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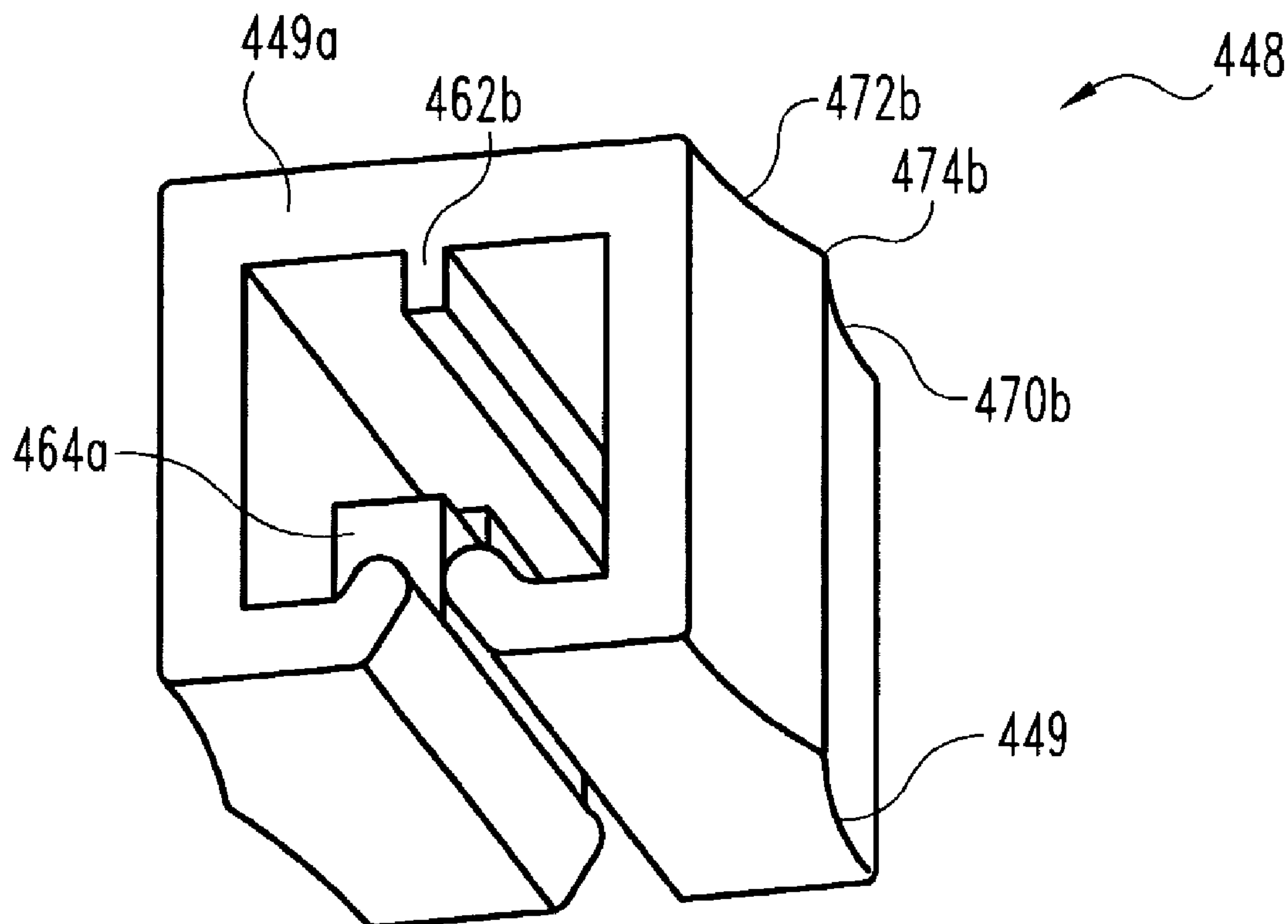
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(57) **Abrégé/Abstract:**

A flexible reclosable container including profiles which are locked and unlocked by a slider (448). One embodiment of the slider has a pair of feet which extend from one end of the slider to the other end and which resist pulling of the slider off of the profiles. Another embodiment of the slider has three spaced pairs of feet which resist removal of the slider from the profiles. The slider in one embodiment has an enlarged central portion (474b) which facilitates grasping the slider and is easy to manufacture by die casting.

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ABSTRACT

A flexible reclosable container including profiles which are locked and unlocked by a slider. One embodiment of the slider has a pair of feet which extend from one end of the slider to the other end and which resist pulling of the slider off of the profiles. Another embodiment of the slider has three spaced pairs of feet which resist removal of the slider from the profiles. The slider in one embodiment has an enlarged central portion which facilitates grasping the slider and is easy to manufacture by die casting.

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SLIDERS FOR RECLOSABLE CONTAINERS

FIELD OF THE INVENTION

5 The present invention relates to reclosable containers, and more specifically to fastener strips and sliders for flexible, reclosable containers and claims priority to U.S. Provisional Patent Application Serial No. 60/330,140 filed October 17, 2001.

BACKGROUND OF THE INVENTION

10 One type of flexible reclosable container includes profiles which are locked and unlocked by a slider which is moved along the profiles. Such reclosable containers are used in form, fill and seal applications where a product is prepacked and sold in the container as well as in applications where the container is sold to the consumer for use by the consumer in packaging the items desired to be packaged by the consumer.

15 Whatever the application or use of the container, it is desirable that the slider and profiles be constructed in such a manner as to prevent the slider from easily being removed from the profiles. It is also desirable that the slider be inexpensive and easy to manufacture.

SUMMARY OF THE INVENTION

One embodiment of the slider of the present invention for locking and unlocking the fastener profiles of a flexible reclosable container might include a body including a top and a pair of sidewalls, the body having an interior bounded by the top and sidewalls. The body further includes a first pair of feet, a second pair of feet and a third pair of feet, all of said pairs of feet being for retaining the slider on the fastener profiles and guiding the slider along the profiles. The second pair of feet is positioned between and spaced from the first and third pair of feet.

Another embodiment of the present invention includes a pair of fastener strips each having a side wall with an upper portion. The fastener strips include a pair of opposing interlockable profile elements which project from the sidewalls of the fastener strips and are configured for repeated locking and unlocking of the fastener strips. Each fastener strip has a flange extending from a location proximate the upper portion of the respective fastener strip. There is also included a slider having a top and pair of opposing sidewalls and a separator for unlocking the profile elements. The top has opposing sides and a central portion therebetween. The sidewalls depend downwardly from the two opposing sides of the top. A separator depends downwardly from the central portion of the top and has a first portion with a first width configured for unlocking the profile elements. The separator also has a second portion attaching the first portion to the top, said second portion having a second width which is less than the first width. The flanges are adjacent one another when the profile elements are interlocked but the flanges are also slidable between the top and the first portion and past the attachment portion when the separator unlocks the profile elements.

Still another embodiment of the invention is a slider for locking and unlocking the fastener profiles of a flexible reclosable container which includes a body having a top and a pair of sidewalls. The body has an interior bounded by the top and the sidewalls and has a first dimension in the same direction as the profiles. The body further includes a pair of feet retaining the slider on the fastener profiles and guiding the slider along the fastener profiles. The body further includes a separator for unlocking the profile elements with the separator being mounted on the top, extending into the interior and extending the entire first dimension of said body.

Still another embodiment of the invention is a slider for locking and unlocking the fastener profiles of a flexible reclosable container. The slider includes a body having a top and a pair of sidewalls, the body having an interior bounded by the top and sidewalls and also having an opening end and a closing end. The body further includes a pair of feet retaining the slider on the fastener profiles and guiding the slider along the fastener profiles. The pair of feet extend from the opening end of the body to the closing end. The body further includes a separator depending downwardly from the top and a pair of closing bars projecting inwardly from the sidewalls with the closing bars being spaced downwardly from the separator.

Still a further embodiment of the invention is a slider for locking and unlocking the fastener profiles of a flexible reclosable container. The slider has an opening end and a closing end. The body includes a top transverse section and a pair of sidewalls connected by the transverse section at the closing end. The transverse section has an inner vertical wall. The sidewalls each have a channel extending from the vertical wall of said transverse section to said opening end. There is also provided closing bars mounted on the sidewalls at the closing end and extending inwardly of the slider. The slider further includes a top portion slidably received within the channels said top portion having a separator mounted thereon and extending between the sidewalls for unlocking the fastener profiles.

Still a further embodiment of the invention involves a slider for locking and unlocking the fastener profiles of a flexible reclosable container. The slider includes a body including a top and a pair of sidewalls. The body has an interior bounded by the top and the sidewalls and also has an opening end and a closing end. The body further includes a pair of feet retaining the slider on the fastener profiles and guiding the slider along the fastener profiles. The body further includes a separator depending downwardly from the top and a pair of closing bars projecting inwardly from the sidewalls. The closing bars are spaced downwardly from the separator and upwardly from the feet.

Still another embodiment of the invention is a slider for locking and unlocking the fastener profiles of a flexible reclosable container. The slider includes a body including a top and a pair of sidewalls with the body having an interior bounded by the top and sidewalls and also having an opening end and a closing end. The body further

includes a pair of feet for retaining the slider on the fastener profiles and guiding the slider along the fastener profiles. The pair of feet extend from the opening end of the body to the closing end. The body further includes a separator depending downwardly from the top and a pair of closing bars projecting inwardly from the sidewalls with the

5 closing bars being spaced downwardly from the separator and upwardly from the feet.

DESCRIPTION OF THE DRAWINGS

Other objects and advantages of the invention will become apparent upon reading the following detailed description upon reference to the drawings in which:

FIG. 1A is a side plan view of a flexible, reclosable container according to one
5 embodiment of the present invention.

FIG. 1B is a cross-sectional view of the apparatus of FIG. 1A as taken in the direction of the arrows along line 1B-1B of FIG. 1A.

FIG. 2 is a top plan view of a slider of according to one embodiment of the present invention.

10 FIG. 3 is an end elevational view of the apparatus of FIG. 2 as taken in the direction of the arrows along line 3-3 of FIG. 2.

FIG. 4 is a bottom plan view of the apparatus of FIG. 2 as taken in the direction of the arrows along line 4-4 of FIG. 3.

15 FIG. 5 is a side elevational view of the apparatus of FIG. 2 as taken along line 5-5 of FIG. 2.

FIG. 6 is a top plan view of a slider according to another embodiment of the present invention.

FIG. 7 is an end elevational view of the apparatus of FIG. 6 as taken in the direction of the arrows along line 7-7 of FIG. 6.

20 FIG. 8 is a bottom plan view of the apparatus of FIG. 6 as taken in the direction of the arrows along line 8-8 of FIG. 7.

FIG. 9 is a side elevational view of the apparatus of FIG. 6 as taken in the direction of the arrows along line 9-9 of FIG. 6.

25 FIG. 10 is a top plan view of a slider of according to another embodiment of the present invention.

FIG. 11 is an end elevational view of the apparatus of FIG. 10 as taken in the direction of the arrows along line 11-11 of FIG. 10.

FIG. 12 is a bottom plan view of the apparatus of FIG. 10 as taken in the direction of the arrows along line 12-12 of FIG. 11.

30 FIG. 13 is a side elevational view of the apparatus of FIG. 10 as taken in the direction of the arrows along line 13-13 of FIG. 10.

FIG. 14 is a top plan view of a slider body of according to another embodiment of the present invention.

FIG. 15 is an end elevational view of the apparatus of FIG. 14 as taken in the direction of the arrows along line 15-15 of FIG. 14.

5 FIG. 16 is a bottom plan view of the apparatus of FIG. 14 as taken in the direction of the arrows along line 16-16 of FIG. 15.

FIG. 17 is a side elevational view of the apparatus of FIG. 14 as taken in the direction of the arrows along line 17-17 of FIG. 14.

FIG. 18 is a top plan view of a removable slider top usable with the body of FIG. 10 14 according to one embodiment of the present invention.

FIG. 19 is an end elevational view of the apparatus of FIG. 18 as taken in the direction of the arrows along line 19-19 of FIG. 18.

FIG. 20 is a bottom plan view of the apparatus of FIG. 18 as taken in the direction of the arrows along line 20-20 of FIG. 19.

15 FIG. 21 is a side elevational view of the apparatus of FIG. 18 as taken in the direction of the arrows along line 21-21 of FIG. 18.

FIG. 22A is a top plan view of an assembled two piece slider according to one embodiment of the present invention.

FIG. 22B is an end elevational view of the slider assembly of FIG. 22A as taken 20 in the direction of the arrows along line 22B-22B of FIG. 22A.

FIG. 23 is a top plan view of a removable slider top according to another embodiment of the present invention.

FIG. 24 is an end elevational view of the apparatus of FIG. 23.

FIG. 25 is a side elevational view of the apparatus of FIG. 23.

25 FIG. 26 is a top plan view of a slider body according to another embodiment of the present invention.

FIG. 27 is a top plan view of a removable slider top according to another embodiment of the present invention.

FIG. 28 is an end elevational view of a slider according to another embodiment of 30 the present invention.

FIG. 29 is an end and bottom perspective view of a slider according to another embodiment of the present invention.

FIG. 30 is a bottom and end perspective view of the slider of FIG. 29.

FIG. 31 is an end and top perspective view of the slider of FIG. 29.

5 FIG. 32 is an end and bottom perspective view of the slider of FIG. 29.

FIG. 33 is an end elevational view of the slider of FIG. 29, including certain exemplary dimensions.

FIG. 34 is a bottom plan view of the slider of FIG. 33 as taken in the direction of the arrows along line 34-34 of FIG. 33, and including certain exemplary dimensions.

10 FIG. 35 is a cross sectional view of an alternative embodiment of fastener profiles for a reclosable container with the profiles unlocked.

FIG. 36 is a cross sectional view similar to FIG. 1B of the fastener profiles of FIG. 36 showing the profiles in combination with the slider of FIGS. 37-42.

15 FIG. 37 is a perspective view of a slider forming another embodiment of the invention.

FIG. 38 is a further perspective view of the slider of FIG. 37.

FIG. 39 is a section taken in the direction of the arrows along the line 39-39 of FIG. 40 of the slider of FIGS. 37 and 38.

FIG. 40 is an elevation of the closing end of the slider.

20 FIG. 41 is a section taken in the direction of the arrows along the line 41-41 of FIG. 40.

FIG. 42 is a top plan view of the slider of FIGS. 37-41.

DESCRIPTION OF THE PREFERRED EMBODIMENT

For the purposes of promoting an understanding of the principles of the invention, reference will now be made to the embodiments illustrated in the drawings and specific language will be used to describe the same. It will
5 nevertheless be understood that no limitation of the scope of the invention is thereby intended, such alterations and further modifications in the illustrated devices, and such further applications of the principles of the invention as illustrated therein being contemplated as would normally occur to one skilled in the art to which the invention relates.

10 FIG. 1A shows a flexible recloseable container 20 for containing a product, container 20 being useful for being formed, filled, and sealed with goods, and also being useful when sold as an empty container. Container 20 comprises first and second sidewalls 22 and 24, respectively, which may be made from any suitable thermoplastic film such as, for example, low density polyethylene, linear low density polyethylene, or
15 similar materials. Sidewalls 22 and 24 include first left transverse side seal 28 and second right transverse side seal 30. Container 20 also includes a bottom edge 26 generally opposite a pair of interlocking fastener strips 32 and 34. Bottom edge 26 may include a fold between sidewalls 22 and 24, such as for a container formed using vertical form, fill and seal apparatus, or alternatively edge 26 may include a seal between
20 sidewalls 22 and 24, such as for a container 20 formed using a horizontal form, fill, and seal apparatus.

Interlocking strips 32 and 34 of fastener profiles run along the top edge of container 20. Strips 32 and 34 are sealed together at endstops 36 and 38. A formed docking station 39 is located near endstop 36. As an alternative to a formed docking
25 station, strips 32 and 34 can also incorporate one or more vertical slits 37a and/or 37b, as will be described later. Strips 32 and 34 are sealed to each other and also to sidewalls 22 and 24 at corner seals 40 and 42. Corner seals 40 and 42 are located along their respective edges of container 20. Seals 40 and 42 are generally located below shoulders 45 and 47 of fastener strips 32 and 34, respectively.

30 In one embodiment of the present invention, container 20 includes a tamper-evident seal 43 between sidewalls 22 and 24. Seal 43 may be an extension of the

interlocking strips that extend internally across the opening of container 20. Seal 43 may be integrally molded with the strips, or may be attached separately. The broken or unbroken state of seal 43 provides evidence to the user of whether or not container 20 has been previously opened. A tamper evident seal is especially useful with a form, fill,
5 and seal machine that inserts an edible product into container 20.

Referring to FIGS. 1A and 1B, slider 148 is slidable upon fastener strips 32 and 34. Fastener strips 32 and 34 include a pair of vertical walls 80b and 80a, respectively. A male profile element 82b projects outwardly from wall 80b. A female profile element 82a projects outwardly from wall 80a. Slider 148 is shown
10 enclosing non-interlocked portions of fastener strips 34 and 32. Movement of slider 148 along the fastener strips results in either an interlocking of profiles 82a and 82b, or an unlocking of profiles 82a and 82b. Female profile 82A includes an upper member 81a which projects outwardly from strip wall 82a to a greater extent than lower member 81b. Because of the greater length of upper member 81a over
15 81b, during interlocking of strips 32 and 34 male profile element 82b comes into contact first with upper member 81a, and second with lower member 81b. In one embodiment of the present invention slider 148 includes a separator 162 having a vertical depth from central portion 151b sufficient to separate elements 82a and 82b as slider 148 is moved along the fastener strips in an opening direction. Feet
20 160b and 160a of slider 148 retain the slider on the interlocking strips by shoulders 45 and 47, respectively.

In another embodiment of the present invention, container 22 contains one or more vertical slits 37a and 37b that extend downward through fastener strips 32 and 34 through the top portion of the fastener strips, but preferably not through the
25 interlocking profile elements of the fastener strips. These slits 37a and 37b reduce the stresses imposed upon the fastener strips due to the presence of the slider separator when the slider is proximate to one of the endstops. For example, slit 37b of bag 22 increases the flexibility of the top portion of the fastener strips such that there is reduced separation force on the interlocked profile elements near
30 endstop 38 when the slider and separator are docked adjacent to endstop 38. It should be understood, however, that not all embodiments of the invention include

vertical slits 37a and 37b. For example, in one embodiment of the invention, a docking station 39 is formed by pressing the slider against a heated still-formable endstop 36. In such an embodiment the slits 37a and 37b are not necessary and not present.

5 FIGS. 2, 3, 4, and 5 present top, end, bottom, and side elevational views of a slider 48 according to one embodiment of the present invention. Slider 48 includes a body 49 which is preferably injection molded from a plastic material. In one embodiment, slider 48 slidably engages a pair of interlockable fastener strips of a flexible, reclosable container, similar to that shown in FIGS. 1A and 1B. As
10 best seen in FIG. 2, body 49 includes a closing end 49a, through which passes a pair of interlocked fastener strips as slider 48 is moved in a closing direction along the fastener strips. Body 49 further includes an opening end 49b, through which passes the unlocked pair of fastener profile strips as slider 48 is moved in a closing direction along the strips.

15 Referring again to FIGS. 2-5, body 49 also includes a top 50 having a pair of central portions 51a and 51b which transversely span from one top edge 51c to an opposing top edge 51d. A pair of opposing sidewalls 52a and 52b depend downward from edges 51c and 51d, respectively, of top 50. Sidewalls 52a and 52b each include a bottom edge 54a and 54b, respectively, which are generally
20 vertically opposite of top edges 51c and 51d, respectively.

 Top 50 and sidewalls 52a and 52b bound an interior 55 of slider 48. Projecting from each sidewall toward interior 55 are one or more feet. As best seen in FIG. 4, projecting inwardly from sidewall 52a are feet 56a, 58a, and 60a. Projecting inwardly from sidewall 52b are feet 56b, 58b, and 60b. Preferably, feet
25 56a and 56b are aligned facing each other along the length of slider 48. Further, feet 58a and 58b are aligned facing each other, and feet 60a and 60b are aligned facing each other. Preferably, slider 48 includes three pair of feet, with adjacent pairs of feet being spaced apart by a gap. Referring to FIGS. 4 and 5, feet 56a and 58a are spaced apart by a gap 57a, and feet 58a and 60a are spaced apart by a gap
30 59a. Further, feet 56b and 58b are spaced apart by gap 57b, and feet 58b and 60b

are spaced apart by gap 59b. Feet 56a and 56b are located proximate opening end 49b; feet 60a and 60b are located proximate closing end 49a.

The pairs of feet of the slider co-act with shoulders of the fastener strips to maintain the slider engaged with the fastener strips, and further to assist in guiding the sliding motion of the slider along fastener strips. As best seen in FIG. 1B, shoulders 45 and 47 are located within the corners formed by the union of foot 160b and sidewall 152b and foot 160a and sidewall 152a, respectively. Any attempt to vertically lift slider 148 from strips 32 and 34 is resisted by interference of shoulders 45 and 47 with feet 160b and 160a, respectively.

However, the integrity of shoulders 45 and 47 is sometimes compromised by other features of container 20. Referring to FIG. 1a, the placement of fused endstops 36 and 38 at opposite ends of fastener strips 32 and 34 can distort or eliminate the edgemoat portions of shoulders 45 and 47. This distortion can reduce the co-action of the shoulders and feet that keeps the slider engaged to the bag. For example, moving the slider as far as possible toward endstop 38 can result in disengagement of the endmost feet from the shoulders. . On a slider having only two pairs of opposing feet, the disengagement of one pair of feet from the shoulder permits the user to inadvertently rotate the slider about the remaining pair of engaged feet, and subsequently lift the slider from the fastener strips. However, a slider according to one embodiment of the present invention includes a central pair of feet such as feet 58a and 58b. Even if feet 60a and 60b become disengaged from shoulders of the fastener strips, the central feet 58a and 58b and opening end feet 56a and 56b remain engaged with the shoulders, discouraging or preventing rotation of the slider and its subsequent pull-off from the fastener strips.

The placement of gaps between adjacent pairs of feet permits some embodiments of the present invention to reduce the material cost and weight of the slider, in comparison to those sliders which include a continuous foot along the length of the sidewalls from the opening end to the closing end. In addition, as best seen in FIGS. 2 and 5, the placement of the gaps can also facilitate design and fabrication of the injection molding dies and also facilitate the injection molding process. For example, gap 59b is located below central portion 51a and closing

bars 64a and 64b. Gap 57b is located below central portion 51b and separator 62. In some embodiments, slider 48 is injection molded in a two-part die, with the two die parts coming together in the vertical direction (vertical with reference to FIG. 5). In addition, central portions 51a and 51b of top 50 are spaced apart by a gap 61b. Central portion 51a is spaced apart from edge 49a of body 49 by a gap 61a. Central portion 51b is spaced apart from edge 49b of body 49 by gap 61c. As best seen in FIG. 5, gaps 61a, 61b, and 61c are arranged in alternating sequence with gaps 59b and 57b. Thus, a die half for injection molding of slider 48 extending downward (as viewed on FIG. 5) includes solid portions which correspond to gaps 61a, 61b, and 61c. The die half for injection molding of slider 48 which extends vertically upward (to join with the top die half) includes solid portions generally within gaps 57b and 59b.

Referring again to FIGS. 2, 3, 4, and 5, slider 48 includes a triangular- or wedge-shaped separator 62 which extends from central portion 51b downward into interior 55. Separator 62 includes a narrow portion 62b which begins spreading apart interlocked profiles when the slider is moved along the fastener strips toward the separator. A pair of closing bars 64a and 64b project downward from central portion 51a. Closing bars 64a and 64b are adapted and configured to interlock fastener strips sliding between the closing bars.

FIGS. 6, 7, 8, and 9 depict top, end, bottom, and side elevational views of a slider according to another embodiment of the present invention. The use of an "N" 100 series prefix (NXX) with an element number (XX) refers to an element that is the same as the non-prefixed element (XX) previously described or depicted, except for the differences which are described or depicted hereafter.

Slider 148 is substantially the same as slider 48, with one difference being the manner of coupling the separator to a central portion of the top. Referring to FIG. 9, a triangular- or wedge-shaped separator 162 is attached to central portion 151b of top 150 by an intermediate attachment portion 163. This attachment portion has a width 163a (FIG. 6) perpendicular to the longitudinal axis of slider 148 that is less than a separating width 162a of separator 162. Attachment portion

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163 is depicted with a square cross section, but can have a cross section of any shape. Preferably,

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attachment portion 163 is integrally molded with separator 162 and central portion 151b.

This incorporation of a reduced width attachment portion above the separator assists in maintaining slider 148 in engagement with a pair of fastener strips. Referring to FIG. 1B, slider 148 is shown engaged with a pair of fastener strips 32 and 34. Each fastener strip includes a top flange 84a and 84b which projects inwardly from sidewalls 80a and 80b, respectively, of fastener strips 34 and 32, respectively. Flanges 84a and 84b provide a top closure of the fastener strips when the fastener strips are interlocked. Further, top flanges 84a and 84b are captured within interior 155 between the top surface of separator 162 and the bottom surface of central portion 151b. Flanges 84a and 84b extend inwardly from their respective sidewalls toward the interior such that a flange and sidewall wrap around separator 162. The use of a reduced width section 163 accommodates the flanges by providing sufficient lateral space for their sliding movement through the slider. Further, any attempt to pull slider 148 off of bag 122 results in interference between the top corners of separator 163 and the inside surfaces of the flanges, thus increasing the strength of the attachment of the slider 148 to strips 32 and 34.

FIGS. 10, 11, 12, and 13 present top, end, bottom, and side elevational views of a slider 248 according to one embodiment of the present invention. Slider 248 includes a body 249 which is preferably injection molded from a plastic material. In one embodiment, slider 248 slidably engages a pair of interlockable fastener strips of a flexible, reclosable container, similar to that shown in FIGS. 1A and 1B. Body 249 includes a closing end 249a, through which passes a pair of interlocked fastener strips as slider 248 is moved in a closing direction along the fastener strips. Body 249 further includes an opening end 249b, through which passes the unlocked pair of fastener profile strips as slider 248 is moved in an opening direction along the strips.

Referring again to FIGS. 10-13, body 249 also includes a top 250 having a central portion which transversely spans from one top edge 251c to an opposing top edge 251d. A pair of opposing sidewalls 252a and 252b depend downward from edges 251c and 251d, respectively, of top 250. Sidewalls 252a and 252b each

include a bottom edge 254a and 254b, respectively, which are generally vertically opposite of top edges 251c and 251d, respectively.

