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(54) **PORTABLE DEVICE CASE WITH CORNER PROTECTOR**

379/455; 396/27; 455/90.3, 550.1, 575.1, 455/575.8, 550, 90; 248/176.1

See application file for complete search history.

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Related U.S. Patent Documents

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Shock protection of portable electronic products: Shock response spectrum, damage boundary approach, and beyond Goyal, S. (Reprint); Papadopoulos, JM; Sullivan, PA AT&T Bell Labs, Lucent Technol, Wireless Res Lab, 600 Mt Ave, Rm 1b-212, Murray Hill, NJ.

(Continued)

U.S. Applications:

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Primary Examiner — Gerald Gauthier

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H04M 9/08 (2006.01)

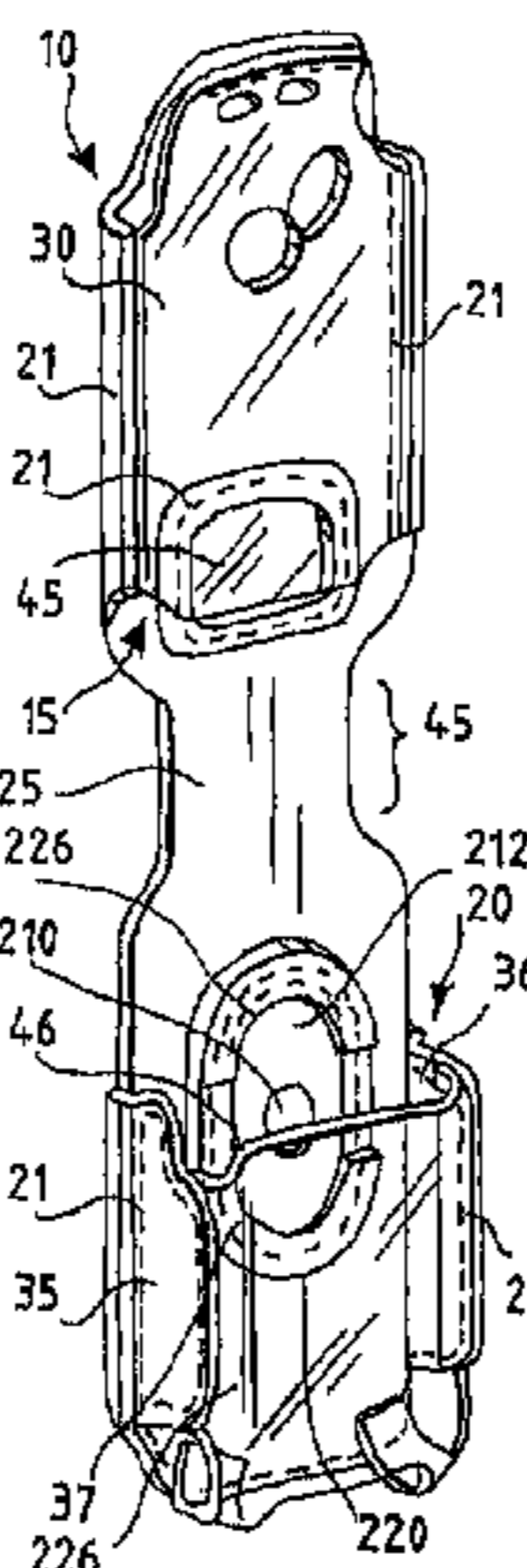
(57) **ABSTRACT**

(52) **U.S. Cl.**
USPC **379/406.01**; 190/119; 190/125; 206/6.1; 206/38.1; 206/303; 206/320; 224/197; 224/242; 224/250; 224/269; 224/675; 235/486; 248/176.1; 361/679.57; 379/433.01; 379/455; 396/27; 455/90.3; 455/550.1; 455/575.1; 455/575.8

A case for a portable electronic device such as cell phones, cameras, MP3 players and PDAs wherein said case includes material at the corners to provide protection to the electronic device. To reduce bulk at the corners and allow the material forming the case to conform with the contours of the device, the protection at the corners includes strips of material defining apertures there between. The apertures provide reduction in bulk and allow the case to conform to the corners of the device therein. Alternately, the protection at the corners can be provided by other structures co-molded into the corners of the cases. Such structures include material that is of a reduced thickness than other material used in the case, or structures that are formed to conform to the corners of the case. Such structures can be joined to the material forming the panels of the case by co-molding.

(58) **Field of Classification Search**
CPC H04M 1/0214; H04M 1/0264; H04M 1/0283; H04M 1/18; H04M 1/23
USPC 206/38.1, 320, 6.1, 303; 224/197, 199, 224/250, 269, 242, 675; 235/486; 361/679.09, 679.57, 683; 379/406.01,

