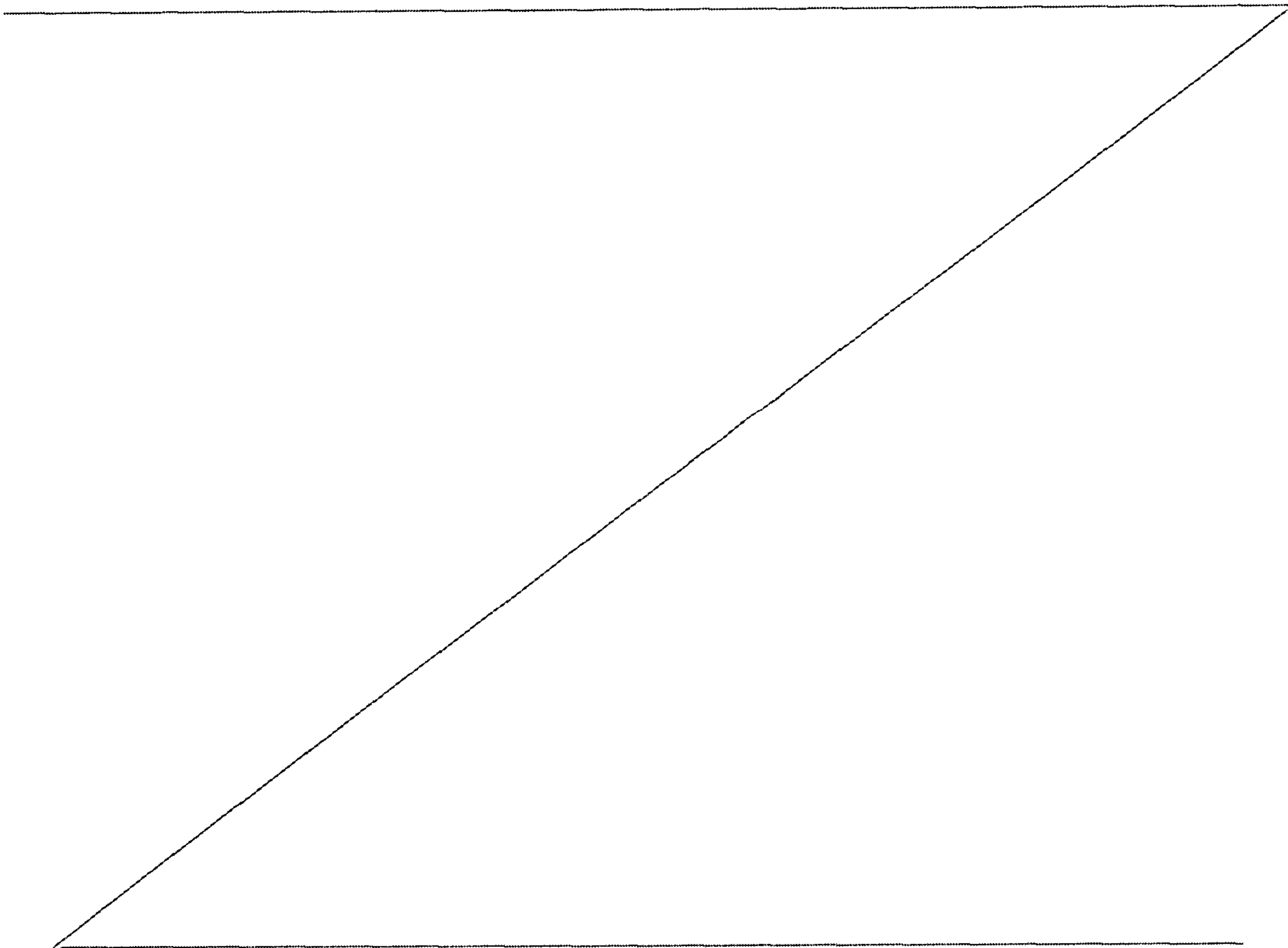


FIG. 7B is a cross-sectional view of a second zipper profile of the zipper closure arrangement depicted in FIG. 7.

FIG. 7C is a cross-sectional view of an alternative embodiment of the zipper closure arrangement depicted in FIG. 7 in a first mated position.

5 **FIG. 7D** is a cross-sectional view of an alternative embodiment of the zipper closure arrangement depicted in FIG. 7 in a second mated position.

FIG. 7E is a cross-sectional view of the zipper closure arrangement depicted in FIG. 7 in a first mated position.

10 **FIG. 7F** is a cross-sectional view of the zipper closure arrangement depicted in FIG. 7 in a second mated position.

FIG. 8 is a perspective view of the closure assembly depicted in FIG. 7.

FIG. 8A is a perspective view of a slider device of the zipper closure arrangement depicted in FIG. 8.

15 **FIG. 9** is a perspective view of a package having an alternative embodiment of a closure assembly.

FIG. 10 is a perspective view of the closure assembly depicted in FIG. 9.

FIG. 11 is a cross-sectional view of the zipper closure arrangement depicted in FIG. 9.

20 **FIG. 11A** is a cross-sectional view of a first zipper profile of the zipper closure arrangement depicted in FIG. 11.

FIG. 11B is a cross-sectional view of a second zipper profile of the zipper closure arrangement depicted in FIG. 11.

FIG. 11C is a cross-sectional view of an alternative embodiment of the zipper closure arrangement depicted in FIG. 11 in a first mated position.

25 **FIG. 11D** is a cross-sectional view of an alternative embodiment of the zipper closure arrangement depicted in FIG. 11 in a second mated position.

FIG. 11E is a cross-sectional view of the zipper closure arrangement depicted in FIG. 11 in a first mated position.

30 **FIG. 11F** is a cross-sectional view of the zipper closure arrangement depicted in FIG. 11 in a second mated position.

FIG. 12 is a perspective view of the slider depicted in FIG. 9 with a clip in a first, inoperative position.

FIG. 13 is a perspective view of the slider depicted in FIG. 9 with a clip in a second, operative position.

FIG. 14 is an alternative perspective view of the slider depicted in FIG. 9.

DETAILED DESCRIPTION

5 The present invention is believed to be applicable to a variety of packaging arrangements. The invention has been found to be particularly advantageous for use in sealing mechanisms for polymeric packages. An appreciation of various aspects of the invention is best gained through a discussion of application examples for such a packaging arrangement.

10 Example 1

Figure 1 illustrates a package 20, which includes a first panel section 22 and second, opposed, panel section 24 (Figure 2), typically made from a flexible polymeric film. For some manufacturing applications, the first and second panel sections 22, 24 are heat-sealed together along two edges 26, 28 and meet at a fold line in order to form a three-edged containment section for a product within the interior 30 (Figure 2) of the package 20. The fold line comprises the bottom edge 32. Alternatively, two separate panel sections 22, 24 of polymeric film may be used and heat-sealed together along the two edges 26, 28 and at the bottom 32. Together, panel sections 22, 24 comprise a surrounding wall 34 that defines the package interior 30. Access is provided to the interior 30 of the package 20 through a mouth 36. A closure assembly 38 is part of package 20 adjacent to mouth 36.

Figure 2 illustrates an example closure assembly 38 constructed in accordance with the present disclosure. Closure assembly 38 comprises a slider device 40 and a zipper closure arrangement 42. Closure assembly 38 is shown in Figure 1 attached to surrounding wall 34 along mouth 36. For example, closure assembly 38 may be heat sealed to surrounding wall 34. Other methods of attachment are possible.

Zipper closure arrangement 42 includes a first zipper profile 44 and a second zipper profile 48, which define a first closure 46 and a second closure 50. First and second zipper profiles 44, 48 further define exterior surfaces 51 and interior surfaces 53. First closure 46 and second closure 50 are constructed and arranged to selectively interlock. Many embodiments of first closure 46 and second closure 50 are useable. One usable embodiment of first closure 46 is a

reclosable closure depicted in Figure 2. A reclosable closure is one that can be repeatedly mated and unmated, when selected to do so by the zipper operator. In the embodiment shown in Figure 2, first closure 46 includes a first hooked profile member 260 on the first zipper profile 44, and second hooked profile member 262 on the second zipper profile 48. Specifically, in the particular embodiment shown, the first and second hooked profile members 260, 262 have a J-shaped cross section. In the embodiment depicted in Figure 2, the first closure 46 further includes a first closure post 264 on the second zipper profile 48 adjacent to the first hooked profile member 260. A gap 266 is formed between the first closure post 264 and the second hooked profile member 262 that is configured and arranged to receive the first hooked profile member 260 when the first and second hooked profile members 260, 262 are mated.

The first and second hooked profile members 260, 262 are constructed and arranged to selectively mate and separate. Specifically, an end region 268 of the first hooked profile member 260 engages with an opposing end region 270 of the second hooked profile member 262 to interlock the first and second hooked profile members 260, 262. To separate the first and second profile members 260, 262, sufficient force must be applied to closure 46 in a separating direction to cause first hooked profile member 260 and second hooked profile member 262 to deform and to slide out of contact. In some embodiments, a slider device is used to separate the members 260, 262, as described further below.

Second closure 50 is also constructed and arranged to selectively interlock. Many embodiments of closure 50 are useable. In one usable embodiment, closure 50 is proximate to first reclosable closure 46 along first and second zipper profiles 44, 48. In one usable embodiment, closure 50 is a closure constructed in accordance with the embodiment depicted in Figure 2. In the embodiment depicted in Figure 2, second closure 50 cannot be unmated after being mated.

In reference now to Figures 2 and 3, second closure 50 includes the first zipper profile 44 and the second zipper profile 48. First zipper profile 44 includes a first closure member 228 having a neck 230 terminating with a head 232 wider than the neck 230, a first arm 234 terminating with a finger 236, and a second arm 238 terminating with a finger 240. The first closure member 228 is spaced from and between the first arm 234 and second arm 238. Second zipper

profile 48 includes a first leg 242 terminating with a pair of hooks 244, 246, and a second leg 248 spaced from the first leg 242 and terminating with a pair of hooks 250, 252. When the second closure 50 is in a mated position, as shown in Figure 4, the second closure 50 includes: (i) the first leg 242 being between the first arm 234 and the first closure member 228; (ii) the first leg pair of hooks 244, 246 engaging the head 232 and the first arm finger 236, respectively; (iii) the second leg 248 being between the second arm 238 and the first closure member 228; and (iv) the second leg pair of hooks 250, 252 engaging the head 232 and the second arm finger 240, respectively.

Closure assembly 38 includes a slider device 40. Slider device 40 is constructed to selectively squeeze one or more of first and second closures 46, 50 through exterior surface 51. Slider device 40 is oriented to slide laterally along the zipper closure arrangement 42, as indicated by directions A and B in Figure 2. In the embodiment shown in Figure 2, slider device 40 is also oriented to be axially movable, as indicated by directions C and D in Figure 2, from a first axial position to a second axial position. Many embodiments of slider device 40 are usable. A perspective view of one useable embodiment of a slider device 40 is shown in Figure 5. In the embodiment depicted in Figure 5, slider device 40 comprises a top wall 96, a first side wall 98 depending from top wall 96, and a second side wall 100 depending from top wall 96. Top wall 96 comprises an exterior surface 104 and an interior surface 106. Interior surface 106 is apparent in Figure 6. In the embodiment of slider 40 depicted in Figure 5, first sidewall 98 of slider device 40 defines an end 200 with a foot 202, and second sidewall 100 defines an end 204 with a foot 206.

Together, the top wall 96, first side wall 98, and second side wall 100 define a cavity 102 to operatively receive a zipper closure arrangement 42. First and second sidewalls 98, 100 of slider device 40 define a first width 122 therebetween to define zipper squeezing surfaces 124. The first width 122 is sized to cause the first and second sidewalls 98, 100 to squeeze at least a portion of the zipper closure arrangement 42.

Slider device 40 is axially movable between a first axial position and a second axial position. In the embodiment depicted in Figure 2, zipper closure arrangement 42 defines a first external groove 208 in the first zipper profile 44 and a second external groove 210 in the second zipper profile 48. First and

second external grooves 208, 210 are located between first closure 46 and second closure 50. When slider device 40 is in the first axial position, as shown in Figures 2 and 3, the first sidewall foot 202 is seated in the first groove 208 and the second sidewall foot 206 is seated in the second groove 210, and zipper squeezing surfaces 124 are arranged to apply a squeezing force to first closure 46.

In the embodiment shown, zipper closure arrangement 42 also includes a first externally directed projection 212 in the first zipper profile 44 and a second externally directed projection 214 in the second zipper profile 48 (Figures 2-4). The second closure 50 is located between the first and second externally directed projections 212, 214 and the first closure 46. When slider device 40 is in the second axial position, as shown in Figure 4, first projection 212 is between first sidewall foot 202 and the second closure 50, and second projection 214 is between second sidewall foot 206 and the second closure 50.

In some embodiments, slider device 40 includes a plow or splitter 120. Splitter 120 is constructed and arranged to at least partially separate the zipper closure arrangement 42 when the slider device 40 is slid along the zipper closure arrangement 42, such as in direction B indicated in Figure 2. One embodiment of a splitter 120 is depicted in Figure 6. The depicted splitter 120 depends from interior surface 106 of top wall 96, and is generally wedge-shaped. Splitter 120 is characterized by a splitter depth 121, defined as the distance that splitter 120 protrudes away from interior surface 106. Splitter depth 121 is sized so that splitter 120 contacts interior surfaces 53 of first and second zipper profiles 44, 48, but does not contact first or second closures 46, 50, when splitter 40 is in the first axial position. The splitter 120 is constructed and arranged to separate the first closure 46 when the slider device 40 is moved laterally along the zipper closure arrangement 42 in a second direction opposite of the first direction, such as in direction B in Figure 10 by applying force in a separating direction to interior surfaces 53. If second closure 50 is closed, first and second zipper profiles 44, 48 have insufficient stiffness to cause the separating force applied to interior surfaces 53 to separate second closure 50 when slider device 40 is moved along zipper closure arrangement 42 in the second direction.

In use, when slider device 40 is in the first axial position, zipper squeezing surfaces 124 (Figure 5) of slider 40 engage with and are slidably

disposed along exterior surfaces 51 (Figure 2) of zipper closure arrangement 42, proximate to first closure 46. When slider device 40 is slid laterally along zipper closure arrangement 42, as in direction A shown in Figure 2, zipper squeezing surfaces 124 generally contact zipper closure arrangement 42 along exterior surface 51 and apply a compression load or squeezing force to first closure 46, causing first and second hooked profile members 260, 262 to become mated.

A user may unmate first closure 46 from the first mated position by grasping slider 40 while in the first axial position and sliding it laterally along zipper closure arrangement 42 in direction B. Splitter 120 applies a separating force to first and second zipper profiles 46, 50 that is sufficient to unmate first closure 46. Alternatively, a user may unmate first closure 46 by grasping closure assembly 38 and manually applying sufficient force in a separating direction.

When slider device 40 is placed in the second axial position and moved axially in direction D (Figure 2) relative to the zipper closure arrangement 42, as shown in Figure 4, zipper squeezing surfaces 124 of slider 40 engage with and are slidably disposed along exterior surfaces 51 of zipper closure arrangement 42 proximate to both first closure 46 and second closure 50. When slider device 40 is then slid laterally along zipper closure arrangement 42, as in direction A shown in Figure 2, zipper squeezing surfaces 124 generally contact zipper closure arrangement 42 and apply a compression load or squeezing force to first closure 46 and second closure 50, causing first closure 46 to be mated such that first and second hooked profile members 260, 262 are mated, and causing second closure 50 to be mated. When the second closure 50 is mated, in the embodiment shown: (i) first leg 242 is between the first arm 234 and the first closure member 228; (ii) the first leg 242 pair of hooks 244, 246 engage the head 232 and the first arm finger 236, respectively; (iii) the second leg 248 is between the second arm 238 and the first closure member 228; and (iv) the second leg 248 pair of hooks 250, 252 engage the head 232 and the second arm finger 240, respectively. After mating first and second closures 46, 50 in this manner, slider device 40 is configured to be removable from zipper closure arrangement 42 and can be disposed of. Once second closure arrangement 50 is mated, it cannot readily be unmated.

Example 2

Many other embodiments of closure assembly 38 are usable. One usable embodiment is depicted in Figures 7 and 8. In the embodiment shown in Figures 7 and 8, zipper closure arrangement 42 includes the first zipper profile 44 and the second zipper profile 48, which define first closure 46 and second closure 50. First closure 46 and second closure 50 are constructed and arranged to selectively interlock. First closure 46 is defined by a first mated position of zipper closure arrangement 42, and second closure 50 is defined by a second mated position of zipper closure arrangement 42. The embodiment of closure 46 shown in Figure 7 is a reclosable closure, meaning that closure 46 can be repeatedly mated and unmated, when selected to do so by the zipper operator. First and second zipper profiles 44, 48 include exterior surfaces 51. In the embodiment shown in Figures 7 and 7A, first zipper profile 44 includes a plurality of first closure members 400. Each first closure member 400 includes a leg 402 with a first pair of feet 404, 406 at an end of leg 402, and a second pair of feet 408, 410 on leg 402 spaced from the first pair of feet 404, 406. As shown in Figure 7B, the second zipper profile 48 includes a plurality of second closure members 414. Each second closure member 414 includes an arm 416 with a first pair of fingers 418, 420 at an end of arm 416 and a second pair of fingers 422, 424 on arm 416 spaced from the first pair of fingers 418, 420. Generally, the second pair of feet 408, 410 and second pair of fingers 422, 424 are stiffer than the first pair of feet 404, 406 and first pair of fingers 418, 420.

In one embodiment, each of the first closure members first and second pairs of feet 404, 406 are arrow-shaped, and each of the second closure members first and second pairs of fingers 418, 420 are arrow-shaped. In some embodiments, each of first and second closure members 400, 414 comprise a material that includes a lubricant. For example, first and second closure members 400, 414 may comprise a material that includes a fat that migrates to the surface, or “blooms,” between about 2 and 24 hours after production, to provide surface lubrication.

In one embodiment of closure assembly 38 shown in Figures 7C and 7D, the plurality of first closure members 400 comprise at least a first leg 402a, further including feet 404a, 406a, 408a, and 410a, and a second leg 402b, further including feet 404b, 406b, 408b, and 410b. The plurality of second closure

members 414 includes at least a first arm 416a, further including fingers 418a, 420a, 422a, and 424a, and a second arm 416b, further including fingers 418b, 420b, 422b, and 424b. In this embodiment, the first mated position (Figure 7C) includes: (i) at least one of the first closure members 400, such as first leg 402a
5 being oriented between first and second arms 416a, 416b; (ii) the second leg first foot 406b being between the first arm first finger 418a and first arm second finger 422a; (iii) the first leg first foot 404a being between the first arm first finger 420a and the first arm second finger 424a; and (iv) the first leg second foot 406a being between the second arm first finger 418b and the second arm
10 second finger 422b. In this embodiment, the second mated position (Figure 7D) includes: (i) at least one of the first closure members 400, as first leg 402a being oriented between first and second arms 416a, 416b; (ii) the second leg second foot 410b being between the first arm first finger 418a and first arm second finger 422a; (iii) the first leg second foot 408a being between the first arm first
15 finger 420a and first arm second finger 424a; and (iv) the first leg second foot 410a being between the second arm first finger 418b and the second arm second finger 422b.