Top 250 and sidewalls 252a and 252b bound an interior 255 of slider 248. Projecting from each sidewall toward interior 255 are a pair of opposing feet. As
5 best seen in FIGS. 11 and 12, projecting inwardly from sidewall 252a is foot 256a, and projecting inwardly from sidewall 252b is foot 256b. Preferably, feet 256a and 256b are aligned facing each other along the length of slider 248.

The pair of feet of the slider co-act with shoulders of the fastener strips to maintain the slider engaged with the fastener strips, and further to assist in guiding
10 the sliding motion of the slider along fastener strips. Referring to FIG. 1B, shoulders 45 and 47 are located within the corners formed by the union of foot 256b and sidewall 252b and foot 256a and sidewall 252a, respectively. Any attempt to vertically lift slider 248 from strips 232 and 234 is resisted by interference of shoulders 45 and 47 with feet 256b and 256a, respectively.

15 Slider 248 incorporates various improvements which reduce the possibility a user will inadvertently pull slider 248 off of a pair of fastener strips. As best seen in FIG. 11, each foot 256a and 256b is inclined upward toward top 250, forming an angle 256c between the upper surface of the foot and the inner surface of the corresponding sidewall that is less than 90 degrees. In a more preferred
20 embodiment, angle 256c is less than about 75 degrees and more than about 20 degrees. Further, although FIG. 11 depicts an angled foot with substantially linear surfaces, the present invention also contemplates the use of a hook-shaped cross section, including radiused or rounded portions.

Separator 262 of slider 248 includes a nose section 262b which extends
25 from the triangular- or wedge-shaped portion of separator 262 to the face of the closing end 249a. A nose 262b that extends flush to the face of closing end 249a limits the maximum travel of slider 248. For example, as best considered in reference to FIG. 1A, movement of a slider 248 toward endstop 36 results in contact of nose 262b with the innermost fused area of endstop 36. This contact
30 limits the sliding travel of slider 248, making it more difficult for a user to slide slider 248 such that a portion of the feet are no longer in contact with the fastener

strip shoulder, and thus more difficult to pull slider 248 out of engagement with fastener strips 32 and 34.

As best seen in FIGS. 11 and 13, closing bars 264a and 264b project inwardly from sidewalls 252a and 252b toward interior 255. Preferably, closing bars 264a and 264b are located vertically between the bottom surface of separator 262 and the top surface of feet 256a and 256b. This manner of vertical location facilitates the use of a dieset for injection molding that couples together along the longitudinal axis of the slider, with reference to FIG. 13 (i.e., a dieset that couples together in a direction parallel to the length of the fastener strips).

As can be best seen in FIGS. 11 and 13, slider 248 includes features with different vertical orientations to facilitate injection molding by a pair of dies that couple together in a longitudinal direction (i.e. the dies come together such that one die approaches from opening side 249b toward another die that approaches from closing side 249a). In this manner, it is possible to mold certain features, such as the angled interior corner represented by angle 256c, that are difficult to fabricate with dies that approach each other vertically. This difficulty arises because of the vertical alignment of closing bars 264a and 264b directly above the angled interior surfaces of feet 256a and 256b, respectively. In contrast, in one embodiment of the present invention the dies approach each other longitudinally, and the open, interior volume beneath the bottom of the closing bars and the top of the angled feet is easily reproduced by a complementary-shaped solid portion of a longitudinally-approaching die member.

FIGS. 14-21, 22A, and 22B depict a slider according to another embodiment of the present invention. These figures depict the two pieces of a two-part slider 348 for a reclosable container. FIGS. 14-17 show a body 349 with a pair of sidewalls 352a and 352b. FIGS. 18-21 show a separately molded top 350 which is slidably received within a track 366 of body 349. FIGS. 22A and 22B show top and end views, respectively, of the assembled slider 348.

FIGS. 14-17 depict a body 349 which is similar to body 249 previously discussed. However, body 349 includes a top transverse section 368 which connects sidewalls 352a and 352b. Sidewalls 352a and 352b each include a

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channel section 366a and 366b, respectively, which extend from the face from opening end 349b toward an inner vertical wall of top transverse section 368. Extending inwardly from sidewalls 352a and 352b are closing bars 364a and 364b which function to interlock fastener strips sliding between the closing bars.

5 FIGS. 18-21 depict a top portion 350, which includes a separator 362 having a nose portion 362b similar to nose portion 262b previously described. However, top portion 350 is adapted and configured to be slidably received within channels 366a and 366b, resulting in a slider 348 which is substantially similar to one piece slider 248. Preferably, separable top portion 350 is received within
10 channels 366a and 366b in a light interference fit, such that friction maintains top 350 coupled to body 349.

FIGS. 22A and 22B show top and end views, respectively, of an assembled two piece slider 348. Top 350 is shown inserted in channels 366a and 366b.

FIGS. 23, 24, and 25 depict top, end, and side elevational views,
15 respectively, of a separable top 350' for a slider 348'. Slider 348' includes top 350', slidably received within channels 366a and 366b (FIG. 15) of body 349. Top 350' is the same as top 350, except that separator 362' is spaced apart from and underneath the bottom surface of top 350' by an attachment portion 363'. Attachment portion 363' has a first width 363a' which is less than a width 362a' of
20 wedge-shaped separator 362'.

FIGS. 26 and 27 depict a body 349'' and separable top 350'' which can be assembled to form a slider. Body 349'' is the same as body 349, except that channels 366a'' and 366b'' include angled interior surfaces, as best seen in FIG. 26. Channels 366a'' and 366b'' are closest together at a location near 349b'', with the
25 distance between opposing walls of the channels increasing as the channels extend toward closing end 349a''. FIG. 27 depicts a top 350'' which is the same as top 350, except that top 350'' includes angled side surfaces 351c'' and 351d'' that are complementary in shape to the inner walls of channels 366a'' and 366b'', respectively. As best seen in FIG. 27, the width of top 350'' is narrowest toward
30 the opening end (i.e., proximate the widest portion of separator 362''), and widest near the closing end (i.e., near the distal end of separator nose 362b'').

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Top 350'' is slidably received within the channels of body 349''. As the widest (or closing) end of top 350'' is pressed into the narrowest (or opening) end of body 349'', sidewalls 352a'' and 352b'' are spread apart. Lead-in chambers or tapers may be provided on both of the channel inlets of body 349''. Alternatively
5 the insertion edge of top 350'' may have tapered corners, as shown, to assist in the insertion and spreading apart of the sidewalls. After insertion, the sidewalls 352a'' and 352b'' resiliently spring back to their original position, thus locking top 350'' in place.

Although FIGS. 14-27 depict a separable top which is inserted into a body
10 proximate the opening end 349b, the present invention further includes separable tops and receiving channels adapted and configured for insertion from opening end 349a. Further, although what has been shown and described is a separable top that is symmetrical about a longitudinal axis, the present invention also contemplates those separable tops in which only one side includes an angled surface or some
15 other feature which co-acts with the respective channel to lock the positioned top in place in the body.

FIG. 28 shows an end elevational view of a slider 248' according to another embodiment of the present invention. Slider 248' is the same as slider 248, except that the sidewalls 252a' and 252b' are angled inward, such that the bottom end of
20 the sidewalls near feet 256a' and 256b' is narrower than the distance between the sidewalls toward top 250'. The included angle 252c' between top surface 250' and the exterior surface of sidewall 252a' is less than 90 degrees, and in a preferred embodiment is less than about 85 degrees and more than about 60 degrees. The included angle 252d' between top surface 250' and the exterior surface of sidewall
25 252b' is less than 90 degrees, and in a preferred embodiment is less than about 85 degrees and more than about 60 degrees. Although what has been shown and described are inwardly angled walls with substantially flat surface, the present invention also contemplates those embodiments in which the walls include rounded, non-planar surfaces.

30 FIGS. 29-34 present various views of a slider 448 according to one embodiment of the present invention. Slider 448 includes a body 449 which is

preferably injection molded from a plastic material. In one embodiment, slider 448
slidingly engages a pair of interlockable fastener strips of a flexible, reclosable
container, similar to that shown in FIGS. 1A and 1B. Body 449 includes a closing
end 449a, through which passes a pair of interlocked fastener strips as slider 448 is
5 moved in a closing direction along the fastener strips. Body 449 further includes
an opening end 449b, through which passes the unlocked pair of fastener profile
strips as slider 448 is moved in an opening direction along the strips.

Referring again to FIGS. 29-34, body 449 also includes a top 450 having a
central portion which transversely spans from one top edge 451c to an opposing
10 top edge 451d. A pair of opposing sidewalls 452a and 452b depend downwardly
from edges 451c and 451d, respectively, of top 450. Sidewalls 452a and 452b each
include a bottom edge 454a and 454b, respectively, which are generally vertically
opposite top edges 451c and 451d, respectively.

Top 450 and sidewalls 452a and 452b bound an interior 455 of slider 448.
15 Projecting from each sidewall toward interior 455 are a pair of opposing feet.
Projecting inwardly from sidewall 452a is foot 456a, and projecting inwardly from
sidewall 452b is foot 456b. Preferably, feet 456a and 456b are aligned facing each
other along the length of slider 448.

The pair of feet of the slider co-act with shoulders of the fastener strips to
20 maintain the slider engaged with the fastener strips, and further to assist in guiding
the sliding motion of the slider along fastener strips. Referring to FIG. 1B,
shoulders 45 and 47 are located within the corners formed by the union of foot
456b and sidewall 452b and foot 456a and sidewall 452a, respectively. Any
attempt to vertically lift slider 448 from strips 32 and 34 is resisted by interference
25 of shoulders 45 and 47 with feet 456b and 456a, respectively.

Slider 448 incorporates various improvements which reduce the possibility
a user will inadvertently pull slider 448 off of a pair of fastener strips. As best seen
in FIG. 33, each foot 456a and 456b includes an upstanding projection or lip 457a
and 457b, respectively. These projections 457a and 457b extend generally toward
30 interior 455 of slider 448 from a generally horizontal central portion of feet 456a
and 456b, respectively. Further, although FIG. 33 depicts an upwardly angled

projection with substantially linear surfaces, the present invention also contemplates the use of a hook-shaped cross section, including radiused or rounded portions.

Separator 462 of slider 448 includes a nose section 462b which extends
5 from the triangular- or wedge-shaped portion of separator 462 to the face of the closing end 449a. A nose 462b that extends flush to the face of closing end 449a limits the maximum travel of slider 448. For example, as best considered in reference to FIG. 1A, movement of a slider 448 toward endstop 36 results in contact of nose 462b with the innermost fused area of endstop 36. This contact
10 limits the sliding travel of slider 448, making it more difficult for a user to slide slider 448 such that a portion of the feet are no longer in contact with the fastener strip shoulder, and thus more difficult to pull slider 448 out of engagement with fastener strips 32 and 34.

As best seen in FIG. 34, closing bars 464a and 464b project inwardly from
15 longitudinal midpoints of sidewalls 452a and 452b toward interior 455. Preferably, closing bars 464a and 464b are located vertically between the bottom surface of separator 462 and the top surface of feet 456a and 456b, as best seen in FIG. 33. This manner of vertical location facilitates the use of a dieset for injection molding that couples together along the longitudinal axis of the slider (i.e., a dieset that
20 couples together in a direction parallel to the length of the fastener strips).

Slider 448 includes features with different vertical orientations to facilitate injection molding by a pair of dies that couple together in a longitudinal direction (i.e. the dies come together such that one die approaches from opening side 449b toward another die that approaches from closing side 449a). In this manner, it is
25 possible to mold certain features, such as the lowered elevational portion of the feet between the innermost projections (457a and 457b) and the inner surface of the walls of the slider body (452a and 452b, respectively), that are difficult to fabricate with dies that approach each other vertically. This difficulty arises because of the vertical alignment of closing bars 464a and 464b directly above the
30 interior surfaces of feet 456a and 456b, respectively. In contrast, in one embodiment of the present invention the dies approach each other longitudinally,

and the open, interior volume beneath the bottom of the closing bars and the top of the angled feet is easily reproduced by a complementary-shaped solid portion of a longitudinally-approaching die member.

Slider 448 also includes exterior features which provide a more positive
5 feel and improved gripping surface for the user, regardless of whether the slider is moved in the opening or closing direction. Slider 448 includes angled or contoured exterior surfaces 472a and 472b which extend outwardly away from interior 455 as the exterior surfaces traverse longitudinally from closing end 449a toward the middle of slider body 449. Likewise, the other half of the slider body
10 includes walls 452a and 452b which include exterior surfaces 470a and 470b that extend away from interior 455 in a direction from opening end 449b toward a midpoint of the slider body. The juncture of outer surfaces 470a and 472a meet along a generally vertical ridge 474a which is preferably near a midpoint along the length of body 449. The juncture of outer surfaces 470b and 472b meet along a
15 generally vertical ridge 474b which is preferably near a midpoint along the length of body 449.

As best seen in FIG. 34, ridges 474a and 474b are located a greater distance from the centerline of body 449 than other points along vertical walls 452a and 452b, respectively. These central ridges and angled or curving exterior walls
20 provide for easier gripping and control of slider 448 by the user. For example, when moving the slider in a direction to interlock the profiles, the user places his fingers on the outwardly flaring wall surfaces 472a and 472b and pushes gently against ridges 474a and 474b, which is gripped more easily and with less need for surface friction than otherwise flat, planar exterior wall surfaces. As another
25 example, when moving the slider in a direction to unlock the profiles, the user places his fingers on the outwardly flaring wall surfaces 470a and 470b and pushes gently against ridges 474a and 474b, which is gripped more easily and with less need for surface friction than otherwise flat, planar exterior wall surfaces.

In one embodiment, the present invention includes an apparatus for a
30 reclosable container, comprising a pair of fastener strips each having a sidewall

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with a top, the fastener strips including a pair of opposing interlockable profile elements projecting from the sidewalls of the fastener strips and adapted and configured for repeated locking and unlocking of the fastener strips. Each fastener strip has a flange extending from a location proximate the top of the respective fastener strip. The apparatus further includes a slider comprising a body including a top with a pair of opposing sides and a central portion therebetween, a pair of opposing sidewalls, and a separator for unlocking the profile elements. Each sidewall depends downward from opposing edges of the top. The separator depends downward from the central portion of the top, and has a first portion with a first width adapted and configured for unlocking the profile elements. The separator is attached to the top by an attachment portion having a second width that is less than the first width. When the slider is coupled to the fastener strips, at least one of the flanges is able to slide between the top of the body and the first portion, and also past the attachment portion. Preferably, the flanges overlap one another when the profile strips are interlocked.

In another embodiment, the present invention includes a slider for locking and unlocking the fastener profiles of a flexible, reclosable container, comprising a body including a top and a pair of opposing sidewalls. Each of the sidewalls depend downward from the top and have a bottom edge spaced away from the top. The body has an interior bounded by the top and the sidewalls. The apparatus includes a first pair of feet for retaining the slider on the fastener profiles and guiding the slider along the fastener profiles, each of the first pair of feet projecting from a different one of the sidewalls toward the interior along the bottom edge. The apparatus includes a second pair of feet for retaining the slider on the fastener profiles and guiding the slider along the fastener profiles, each of the second pair of feet projecting from a different one of the sidewalls toward the interior along the bottom edge. The apparatus includes a third pair of feet for retaining the slider on the fastener profiles and guiding the slider along the fastener profiles, each of the third pair of feet projecting from a different one of the sidewalls toward the interior along the bottom edge. The second pair of feet are placed between and spaced apart from the first pair of feet and the third pair of feet along the bottom edge. The

apparatus preferably includes a pair of closing bars, each of the bars projecting from a different one of the sidewalls toward the interior and located intermediate of the top and the respective bottom edge. The closing bars are located along the respective sidewall in between the first pair of feet and the second pair of feet.

5 Preferably, each of the first pair of feet opposes each other, each of the second pair of feet opposes each other, and each of the third pair of feet opposes each other.

Referring now to FIGS. 35-42, there is illustrated a further embodiment of the present invention. Referring particularly to FIG. 36 there is shown a cross sectional view similar to FIG. 1b of a slider 548 which is slidable upon fastener strips 532 and 534. The description and showing above with reference to FIG. 1A is also pertinent as regards the construction application and operation of the embodiment of FIGS. 35-42.

Referring to FIG. 36, slider 548 is slidable upon fastener strips 532 and 534. Fastener strips 532 and 534 include a pair of vertical walls 580a and 580b, respectively. A male profile 582b projects outwardly from wall 580a. A female profile element 582a projects outwardly from wall 580b. Slider 548 is shown enclosing non-interlocked portions of fastener strips 534 and 532. Movement of slider 548 along the fastener strips results in either an interlocking of profiles 582a and 582b, or an unlocking of profiles 582a and 582b. Female profile 582a includes an upper member 581a and also a lower member 581b. Slider 548 includes a separator 562 having a vertical depth from central portion 551b sufficient to separate elements 582a and 582b as slider 548 is moved along the fastener strips in an opening direction. Feet 560b and 560a of slider 548 retain slider 548 on the interlocking strips by shoulders 545 and 547, respectively.

25 Referring to FIGS. 37-42, slider 548 includes a body 549 which is preferably injection molded from a plastic material. Body 549 includes a closing end 549a through which passes interlocked fastener strips of a flexible, reclosable container such as that shown in FIG. 1a. When the slider 548 is moved in a closing direction along the fastener strips, the interlocked profiles pass out of the closing end 549a. Body 549 further includes an opening end 549b through which passes

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the unlocked pair of fastener profile strips as slider 548 is moved in a opening direction along the strips.

Body 549 also includes a top 550 and a pair of opposing side walls 552a and 552b which depend from the top 550. Projecting inwardly from sidewall 552a is foot 556a. Projecting inwardly from sidewall 552b is foot 556b. The feet 556a and 556b are relatively stout or thick and also extend the entire length of the slider from the closing end 549a to the opening end 549b. The single pair of feet of the slider coact with the shoulders 545 and 547 to firmly retain the slider on the fastener strips. Because the feet 556a and 556b extend the entire length of the slider there is little tendency for the feet to become disengaged with the shoulders thus preventing or reducing pull-off of the slider from the fastener strips.

The slider 548 further includes the separator 562 which as shown in FIGS. 38, 39, 40 and 41 has, at least in part, a wedge-shaped or diamond-shaped portion 562a and straight or elongated portion 562b. The separator 562 is adapted and configured to unlock and separate the profiles as shown in FIG. 36 when the slider is moved in the opening direction on the fastener strips. Mounted on the sidewalls 552a and 552b are closing bars 564a and 564b which are adapted and configured to interlock fastener strips sliding between the closing bars.

The slider 548 includes features with different vertical orientations to facilitate injection molding by a pair of dies that couple together in a longitudinal direction (i.e. the dies come together such that one die approaches from closing end 549a toward another die that approaches from opening end 549b). A pair of slots 570 are provided to facilitate orienting the sliders when it is fed in a parts feeder for assembly on the fastener strips.

While the invention has been illustrated and described in detail in the drawings and foregoing description, the same is to be considered as illustrative and not restrictive in character, it being understood that only the preferred embodiments have been shown and described and that all changes and modifications that come within the spirit of the invention are desired to be protected. In the following claims the terms vertical, horizontal, above and the like

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are used not in an absolute sense but instead in a relative sense so as to orient the various elements of the claim relative to one another.

WHAT IS CLAIMED:

1. A slider for locking an unlocking the fastener profiles of a flexible reclosable container comprising:
- 5 (a) a body including a top and a pair of sidewalls, said body having an interior bounded by the top and the sidewalls;
- (b) said body further including a first pair of feet extending inwardly from said sidewalls for retaining the slider on the fastener profiles and guiding the slider along the fastener profiles;
- 10 (c) said body further including a second pair of feet extending inwardly from said sidewalls for retaining the slider on the fastener profiles and guiding the slider along the fastener profiles;
- (d) said body further including a third pair of feet extending inwardly from said sidewalls for retaining the slider on the fastener profiles and guiding the slider along the fastener profiles; and
- 15 (e) said second pair of feet being positioned between and spaced from the first and third pair of feet.
2. The slider of claim 1 wherein said top has a first gap, a second gap and a third gap; said first gap being located vertically above said first pair of feet; said second gap being located vertically above said second pair of feet; and said third gap being located vertically above said third pair of feet; and wherein
- 20
3. A slider for locking an unlocking the fastener profiles of a flexible reclosable container comprising:
- 25 (a) a body including a top and a pair of sidewalls, said body having an interior bounded by the top and the sidewalls;
- (b) said body further including a first pair of feet for retaining the slider on the fastener profiles and guiding the slider along the fastener profiles;
- 30 (c) said body further including a second pair of feet for retaining the slider on the fastener profiles and guiding the slider along the fastener profiles;

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(d) said body further including a third pair of feet for retaining the slider on the fastener profiles and guiding the slider along the fastener profiles; and

(e) said second pair of feet being positioned between and spaced from the first and third pair of feet;

5 wherein said top has a first gap, a second gap and a third gap; said first gap being located vertically above said first pair of feet; said second gap being located vertically above said second pair of feet; and said third gap being located vertically above said third pair of feet; and

10 additionally comprising a separator and a pair of closing bars, said top being formed in two parts which are spaced apart by said second gap, said separator being mounted on one of said parts and said closing bars on the other of said parts.

4. The slider of claim 3 which is formable by a pair of dies moving
15 into engagement with one another by movement in a vertical direction, said slider having no gaps or recesses that are not filled by said dies when said dies are in engagement with one another to form the slider.

5. A reclosable container comprising

20 (a) a pair of fastener strips each having a sidewall with an upper portion, said fastener strips including a pair of opposing interlockable profile elements projecting from the sidewalls of the fastener strips and configured for repeated locking and unlocking of the fastener strips, each fastener strip having a flange extending from a location proximate the upper portion of the respective
25 fastener strip; each of said flanges being separate and apart from said pair of opposing interlockable profile elements;

(b) a slider including a top, a pair of opposing sidewalls and a separator for unlocking the profile elements, said top having opposing sides and a central portion therebetween, said sidewalls depending downwardly from said two
30 opposing sides of said top, and said separator depending downwardly from the central portion of the top and having a first portion with a first width configured for

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unlocking the profile elements, said separator having a second portion attaching said first portion to the top, said second portion having a second width which is less than said first width;

- 5 (c) said flanges being adjacent one another when the profile elements are interlocked but said flanges being slidable between the top and the first portion and past the attachment portion when said separator unlocks the profile elements.

6. The reclosable container of claim 5 wherein said slider further includes:

- 10 (a) a first pair of feet for retaining the slider on the fastener profile elements and guiding the slider along the fastener profile elements;
- (b) a second pair of feet for retaining the slider on the fastener profile elements and guiding the slider along the fastener profile elements;
- (c) a third pair of feet for retaining the slider on the fastener profile
- 15 elements and guiding the slider along the fastener profile elements; and
- (d) said second pair of feet being positioned between and spaced from said first and third pair of feet.

20 8. A slider for locking and unlocking the fastener profiles of a flexible reclosable container comprising:

- (a) a body including a top and a pair of sidewalls, said body having an interior bounded by the top and the sidewalls and having a first dimension in the same direction as said profiles;
- (b) said body further including a separator for unlocking the profile
- 25 elements, said separator being mounted on said top and extending into said interior and extending the entire first dimension of said body;
- (c) said body further including a first pair of feet for retaining the slider on the fastener profiles and guiding the slider along the fastener profiles, a second pair of feet for retaining the slider on the fastener profile, and guiding the slider
- 30 along the fastener profiles, and a third pair of feet for retaining the slider on the fastener profiles and guiding the slider along the fastener profiles; and

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(d) said second pair of feet being positioned between and spaced from said first and third pair of feet.

5 9. A slider for locking and unlocking the fastener profiles of a flexible reclosable container comprising:

(a) a body including a top and a pair of sidewalls, said body having an interior bounded by the top and the sidewalls, said body having an opening end and a closing end;

10 (b) said body further including a pair of feet for retaining the slider on the fastener profiles and guiding the slider along the fastener profiles, said pair of feet extending from the opening end of said body to the closing end; and

(c) said body further including a separator depending downwardly from said top and a pair of closing bars projecting inwardly from said sidewalls, said closing bars being spaced downwardly from said separator, said separator
15 extending from said closing end to said opening end.

11. The slider of claim 9 wherein said feet are spaced downwardly from said separator and said closing bars.

20 12. The slider of claim 11 which is formable by a pair of dies moving into engagement with one another by movement in a horizontal direction, said slider having no gaps or recesses that are not filled by said dies when said dies are in engagement with one another to form the slider.

25 13. The slider of claim 9 wherein said feet extend inwardly from said sidewalls at an angle of less than 90 degrees.

14. The slider of claim 9 wherein said feet extend inwardly from said sidewalls at an angle of approximately 70 degrees.

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15. The slider of claim 9 wherein the body has a central portion, said body being tapered from its closing end to the central portion which is larger than said closing end, said body being tapered from its opening end to said central portion which is larger than said opening end.

5

16. A slider for locking and unlocking the fastener profiles of a flexible reclosable container comprising:

- (a) a slider having an opening end and a closing end;
- (b) a body including a top transverse section and a pair of sidewalls connected by said transverse section at said closing end, said transverse section having an inner vertical wall, said sidewalls each having a channel extending from the vertical wall of said transverse section to said opening end, closing bars mounted on said sidewalls at said closing end and extending inwardly of said slider; and
- (c) a top portion slidably received within said channels, said top portion having a separator mounted thereon and extending between said sidewalls for unlocking said fastener profiles.

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17. The slider of claim 16 wherein the separator extends from said opening end to said closing end, said slider having feet extending inwardly from said sidewalls for retaining said slider on said fastener profiles.

18. The slider of claim 17 wherein said feet extend from said opening end to said closing end.

25

19. The slider of claim 18 wherein said feet extend inwardly from said sidewalls at an angle of less than 90 degrees.

22. A slider for locking and unlocking the fastener profiles of a flexible reclosable container comprising:

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(a) a body including a top and a pair of sidewalls, said body having an interior bounded by the top and the sidewalls, said body having an opening end and a closing end;

5 (b) said body further including a pair of feet for retaining the slider on the fastener profiles and guiding the slider along the fastener profiles;

(c) said body further including a separator depending downwardly from said top and a pair of closing bars projecting inwardly from said sidewalls; and

10 (d) said body having a largest dimension and tapering to a smaller dimension in the direction of said fastener profiles whereby said body can be cast in one piece with the casting dies removable in the direction of said profiles.