28 Claims, 14 Drawing Sheets



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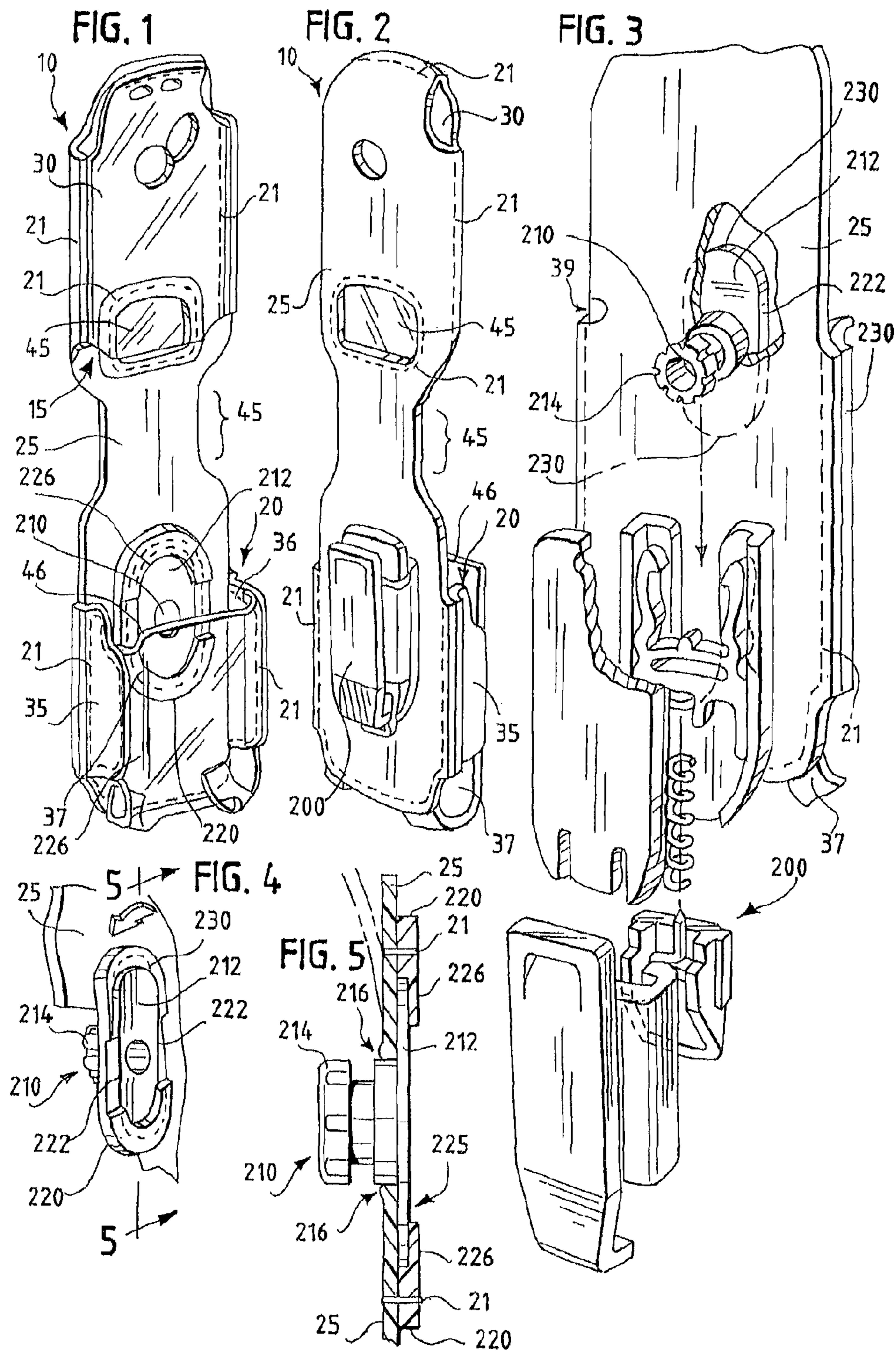
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* cited by examiner