In another embodiment shown in Figures 7E and 7F, the plurality of first closure members further includes at least a third leg 402c, further including first
20 feet 404c, 406c, and second feet 408c, 410c. In this embodiment, the first mated position (Figure 7E) includes: (i) at least one of the first closure members 400, such as first leg 402a being oriented between first and second arms 416a, 416b; (ii) at least one of the second closure members 414, such as second arm 416b being oriented between first and third legs 402a, 402c; (iii) the second leg first
25 foot 406b being between the first arm first finger 418a and first arm second finger 422a; (iv) the first leg first foot 404a being between the first arm first finger 420a and the first arm second finger 424a; (v) the first leg second foot 406a being between the second arm first finger 418b and the second arm second finger 422b; and (vi) the third leg first foot 404c being between the second arm
30 first finger 420b and the second arm second finger 424b. In this embodiment, the second mated position (Figure 7F) includes: (i) at least one of the first closure members 400, as first leg 402a being oriented between first and second arms 416a, 416b; (ii) at least one of the second closure members 414, such as second arm 416b, being oriented between the first and third legs 402a, 402c; (iii)

the second leg second foot 410b being between the first arm first finger 418a and first arm second finger 422a; (iv) the first leg second foot 408a being between the first arm first finger 420a and first arm second finger 424a; (v) the first leg second foot 410a being between the second arm first finger 418b and the second arm second finger 422b; and (vi) the third leg second foot 408c being between the second arm first finger 420b and the second arm second finger 424b.

Closure assembly 38 includes slider device 40. Slider device 40 is constructed to selectively squeeze one or more of first and second closures 46, 50 through exterior surfaces 51. Slider device 40 is oriented to slide laterally along the zipper closure arrangement 42, as indicated by directions A and B in Figure 8. A perspective view of one useable embodiment of slider device 40 is shown in Figure 8A. In the embodiment depicted in Figure 8A, slider device 40 comprises a top wall 96, a first side wall 98 depending from top wall 96, and a second side wall 100 depending from top wall 96. Top wall 96 comprises an exterior surface 104 and an interior surface 106. In the embodiment of slider 40 depicted in Figure 8A, first sidewall 98 of slider device 40 defines an end 200 with a foot 202, and second sidewall 100 defines an end 204 with a foot 206.

Together, the top wall 96, first side wall 98, and second side wall 100 define a cavity 102 to operatively receive a zipper closure arrangement 42. First and second sidewalls 98, 100 of slider device 40 define a first width 122 therebetween to define zipper squeezing surfaces 124. The first width 122 is sized to cause the first and second sidewalls 98, 100 to squeeze at least a portion of the zipper closure arrangement 42.

There are many usable embodiments for effecting the first mated position and second mated position. In the embodiment depicted in Figures 7 and 8, a user effects the first mated position by grasping closure assembly 38 and manually applying sufficient squeezing pressure to cause the zipper closure arrangement 42 to enter the first mated position, as shown in Figures 7C and 7E. To enter the first mated position, each of first foot 406b and first finger 418a, and first foot 404a and first finger 420a, and first foot 406a and first finger 418b must deform and slide past each other. Typically, because first pair of feet 404, 406 and first pair of fingers 418, 420 are less stiff than the second pair of feet 408, 410 and second pair of fingers 422, 424, a force that is sufficient to cause the zipper closure arrangement 42 to enter the first mated position will be

insufficient to cause the zipper closure arrangement 42 to enter the second mated position.

A user may unmate first closure 46 by grasping closure assembly 38 and manually applying sufficient force in a separating direction.

5 The second mated position is effected by sliding slider 40 laterally along zipper closure arrangement 42. Zipper squeezing surface 124 of slider 40 applies squeezing force to exterior surface 51 of zipper closure arrangement 42 to cause zipper closure arrangement 42 to enter the second mated position. In the embodiment depicted in Figures 7E and 7F, entering the second mated
10 position requires: (i) second foot 410b and first finger 418a must deform and slide past each other; (ii) first foot 406b and second finger 422a must deform and slide past each other; (iii) second foot 408a and first finger 420a must deform and slide past each other; (iv) first foot 404a and second finger 424a must deform and slide past each other; (v) first foot 406a and second finger 422b must
15 deform and slide past each other; (vi) first foot 404c and second finger 424b must deform and slide past each other; (vii) second foot 410b and first finger 418a must deform and slide past each other; (viii) second foot 408a and first finger 420a must deform and slide past each other; (ix) second foot 410a and first finger 418b must deform and slide past each other; and (x) second foot 408c
20 and first finger 420b must deform and slide past each other. Because second pairs of feet 408, 410, and second pairs of fingers 422, 424 are relatively stiff, once zipper closure arrangement 42 is in the second mated position, it cannot readily be unmated. In addition, once zipper closure arrangement 42 is in the second mated position, slider 40 may be removed from closure 38.

25

Example 3

Many other usable embodiments of closure 38 exist. One usable embodiment is depicted in Figures 9-11. In the embodiment shown in Figures 9-11, zipper closure arrangement 42 includes first zipper profile 44 and second zipper profile 48, which define first closure 46 and second closure 50. First
30 closure 46 and second closure 50 are constructed and arranged to selectively interlock. First closure 46 is defined by a first mated position of zipper closure arrangement 42, and second closure 50 is defined by a second mated position of zipper closure arrangement 42. In one embodiment, first closure 46 is a reclosable closure and second closure 50 is a closure that cannot readily be

unmated once it has been mated. A reclosable closure is one that can be repeatedly mated and unmated, when selected to do so by the zipper operator. First and second zipper profiles 44, 48 define exterior surfaces 51, interior surfaces 53, and a plurality of protrusions 55.

5 In the embodiment shown in Figures 11 and 11A, first zipper profile 44 includes a plurality of first closure members 300. Each first closure member 300 includes a leg 302 with a first pair of feet 304, 306 at an end of leg 302, and a second pair of feet 308, 310 on leg 302 spaced from the first pair of feet 304, 306. Referring to Figure 11B, the second zipper profile 48 includes a plurality
10 of second closure members 314. Each second closure member 314 includes an arm 316 with a first pair of fingers 318, 320 at an end of arm 316 and a second pair of fingers 322, 324 on arm 316 spaced from the first pair of fingers 318, 320. Generally, the second pair of feet 308, 310 and second pair of fingers 322, 324 are stiffer than the first pair of feet 304, 306 and first pair of fingers 318,
15 320. Preferably, each protrusion 55 is positioned along exterior surface 51 opposite from each leg 302 or each arm 316 along interior surface 53.

 In one embodiment, each of the first closure members first and second pairs of feet 304, 306 are arrow-shaped, and each of the second closure members first and second pairs of fingers 318, 320 are arrow-shaped. In some
20 embodiments, each of first and second closure members 300, 314 comprise a material that includes a lubricant. For example, first and second closure members 300, 314 may comprise a material that includes a fat that migrates to the surface, or "blooms," between about 2 and 24 hours after production, to provide surface lubrication.

25 In one embodiment of closure assembly 38 shown in Figures 11C and 11D, the plurality of first closure members 300 comprise at least a first leg 302a, further including feet 304a, 306a, 308a, and 310a, and a second leg 302b, further including feet 304b, 306b, 308b, and 310b. The plurality of second closure members 314 includes at least a first arm 316a, further including fingers 318a, 320a, 322a, and 324a, and a second arm 316b, further including fingers 318b,
30 320b, 322b, and 324b. In this embodiment, the first mated position (Figure 11C) includes: (i) at least one of the first closure members 300, such as first leg 302a being oriented between first and second arms 316a, 316b; (ii) the second leg first foot 306b being between the first arm first finger 318a and first arm second

finger 322a; (iii) the first leg first foot 304a being between the first arm first finger 320a and the first arm second finger 324a; and (iv) the first leg second foot 306a being between the second arm first finger 318b and the second arm second finger 322b. In this embodiment, the second mated position (Figure 5 11D) includes: (i) at least one of the first closure members 300, as first leg 302a being oriented between first and second arms 316a, 316b; (ii) the second leg second foot 310b being between the first arm first finger 318a and first arm second finger 322a; (iii) the first leg second foot 308a being between the first arm first finger 320a and first arm second finger 324a; and (iv) the first leg 10 second foot 310a being between the second arm first finger 318b and the second arm second finger 322b.

In another embodiment shown in Figures 11E and 11F, the plurality of first closure members further includes at least a third leg 302c, further including first feet 304c, 306c, and second feet 308c, 310c. In this embodiment, the first 15 mated position (Figure 11E) includes: (i) at least one of the first closure members 300, such as first leg 302a being oriented between first and second arms 316a, 316b; (ii) at least one of the second closure members 314, such as second arm 316b being oriented between first and third legs 302a, 302c; (iii) the second leg first foot 306b being between the first arm first finger 418a and first 20 arm second finger 322a; (iv) the first leg first foot 304a being between the first arm first finger 320a and the first arm second finger 324a; (v) the first leg second foot 306a being between the second arm first finger 318b and the second arm second finger 322b; and (vi) the third leg first foot 304c being between the second arm first finger 320b and the second arm second finger 324b. In this 25 embodiment, the second mated position (Figure 11F) includes: (i) at least one of the first closure members 300, as first leg 302a being oriented between first and second arms 316a, 316b; (ii) at least one of the second closure members 314, such as second arm 316b, being oriented between the first and third legs 302a, 302c; (iii) the second leg second foot 310b being between the first arm first 30 finger 318a and first arm second finger 322a; (iv) the first leg second foot 308a being between the first arm first finger 320a and first arm second finger 324a; (v) the first leg second foot 310a being between the second arm first finger 318b and the second arm second finger 322b; and (vi) the third leg second foot 308c

being between the second arm first finger 320b and the second arm second finger 324b.

Closure assembly 38 includes slider device 40. Slider device 40 is constructed to selectively squeeze one or more of first and second closures 46, 50 through exterior surfaces 51. Slider device 40 is oriented to slide laterally along the zipper closure arrangement 42, as indicated by directions A and B in Figure 10. A perspective view of one useable embodiment of a slider device 40 is shown in Figure 12. In the embodiment shown in Figure 12, slider device 40 includes a top wall 96 oriented to slide along a top of the zipper closure arrangement 38, a first sidewall 98 depending from the top wall 96 oriented to slide along a side of the zipper closure arrangement 38, and a second sidewall 100 depending from the top wall 96 oriented to slide laterally along a side of the zipper closure arrangement 42 in directions A and B indicated in Figure 10. Together, the top wall 96, first sidewall 98, and second sidewall 100 define a cavity 102 to operatively receive the zipper closure arrangement 42 therein. Slider device 40 further includes a clip 108 that is secured to at least one of the top wall 96, first sidewall 98, and second sidewall 100. Clip 108 is movable from a first position to a second position, in directions C and D indicated in Figure 10. The first position includes the clip 108 being remote from the zipper closure arrangement 42. The second position includes the clip 108 being oriented to operatively engage the zipper closure arrangement 42.

Many embodiments of clip 108 are possible. A perspective view of one embodiment of clip 108 is shown in Figure 12. In the embodiment depicted in Figure 12, clip 108 includes a first wall 110, a first leg 112 depending from the first wall 110, and a second leg 114 depending from the first wall 110. The embodiment shown in Figure 12 depicts the clip 108 secured to the top wall 96. A living hinge 116 is depicted in this embodiment as securing the top wall 96 of the slider device 40 to the clip first wall 110.

In the embodiment shown, top wall 96 of slider device 40 includes an aperture or opening 118 extending through top wall 96. Opening 118 is sized or dimensioned to allow the first and second legs 112, 114 of clip 108 to move through the cavity 102. First sidewall 98 of slider device 40 defines a first groove 134 sized to receive first leg 112 of clip 108. Second sidewall 100 of

slider device 40 defines a second groove 136 sized to receive second leg 114 of clip 108.

Clip 108 is moveable from a first position, as shown in Figure 12, wherein the clip 108 is inoperative, to a second position, as shown in Figure 13, wherein the clip 108 is operatively oriented to engage the zipper closure arrangement 42. In the embodiment shown in Figure 12, in the first position of clip 108, the first and second legs 112, 114 are outside of opening 118, and the clip first wall 110 is angled relative to the top wall 96. As shown in Figure 13, when the clip 108 is in the second position, the first and second legs 112, 114 are at least partially inside of cavity 102 and pressed against the second closure, and clip first wall 110 is against top wall 96. In particular, in the illustrated embodiment, the first and second legs 112, 114 are substantially all the way inside of cavity 102, and the clip first wall 110 is against top wall 96. Clip 108 is brought to the second position by moving clip 108 through opening 118 in top wall 96.

In one embodiment, first and second walls 98, 100 of slider 40 define a plurality of grooves 125 that define a plurality of first zipper squeezing regions 127. The first zipper squeezing regions 127 are sized to apply sufficient pressure to protrusions 55 when the slider 40 is slid along the zipper closure arrangement 42 to cause the first and second zipper profiles 44, 48 to enter the first mated position. Further, first and second sidewalls 112, 114 of clip 108 define a second width 123 therebetween that defines a second zipper squeezing region 129. The second zipper squeezing region 129 is sized to apply sufficient pressure to protrusions 55 when the slider 40 is slid along the zipper closure arrangement 42 to cause the first and second zipper profiles 44, 48 to enter the second mated position.

In some embodiments, slider device 40 includes a plow or splitter 120. Splitter 120 is constructed and arranged to at least partially separate the zipper closure arrangement 42 when the slider device 40 is slid along the zipper closure arrangement 42. One embodiment of a splitter 120 is depicted in Figure 14. The depicted splitter 120 depends from interior surface 106 of top wall 96, and is generally wedge-shaped. Splitter 120 is characterized by a splitter depth 121, defined as the distance that splitter 120 protrudes away from surface interior surface 106. Splitter depth 121 is sized so that splitter 120 does not contact first

or second closures 46, 50. The splitter 120 is constructed and arranged to separate the first closure 46 when the slider device 40 is moved laterally along the zipper closure arrangement 42 in a second direction opposite of the first direction, such as in direction B in Figure 10 by applying force in a separating direction to interior surfaces 53. Splitter 120 is configured to not apply sufficient separating force to separate second closure 50 when slider device 40 is moved along zipper closure arrangement 42 in the second direction.

In use, a user effects the first mated position by grasping slider 40 with clip 108 in the first position and sliding slider 40 laterally along zipper closure arrangement 42 in first direction A, causing squeezing pressure to be applied from grooves 125 in side walls 98, 100 of slider 40 to protrusions 55 of first and second zipper profiles. The squeezing pressure applied is sufficient to cause the first closure 46 to mate in the first mated position. To enter the first mated position, each of first foot 306b and first finger 318a, and first foot 304a and first finger 320a, and first foot 306a and first finger 318b must deform and slide past each other. Typically, because first pair of feet 304, 306 and first pair of fingers 318, 320 are less stiff than the second pair of feet 308, 310 and second pair of fingers 322, 324, a force that is sufficient to cause the zipper closure arrangement 42 to enter the first mated position will be insufficient to cause the zipper closure arrangement 42 to enter the second mated position.

A user may unmate first closure 46 from the first mated position by grasping slider 40 with clip 108 in the first position and sliding it laterally along zipper closure arrangement 42 in direction B. Splitter 120 applies a separating force to interior surfaces 53 of first and second zipper profiles 46, 50 that is sufficient to unmate first closure 46. Alternatively, a user may unmate first closure 46 by grasping closure assembly 38 and manually applying sufficient force in a separating direction.

The second mated position is effected by first grasping clip 108 and placing it in the second position, through opening 118 and within first and second grooves 134, 136. The user then grasps slider 40 and slides it laterally along zipper closure arrangement 42 in either first direction A or second direction B, causing squeezing pressure to be applied from second squeezing region 129 of clip 108 to protrusions 55 of first and second zipper profiles 44, 48. The squeezing pressure applied is sufficient to cause both the first closure 46

to mate in the first mated position and the second closure 50 to mate in the second mated position. In the embodiment depicted in Figures 11E and 11F, entering the second mated position requires: (i) second foot 310b and first finger 318a must deform and slide past each other; (ii) first foot 306b and second finger 322a must deform and slide past each other; (iii) second foot 308a and first finger 320a must deform and slide past each other; (iv) first foot 304a and second finger 324a must deform and slide past each other; (v) first foot 306a and second finger 322b must deform and slide past each other; (vi) first foot 304c and second finger 324b must deform and slide past each other; (vii) second foot 310b and first finger 318a must deform and slide past each other; (viii) second foot 308a and first finger 320a must deform and slide past each other; (ix) second foot 310a and first finger 318b must deform and slide past each other; and (x) second foot 308c and first finger 320b must deform and slide past each other. Because second pairs of feet 308, 310, and second pairs of fingers 322, 324 are relatively stiff, once zipper closure arrangement 42 is in the second mated position, it cannot readily be unmated. In addition, once zipper closure arrangement 42 is in the second mated position, slider 40 may be removed from closure 38.

Example 4

In another aspect, a method of using a package 20 is disclosed. Referring to Figure 1, package 20 includes a surrounding wall 34 defining an interior volume 30, a mouth 36, and a closure assembly 38 oriented at the mouth 36. The closure assembly 38 includes a zipper closure arrangement 42 and a slider device 40 operably oriented on the zipper closure arrangement 42. The zipper closure arrangement 42 includes a first zipper profile 44 and a second zipper profile 48, which define a first closure 46 and a second closure 50. First and second closures 46, 50 are constructed and arranged to selectively interlock. In one embodiment, second closure 50 cannot be unmated after being mated.

In one embodiment, the method includes the steps of grasping slider device 40 and pushing slider device 40 axially relative to the zipper closure arrangement 42, such as in direction D in Figure 2, to engage the slider device 40 against the zipper closure arrangement 42, where the zipper closure arrangement 42 includes a first closure 46 and a second closure 50. In the embodiment shown in Figure 2, slider device includes an end 200 with a foot 202 and an end 204

with a foot 206. Further, the zipper closure arrangement includes first and second externally directed projections 212, 214. Pushing the slider device 40 axially relative to the zipper closure arrangement 42 causes feet 202, 206 to move over and beyond projections 212, 214. The method further includes the step of moving the slider device 40 laterally in a first direction to close the first closure 46 and to permanently close the second closure 50. The slider 40 has zipper squeezing surfaces 124, which apply a compressive or squeezing force to both the first and second zipper profiles 44, 48 when the slider device 40 is slid along the zipper closure arrangement 42. The squeezing force is sufficient to cause second closure 50 to mate, which in one embodiment cannot be unmated after being mated.

In another embodiment of the method, before the step of pushing the slider device 40 axially relative to the zipper closure arrangement, the method includes the step of moving the slider device 40 laterally in the first direction, such as in direction A in Figure 2, to close only the first closure 46 and not to close the second closure 50. In the embodiment depicted in Figure 2, before pushing the slider device 40 relative to the zipper closure arrangement 42, the feet 202, 206 of slider 40 are positioned in grooves 208, 210 along the first and second zipper profiles 44, 48. When the slider device 40 is in this position, the zipper squeezing surfaces 124 are proximate to the first closure 46 and not proximate to second closure 50. When the slider 40 is moved laterally in the first direction, a squeezing or compression force is applied only to first closure 46, only closing first closure 46 and not second closure 50.