23. A slider for locking and unlocking the fastener profiles of a flexible reclosable container comprising:

15 (a) a body including a top and a pair of sidewalls, said body having an interior bounded by the top and the sidewalls, said body having an opening end and a closing end;

(b) said body further including a pair of feet for retaining the slider on the fastener profiles and guiding the slider along the fastener profiles, said pair of feet extending from the opening end of said body to the closing end; and

20 (c) said body having a largest dimension and tapering to a smaller dimension in the direction of said fastener profiles whereby said body can be cast in one piece with the casting dies removable in the direction of said profiles.

24. The slider of claim 22 wherein said separator extends from said closing end to said opening end.

25. The slider of claim 22 wherein said separator extends between said closing end and said opening end but said separator is shorter than the distance between said closing end and said opening end.

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26. The slider of claim 22 wherein said feet extend from said opening end to said closing end.

27. The slider of claim 22 which is formable by a pair of dies moving
5 into engagement with one another by movement in a horizontal direction, said slider having no gaps or recesses that are not filled by said dies when said dies are in engagement with one another to form the slider.

28. A slider for locking an unlocking the fastener profiles of a flexible
10 reclosable container comprising:

(a) an elongated body including a top and a pair of sidewalls, said body having an interior bounded by the top and the sidewalls;

(b) said body further including a first pair of feet for retaining the slider on the fastener profiles and guiding the slider along the fastener profiles;

15 (c) said body further including a second pair of feet for retaining the slider on the fastener profiles and guiding the slider along the fastener profiles, said second pair of feet being spaced longitudinally of said body relative to said first pair of feet;

(d) said body further including a third pair of feet for retaining the
20 slider on the fastener profiles and guiding the slider along the fastener profiles, said third pair of feet being spaced longitudinally on said body relative to said first pair of feet and said second pair of feet; and

(e) said second pair of feet being positioned between and spaced from the first and third pair of feet.

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29. The slider of claim 28 wherein said top has a first gap, a second gap and a third gap; said first gap being located vertically above said first pair of feet; said second gap being located vertically above said second pair of feet; and said third gap being located vertically above said third pair of feet.

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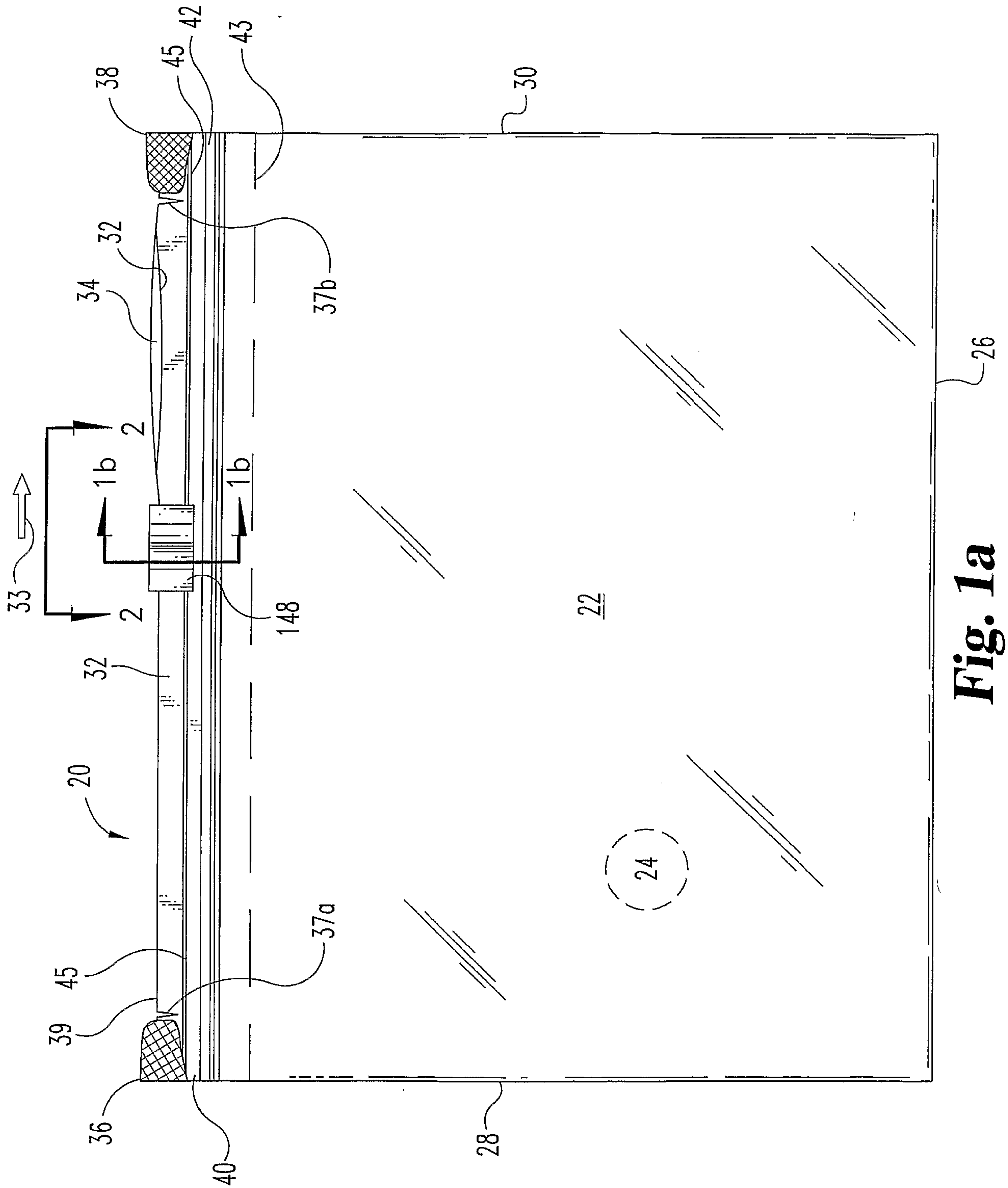
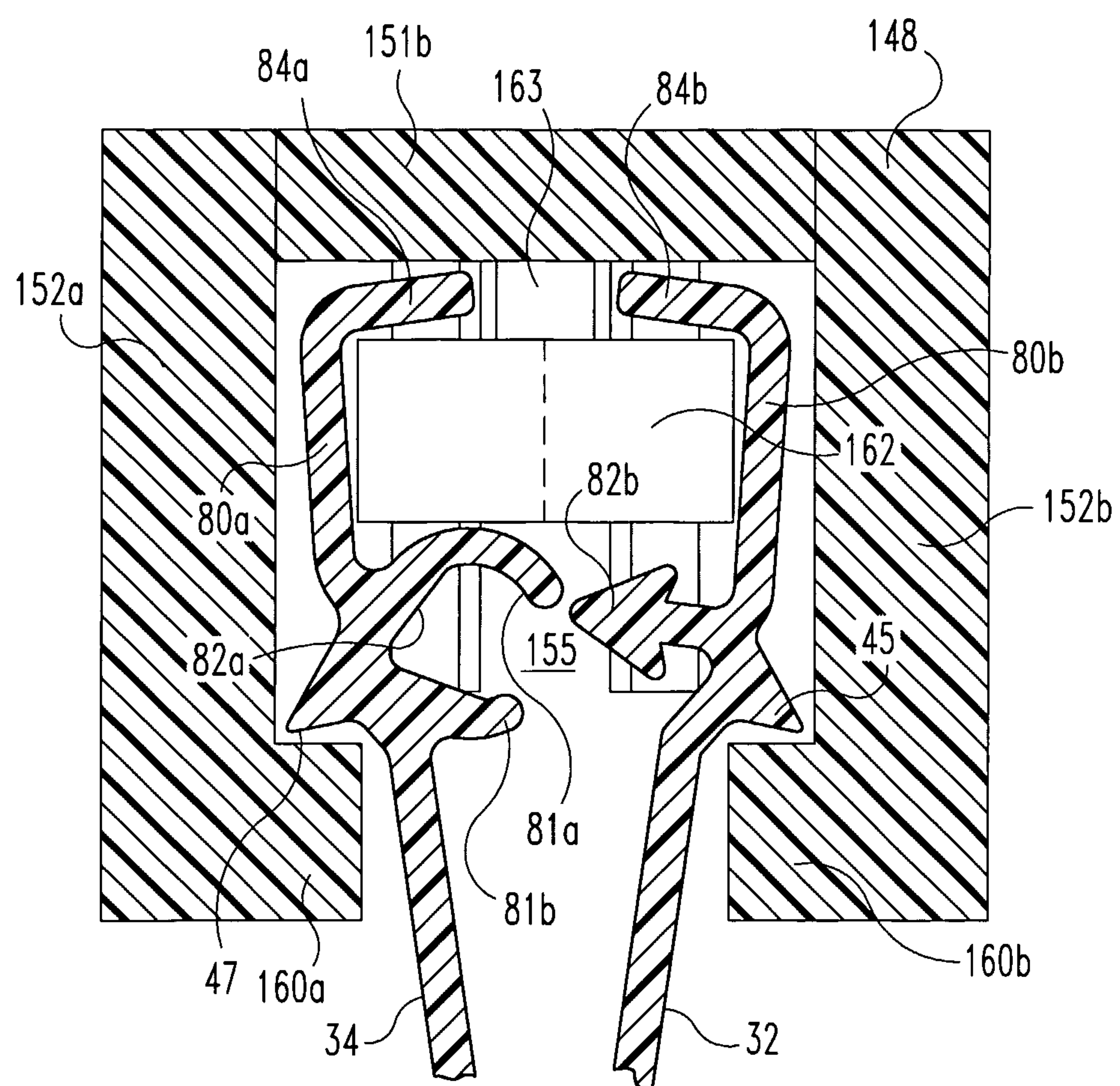