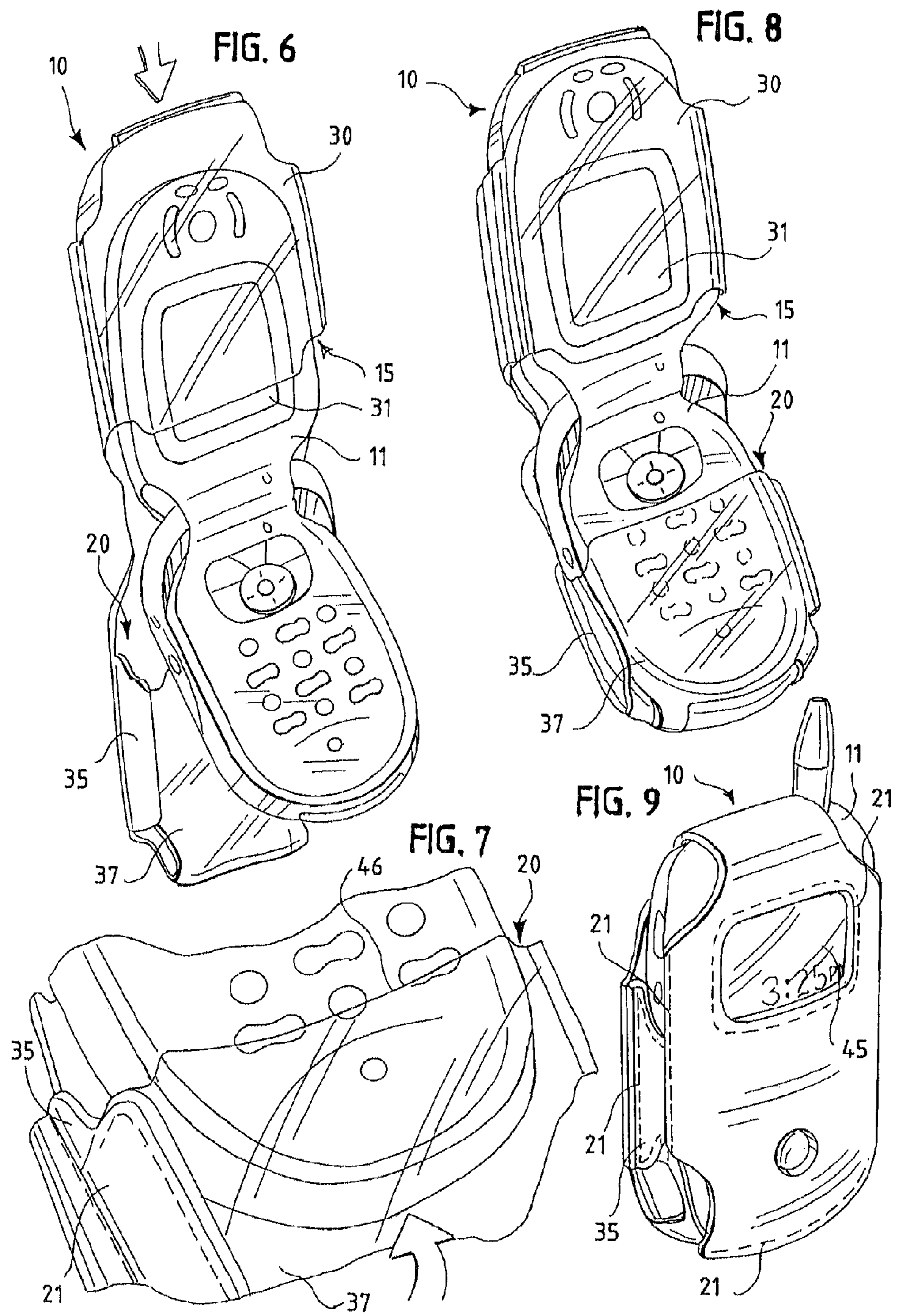


FIG. 10

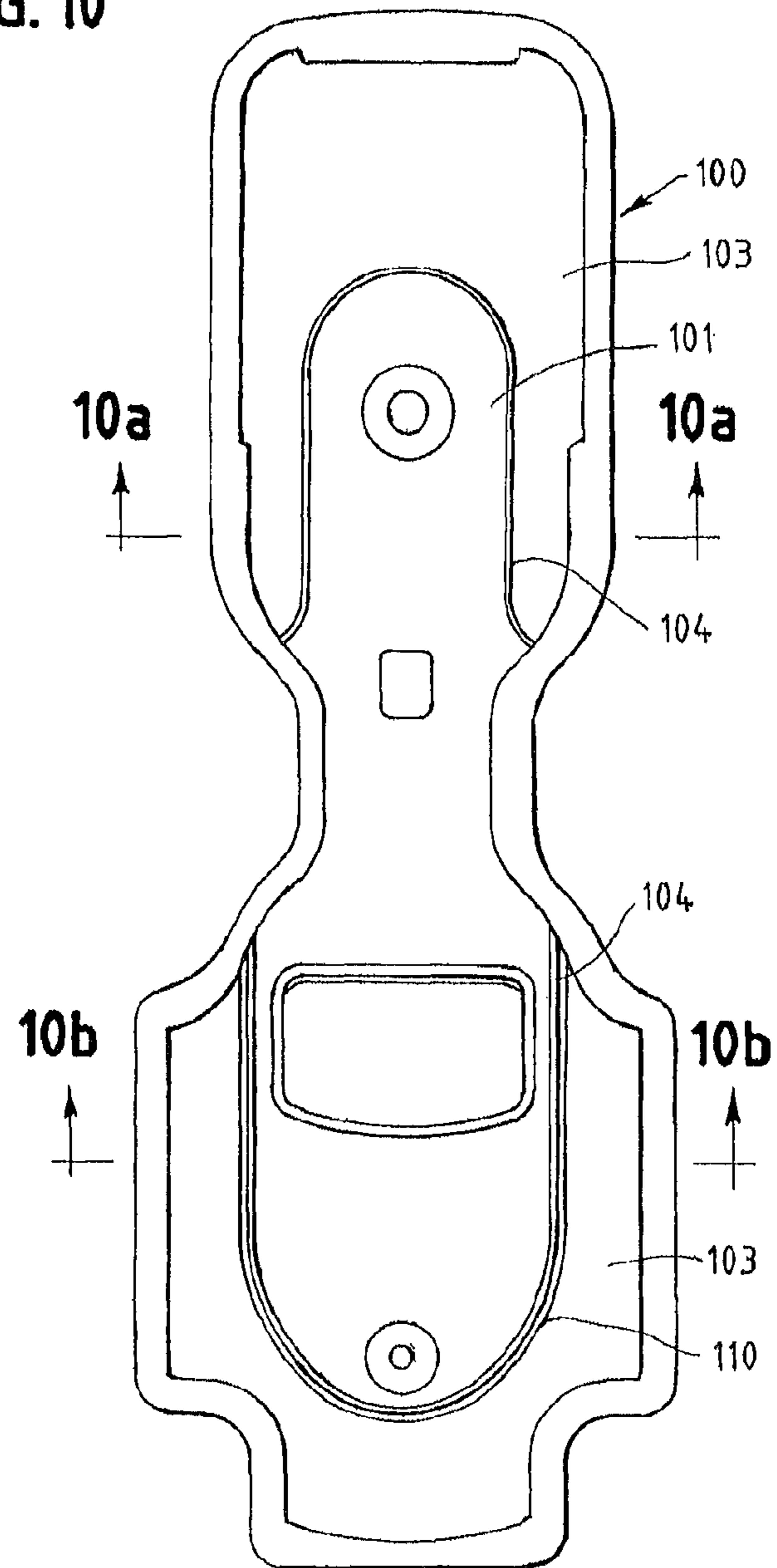