In a further embodiment of the method, after the step of moving the slider device 40 laterally in the first direction to close only the first closure 46 and not to close the second closure 50 and before the step of pushing the slider device 40 axially, the slider device 40 is moved laterally in a second direction opposite of the first direction, such as direction B shown in Figure 2, to open the first closure 46. In one embodiment, slider 40 includes a wedge-shaped splitter 120 that is arranged to contact interior surfaces 53 of the first and second zipper profiles 44, 48. When the slider 40 is moved in a direction such as direction B shown in Figure 2, splitter 120 applies a separating force to interior surfaces 53, causing the first closure 46 to become unmated.

Example 5

In another aspect, a method of using a package 20 is disclosed. Referring to Figure 9, package 20 includes a package surrounding wall 34 defining an interior volume 30, a mouth 36, and a closure assembly 38 oriented at the mouth 36; the closure assembly 38 including a zipper closure arrangement 42 and a slider device 40 operably oriented on the zipper closure arrangement 42. The zipper closure arrangement includes a first zipper profile 44 and a second zipper profile 48, which define a first closure 46 and a second closure 50. First closure 46 and second closure 50 are constructed and arranged to selectively interlock. The zipper closure arrangement 42 includes a first mated position and a second mated position. First closure 46 is defined by a first mated position of zipper closure arrangement 42, and second closure 50 is defined by a second mated position of zipper closure arrangement 42. In one embodiment, first closure 46 is a reclosable closure and second closure 50 is a closure that cannot readily be unmated once it has been mated. The slider device 40 includes zipper squeezing surfaces, such as zipper squeezing surfaces 127 shown in Figure 12. Slider device 40 also includes a clip 108 movable from a first position to a second position. In the embodiment shown in Figure 12, clip 108 includes a pair of legs 112, 114 which define a zipper squeezing region 124 therebetween. In the embodiment shown in Figure 9, when clip 108 is in the first position, clip 108 is not in contact with the zipper closure arrangement 42. In the embodiment shown in Figure 13, when clip 108 is in the second position, the legs 112, 114 are positioned so that zipper squeezing region 124 will contact the zipper closure arrangement 42.

The method includes the step of grasping the slider device 40, with the clip 108 in the second position and the zipper closure arrangement in the first mated position, and moving the slider device 40 laterally in a first direction, such as direction A shown in Figure 10, to move the zipper closure arrangement 42 from the first mated position to the second mated position. When slider device 40 is moved in the first direction, the zipper squeezing surfaces 124 of clip 108 apply a squeezing or compression force to the first and second zipper profiles 44, 48, causing the zipper closure arrangement 42 to enter the second mated position from the first mated position. The squeezing force applied by the zipper

squeezing surfaces 127 is sufficient to cause the zipper closure arrangement 42 to enter the second mated position.

In another aspect of the method, before the step of moving the slider device 40 laterally in a first direction, such as direction A in Figure 10, to move the zipper closure arrangement 42 from the first mated position to the second mated position, the method includes the step of moving the clip 108 from the first position to the second position.

In another aspect of the method, before the step of moving the clip 108 from the first position to the second position, the method includes the step of moving the slider device 40 laterally in a first direction, such as direction A in Figure 10, to move the zipper closure arrangement 42 to the first mated position. When the clip 108 is in the first position and the slider device 40 is moved laterally in the first direction, the zipper squeezing surfaces 127 of slider 40 apply a squeezing or compressive force to zipper closure arrangement 42 to cause zipper closure arrangement 42 to enter the first mated position. The squeezing force applied by surfaces 127 is insufficient, however, to cause zipper closure arrangement to enter the second mated position.

In yet another aspect of the method, before the step of moving the clip 108 from the first position to the second position, the method includes the step of moving the slider device 40 laterally in a second direction, such as direction B shown in Figure 10 to unmate the zipper closure arrangement 42 from the first mated position. In one embodiment, slider 40 includes a wedge-shaped splitter 120 that is arranged to contact interior surfaces 53 of the first and second zipper profiles 44, 48. When the slider 40 is moved in a direction such as direction B shown in Figure 10, splitter 120 applies a separating force to interior surfaces 53, causing the first closure 46 to become unmated.

Claims:

1. A closure assembly for use with a flexible package; the closure assembly comprising:
 - (a) a zipper closure arrangement having first and second zipper profiles constructed and arranged to selectively interlock; the zipper closure arrangement including first and second closures defined by the first and second zipper profiles;
 - (b) a slider device oriented to slide laterally along the zipper closure arrangement and oriented to be axially moveable from a first axial position to a second axial position;
 - (i) the first closure being constructed and arranged to mate when the slider device is in the first axial position and is moved laterally along the zipper closure arrangement in a first direction; and
 - (ii) the second closure being constructed and arranged to mate when the slider device is in the second axial position and is moved laterally along the zipper closure arrangement in the first direction; the second closure being constructed and arranged not to mate when the slider device is in the first axial position.

2. A closure assembly according to claim 1 wherein:
 - (a) the slider device includes:
 - (i) a top wall oriented to slide along a top of the zipper closure arrangement;
 - (ii) a first sidewall depending from the top wall oriented to slide along a side of the zipper closure arrangement; and
 - (iii) a second sidewall depending from the top wall oriented to slide along a side of the zipper closure arrangement; and
 - (A) the top wall, first sidewall, and second sidewall defining a cavity to operatively receive the zipper closure arrangement therein.

3. A closure assembly according to claim 2 wherein:
 - (a) the slider device further includes a splitter depending from the top wall; the splitter being constructed and arranged to separate the first closure when the slider device is moved laterally along the zipper closure arrangement in a second direction opposite of the first direction.

4. A closure assembly according to claim 3 wherein:
 - (a) the splitter and the second closure are oriented so that the second closure is not separated by the splitter, when the slider device is in the first axial position and when moved along the zipper closure arrangement in the second direction.

5. A closure assembly according to claim 2 wherein:
 - (a) the first sidewall defines an end with a foot;
 - (b) the second sidewall defines an end with a foot;
 - (c) the zipper closure arrangement defines a first external groove in the first zipper profile and a second external groove in the second zipper profile;
 - (i) the first and second external grooves being located between the first closure and second closure; and
 - (d) the first axial position of the slider device includes the first sidewall foot being seated in the first groove, and the second sidewall foot being seated in the second groove.

6. A closure assembly according to claim 5 wherein:
 - (a) the zipper closure arrangement includes a first externally directed projection in the first zipper profile and a second externally directed projection in the second zipper profile;
 - (i) the second closure being located between the first and second externally directed projections and the first closure; and
 - (b) the second axial position includes:

- (i) the first projection being between the first sidewall foot and the second closure; and
 - (ii) the second projection being between the second sidewall foot and the second closure.
7. A closure assembly according to claim 1 wherein:
- (a) the second closure cannot be unmated after being mated.
8. A closure assembly according to claim 7 wherein:
- (a) the second closure includes the first zipper profile having:
 - (i) a first closure member having a neck terminating with a head wider than the neck;
 - (ii) a first arm terminating with a finger; and
 - (iii) a second arm terminating with a finger;
 - (A) the first closure member being between the first arm and second arm;
 - (b) the second closure includes the second zipper profile having:
 - (i) a first leg terminating with a pair of hooks; and
 - (ii) a second leg terminating with a pair of hooks;
 - (c) the second closure, in a mated position, includes:
 - (i) the first leg being between the first arm and the first closure member; the first leg pair of hooks engaging the head and the first arm finger; and
 - (ii) the second leg being between the second arm and the first closure member; the second leg pair of hooks engaging the head and the second arm finger.
9. A closure assembly according to claim 7 wherein:
- (a) the first closure includes a first hooked profile member on the first zipper profile;
 - (b) the first closure includes a second hooked profile member on the second zipper profile;
 - (i) the first and second hooked profile members being constructed and arranged to selectively mate and separate.

10. A closure assembly according to claim 9 wherein:
 - (a) the first closure further includes a first closure post on the second zipper profile adjacent to the first hooked profile member;
 - (i) the first hooked profile member being received within a gap between the first closure post and the second hooked profile member, when the first and second hooked profile members are mated.

11. A flexible package comprising a closure assembly according to claim 1;
the flexible package comprising:
 - (a) a surrounding wall defining a bottom, an interior volume, and a mouth to provide access to the interior volume; and
 - (b) a closure assembly oriented at the mouth; the closure assembly including:
 - (i) a zipper closure arrangement having first and second zipper profiles constructed and arranged to selectively interlock; the zipper closure arrangement including first and second closures defined by the first and second zipper profiles;
 - (ii) a slider device oriented to slide laterally along the zipper closure arrangement and oriented to be axially moveable from a first axial position to a second axial position;
 - (A) the first closure being constructed and arranged to mate when the slider device is in the first axial position and is moved laterally along the zipper closure arrangement in a first direction; and
 - (B) the second closure being constructed and arranged to mate when the slider device is in the second axial position and is moved laterally along the zipper closure arrangement in the first direction; the second closure being constructed and arranged not to mate when the slider device is in the first axial position.

12. A method of using a package according to claim 11; the package including a package surrounding wall defining an interior volume, a mouth, and a closure assembly oriented at the mouth; the closure assembly including a zipper closure arrangement and a slider device operably oriented on the zipper closure arrangement; the method comprising:
 - (a) grasping a slider device and pushing the slider device axially relative to the zipper closure arrangement to engage the slider device against the zipper closure arrangement; the zipper closure arrangement including a first closure and a second closure; and
 - (b) moving the slider device laterally in a first direction to close the first closure and to permanently close the second closure.
13. A method according to claim 12 further comprising:
 - (a) before the step of pushing the slider device axially, moving the slider device laterally in the first direction to close only the first closure and not to close the second closure.
14. A method according to claim 13 further comprising:
 - (a) after the step of moving the slider device laterally in the first direction to close only the first closure and not to close the second closure and before the step of pushing the slider device axially, moving the slider device laterally in a second direction opposite of the first direction to open the first closure.
15. A closure assembly for use with a flexible package; the closure assembly comprising:
 - (a) a zipper closure arrangement having first and second zipper profiles constructed and arranged to selectively interlock into first and second mated positions;
 - (i) the first mated position including the first and second zipper profiles being interlocked and being capable of being selectively unmated; and

- (ii) the second mated position including the first and second zipper profiles being interlocked and not being capable of being unmated; and
 - (b) a slider device oriented to slide laterally along the zipper closure arrangement to move the zipper closure arrangement from the first mated position to the second mated position.
16. A closure assembly according to claim 15 wherein:
- (a) the first zipper profile includes a plurality of first closure members; each of the first closure members including a leg with a first pair of feet at an end of the leg and a second pair of feet on the leg spaced from the first pair of feet; and
 - (b) the second zipper profile includes a plurality of second closure members; each of the second closure members including an arm with a first pair of fingers at an end of the arm and a second pair of fingers on the arm spaced from the first pair of fingers.
17. A closure assembly according to claim 16 wherein:
- (a) the plurality of first closure members includes at least a first leg and a second leg;
 - (b) the plurality of second closure members includes at least a first arm and a second arm; and
 - (c) the first mated position includes at least the first leg being oriented between the first and second arms, the first leg first pair of feet being between:
 - (i) the first arm first pair of fingers and the first arm second pair of fingers; and
 - (ii) the second arm first pair of fingers and the second arm second pair of fingers.
18. A closure assembly according to claim 17 wherein:
- (a) the plurality of first closure members further includes at least a third leg; and

- (b) the first mated position includes the first arm being oriented between the first and second legs and the second arm being oriented between the second and third legs;
 - (i) the first arm first pair of fingers being between: the first leg first pair of feet and first leg second pair of feet, and the second leg first pair of feet and the second leg second pair of feet; and
 - (ii) the second arm first pair of fingers being between: the second leg first pair of feet and the second leg second pair of feet, and the third leg first pair of feet and the third leg second pair of feet.
19. A closure assembly according to claim 18 wherein:
- (a) the second mated position includes the first arm being oriented between the first and second legs and the second arm being oriented between the second and third legs;
 - (i) the first arm second pair of fingers being between: the first leg first pair of feet and first leg second pair of feet, and the second leg first pair of feet and the second leg second pair of feet;
 - (ii) the second arm second pair of fingers being between: the second leg first pair of feet and the second leg second pair of feet, and the third leg first pair of feet and the third leg second pair of feet; and
 - (iii) the second leg second pair of feet being between: the first arm first pair of fingers and the first arm second pair of fingers, and the second arm first pair of fingers and the second arm second pair of fingers.
20. A closure assembly according to claim 16 wherein:
- (a) each of the first closure member first and second pairs of feet being arrow-shaped; and
 - (b) each of the second closure member first and second pairs of fingers being arrow-shaped.

21. A closure assembly according to claim 16 wherein:
- (a) the slider device includes:
 - (i) a top wall oriented to slide along a top of the zipper closure arrangement;
 - (ii) a first sidewall depending from the top wall oriented to slide along a side of the zipper closure arrangement;
 - (iii) a second sidewall depending from the top wall oriented to slide along a side of the zipper closure arrangement;
 - (A) the top wall, first sidewall, and second sidewall defining a cavity to operatively receive the zipper closure arrangement therein; and
 - (iv) a clip secured to at least one of the top wall, first sidewall, and second sidewall; the clip being moveable from a first position to a second position;
 - (A) the first position including the clip being remote from the zipper closure arrangement; and
 - (B) the second position including the clip being oriented to operatively engage the zipper closure arrangement.
22. A closure assembly according to claim 21 wherein:
- (a) the zipper closure arrangement is constructed and arranged to move to the first mated position when the slider device is moved along the zipper closure arrangement in a first direction; and
 - (b) the zipper closure arrangement is constructed and arranged to move to the second mated position when the slider device is moved along the zipper closure arrangement in the first direction and when the clip is in the second position.
23. A closure assembly according to claim 22 wherein:
- (a) the slider device further includes a splitter depending from the top wall; the splitter being constructed and arranged to separate the zipper closure arrangement from the first mated position to an

unmated position when the slider device is moved along the zipper closure arrangement in a second direction opposite of the first direction.

24. A closure assembly according to claim 23 wherein:
 - (a) the clip includes a first wall, a first leg depending from the first wall, and a second leg depending from the first wall.

25. A closure assembly according to claim 24 wherein:
 - (a) the clip is secured to the top wall.

26. A closure assembly according to claim 25 further comprising:
 - (a) a living hinge between the clip first wall and top wall to secure the clip to the top wall.

27. A closure assembly according to claim 26 wherein:
 - (a) the first position of the clip includes:
 - (i) the first and second legs being outside of the cavity; and
 - (ii) the clip first wall being angled relative to the top wall; and
 - (b) the second position of the clip includes:
 - (i) the first and second legs being at least partially inside of the cavity and pressed against the second closure; and
 - (ii) the clip first wall being against the top wall.

28. A closure assembly according to claim 27 wherein:
 - (a) the top wall defines an opening; and
 - (b) the first and second legs are movable through the opening to move the clip from the first position to the second position.

29. A closure assembly according to claim 28 wherein:
 - (a) the first and second sidewalls define:
 - (i) a first width therebetween to define a zipper squeezing region; the first width being sized to cause the first and

- second sidewalls to move the zipper closure arrangement to the first mated position; and
- (ii) a second width therebetween to define a zipper non-squeezing region; the second width being sized greater than the first distance and to not cause the first and second sidewalls to move the zipper closure arrangement to the second mated position.
30. A flexible package comprising a closure assembly according to claim 15; the flexible package comprising:
- (a) a surrounding wall defining a bottom, an interior volume, and a mouth to provide access to the interior volume; and
- (b) a closure assembly oriented at the mouth; the closure assembly including:
- (i) a zipper closure arrangement comprising first and second zipper profiles constructed and arranged to selectively interlock into first and second mated positions;
- (A) the first mated position including the first and second zipper profiles being interlocked and being capable of being selectively unmated; and
- (B) the second mated position including the first and second zipper profiles being interlocked and not being capable of being unmated; and
- (ii) a slider device oriented to slide laterally along the zipper closure arrangement to move the zipper closure arrangement from the first mated position to the second mated position.
31. A method of using a package according to claim 30; the package including a package surrounding wall defining an interior volume, a mouth, and a closure assembly oriented at the mouth; the closure assembly including a zipper closure arrangement and a slider device operably oriented on the zipper closure arrangement; the method comprising:

- (a) the zipper closure arrangement including a first mated position and a second mated position; and
 - (b) grasping the slider device and moving the slider device laterally in a first direction to move the zipper closure arrangement from the first mated position to the second mated position.
32. A method according to claim 31 further comprising:
- (a) the slider device includes a clip movable from a first position to a second position; and
 - (a) before the step of moving the slider device laterally in a first direction to move the zipper closure arrangement from the first mated position to the second mated position, moving the clip from the first position to the second position.
33. A method according to claim 32 further comprising:
- (a) before the step of moving the clip from the first position to the second position, moving the slider device laterally in a first direction to move the zipper closure arrangement to the first mated position.
34. A method according to claim 32 further comprising:
- (a) before the step of moving the clip from the first position to the second position, moving the slider device laterally in a second direction to unmate the zipper closure arrangement from the first mated position.
35. A slider device for use with a recloseable package having a zipper closure arrangement; the slider device comprising:
- (a) a top wall;
 - (b) a first sidewall depending from the top wall;
 - (c) a second sidewall depending from the top wall;
 - (i) the first and second sidewalls having a plurality of grooves to operatively receive protrusions on an external surface of a zipper closure arrangement; and

- (ii) the top wall, first sidewall, and second sidewall defining a cavity to operatively receive a zipper closure arrangement; and
 - (d) a clip secured to at least one of the top wall, first sidewall, and second sidewall; the clip being moveable from a first, inoperative position to a second position;
 - (i) the second position including the clip being operatively oriented to engage the zipper closure arrangement.
36. A slider device according to claim 35 further comprising:
- (a) a splitter depending from the top wall; the splitter being constructed and arranged to at least partially separate the zipper closure arrangement when the slider device is slid along the zipper closure arrangement.
37. A slider device according to claim 35 wherein:
- (a) the clip includes a first wall, a first leg depending from the first wall, and a second leg depending from the first wall;
 - (b) the first position of the clip includes the first and second legs being outside of the cavity; and
 - (c) the second position of the clip includes the first and second legs being at least partially inside of the cavity.
38. A slider device according to claim 37 wherein:
- (a) the top wall defines an opening; and
 - (b) the first and second legs are movable through the opening when the clip moves from the first position to the second position.
39. A zipper closure arrangement comprising:
- (a) first and second zipper profiles constructed and arranged to selectively interlock; the first and second zipper profiles defining first and second closures;
 - (i) the first closure being reclosable and constructed and arranged to repeatedly selectively mate and unmate; and

- (ii) the second closure being constructed and arranged to selectively mate and wherein, the second closure cannot be unmated after being mated;
 - (b) the second closure including the first zipper profile having:
 - (i) a first closure member having a neck terminating with a head wider than the neck;
 - (ii) a first arm terminating with a finger; and
 - (iii) a second arm terminating with a finger;
 - (A) the first closure member being between the first arm and second arm;
 - (c) the second closure including the second zipper profile having:
 - (i) a first leg terminating with a pair of hooks; and
 - (ii) a second leg terminating with a pair of hooks;
 - (d) the second closure, in a mated position, including:
 - (i) the first leg being between the first arm and the first closure member; the first leg pair of hooks engaging the head and the first arm finger; and
 - (ii) the second leg being between the second arm and the first closure member; the second leg pair of hooks engaging the head and the second arm finger;
 - (e) the first closure including a first hooked profile member on the first zipper profile; and
 - (f) the first closure including a second hooked profile member on the second zipper profile;
 - (i) the first and second hooked profile members being constructed and arranged to selectively mate and separate.
40. A zipper closure arrangement according to claim 39 wherein:
- (a) the first closure further includes a first closure post on the second zipper profile adjacent to the first hooked profile member;
 - (i) the first hooked profile member being received within a gap between the first closure post and the second hooked profile member, when the first and second hooked profile members are mated.