Fig. 1a

**Fig. 1b**

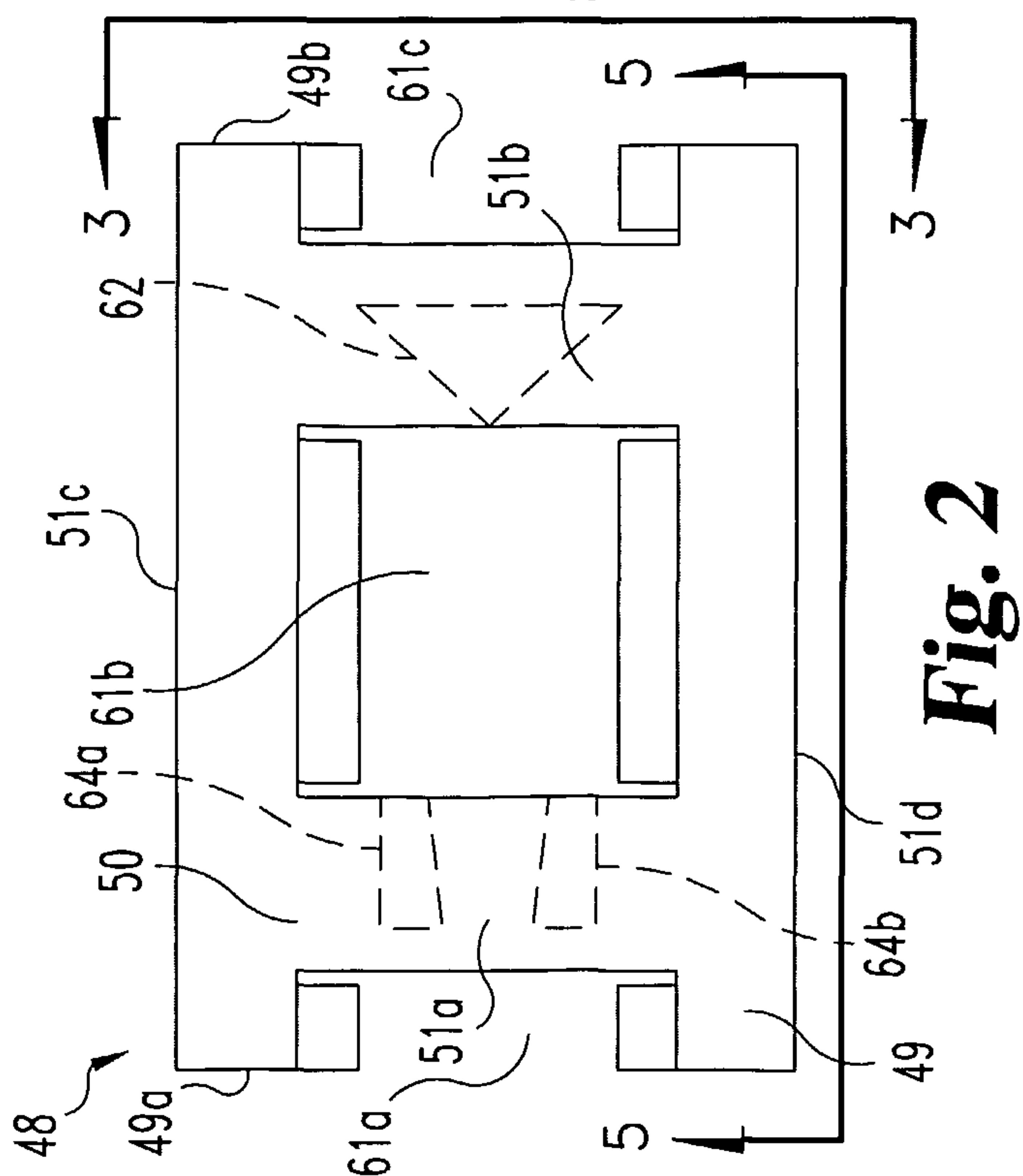


Fig. 2

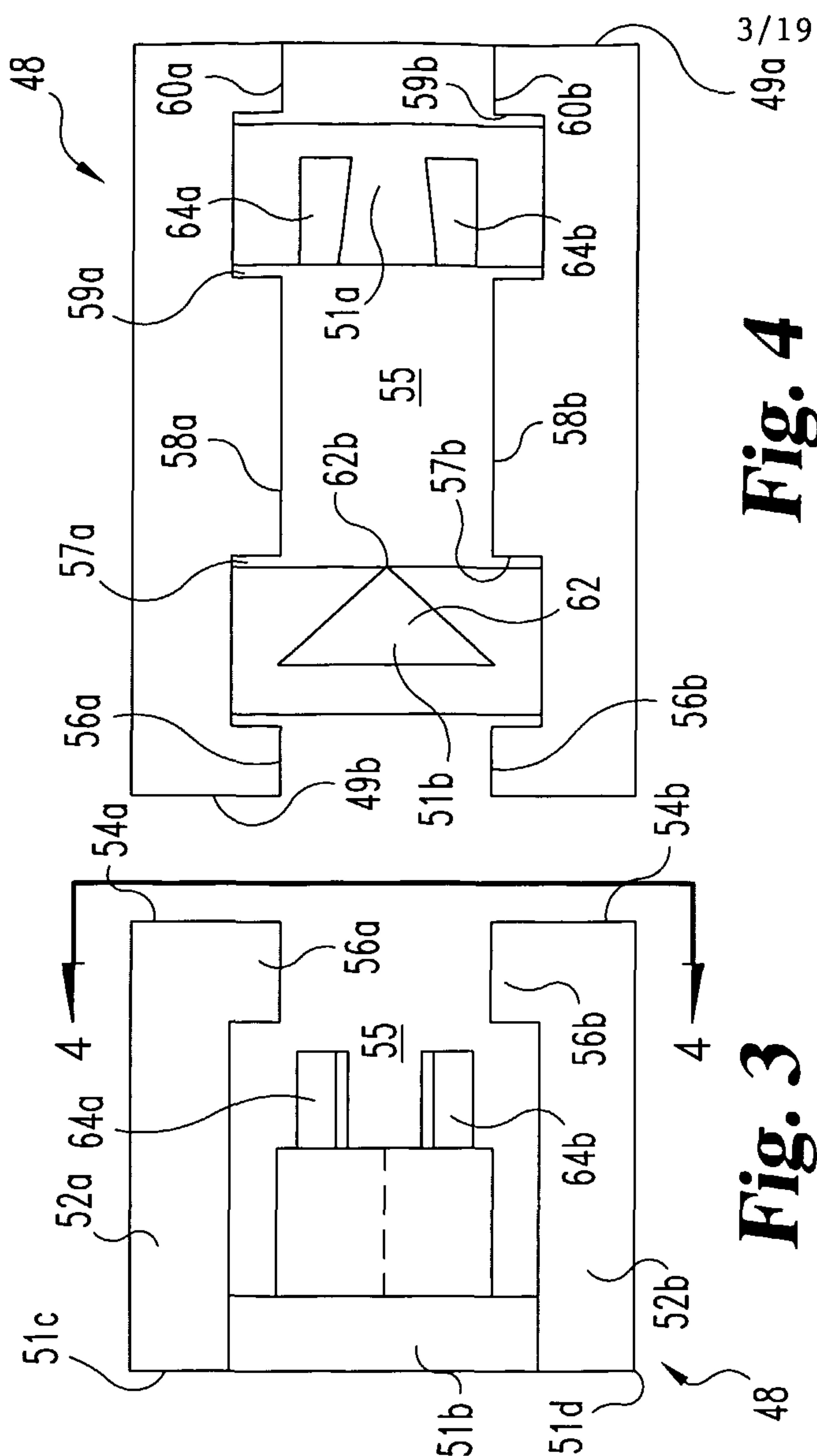


Fig. 3

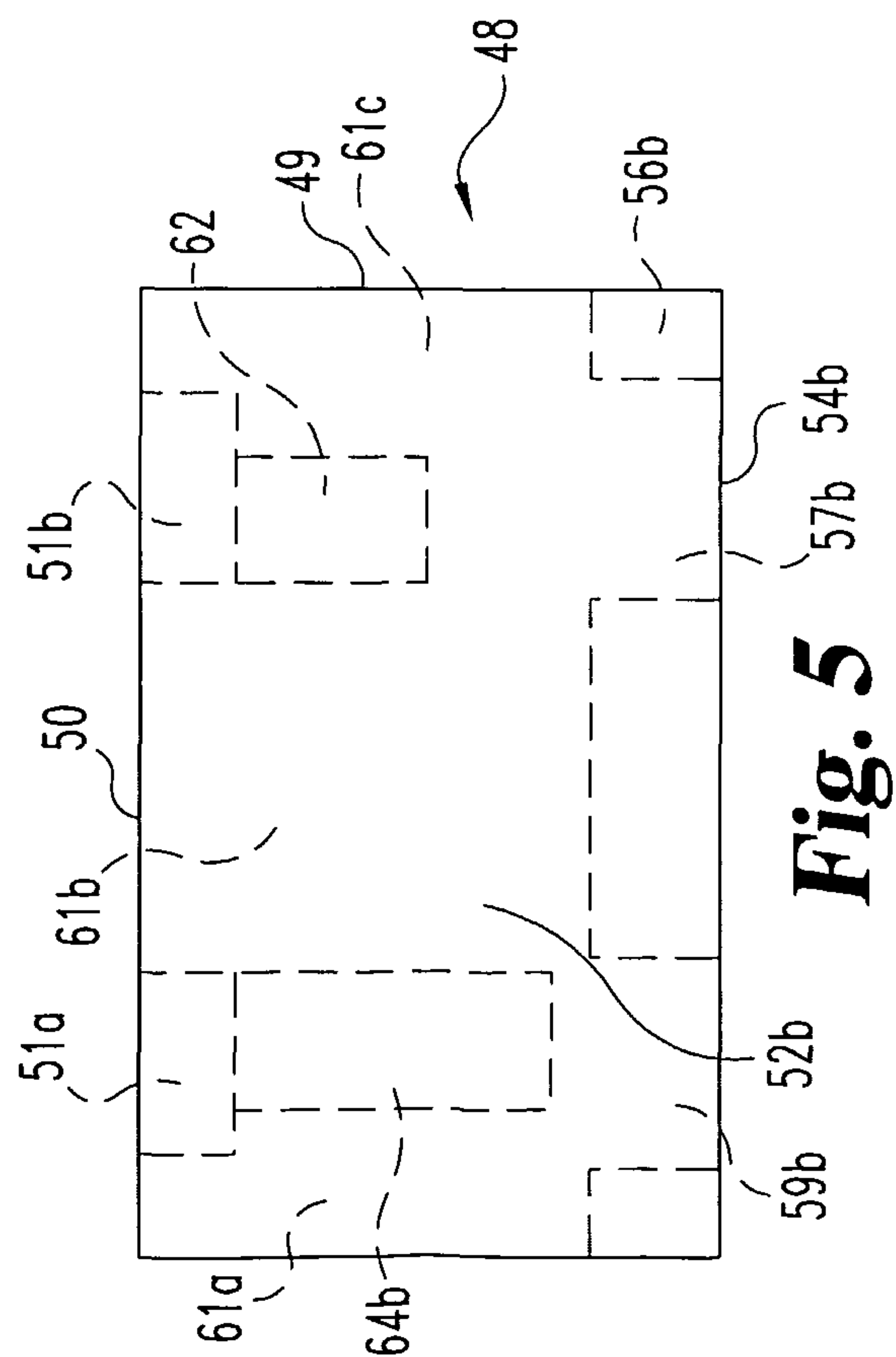


Fig. 5



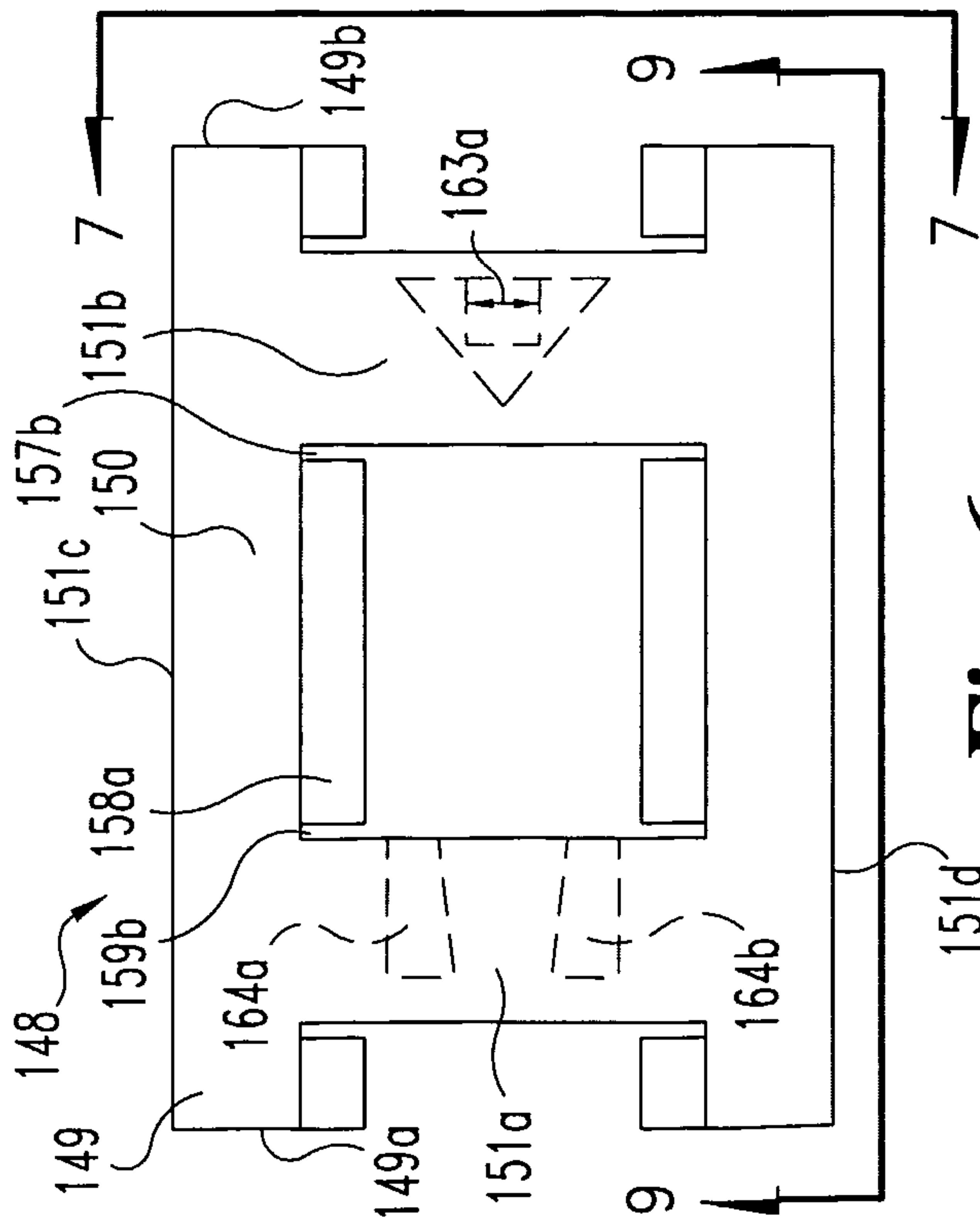


Fig. 6

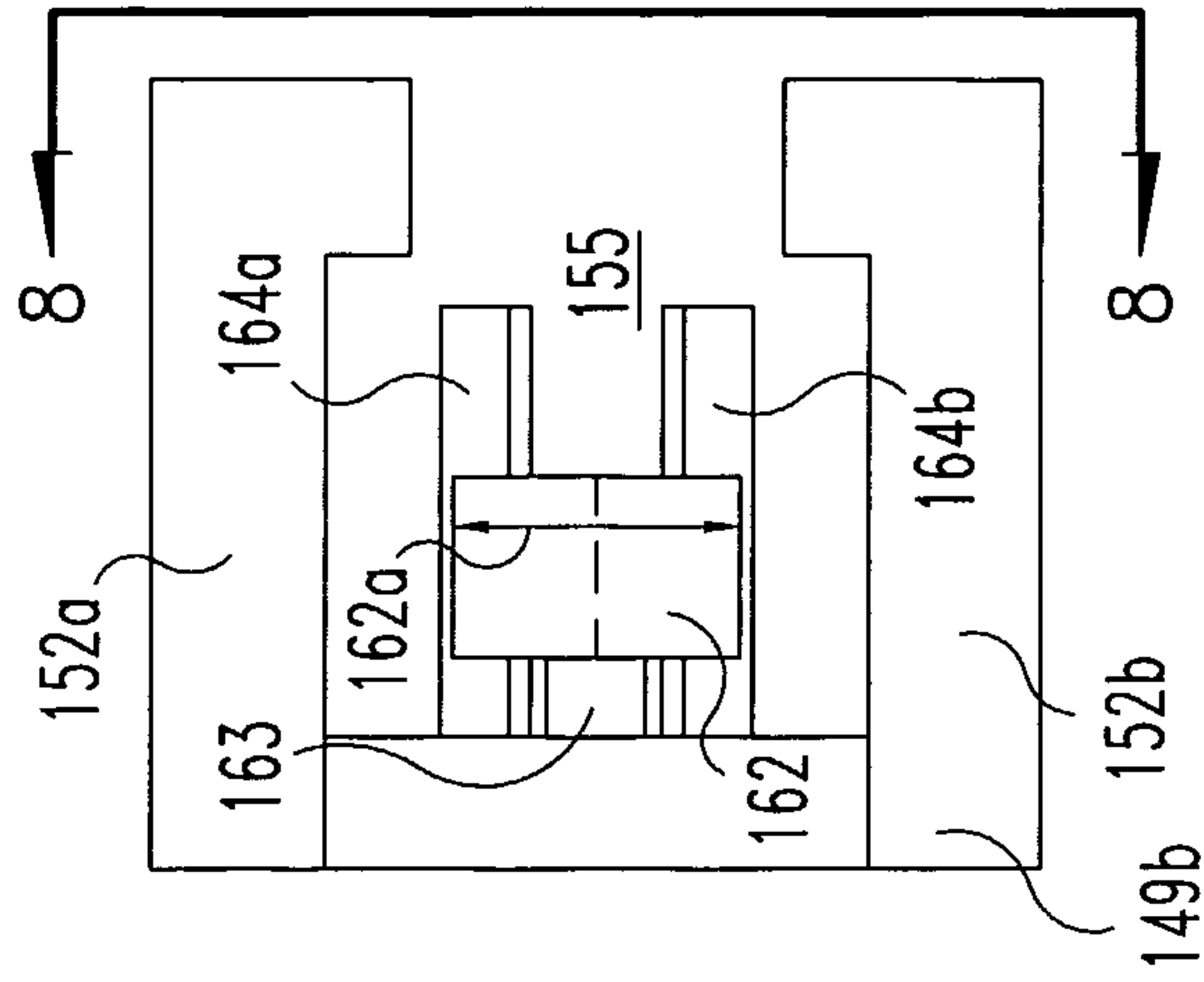


Fig. 7

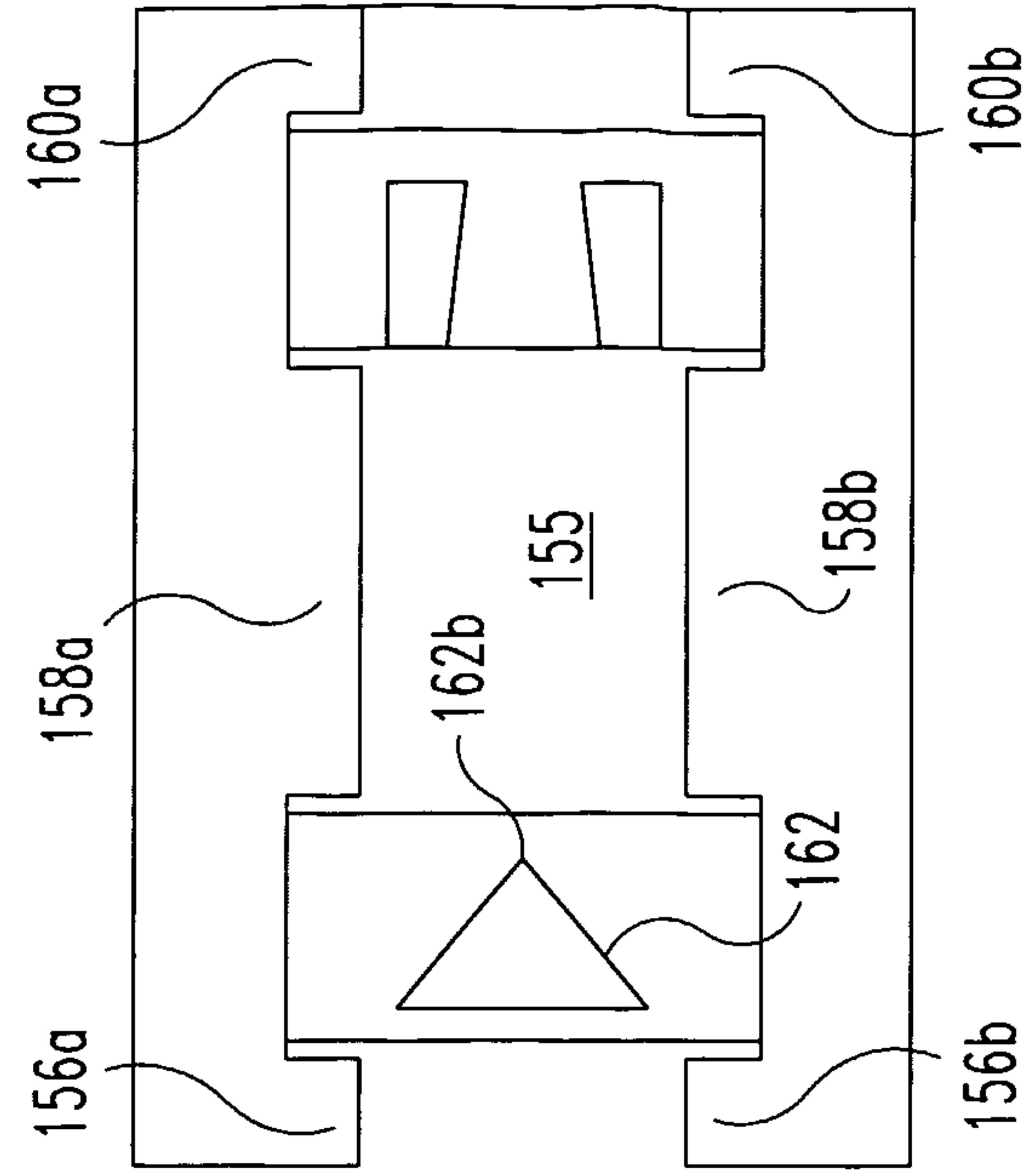


Fig. 8