FIG. 10a

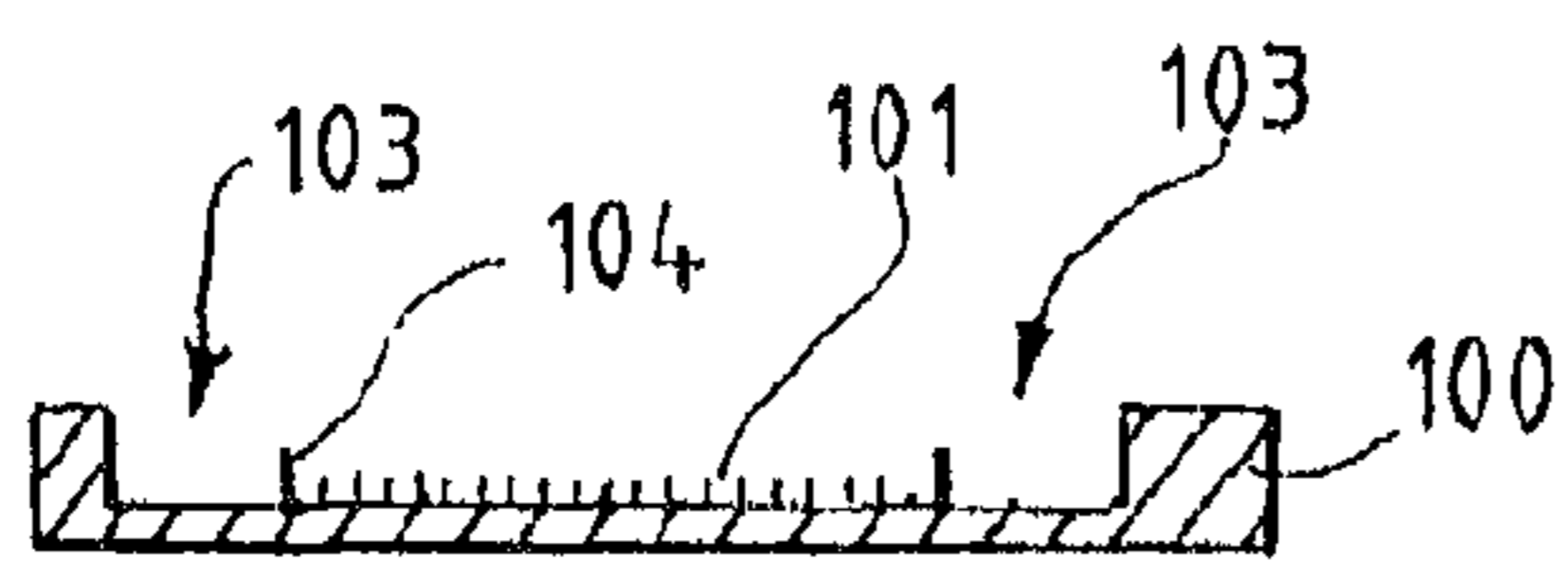


FIG. 10b