41. A zipper closure arrangement according to claim 39 wherein:
- (a) the first closure includes a first hooked profile member on the first zipper profile;
 - (b) the first closure includes a second hooked profile member on the second zipper profile;
 - (i) the first and second hooked profile members being constructed and arranged to selectively mate and separate; and
 - (c) the first closure further includes a first closure post on the second zipper profile adjacent to the first hooked profile member;
 - (i) the first hooked profile member being received within a gap between the first closure post and the second hooked profile member, when the first and second hooked profile members are mated.

FIG. 1

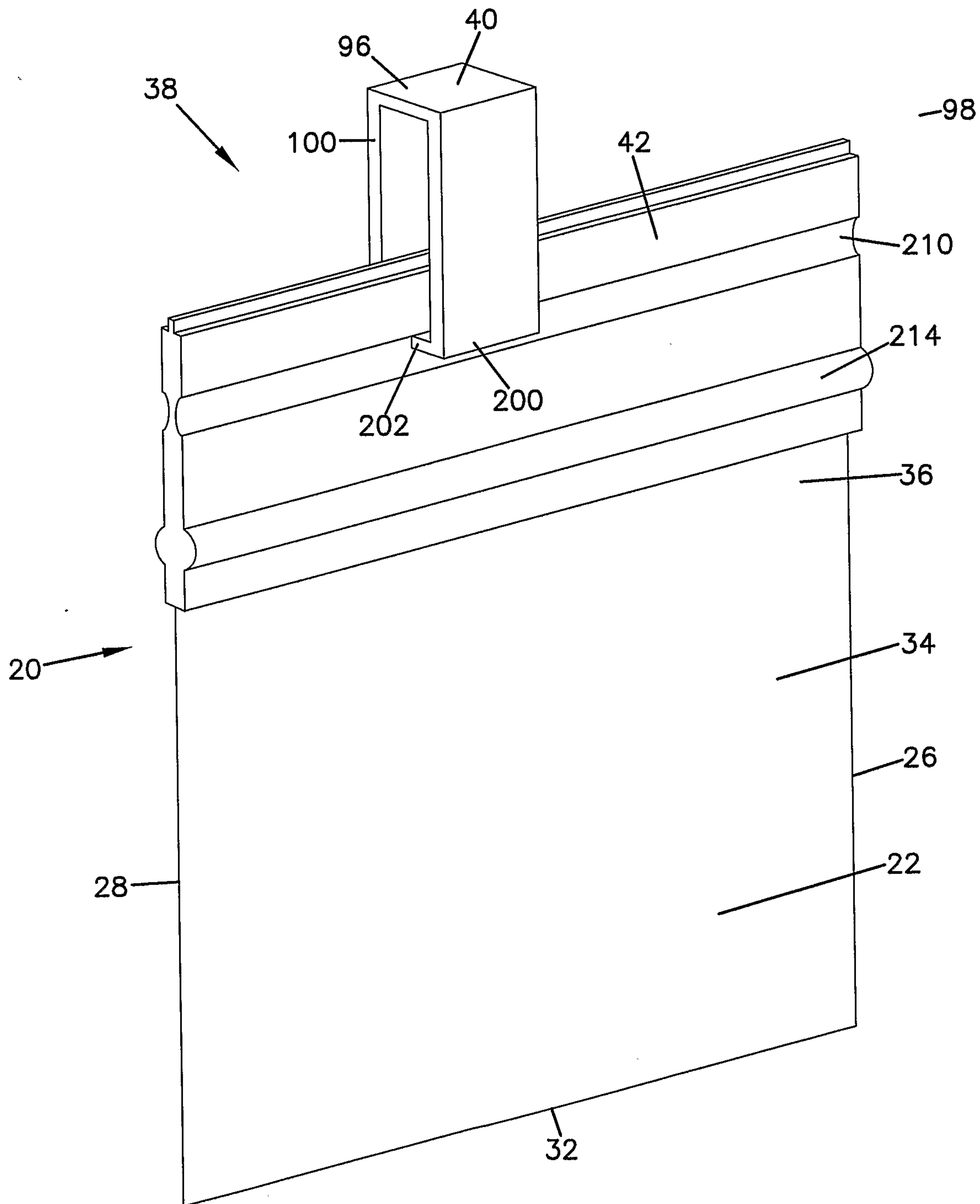
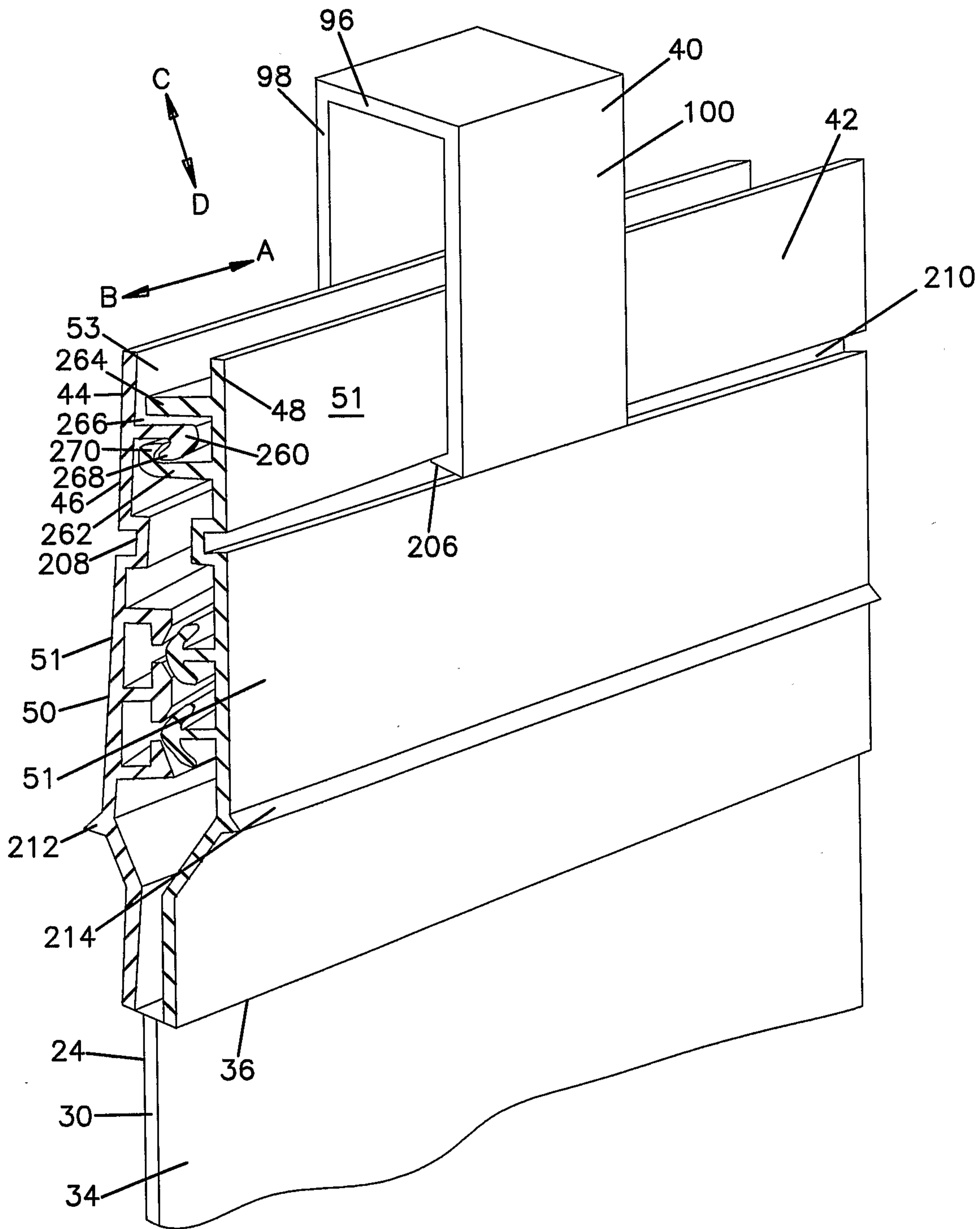


FIG. 2



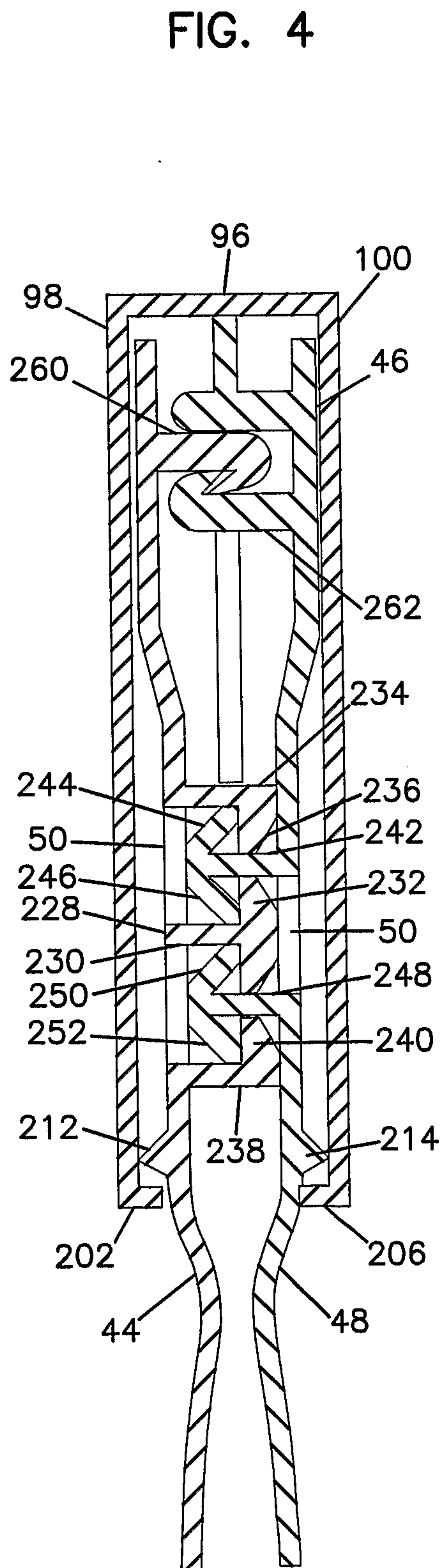
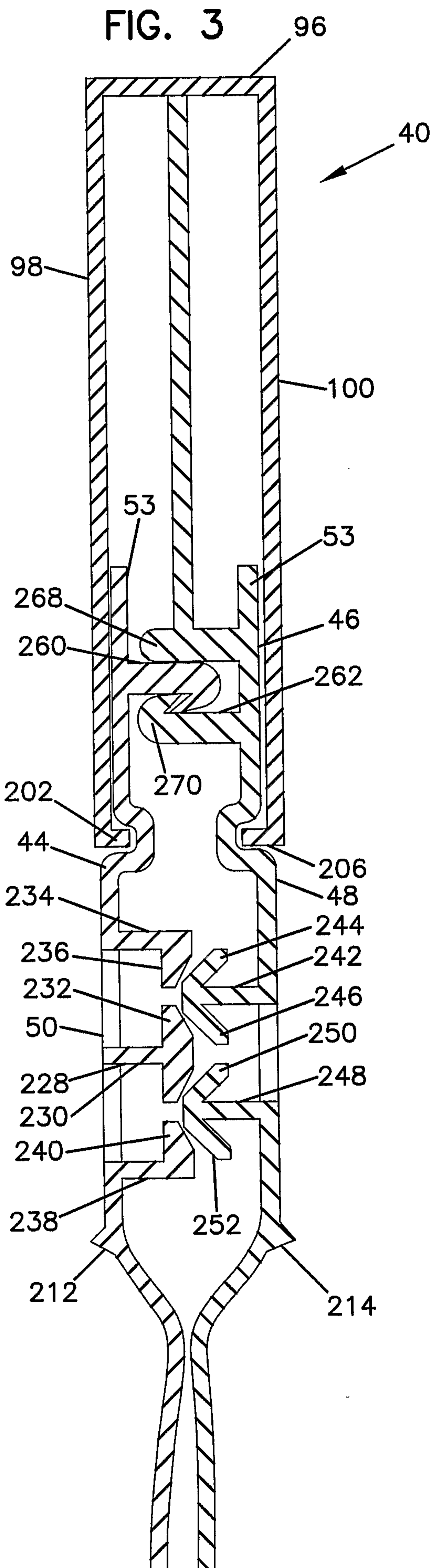


FIG. 5

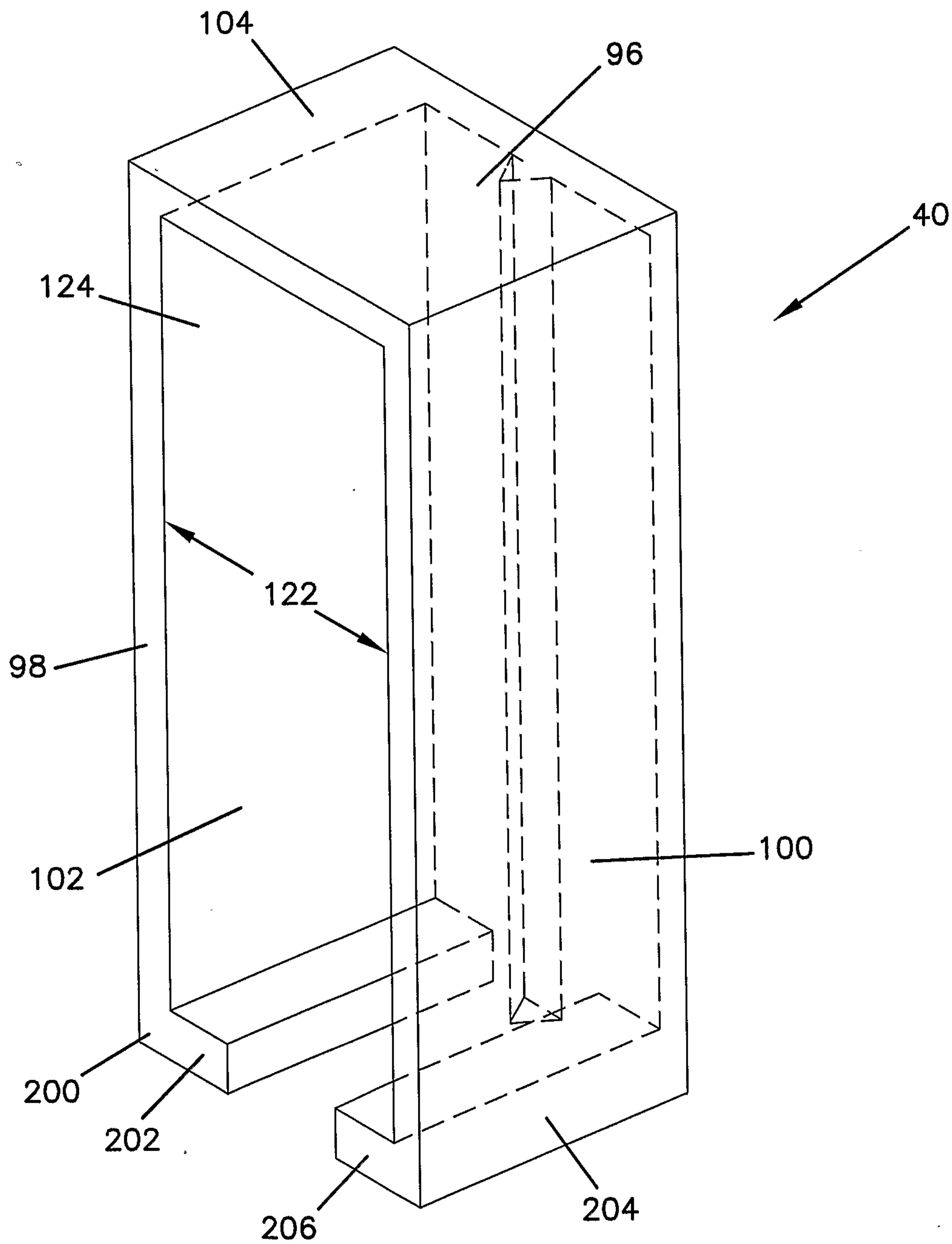
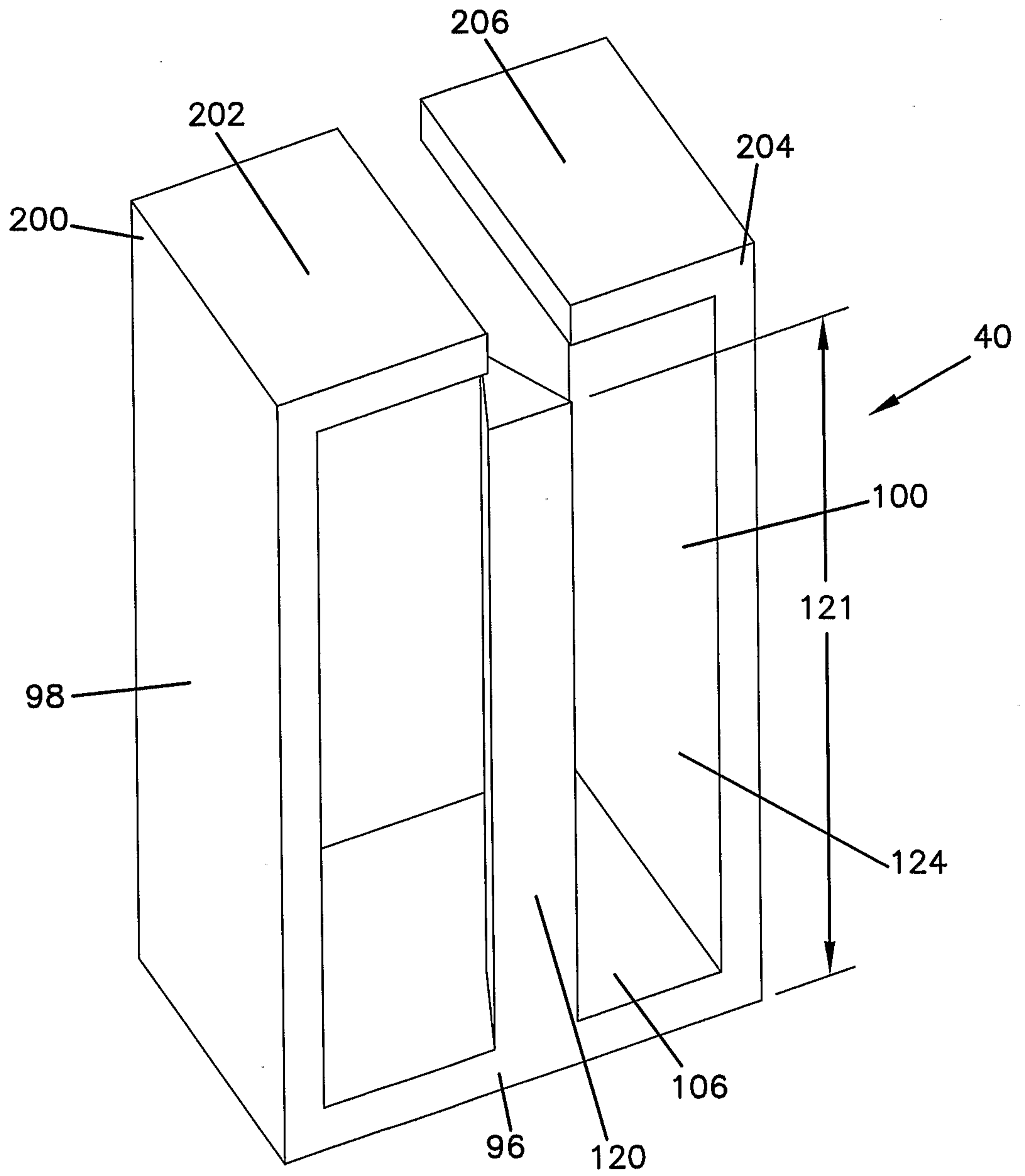