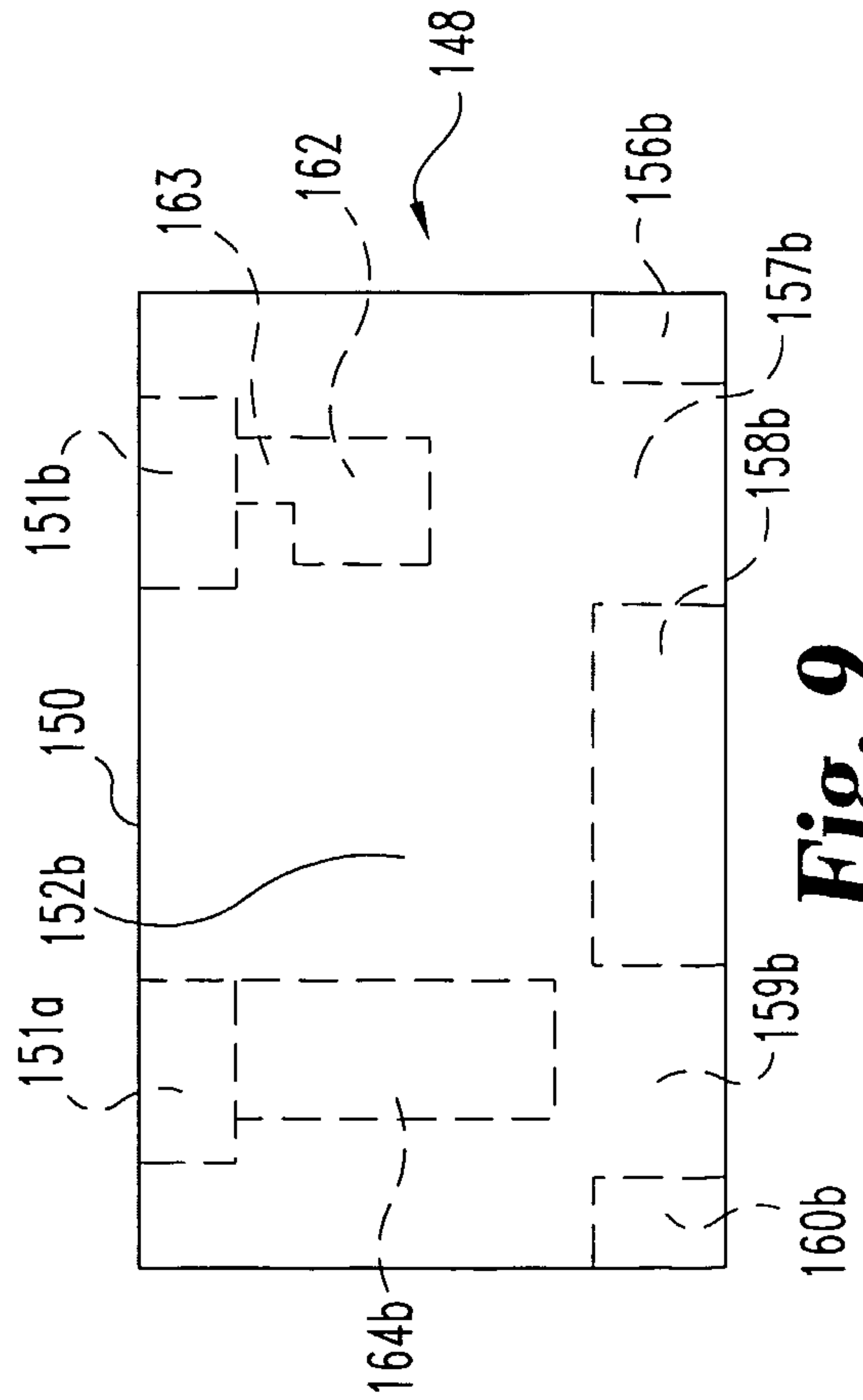


Fig. 9

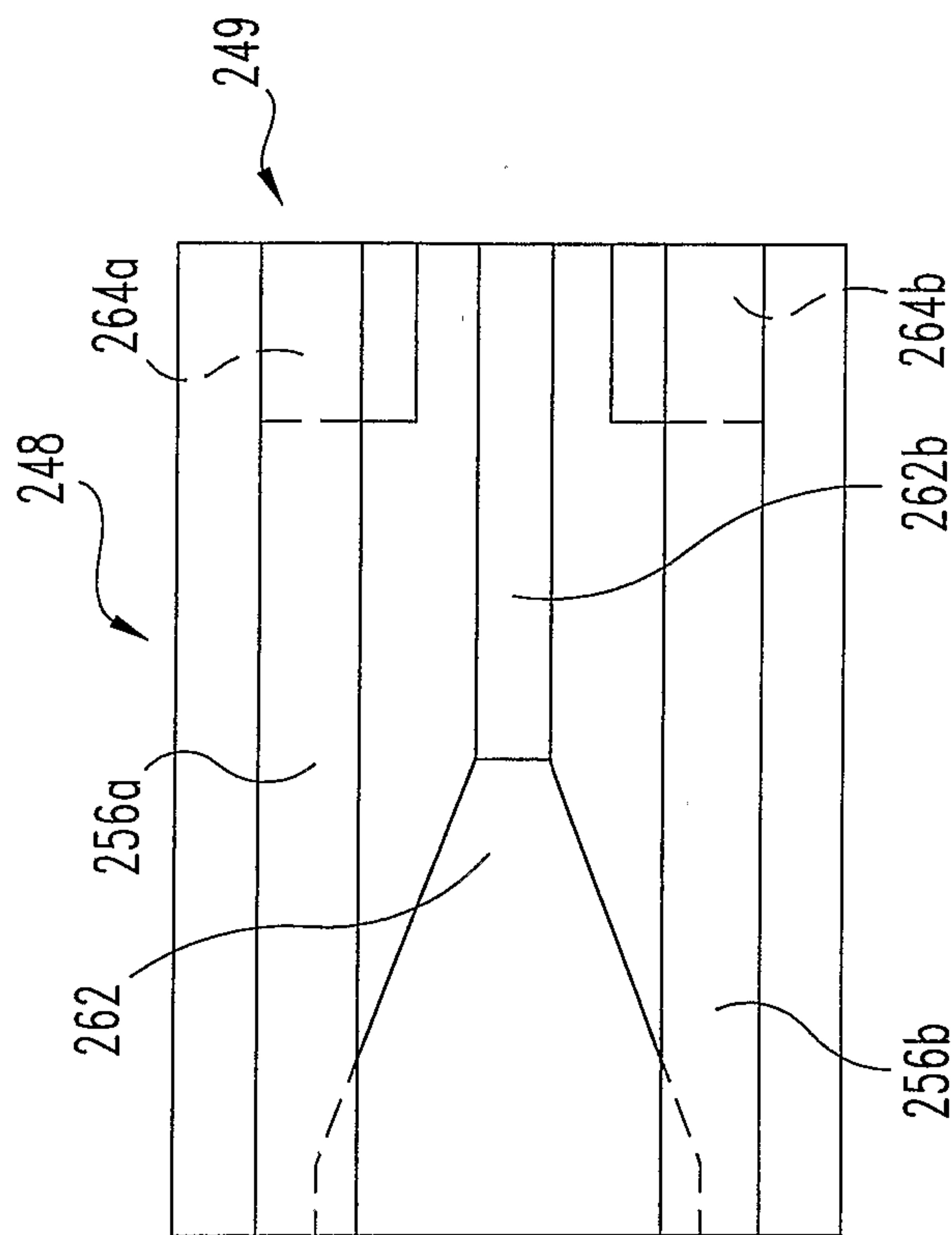


Fig. 10

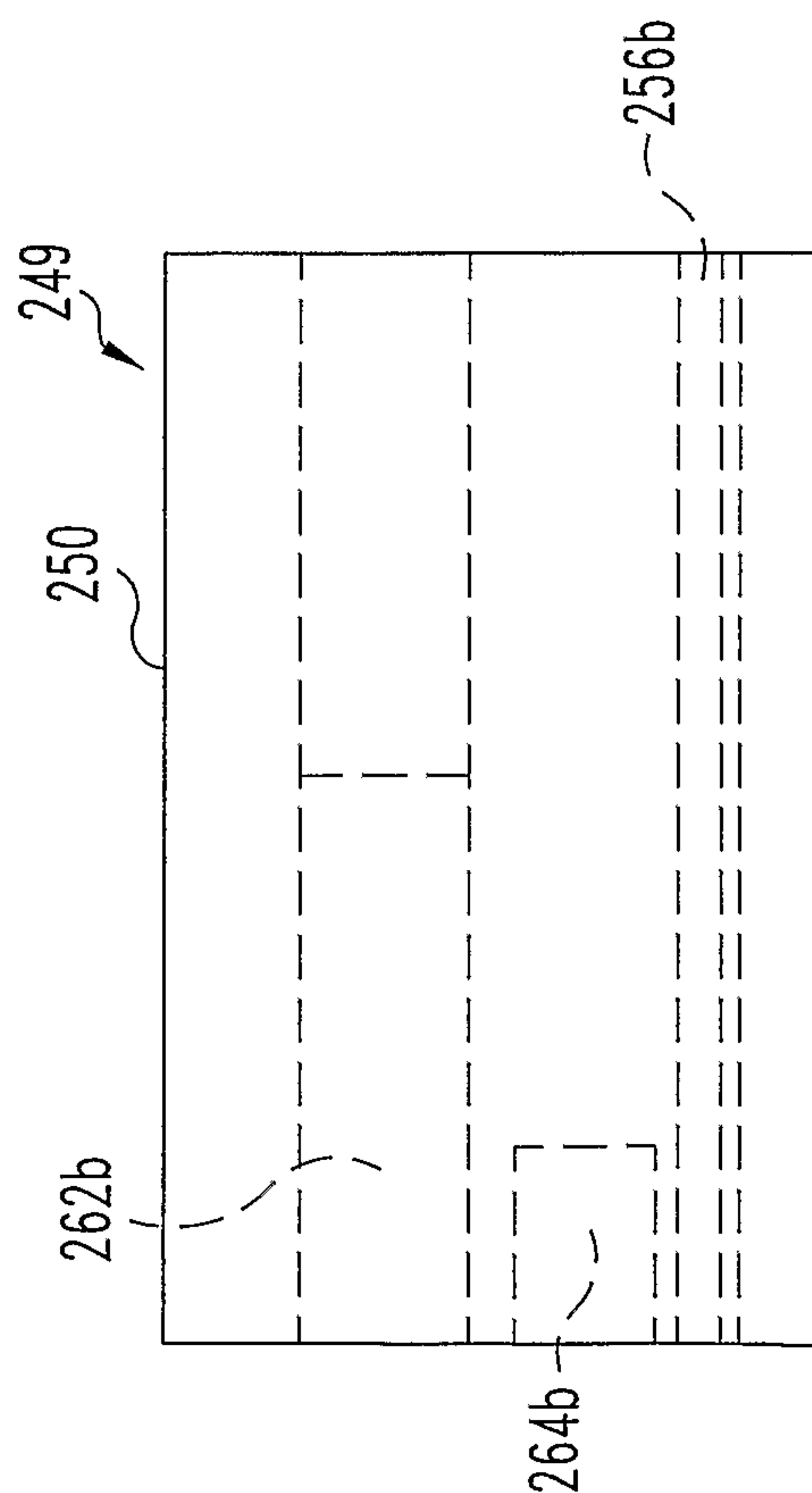


Fig. 11

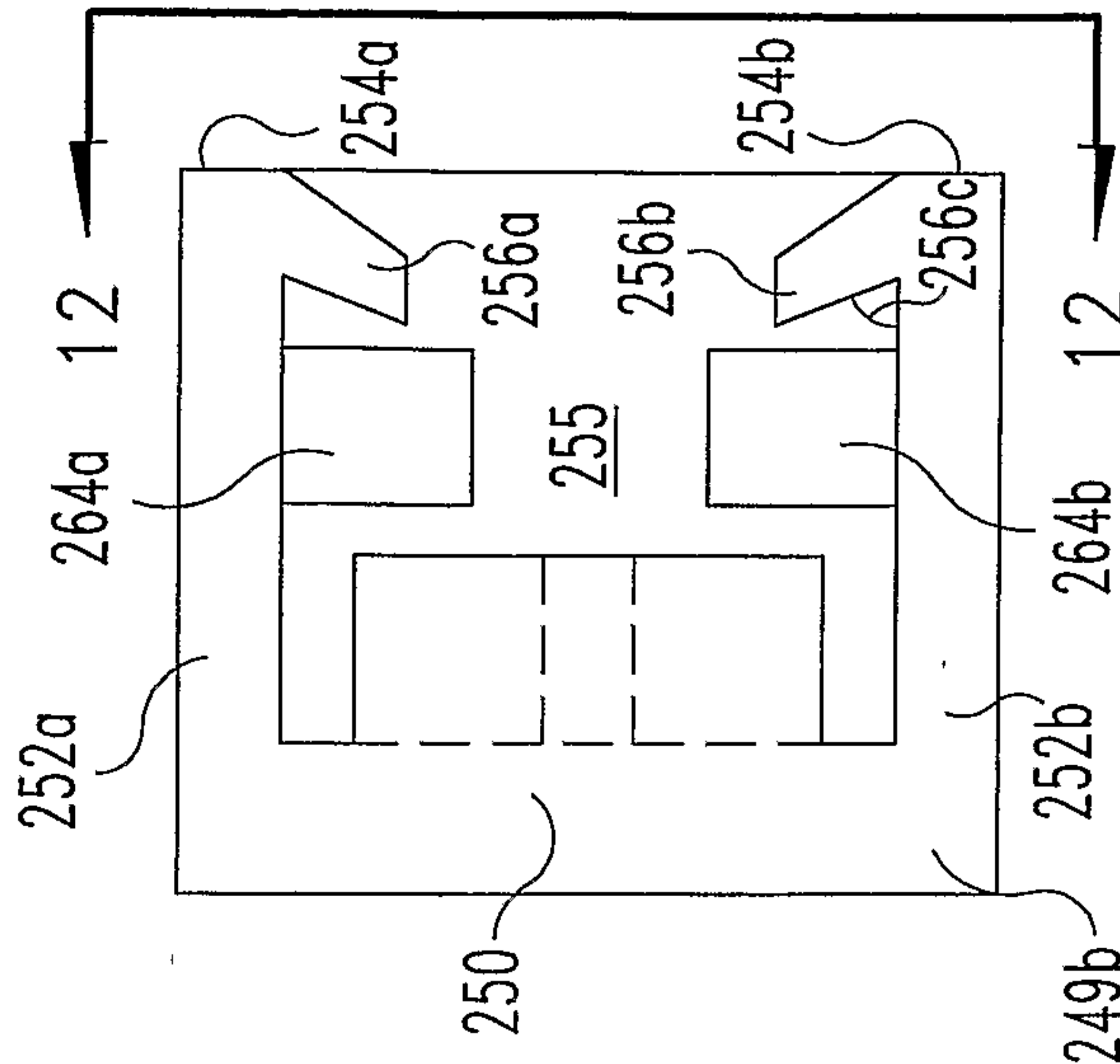
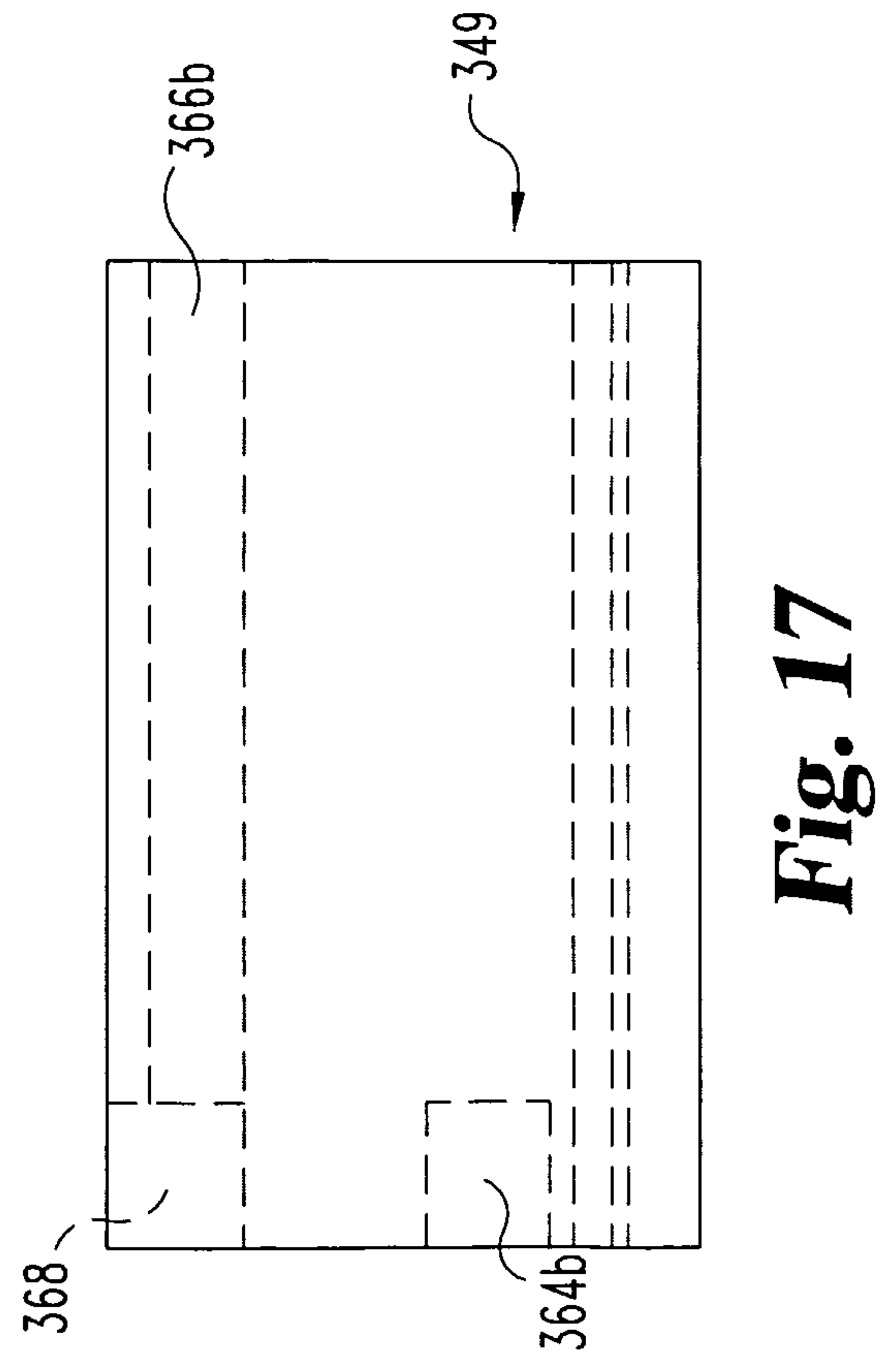
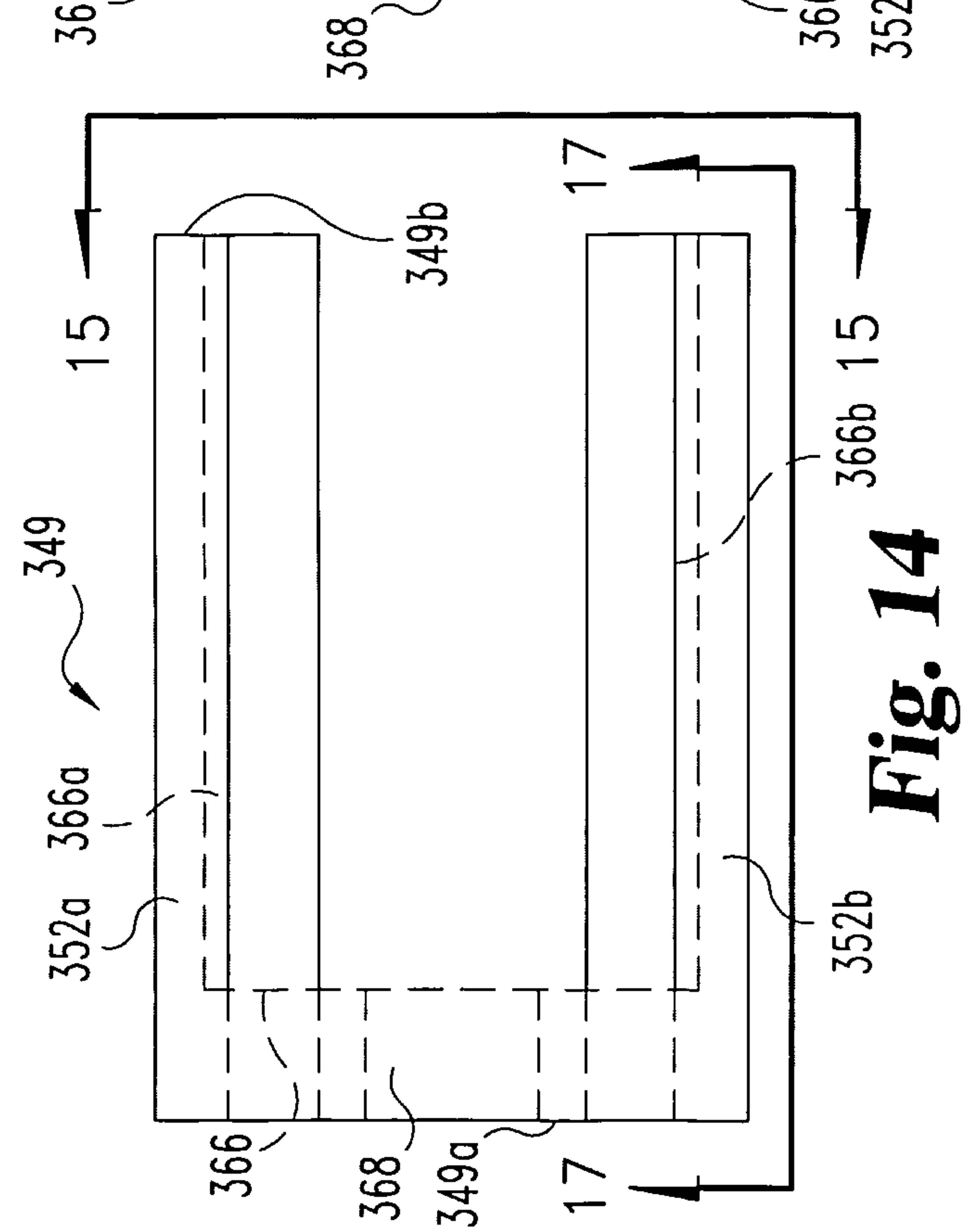
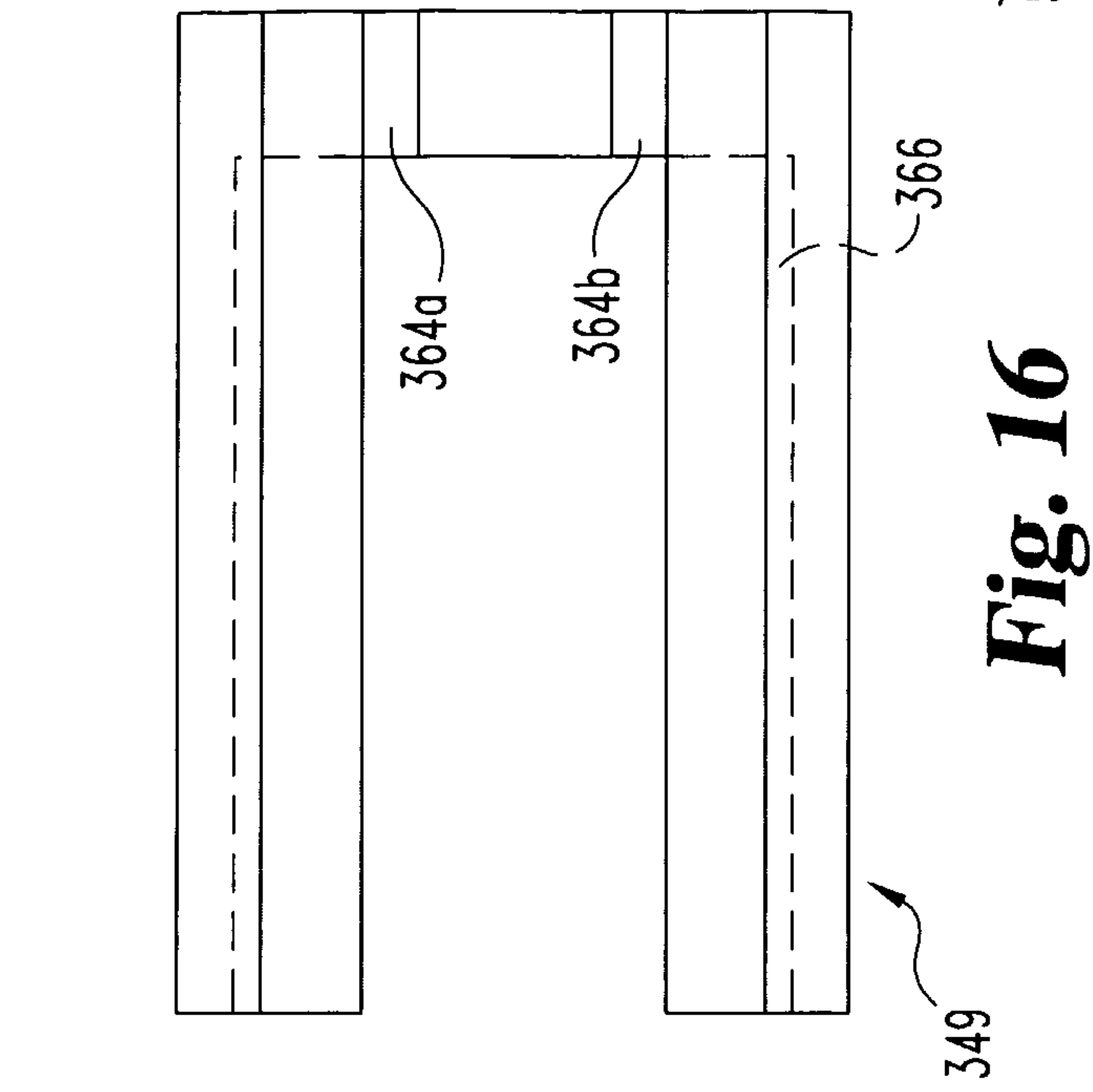
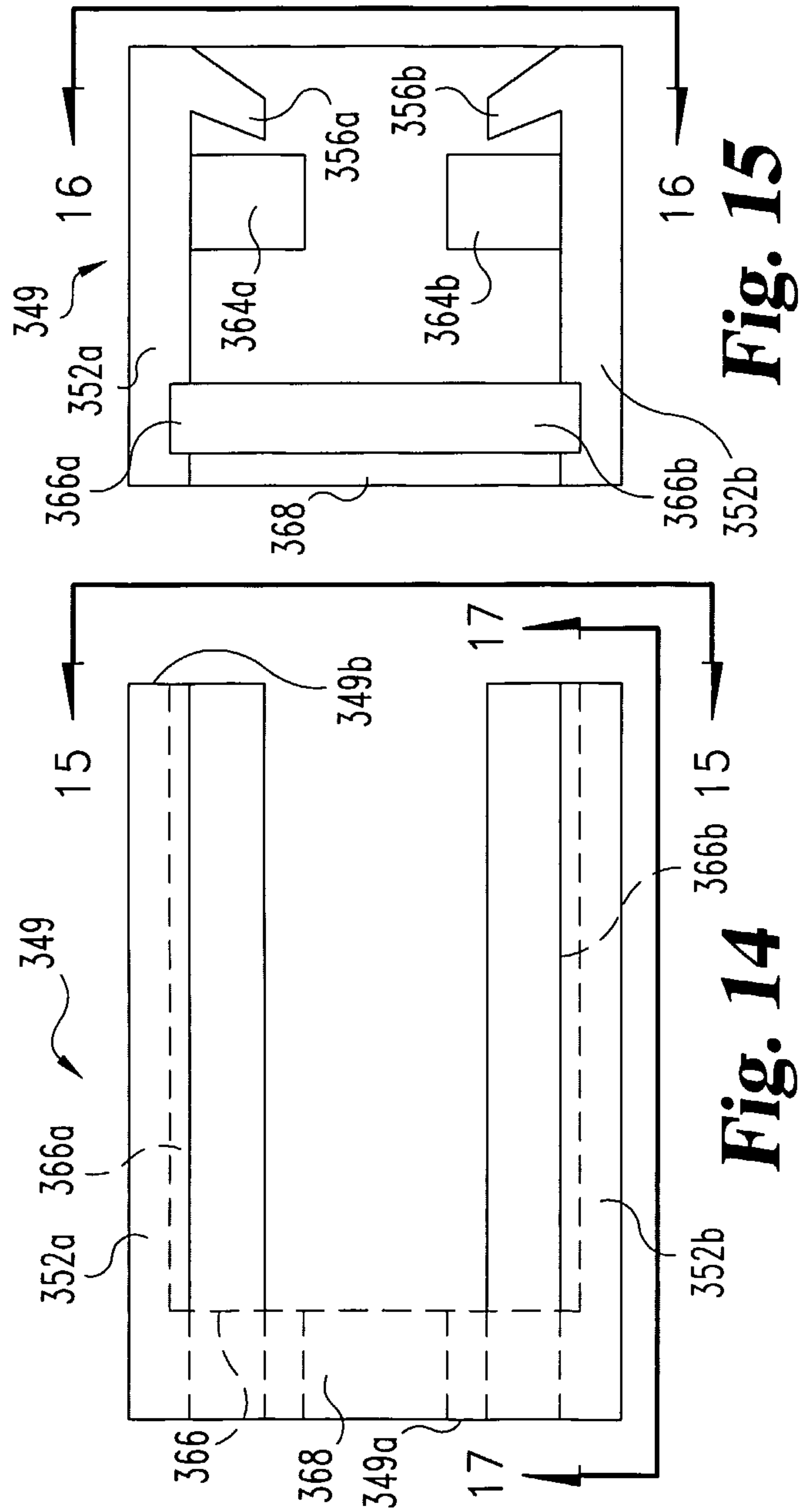