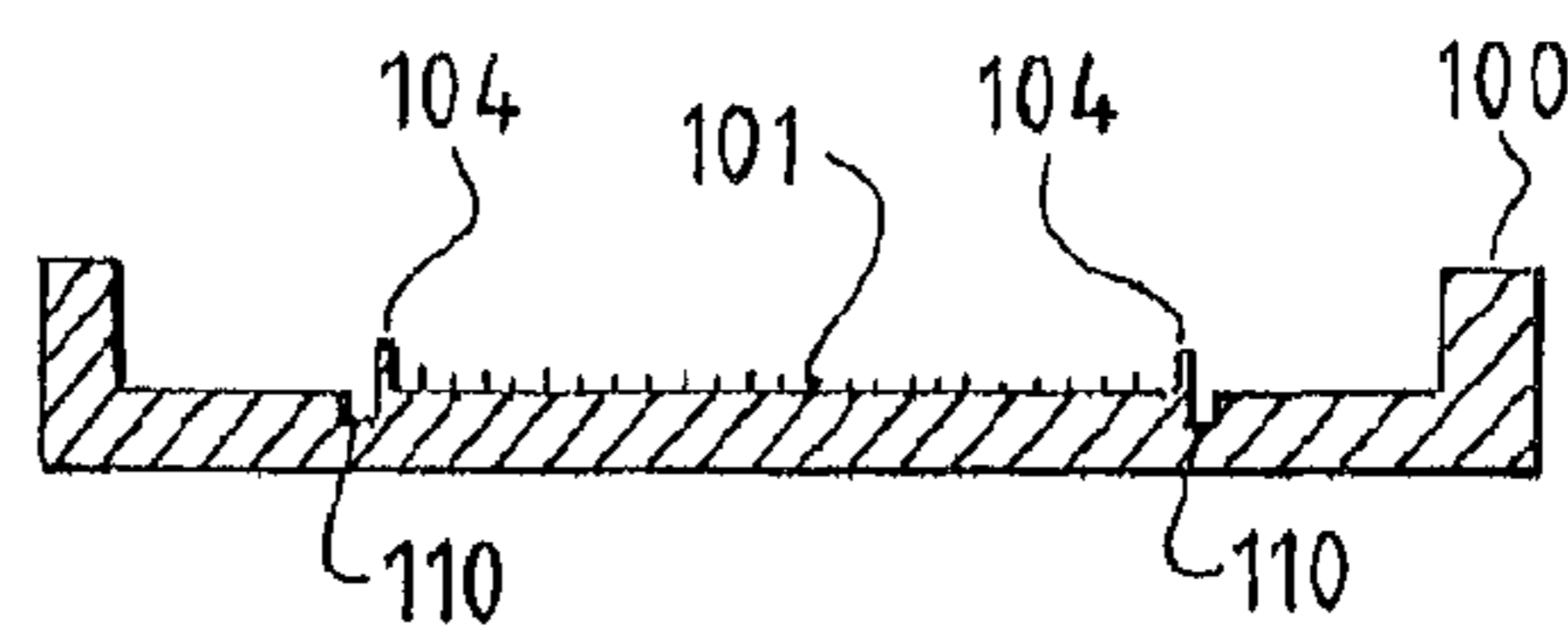


FIG. 11

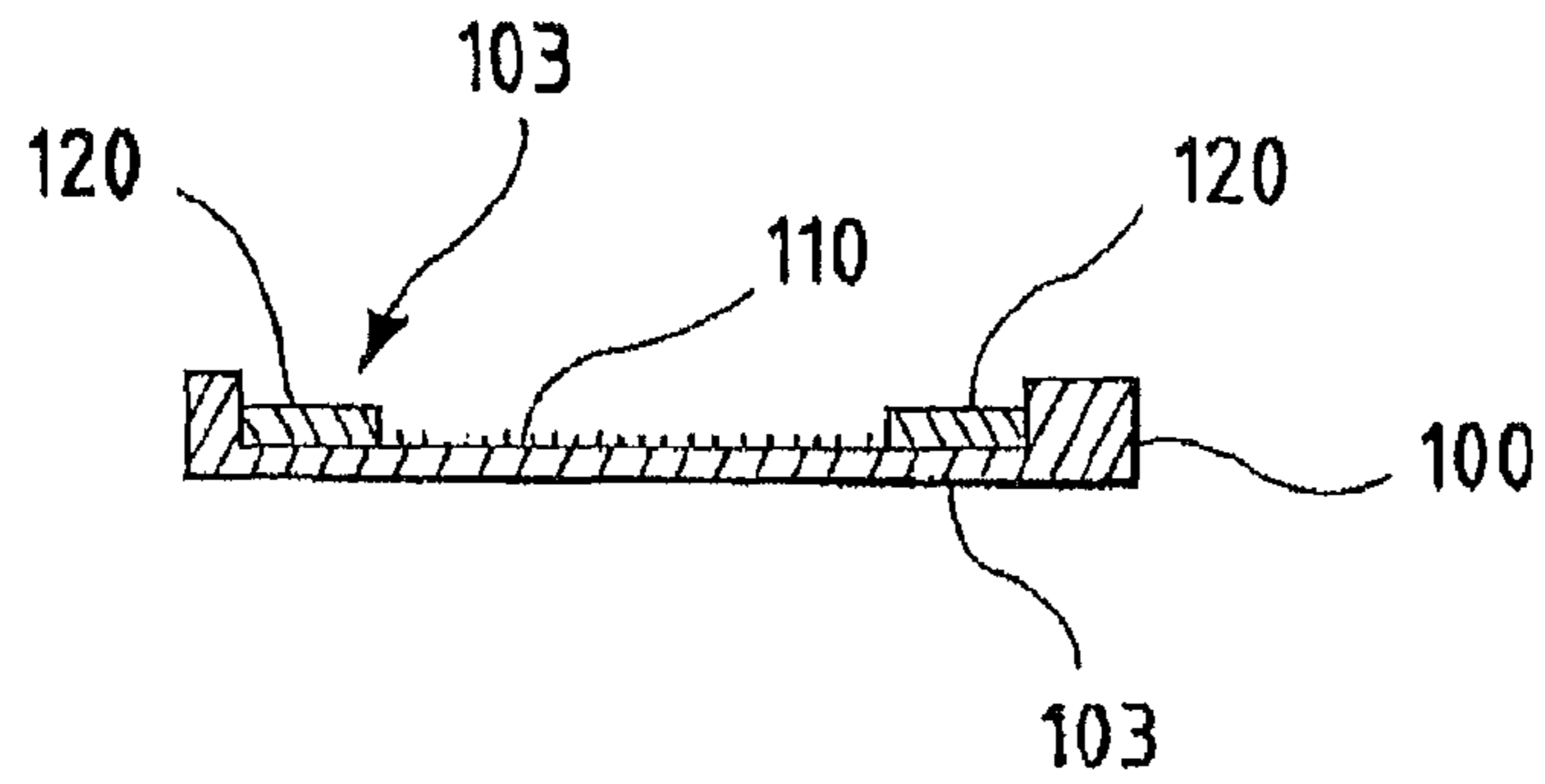