FIG. 6



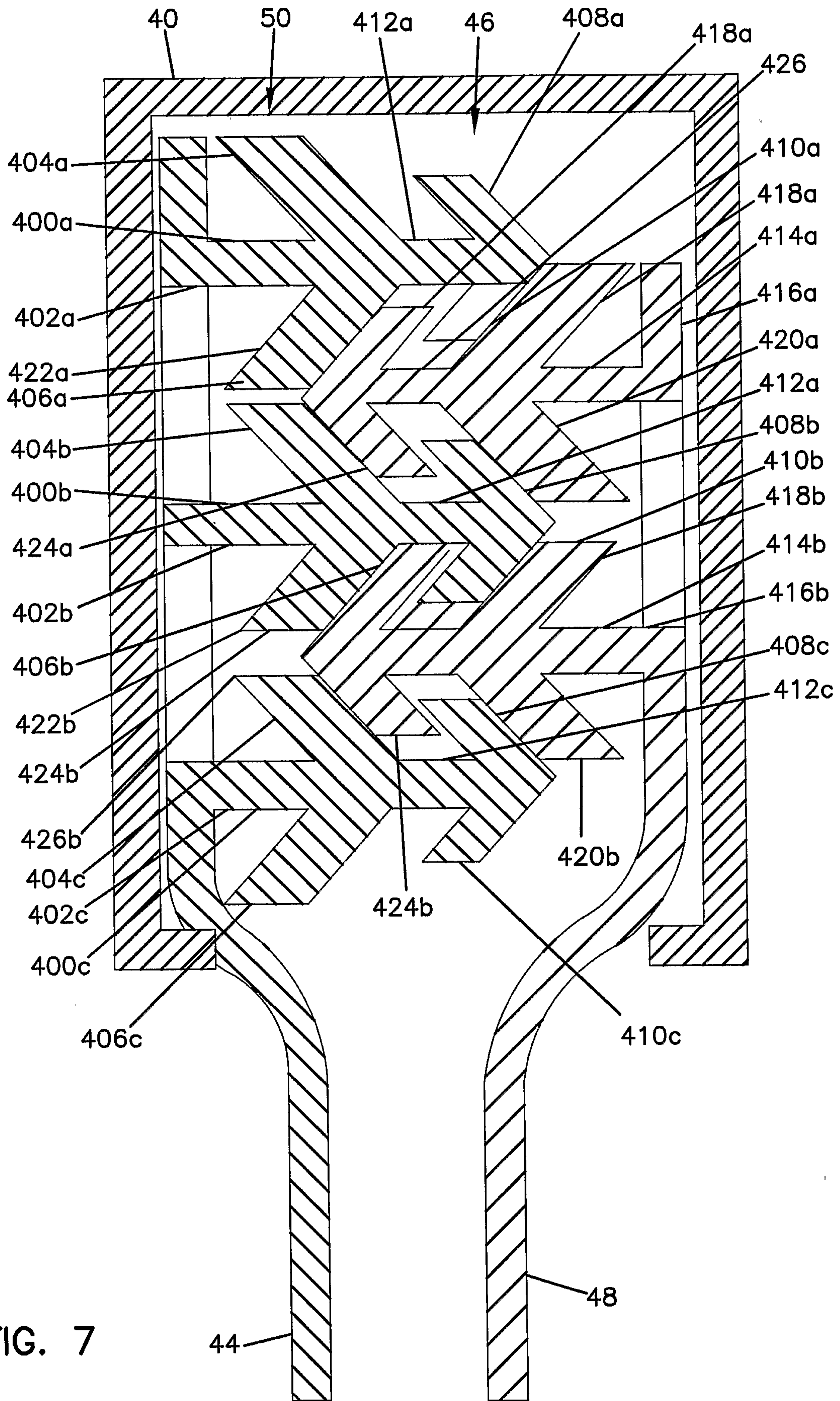


FIG. 7

FIG. 7A

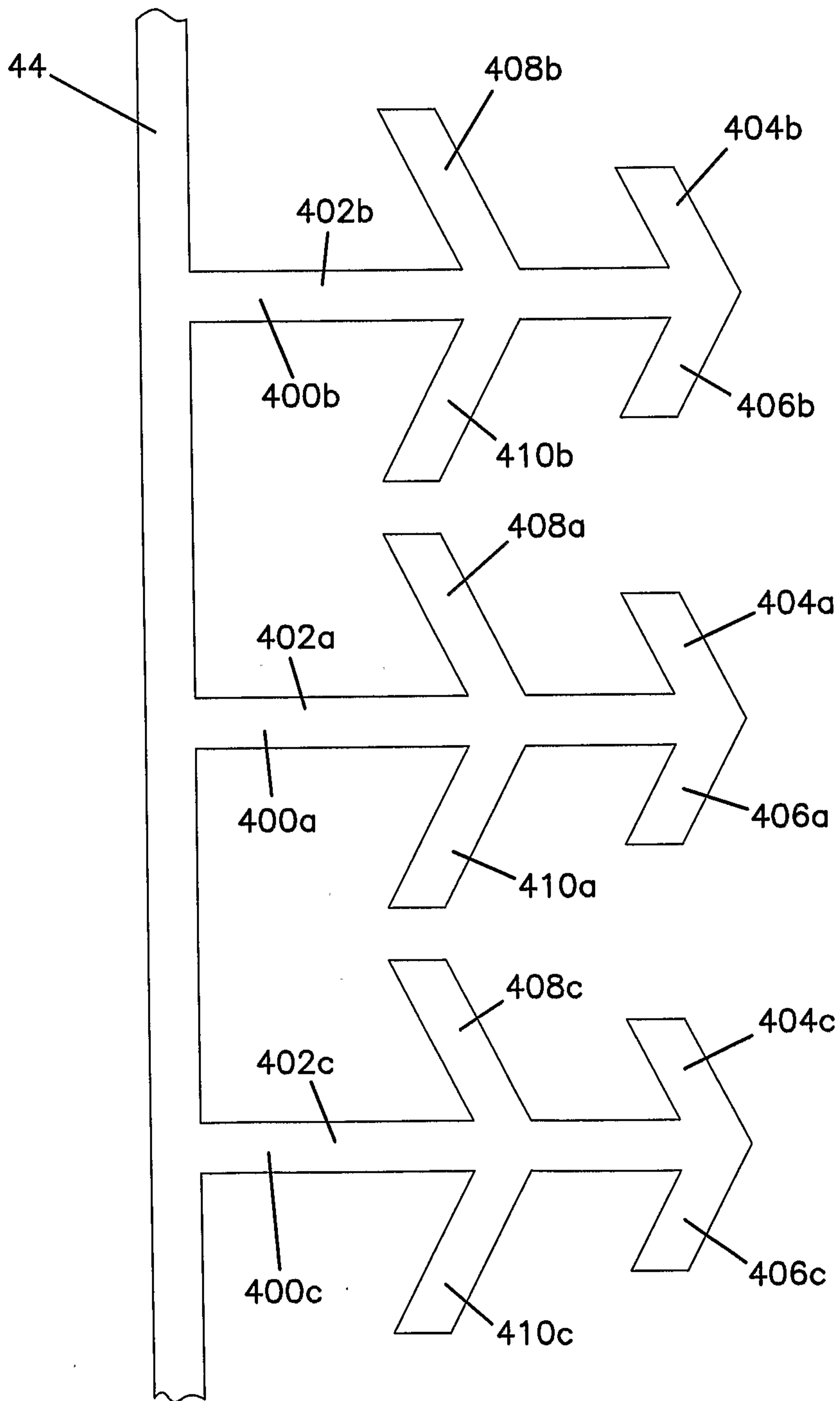


FIG. 7B

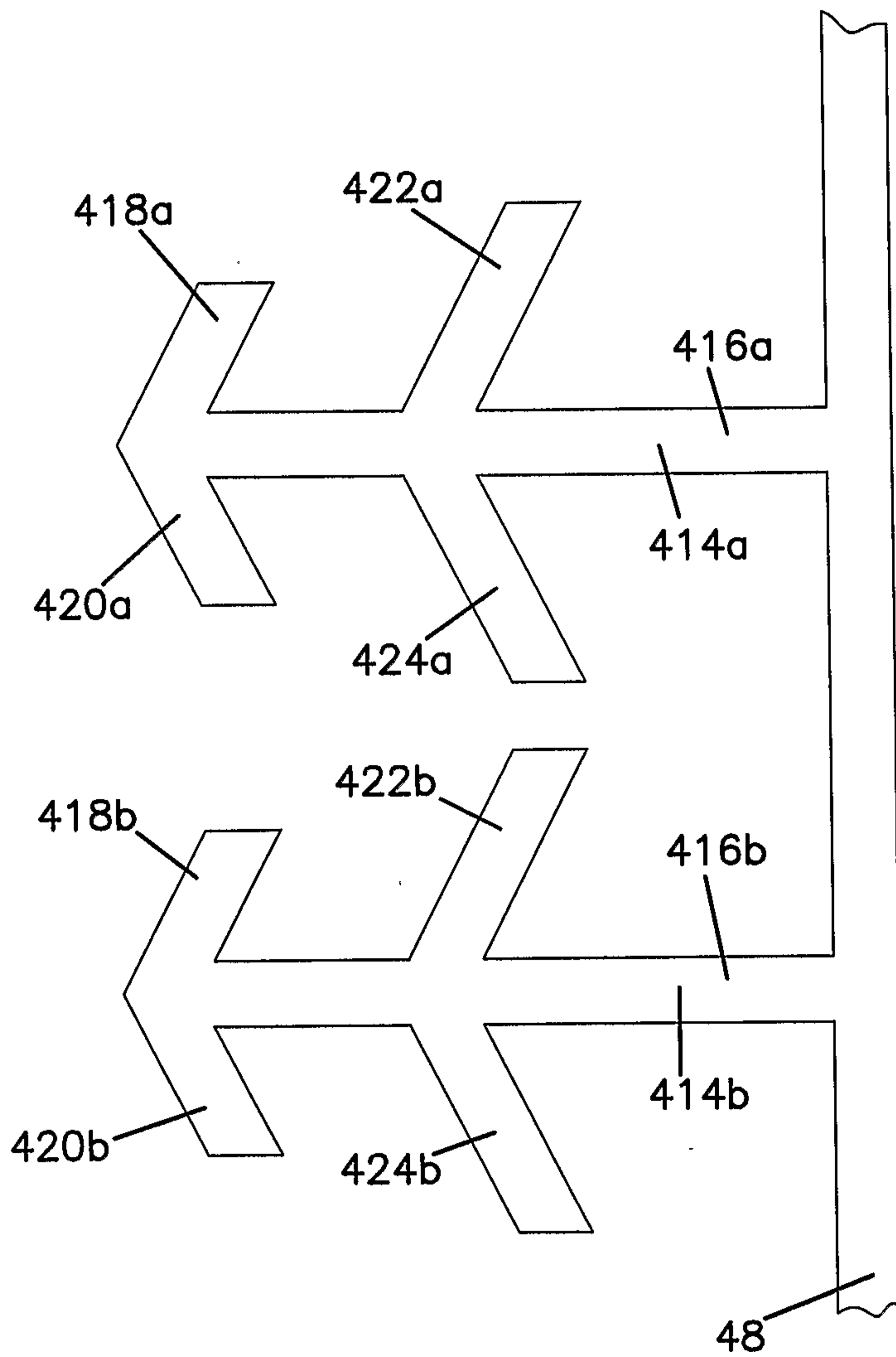


FIG. 7C

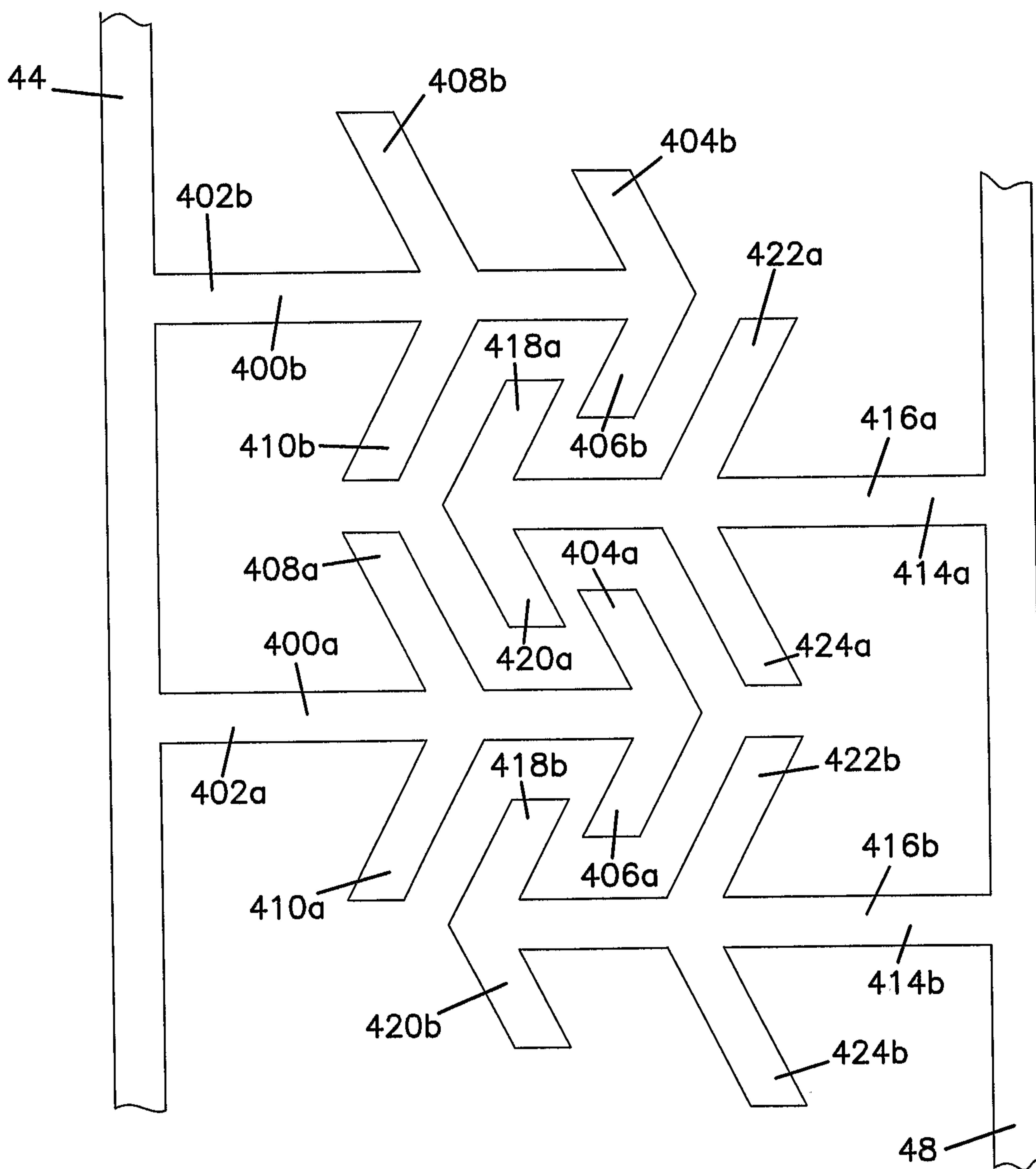


FIG. 7D

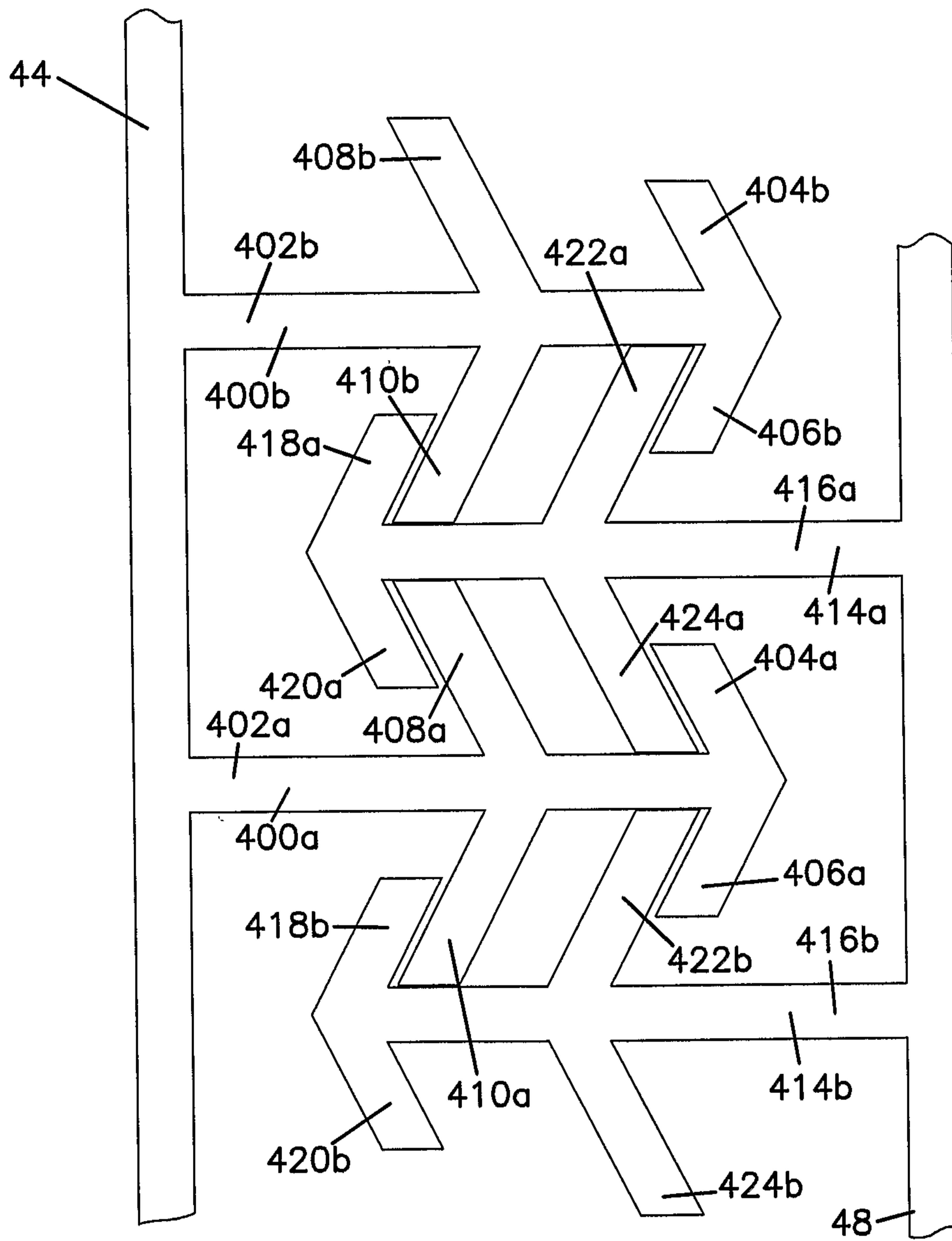