Fig. 12



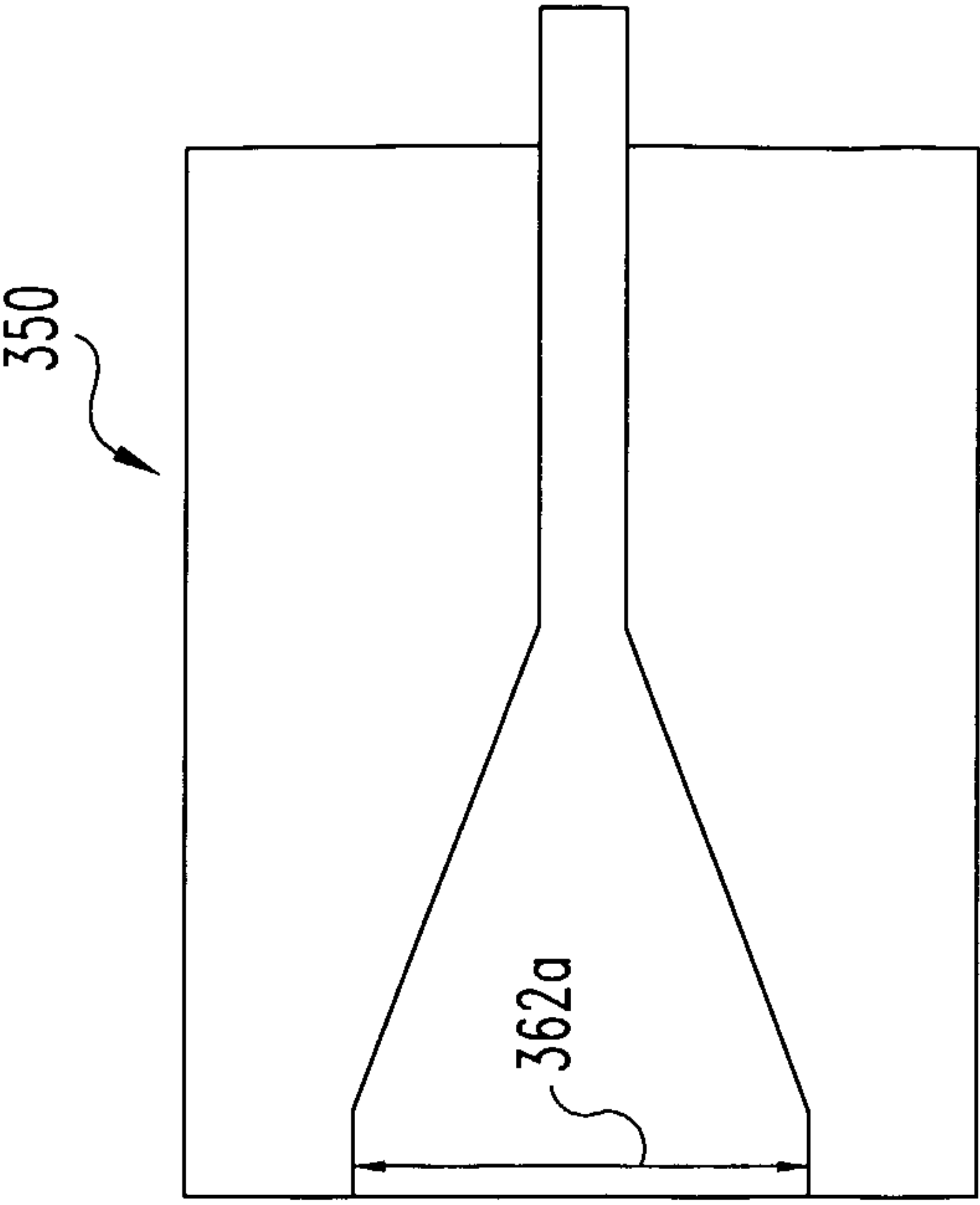


Fig. 20

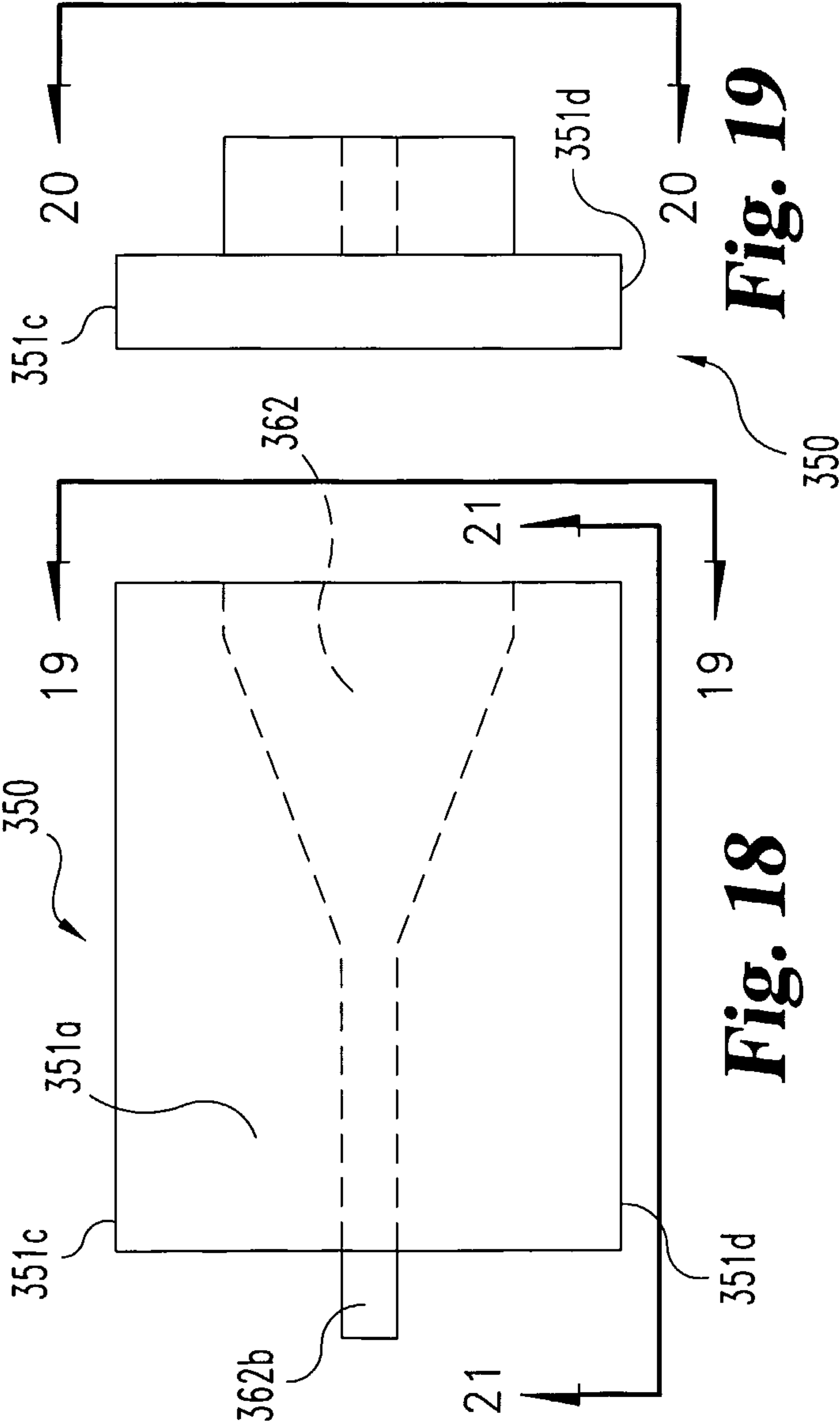


Fig. 19

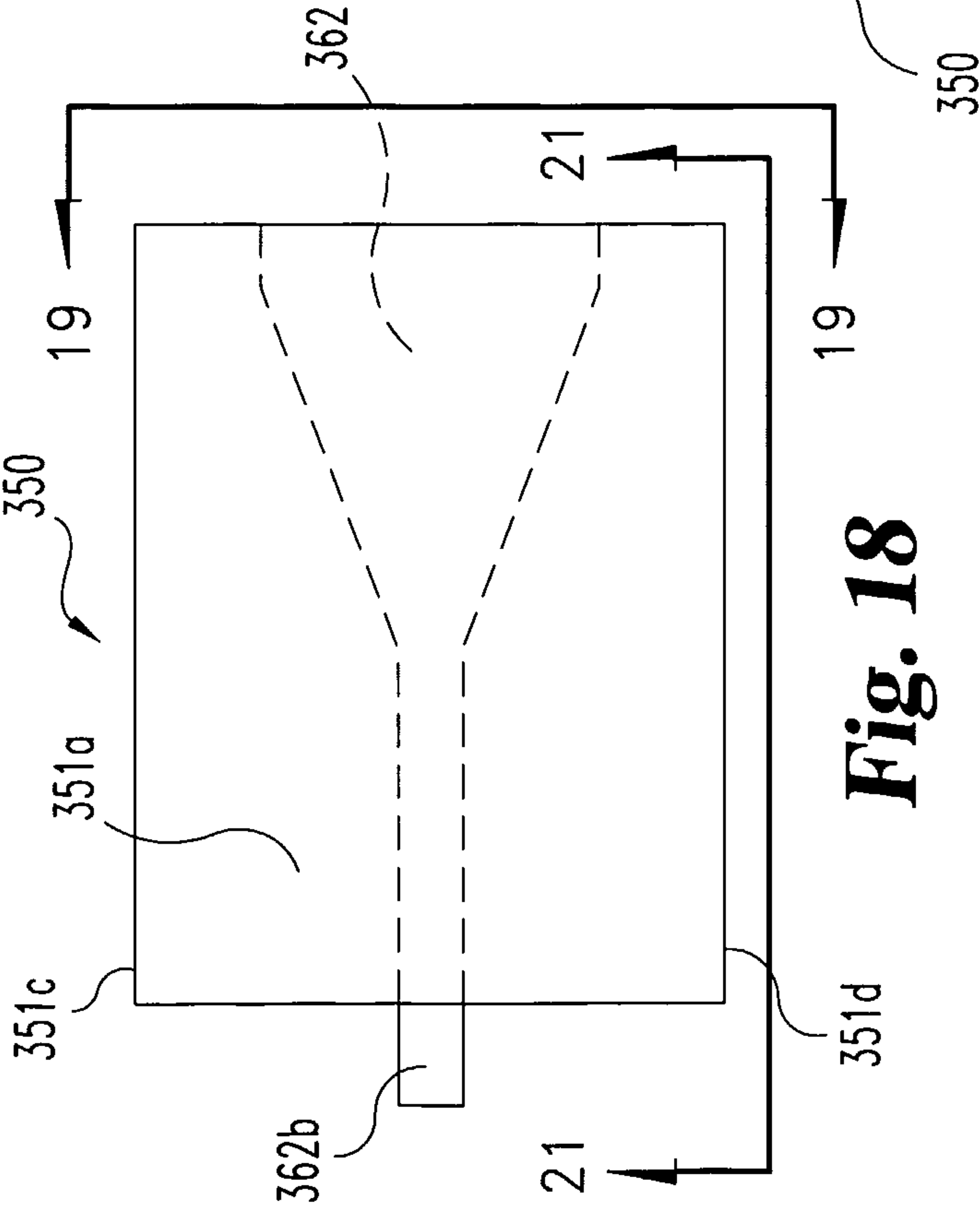


Fig. 18

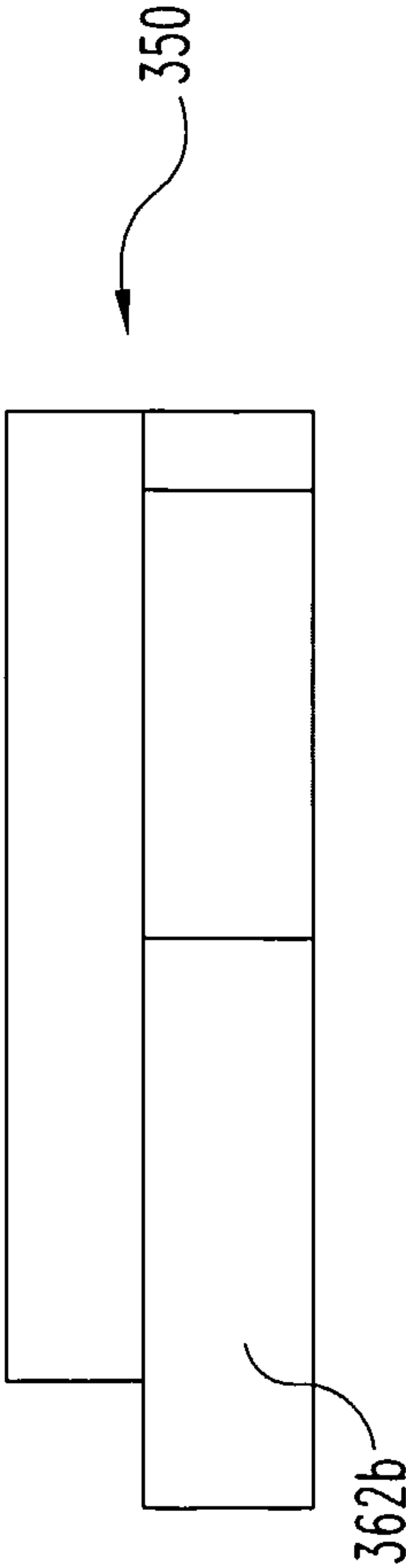


Fig. 21

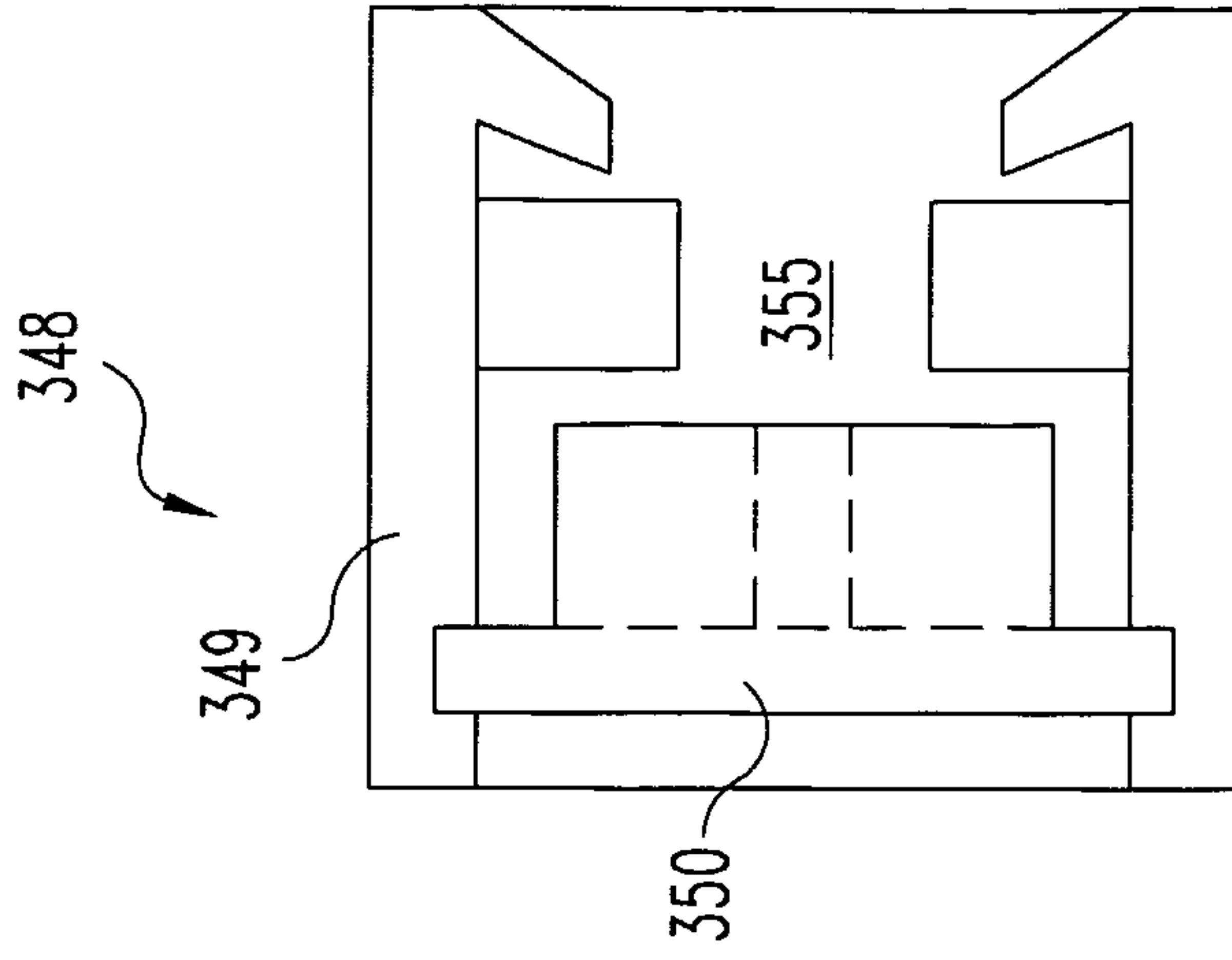


Fig. 22a

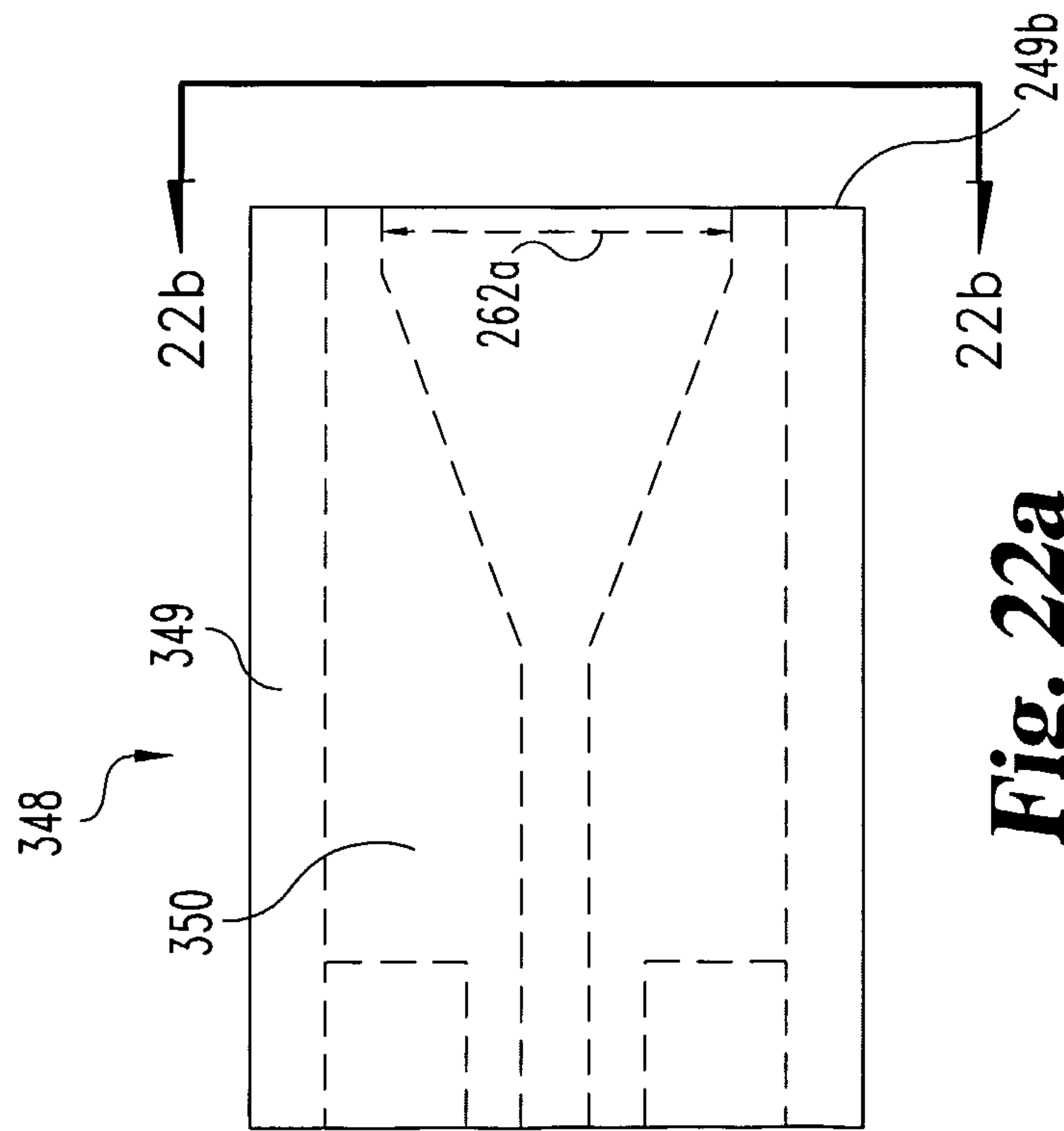


Fig. 22b

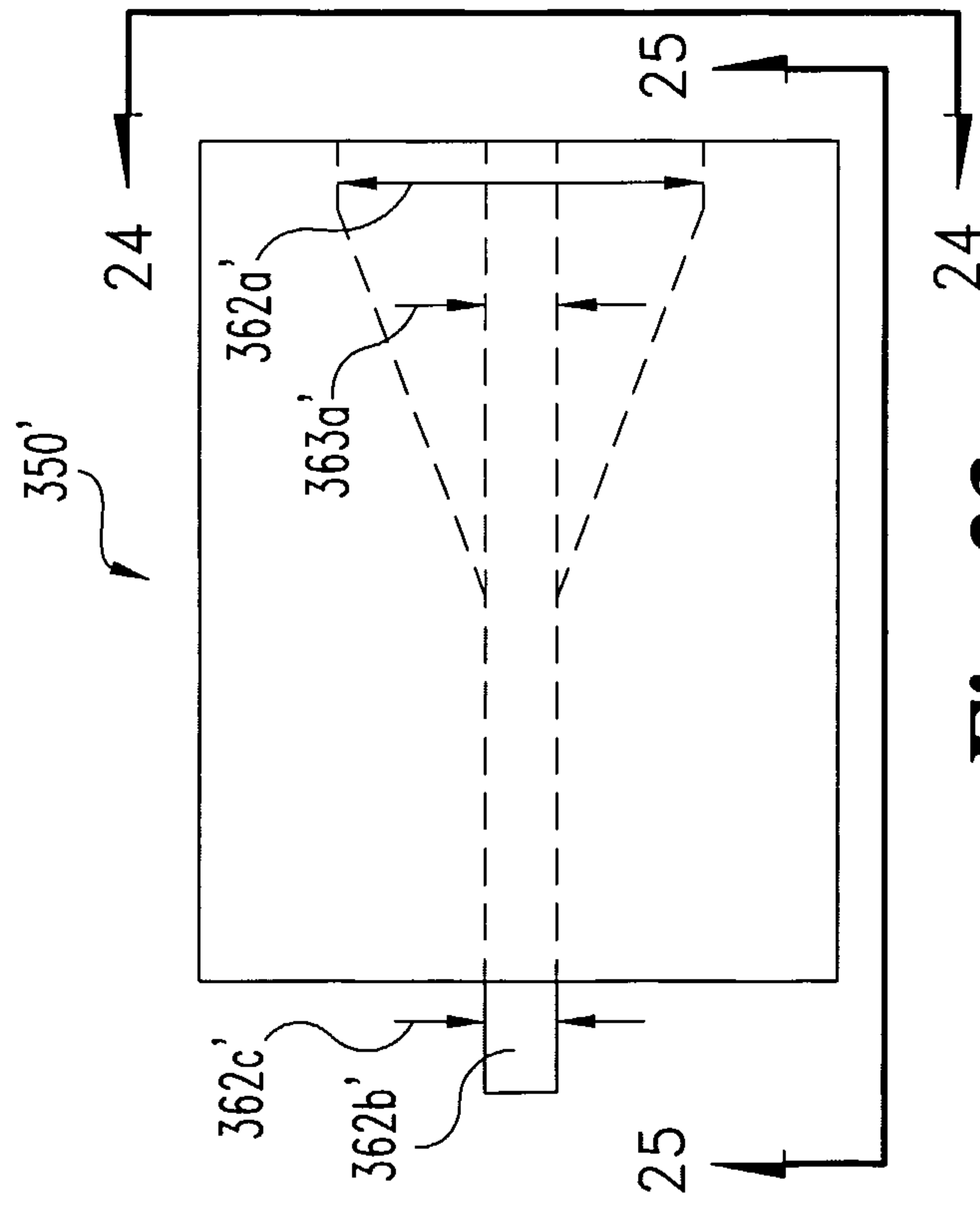


Fig. 23

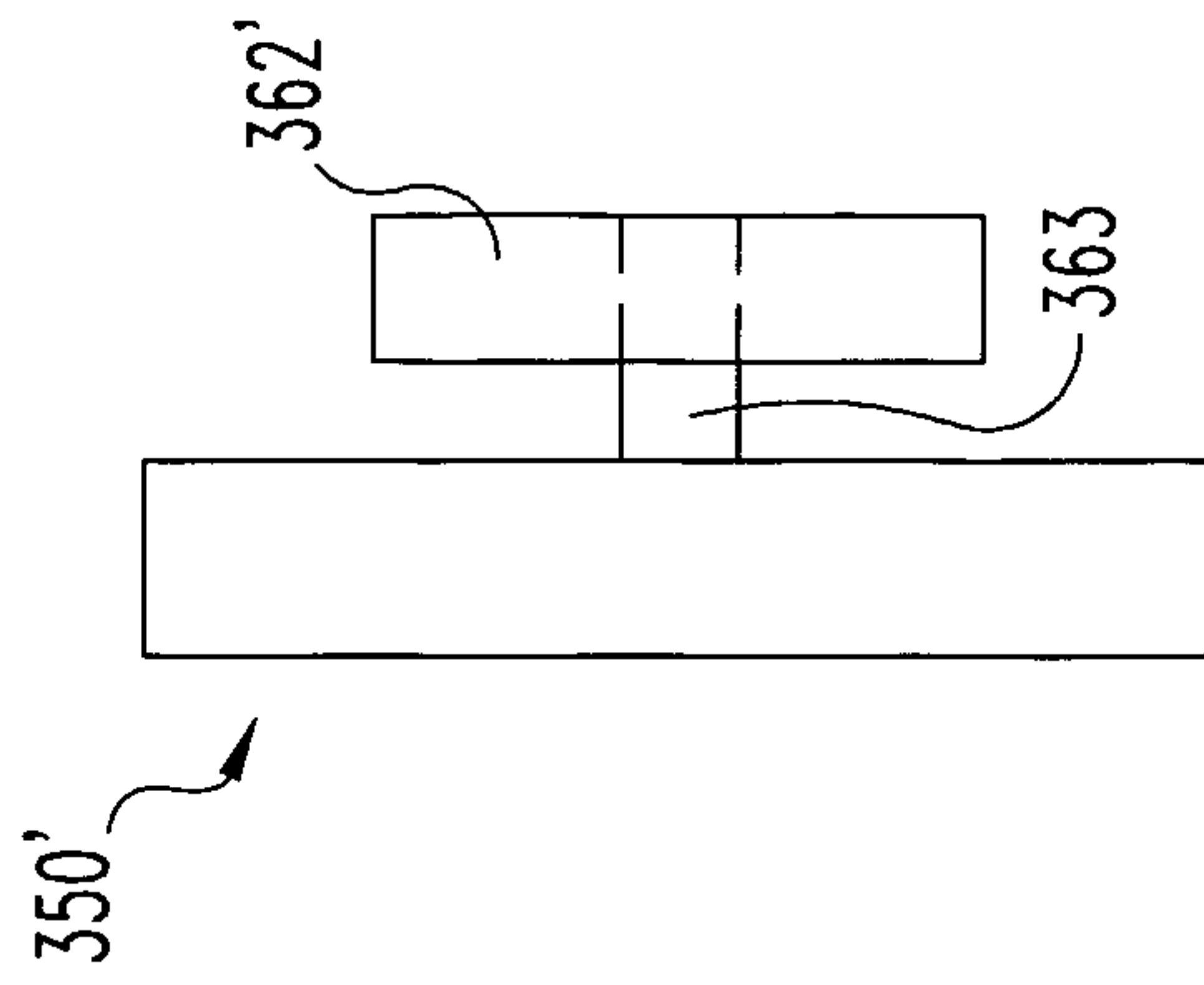


Fig. 24

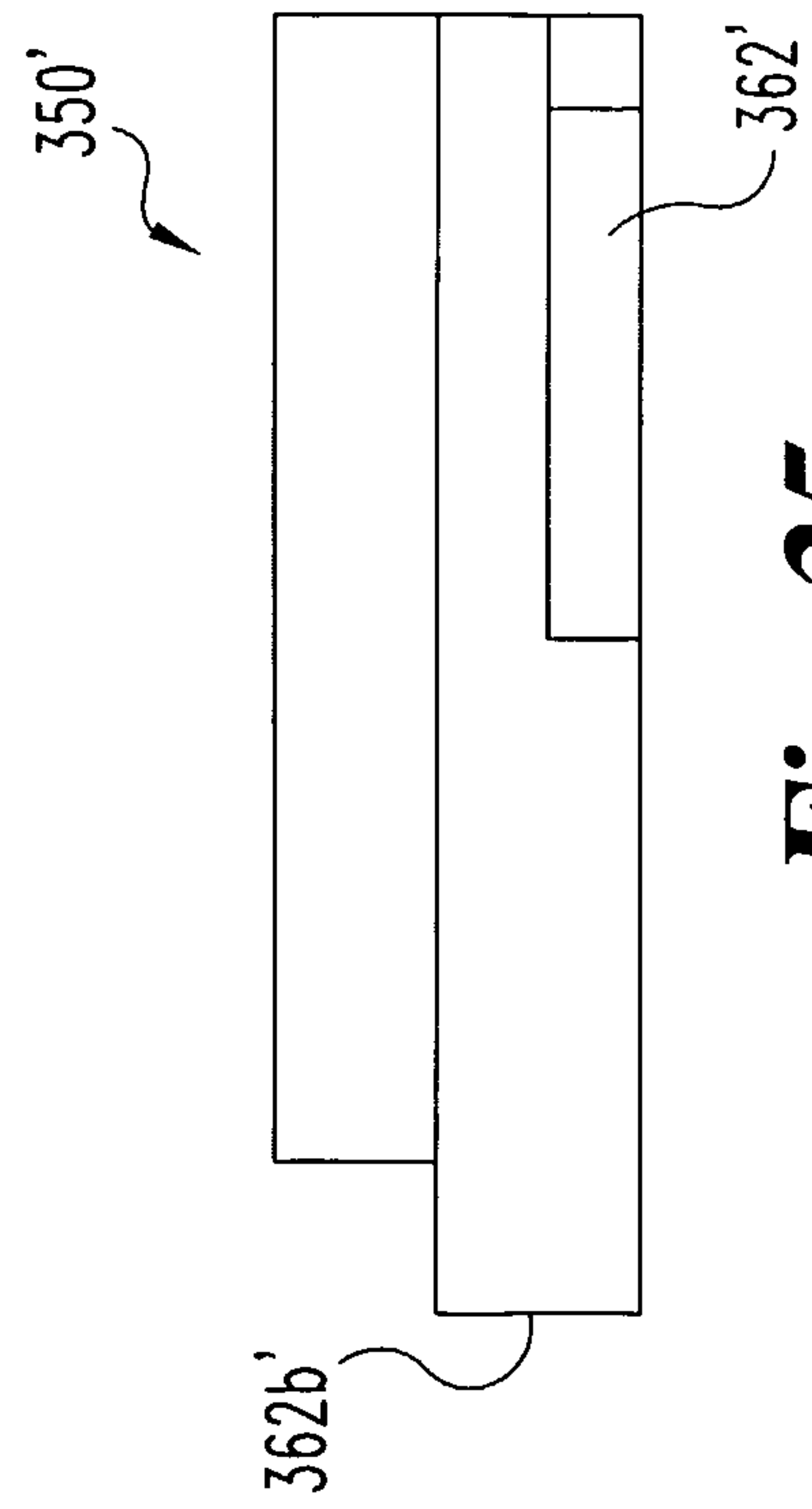
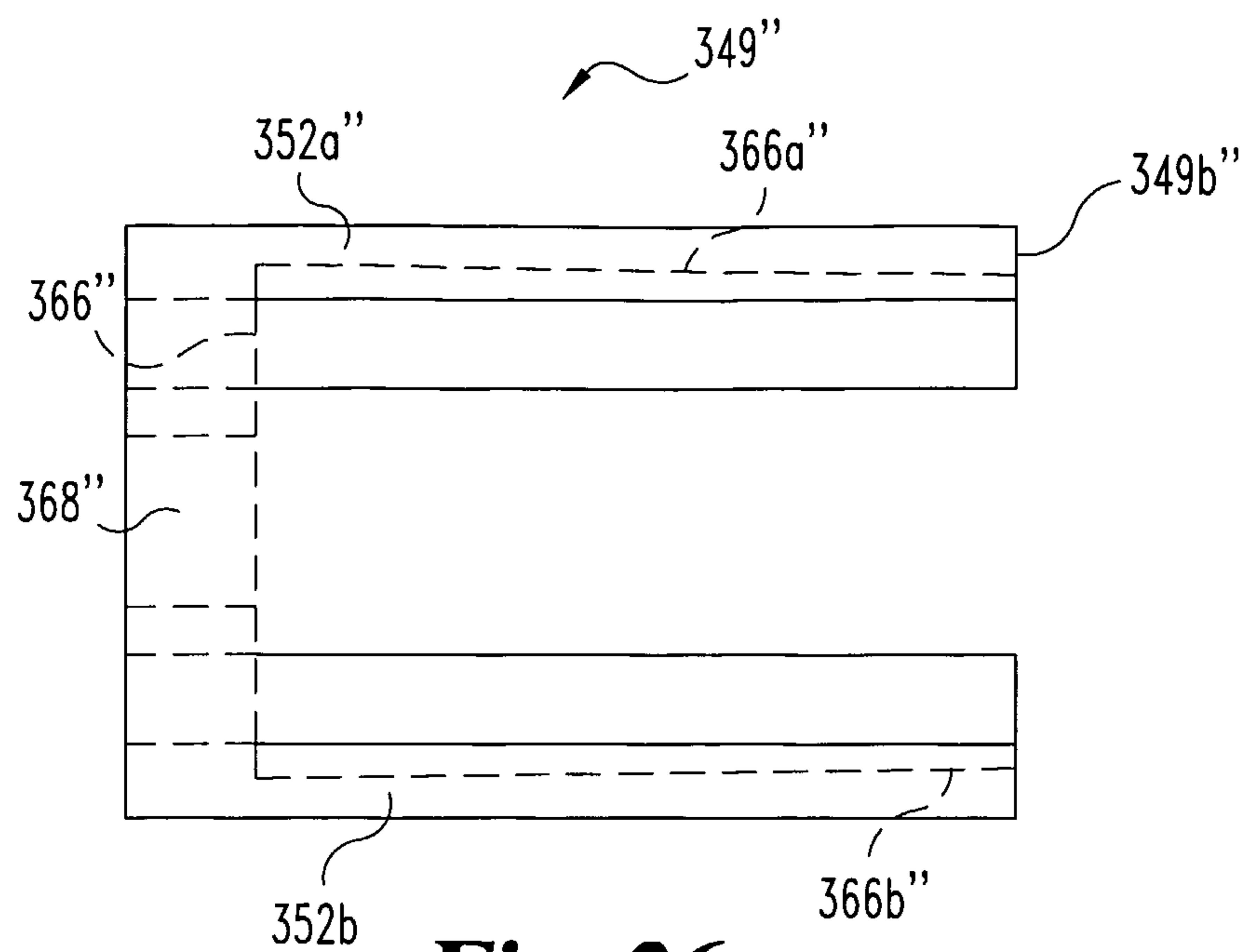
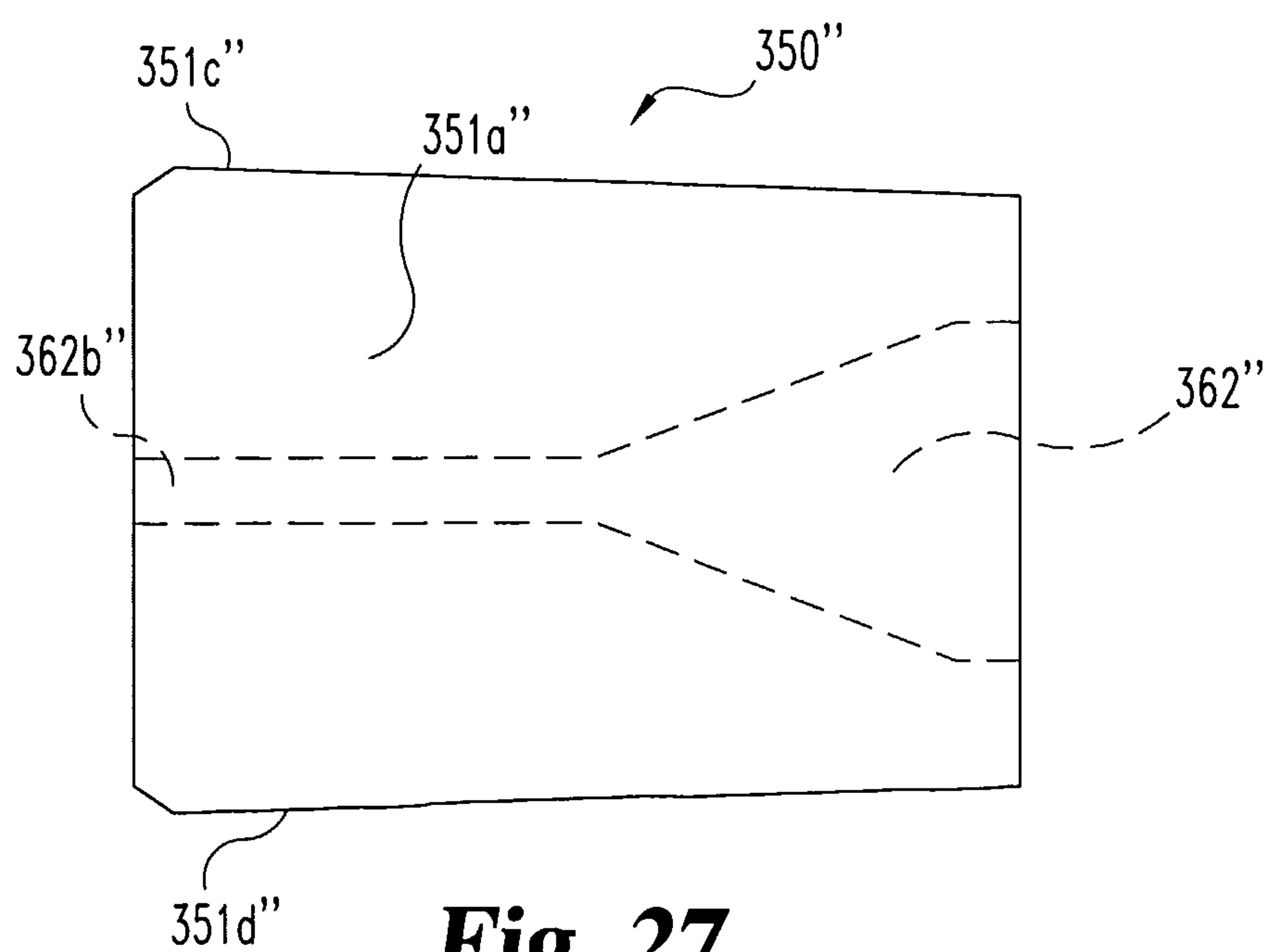