FIG. 12

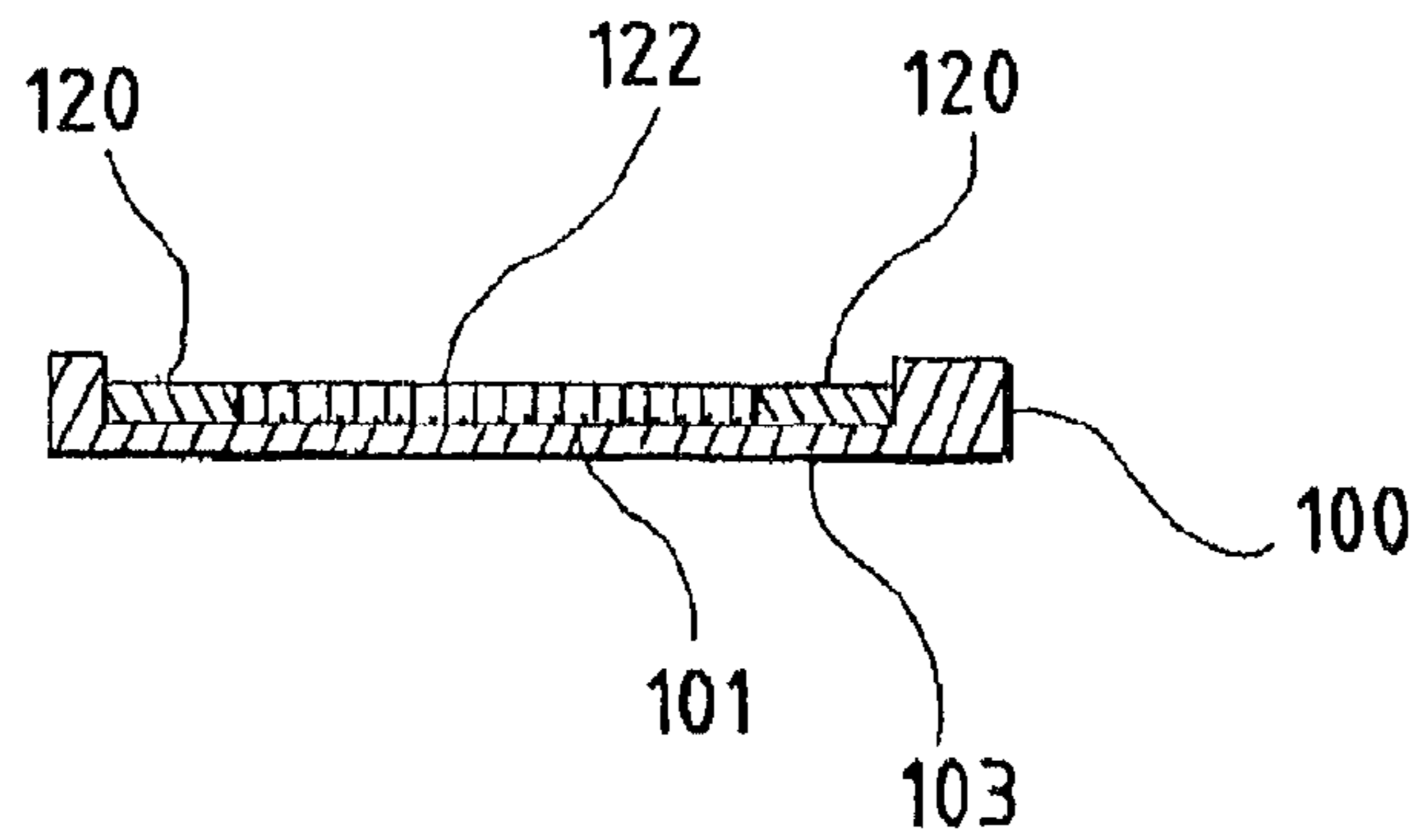


FIG. 13