FIG. 7E

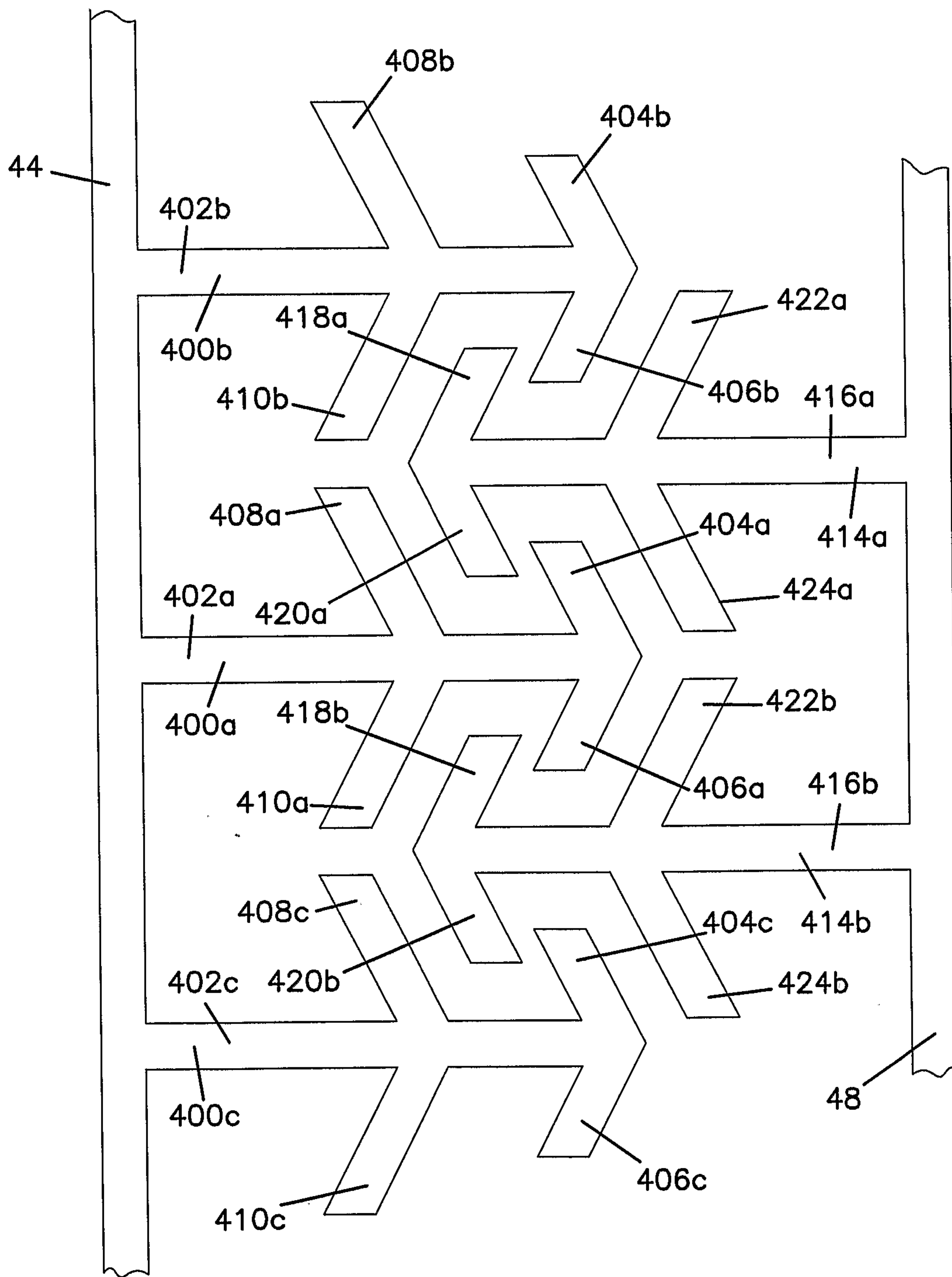


FIG. 7F

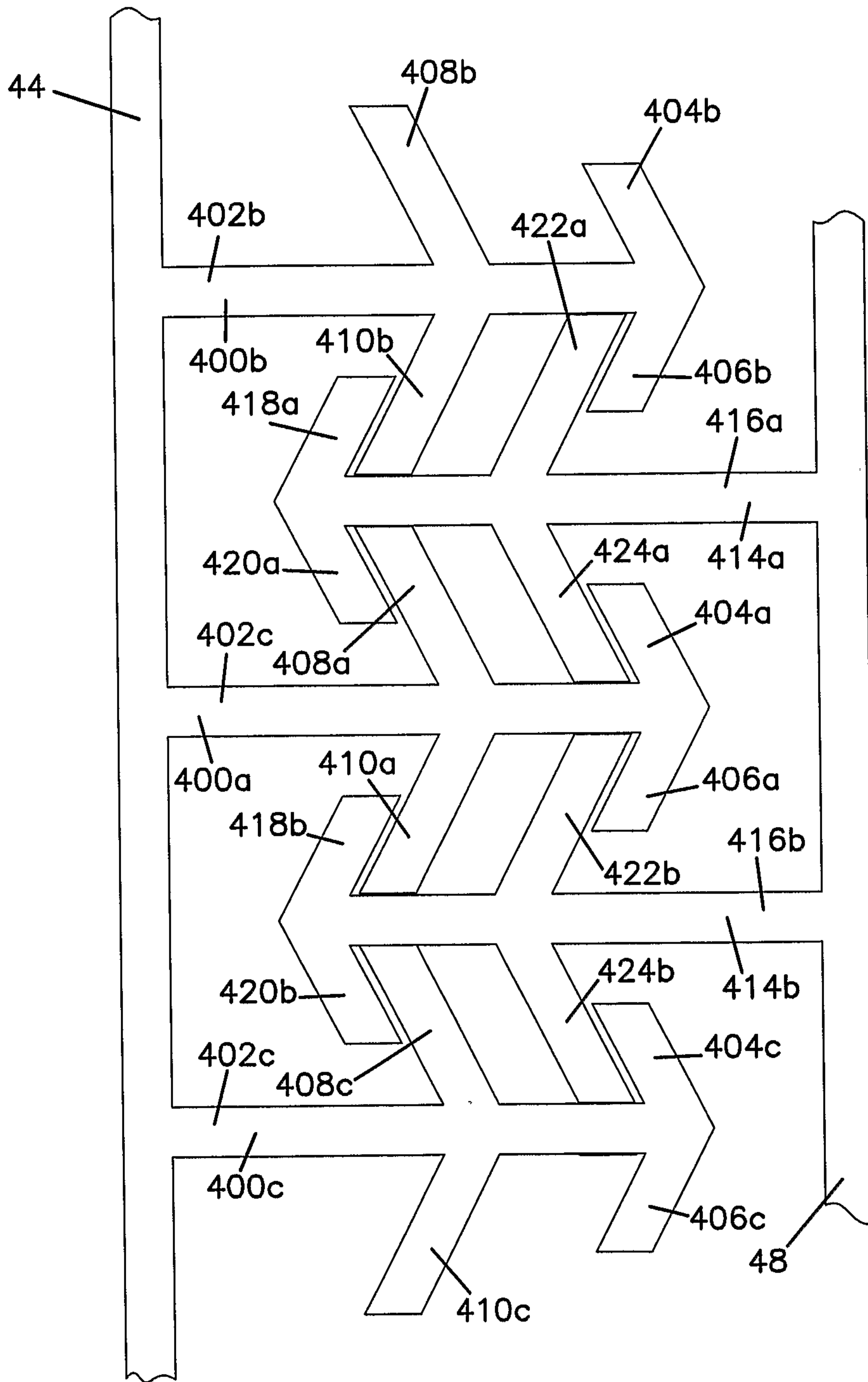


FIG. 8

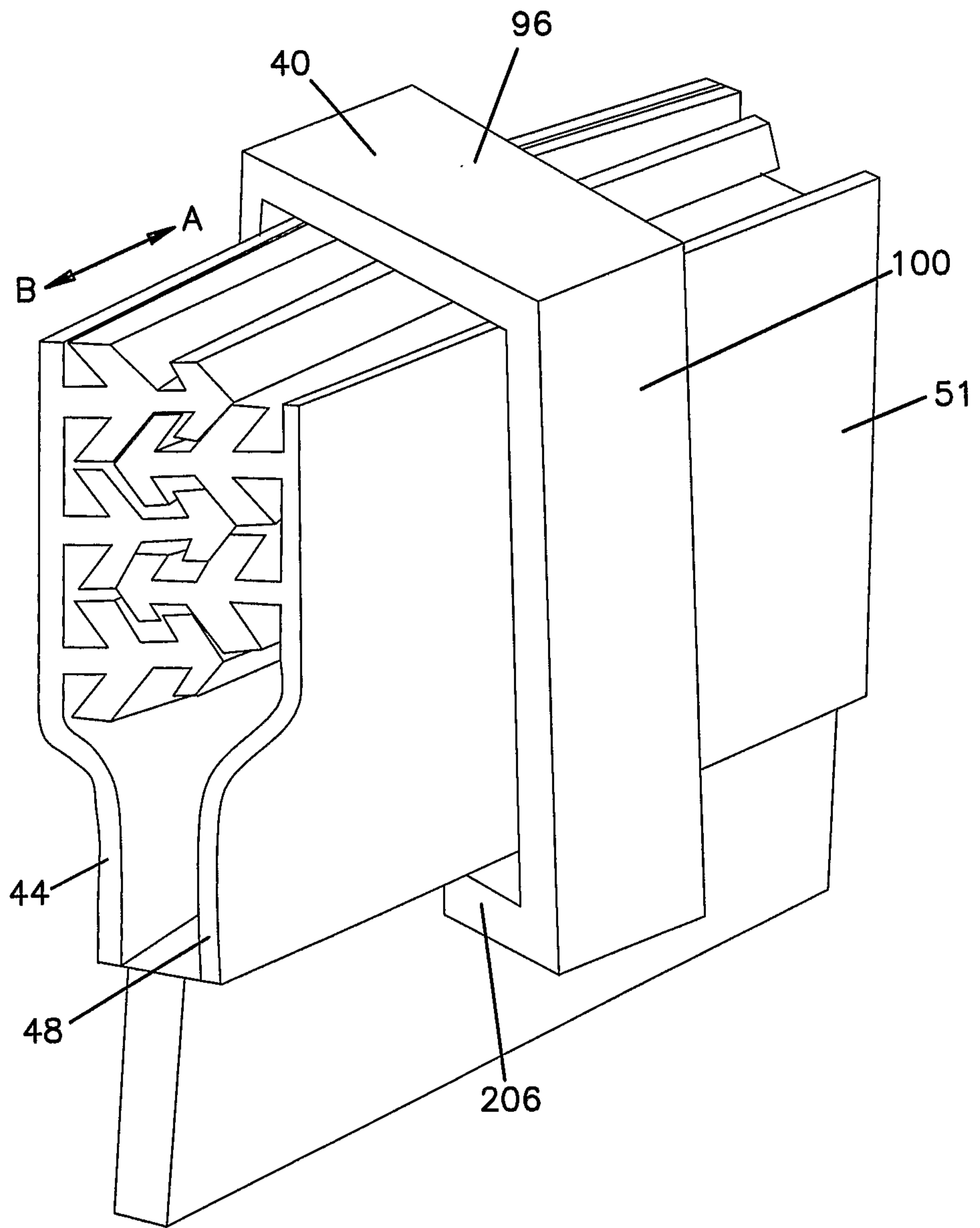


FIG. 8A

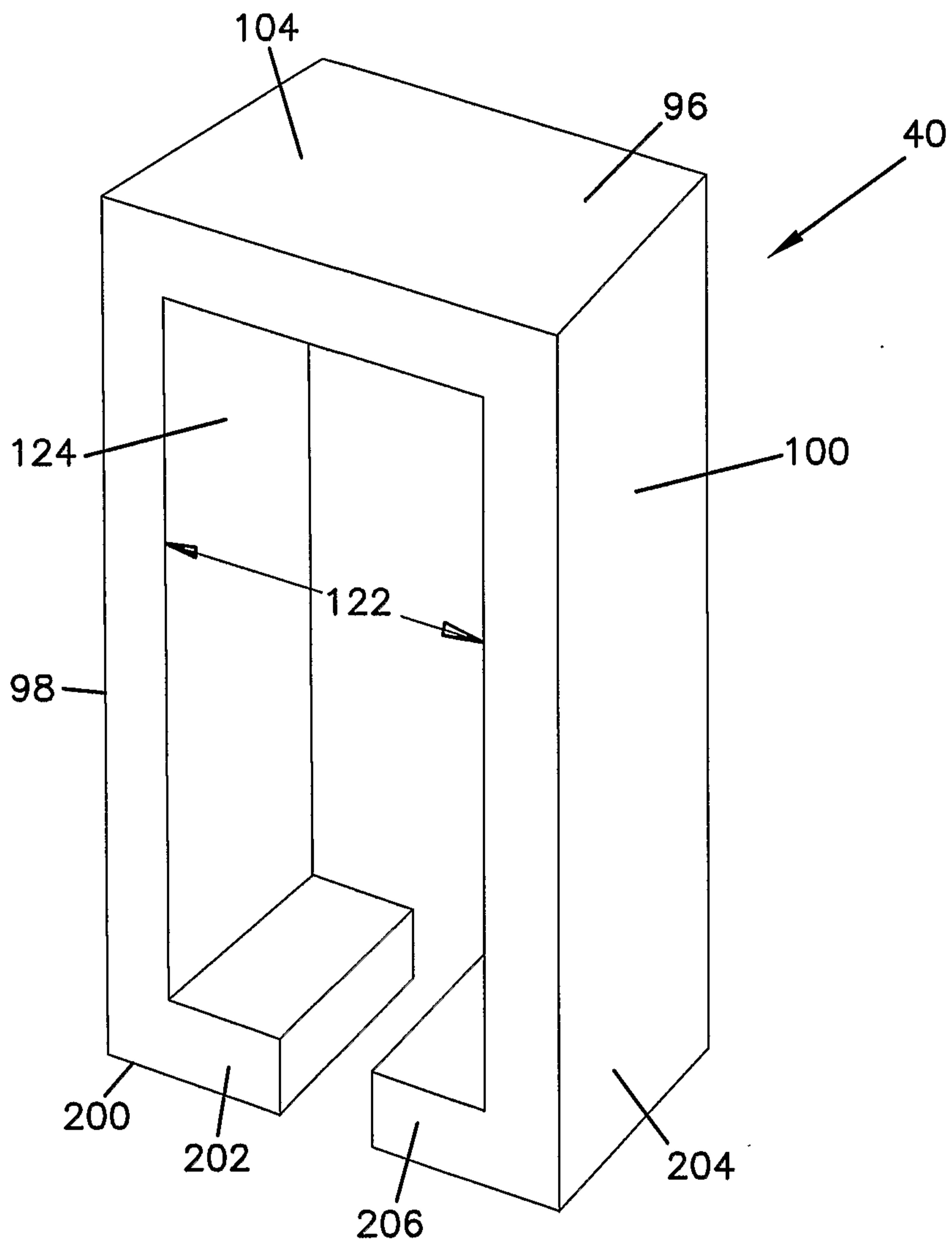


FIG. 9

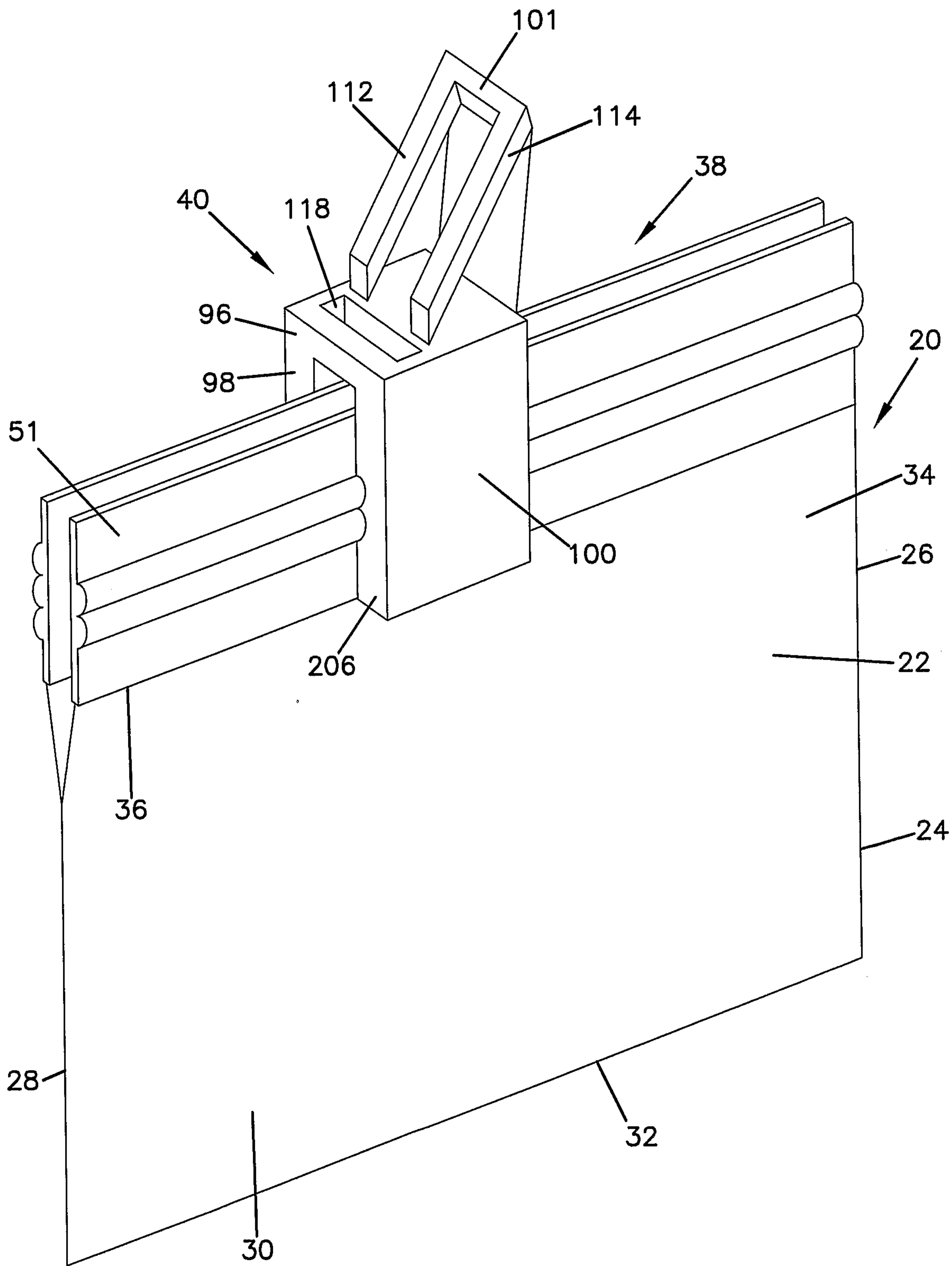