Fig. 25

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**Fig. 26****Fig. 27**

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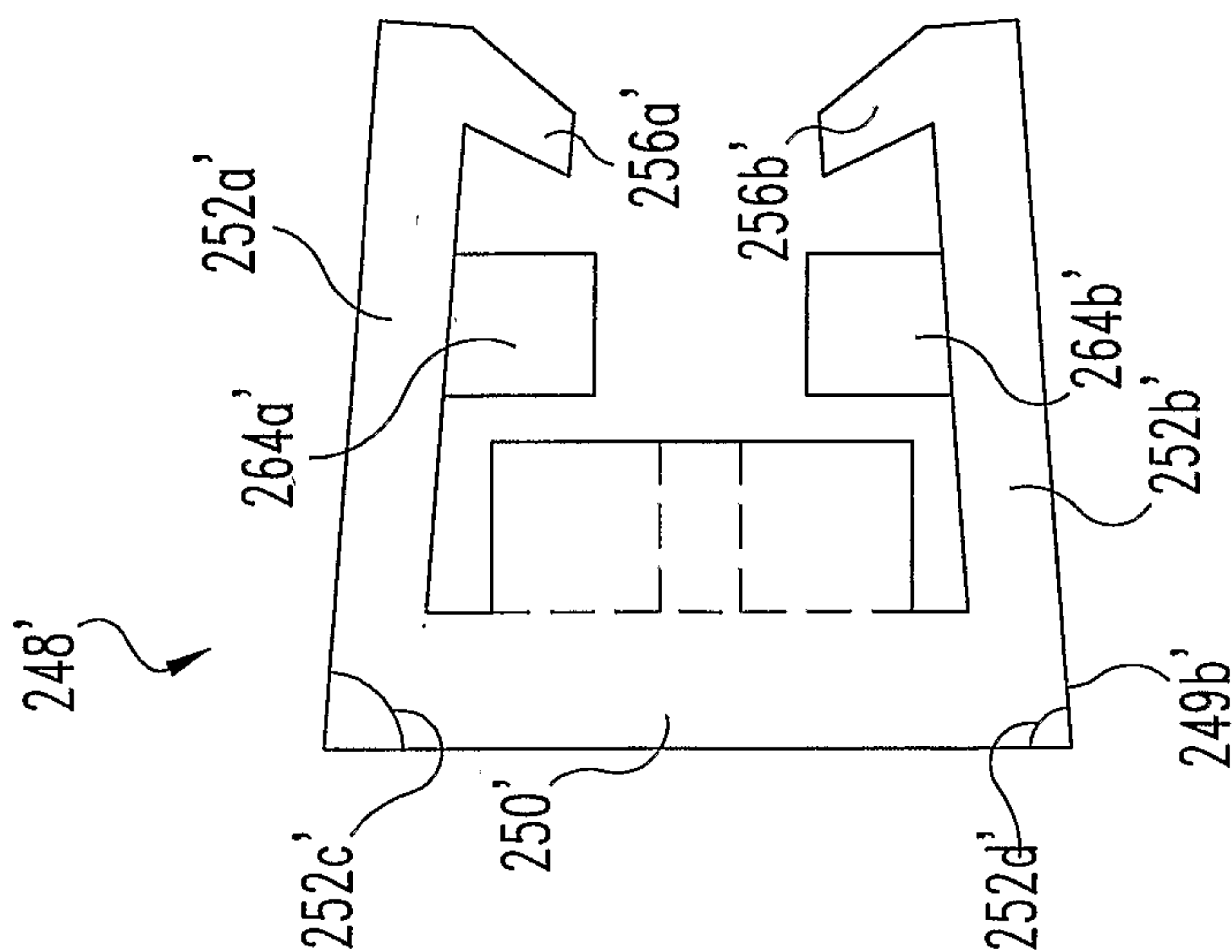
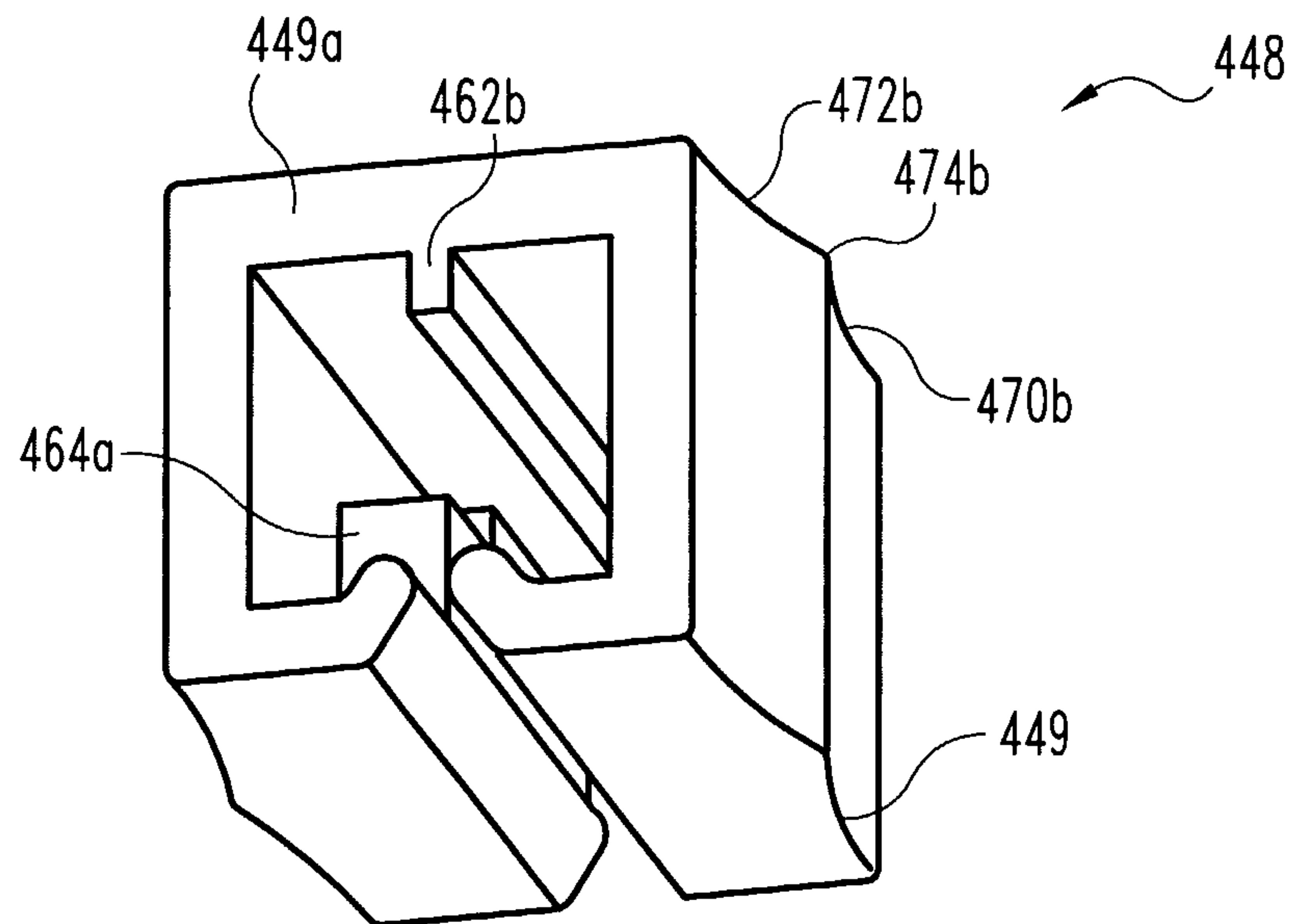
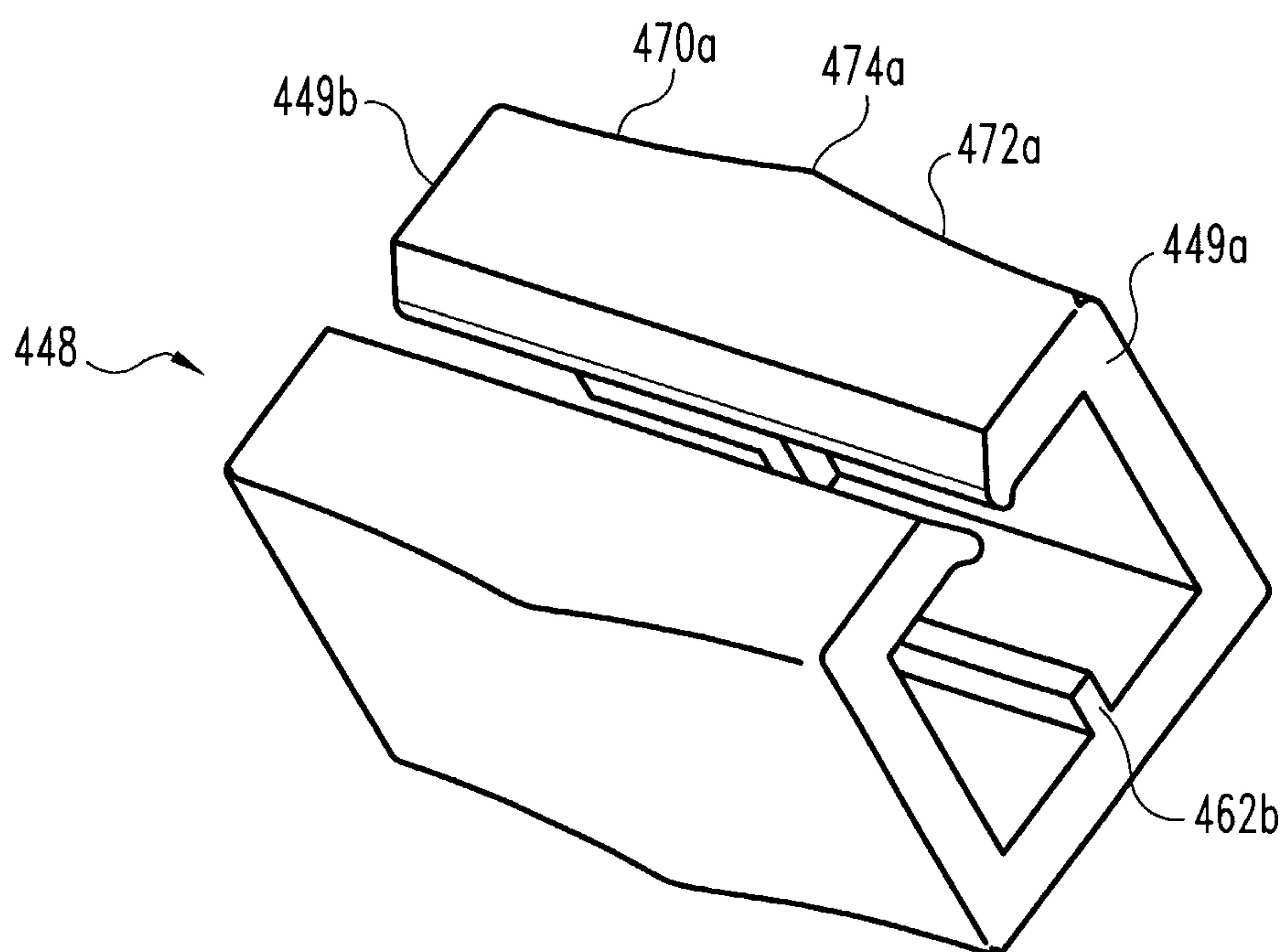
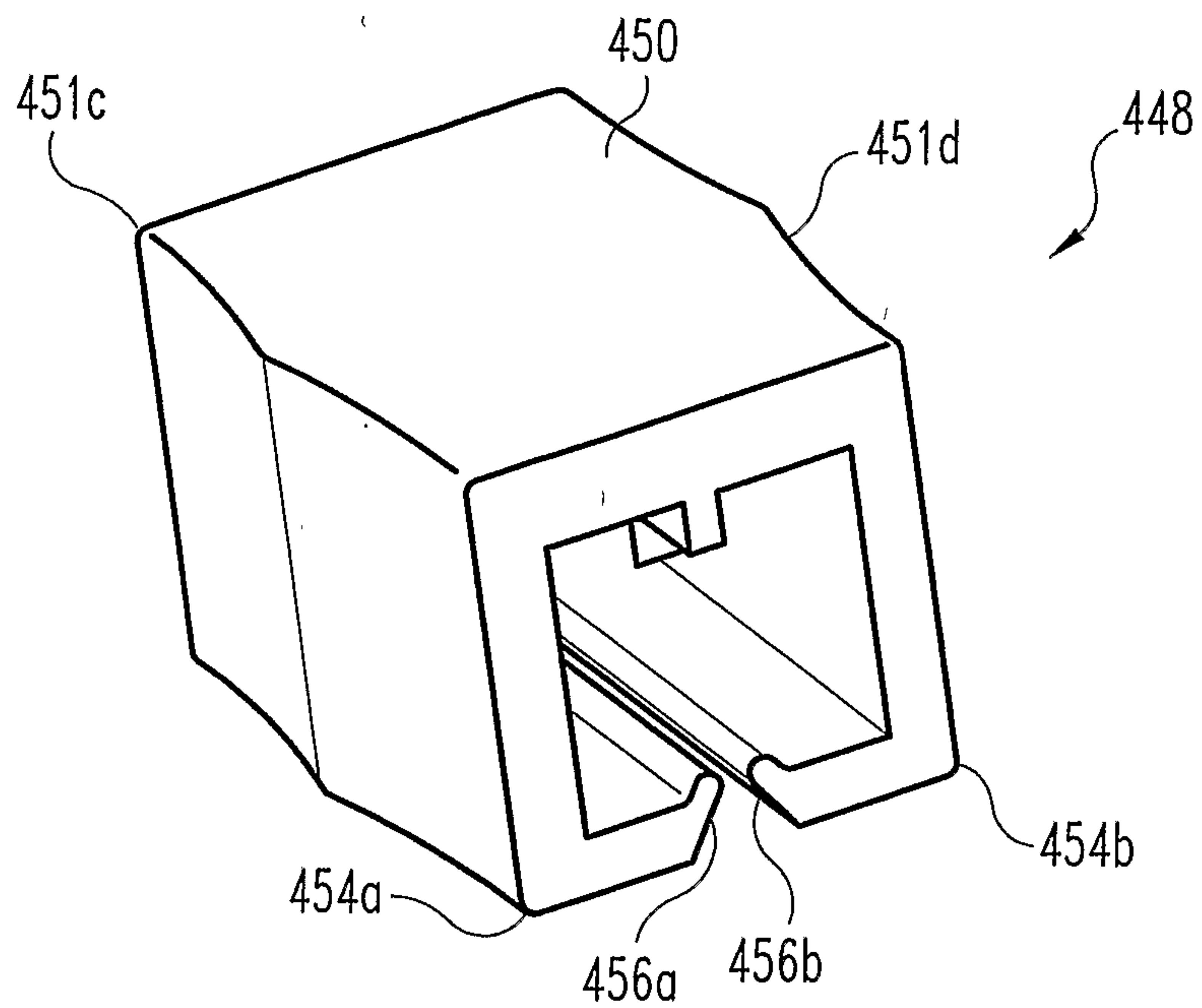
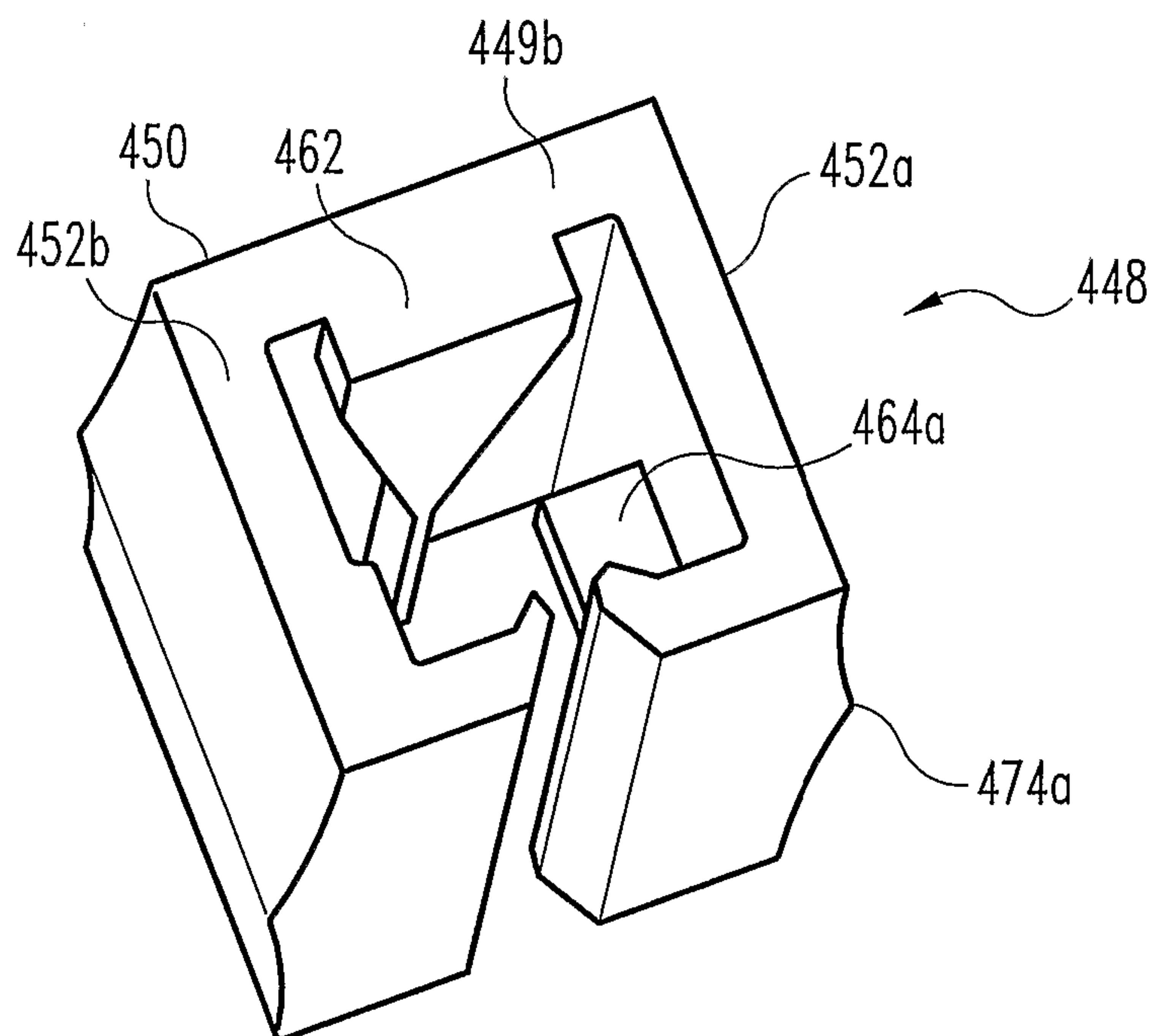


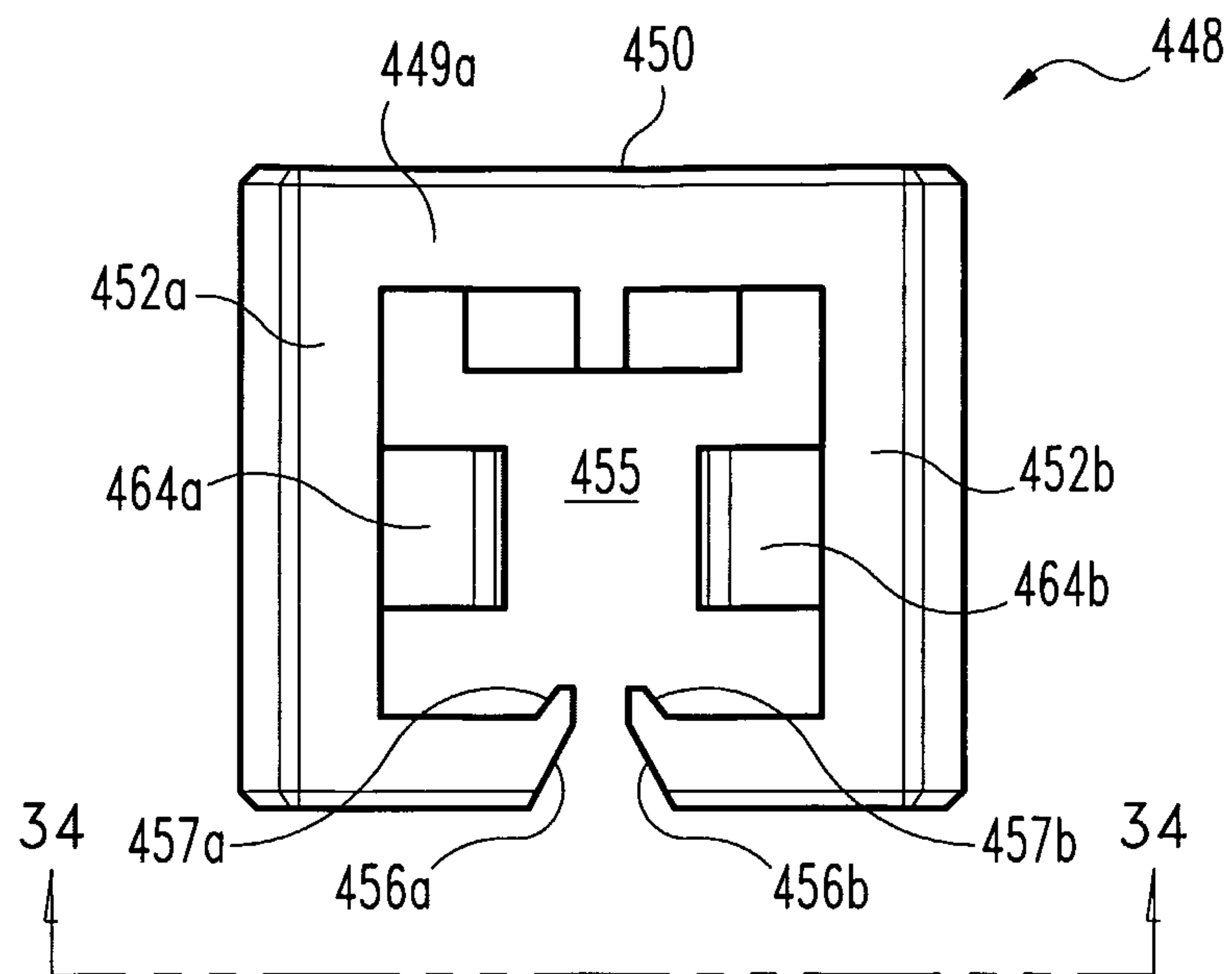
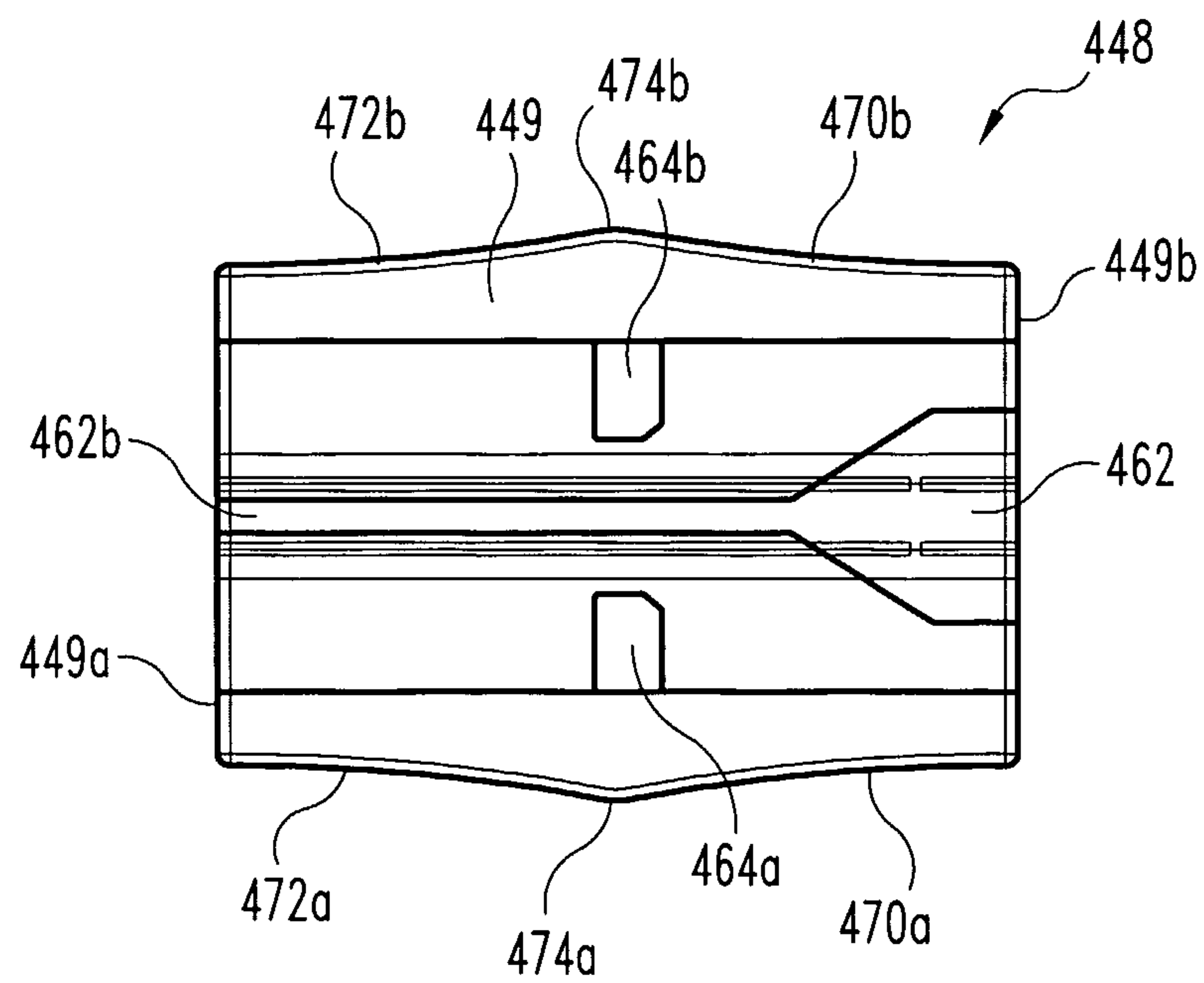
Fig. 28

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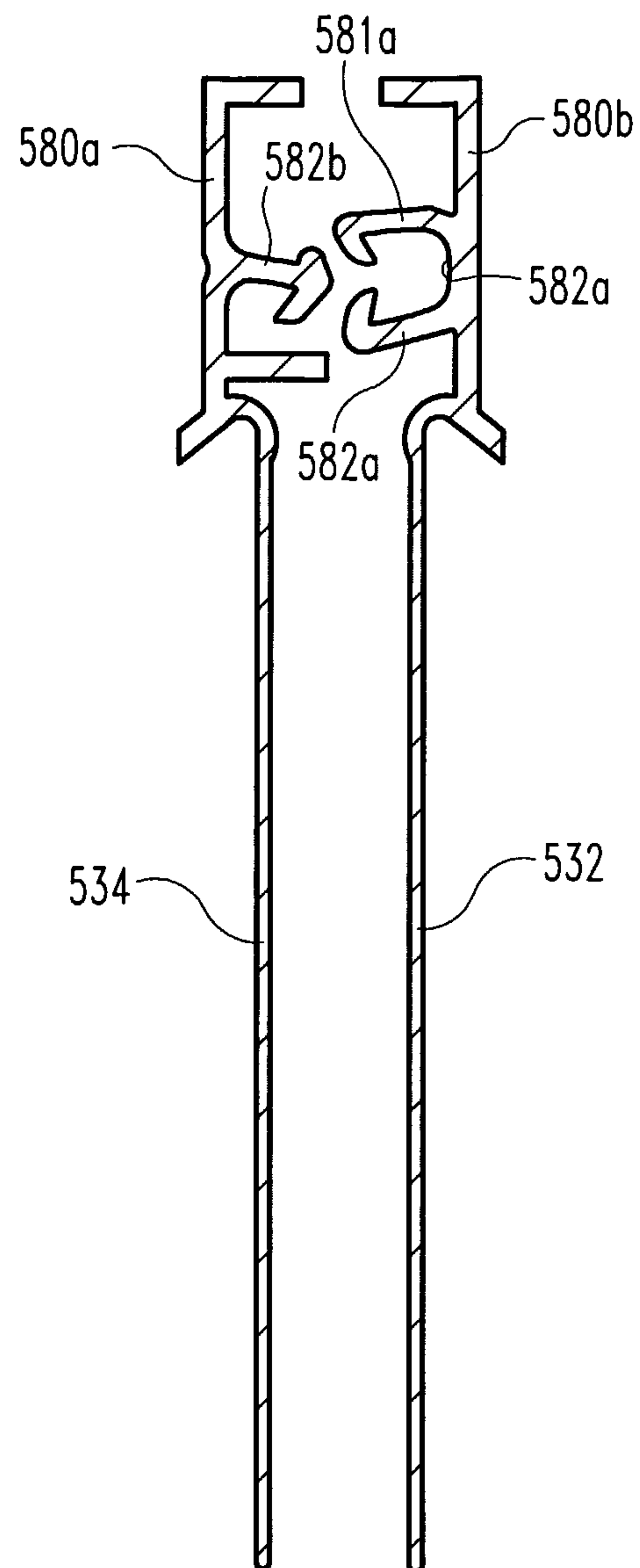
**Fig. 29****Fig. 30**