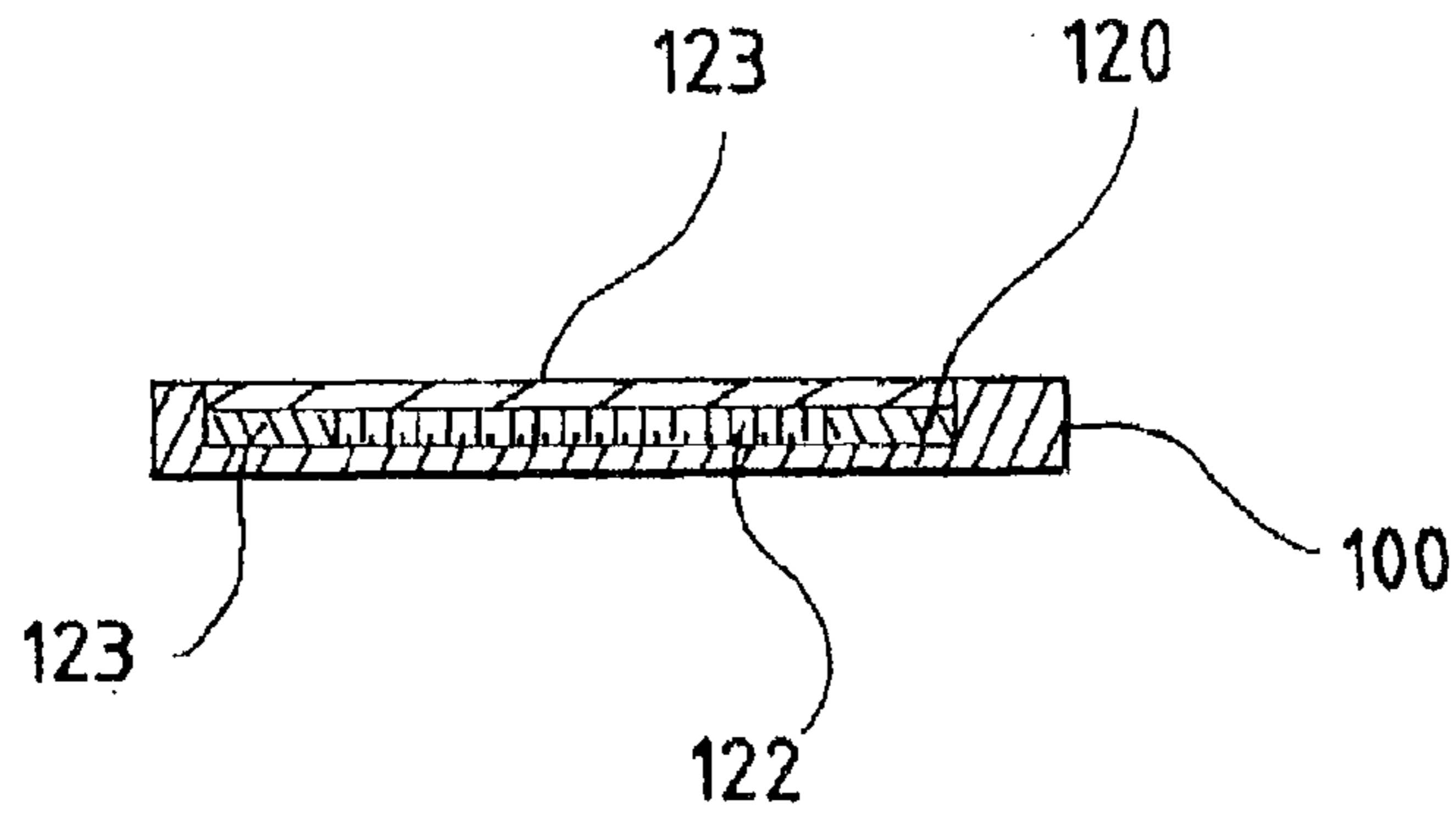


FIG. 14

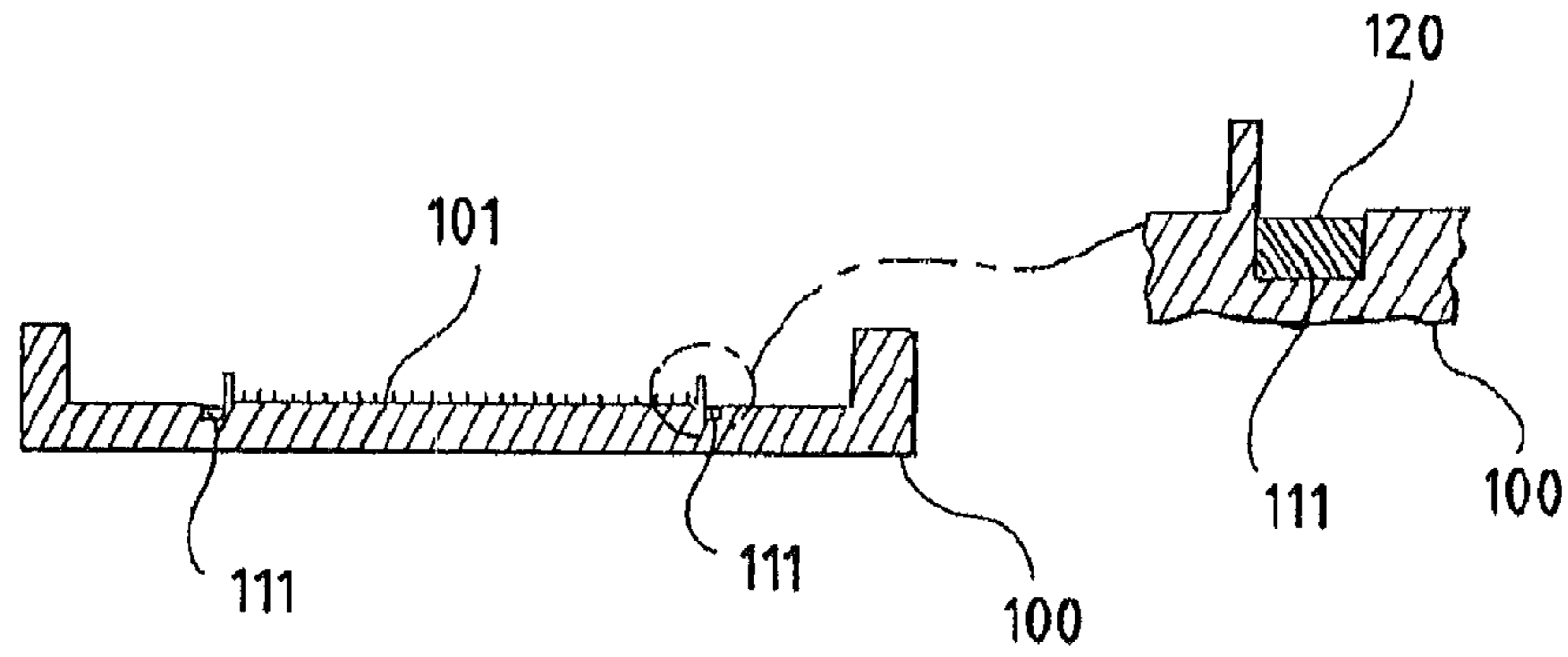