FIG. 10

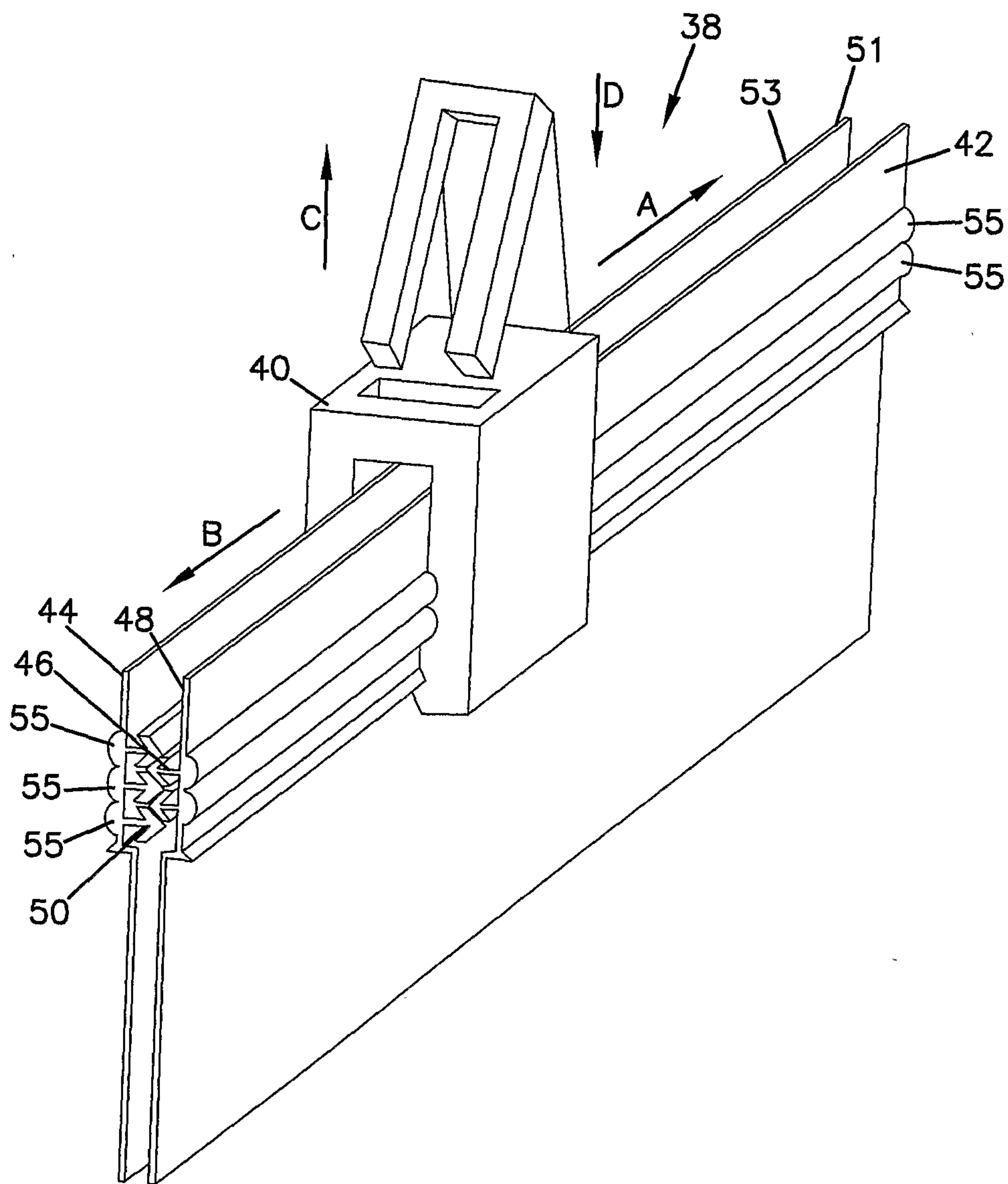


FIG. 11

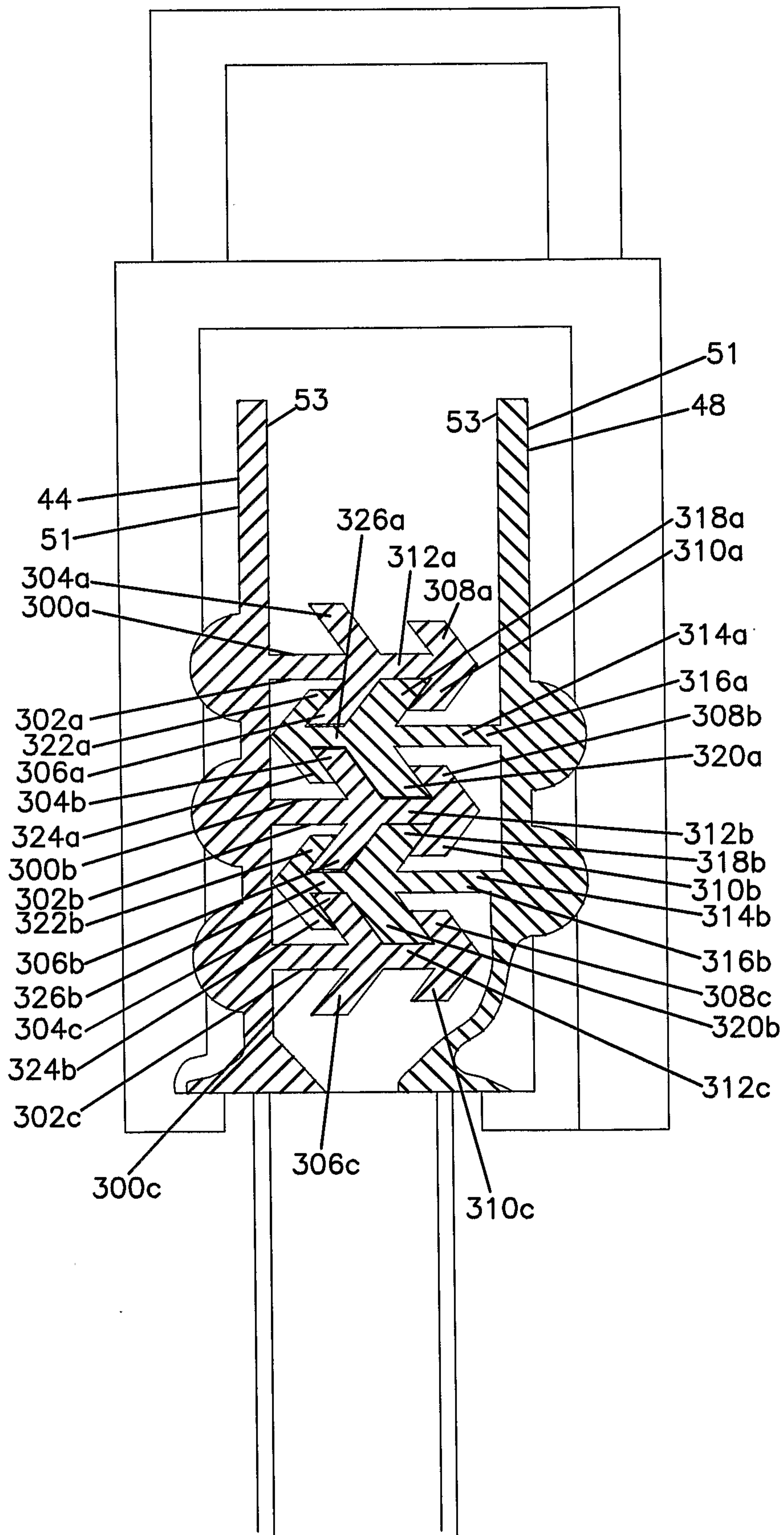


FIG. 11A

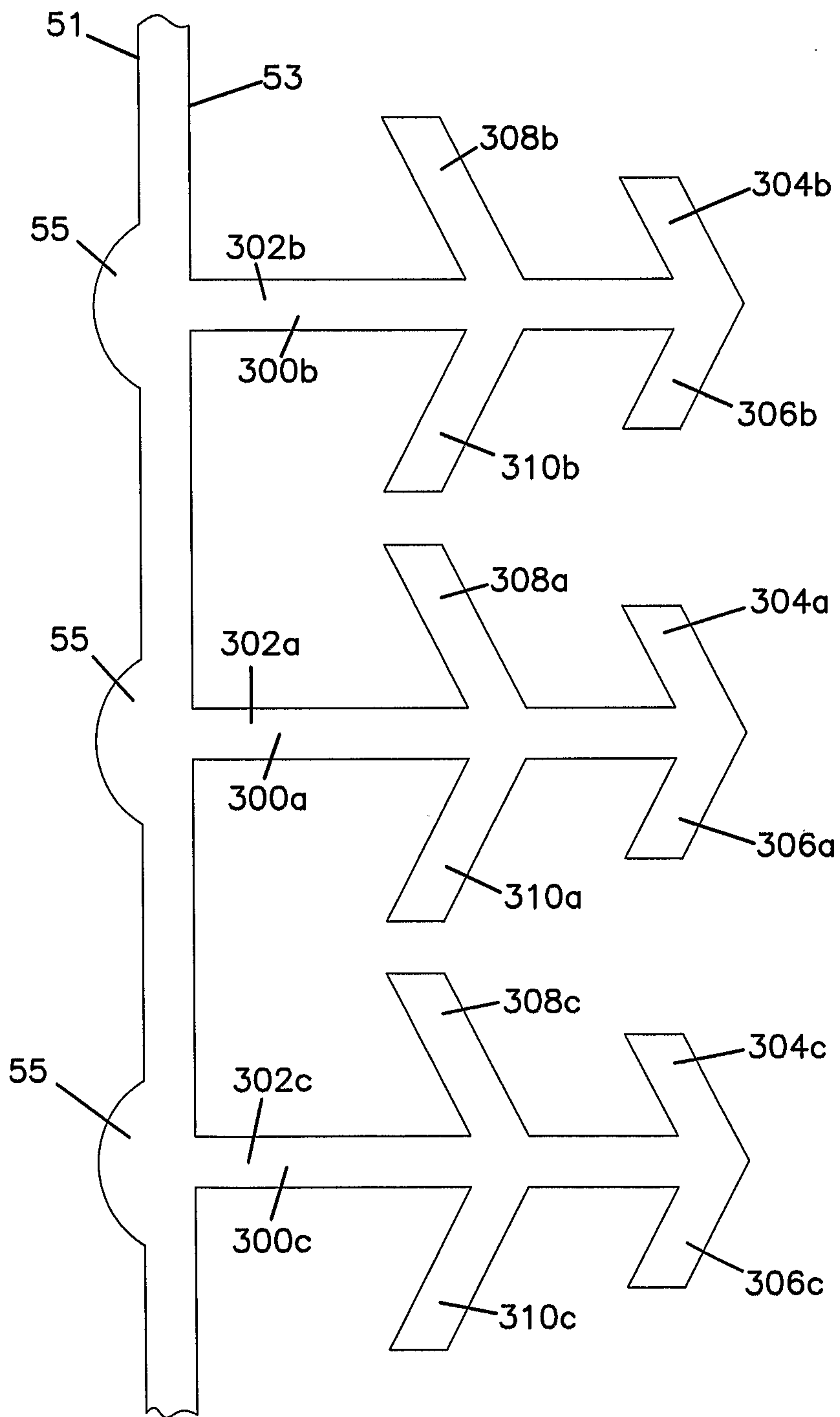


FIG. 11B

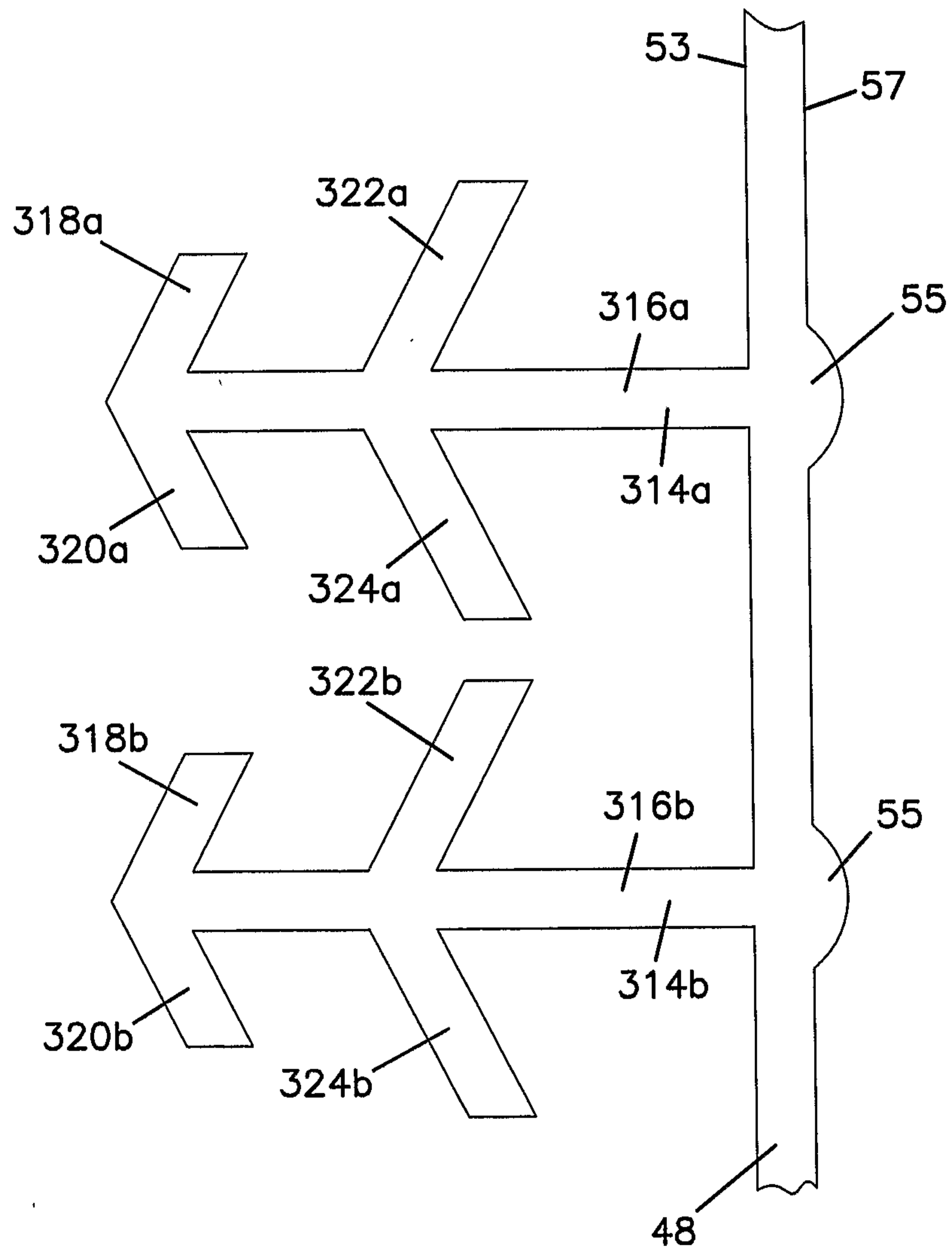


FIG. 11C

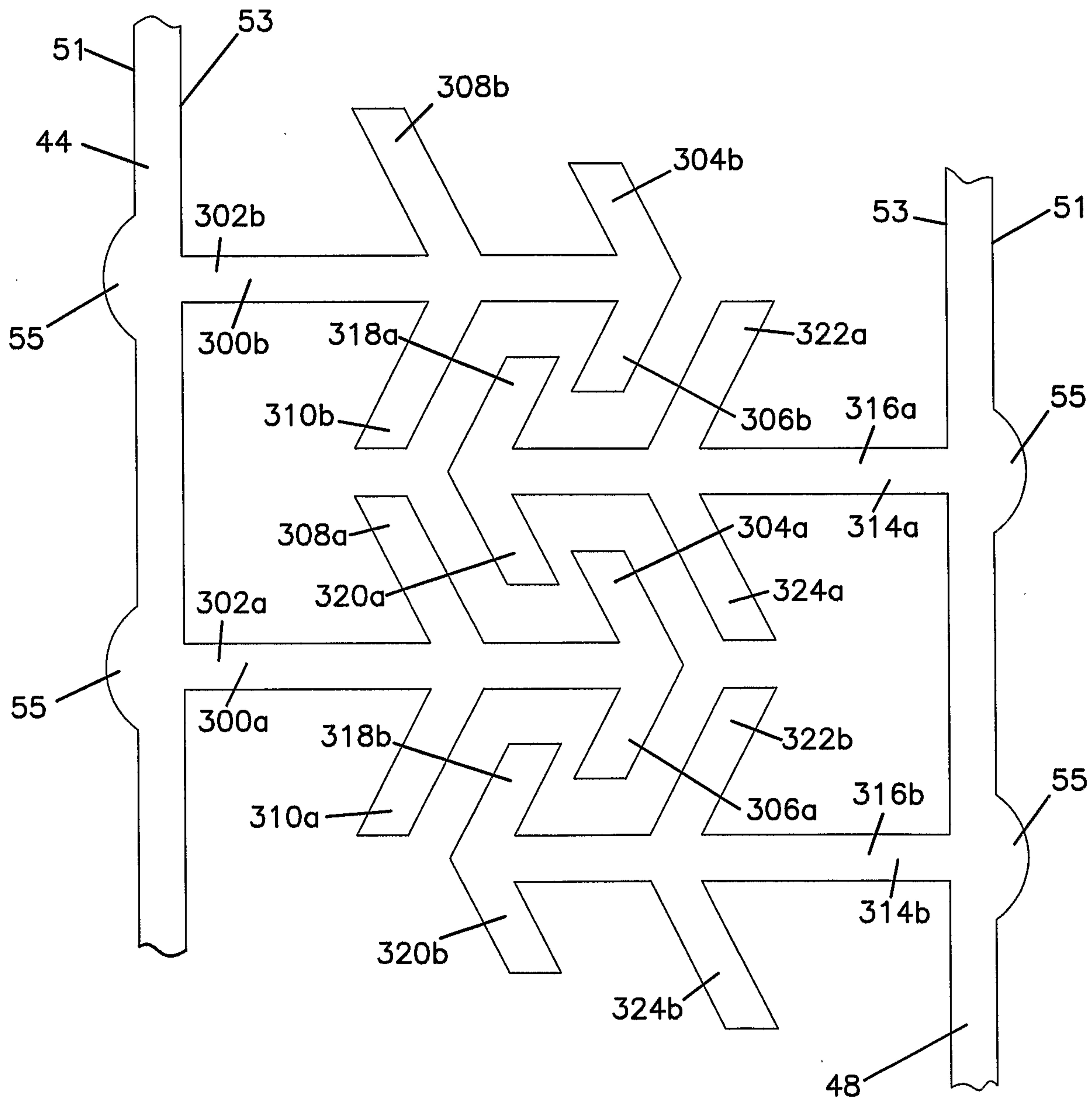


FIG. 11D