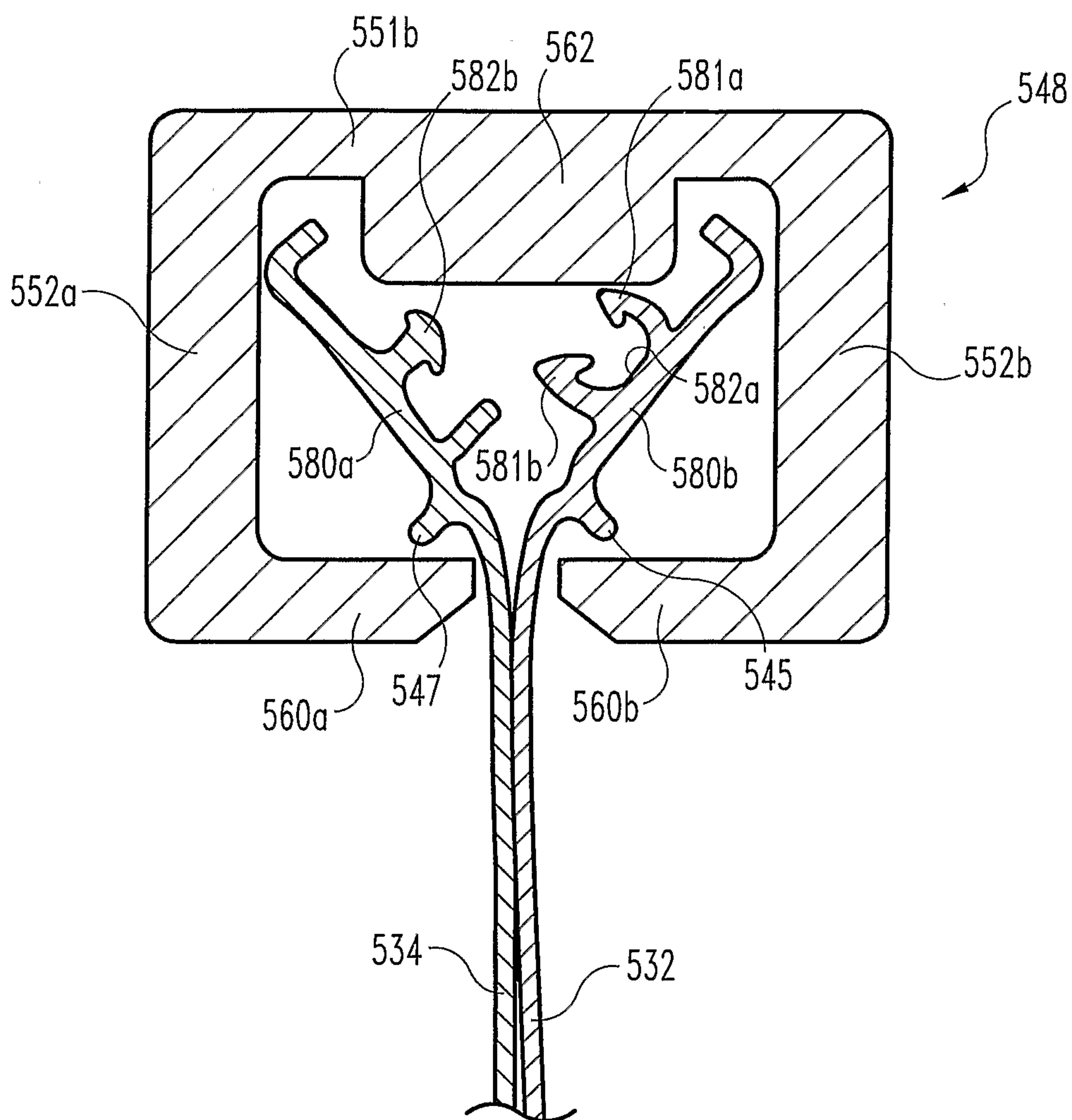
**Fig. 31****Fig. 32**

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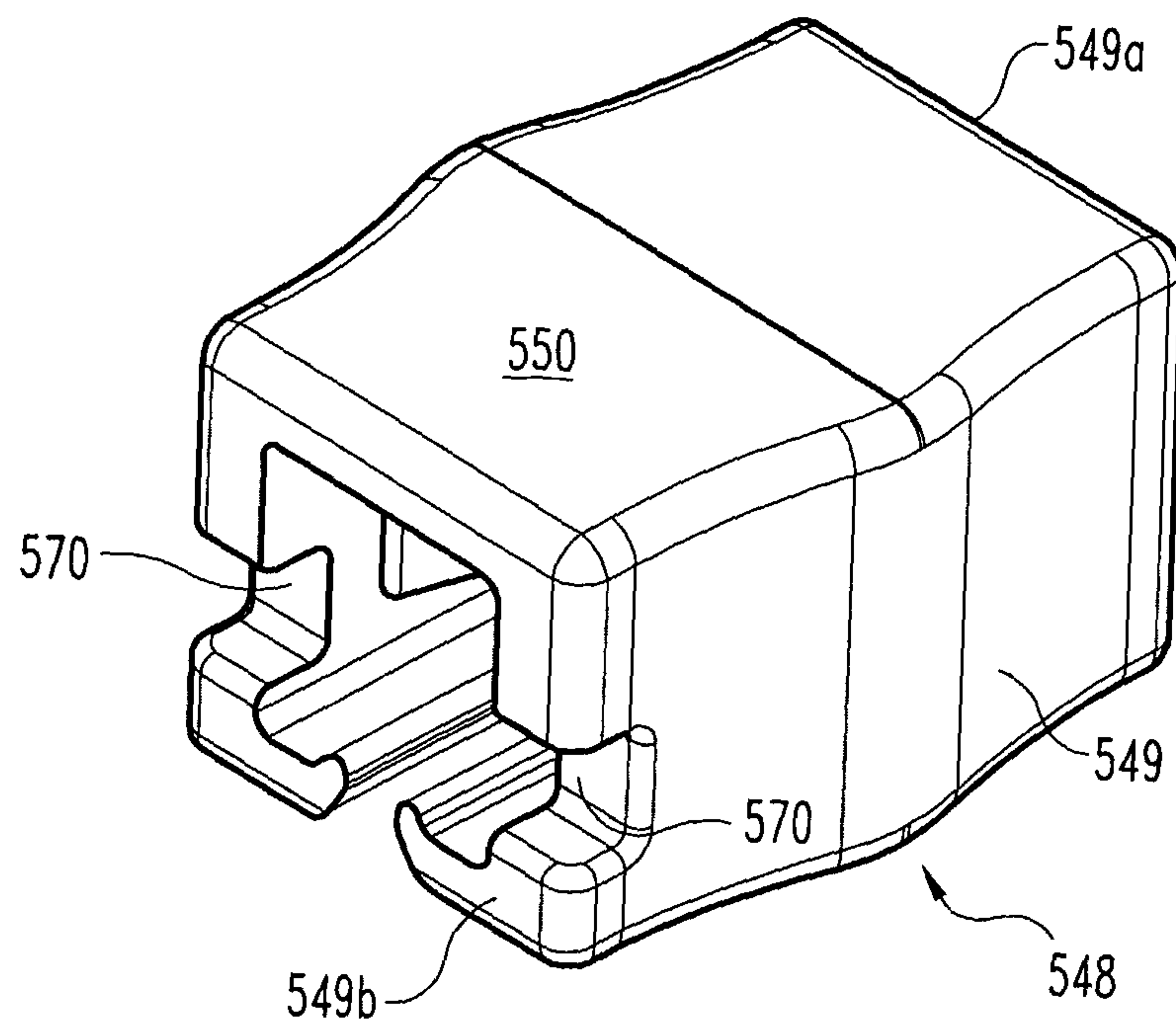
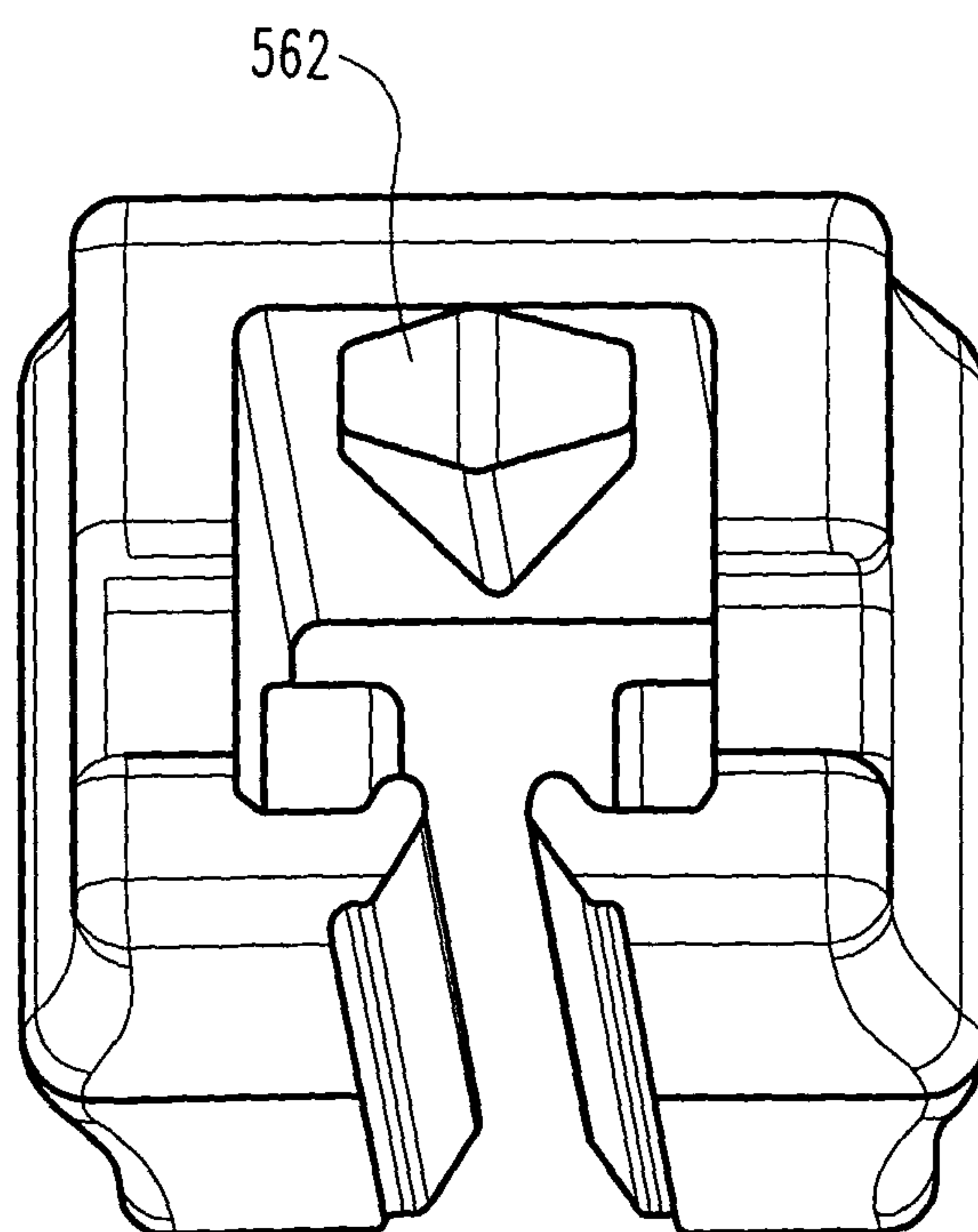
**Fig. 33****Fig. 34**

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**Fig. 35**

**Fig. 36**

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**Fig. 37****Fig. 38**

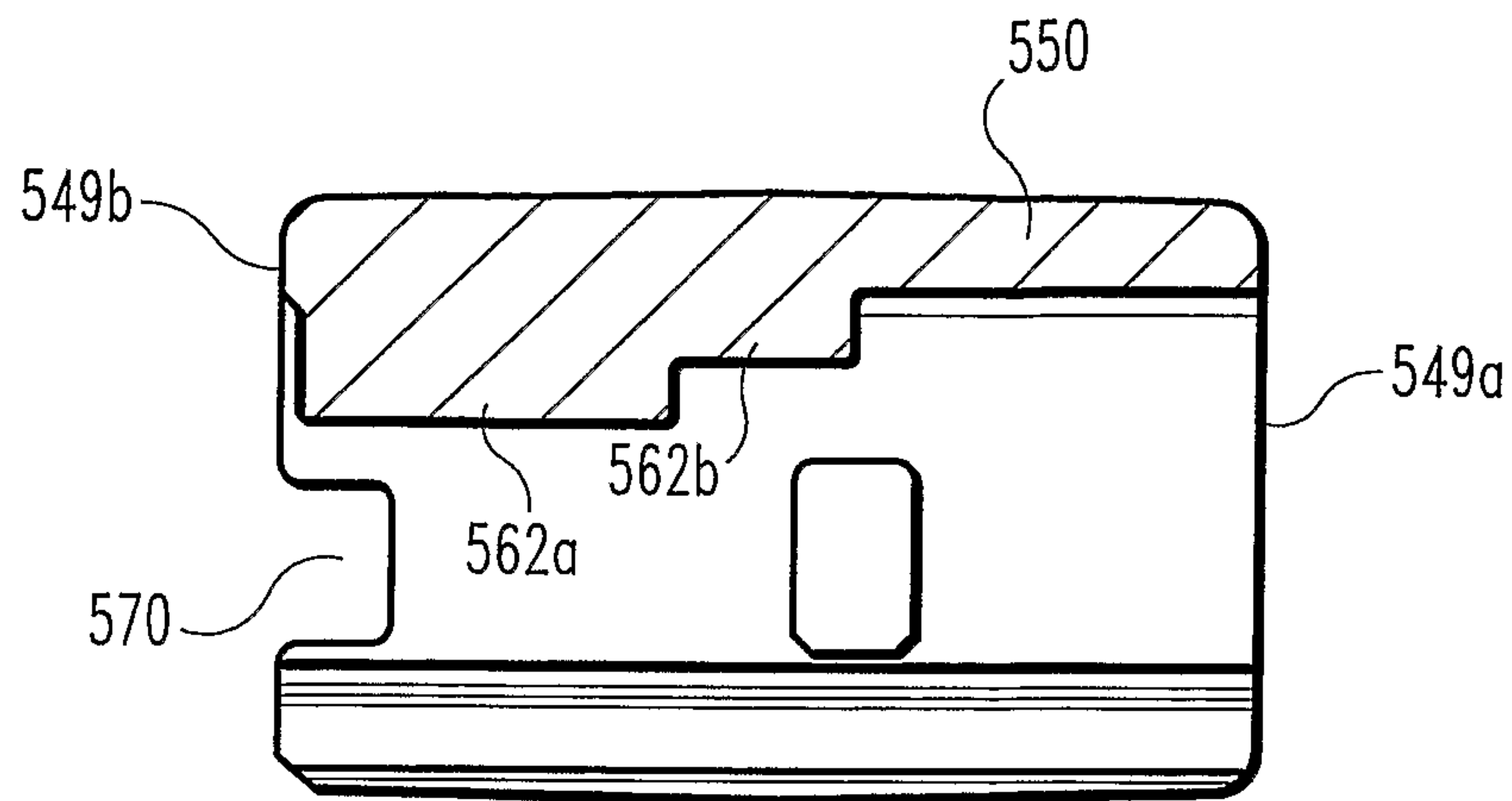


Fig. 39

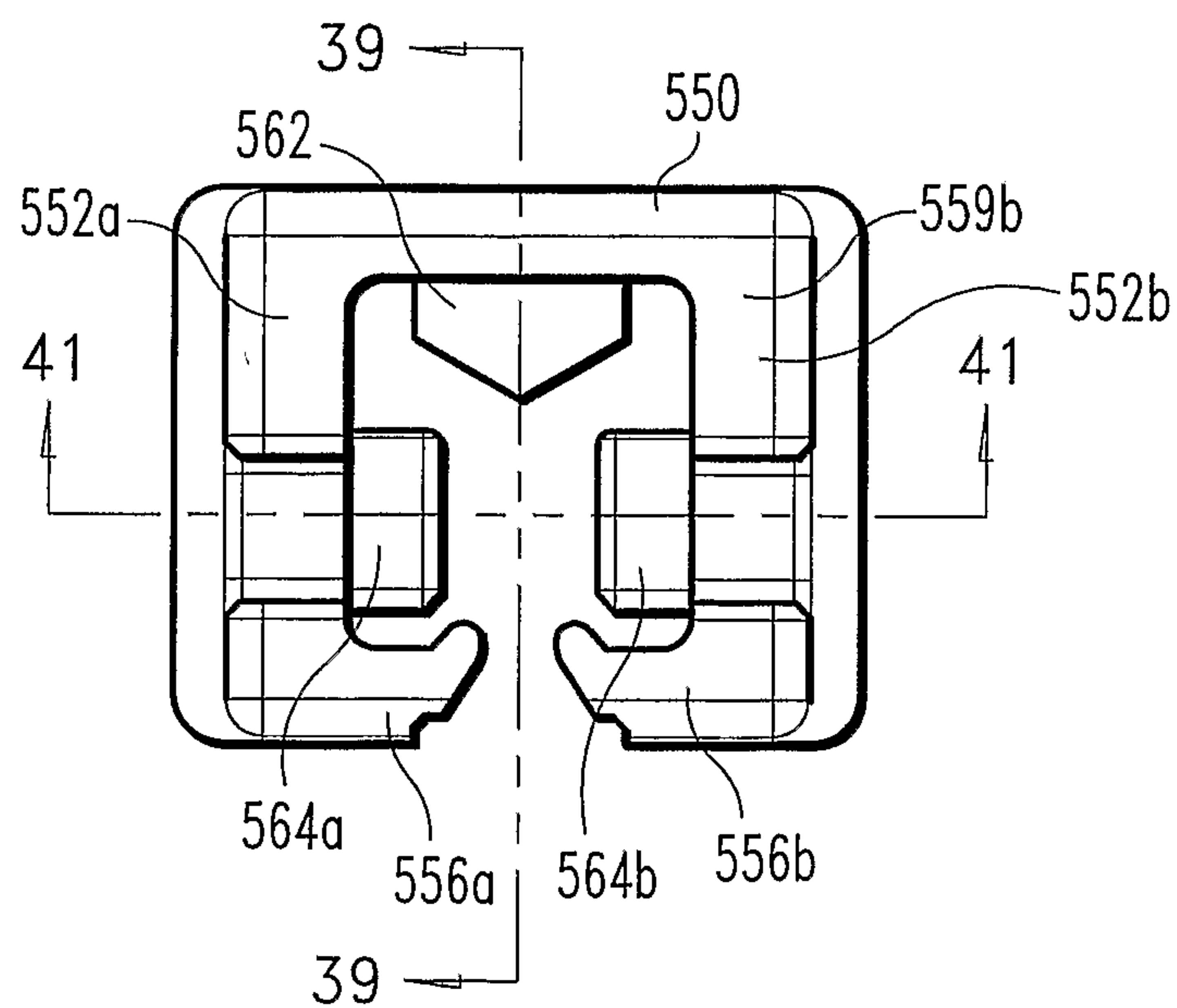


Fig. 40

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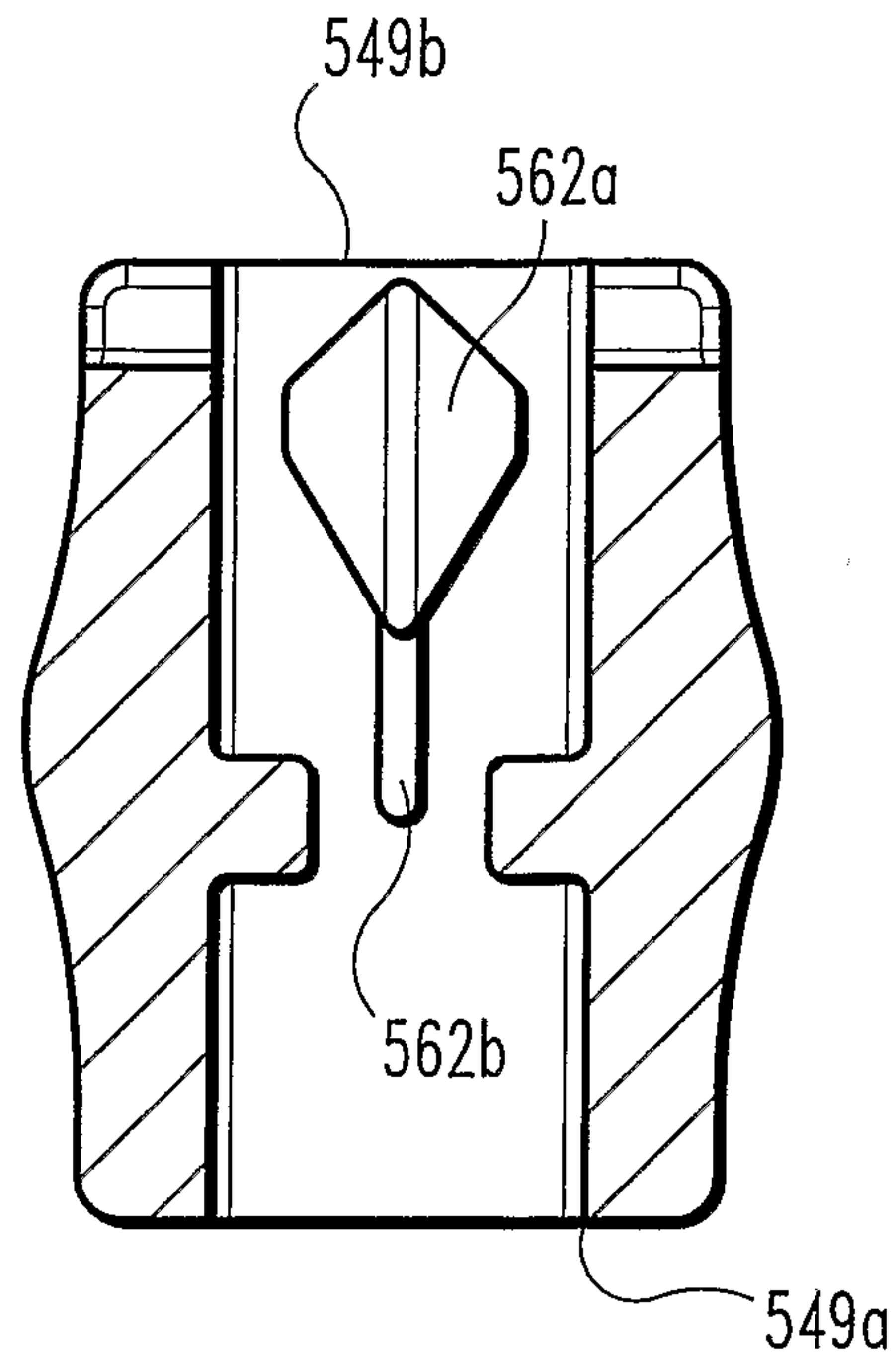


Fig. 41

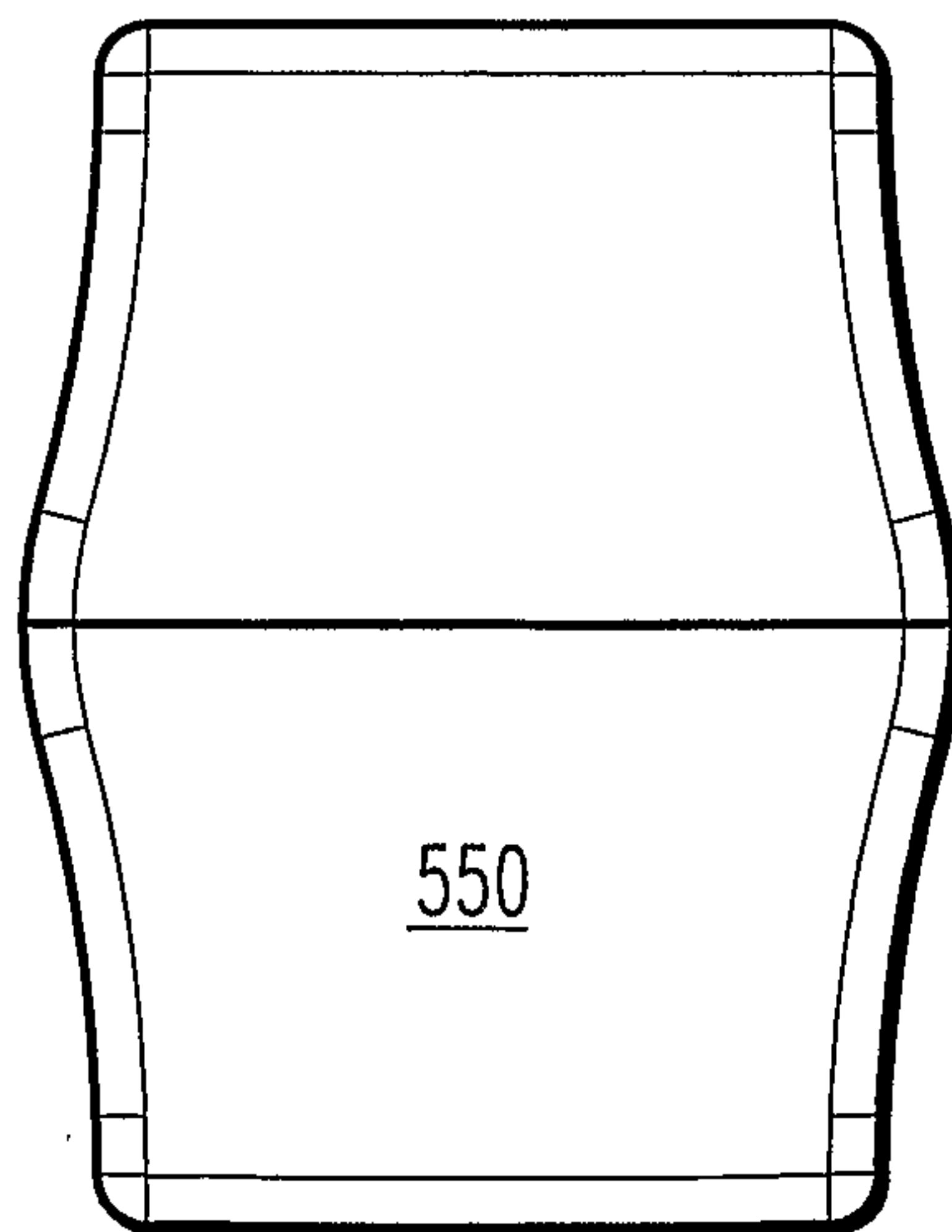


Fig. 42