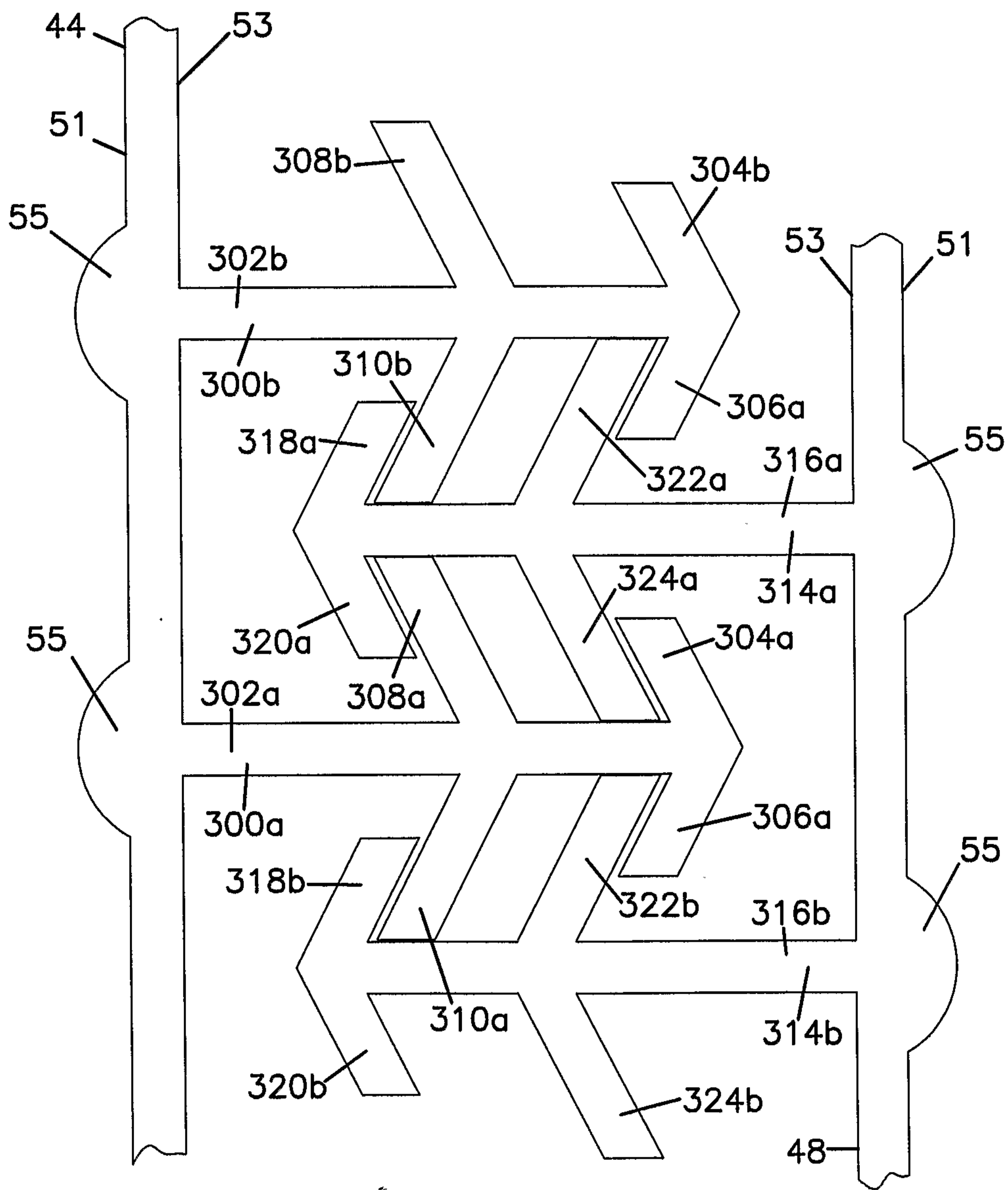


FIG. 11E

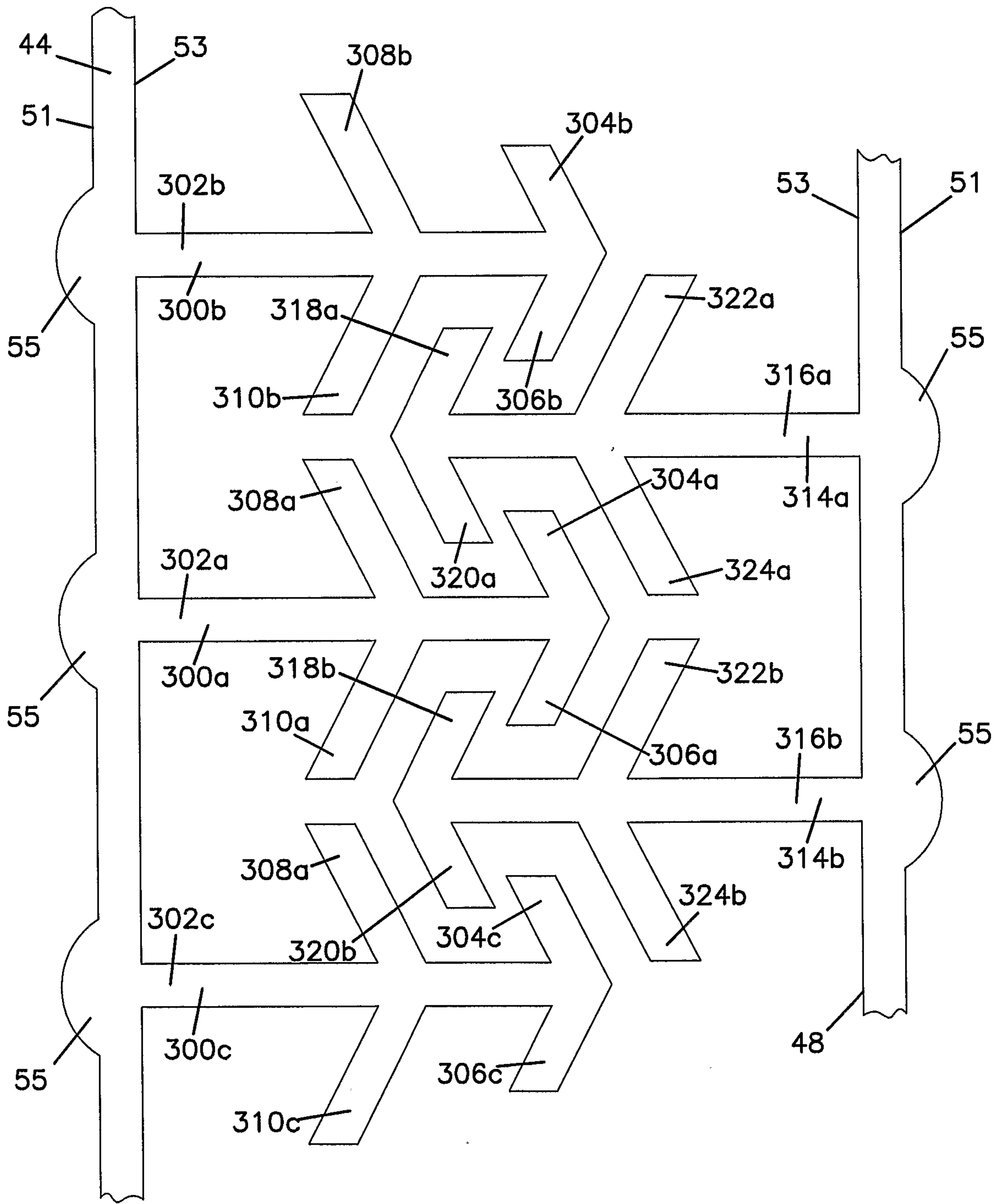


FIG. 11F

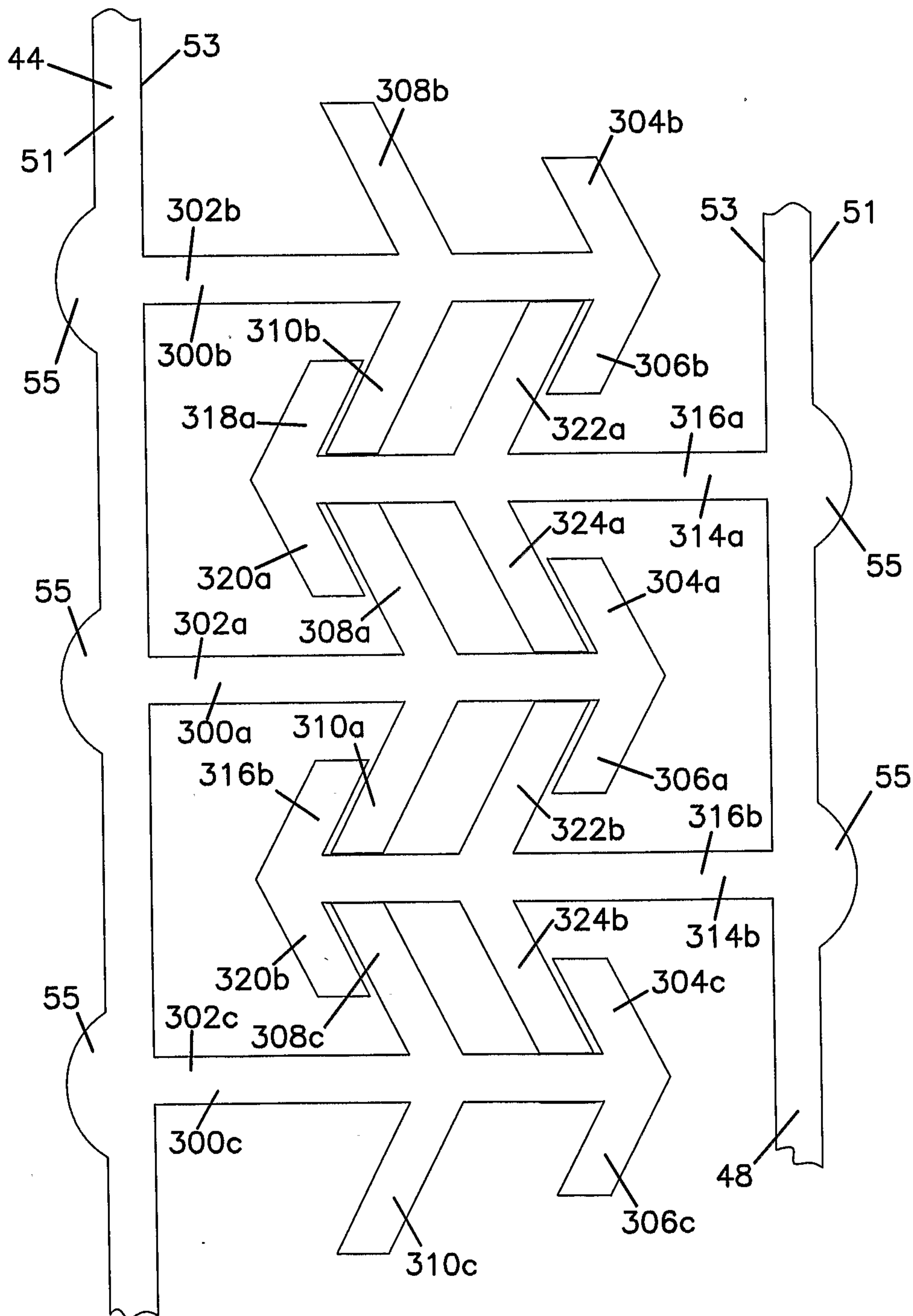


FIG. 12

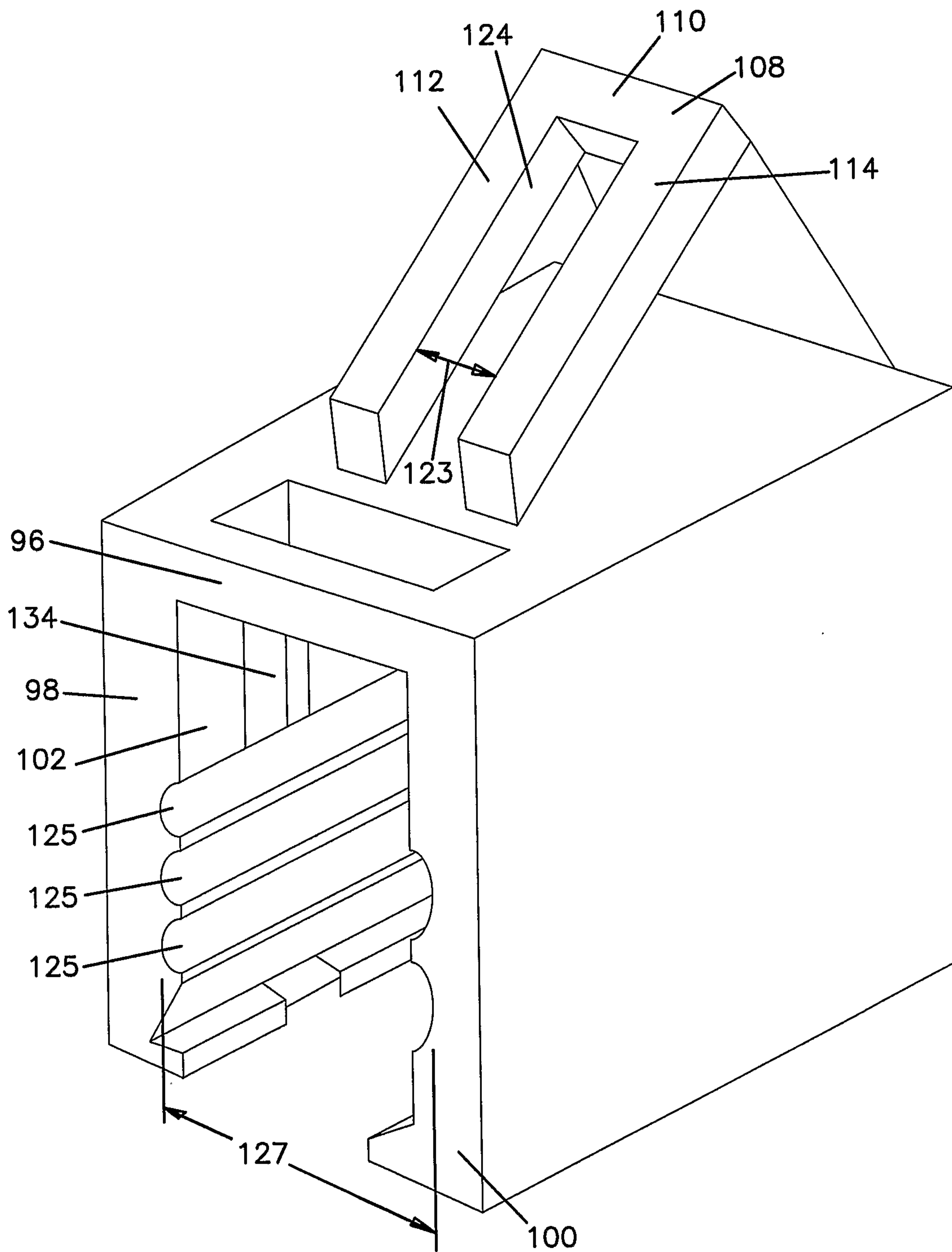


FIG. 13

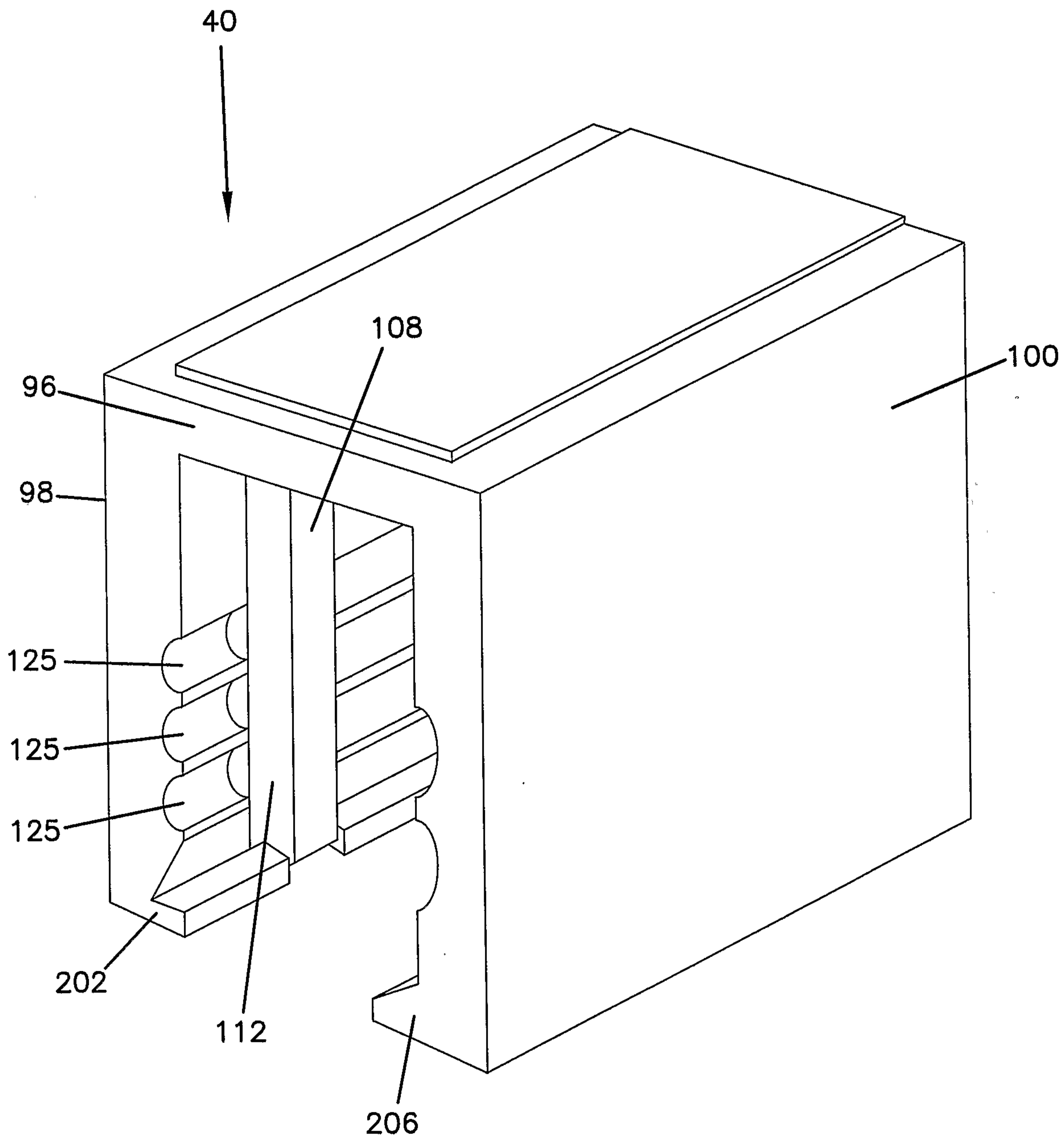


FIG. 14