FIG. 15

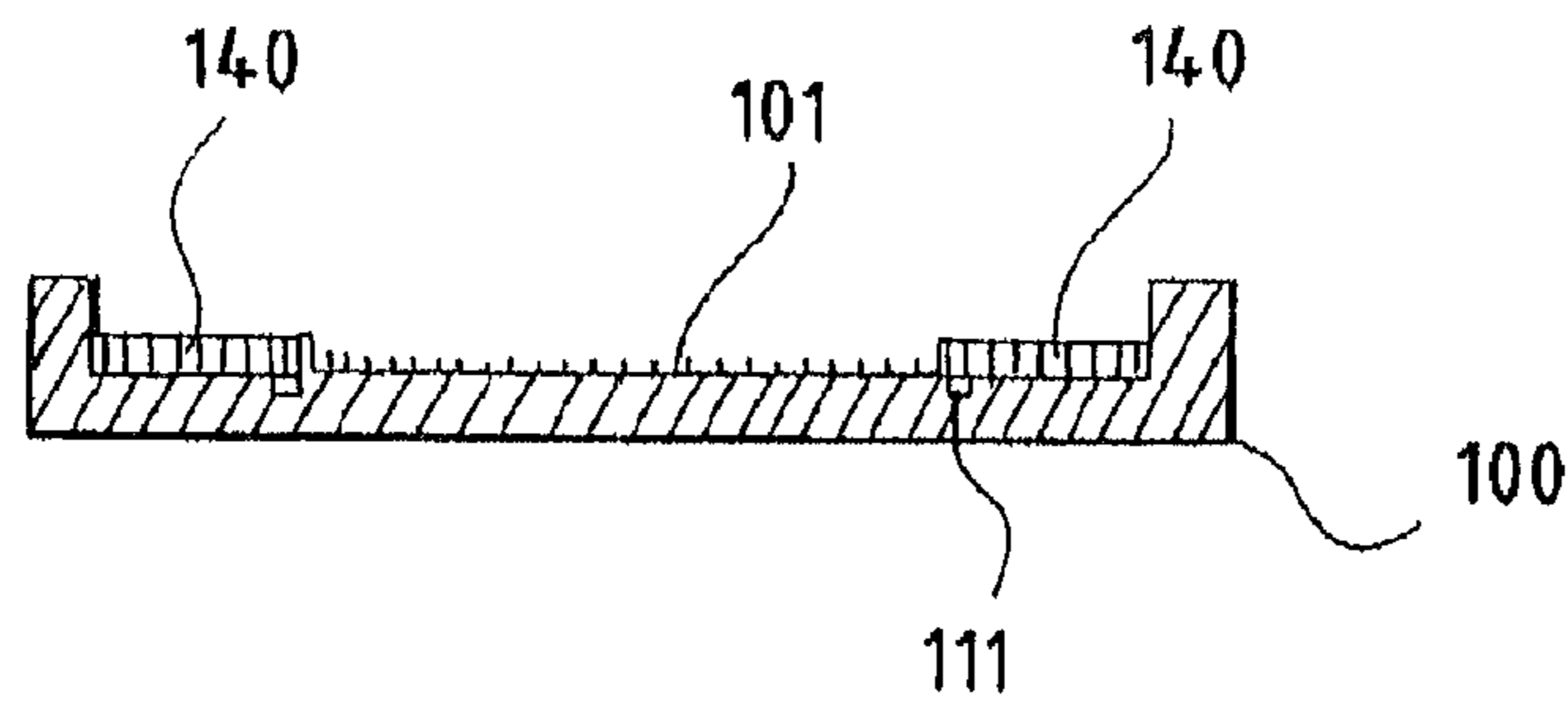


FIG. 16

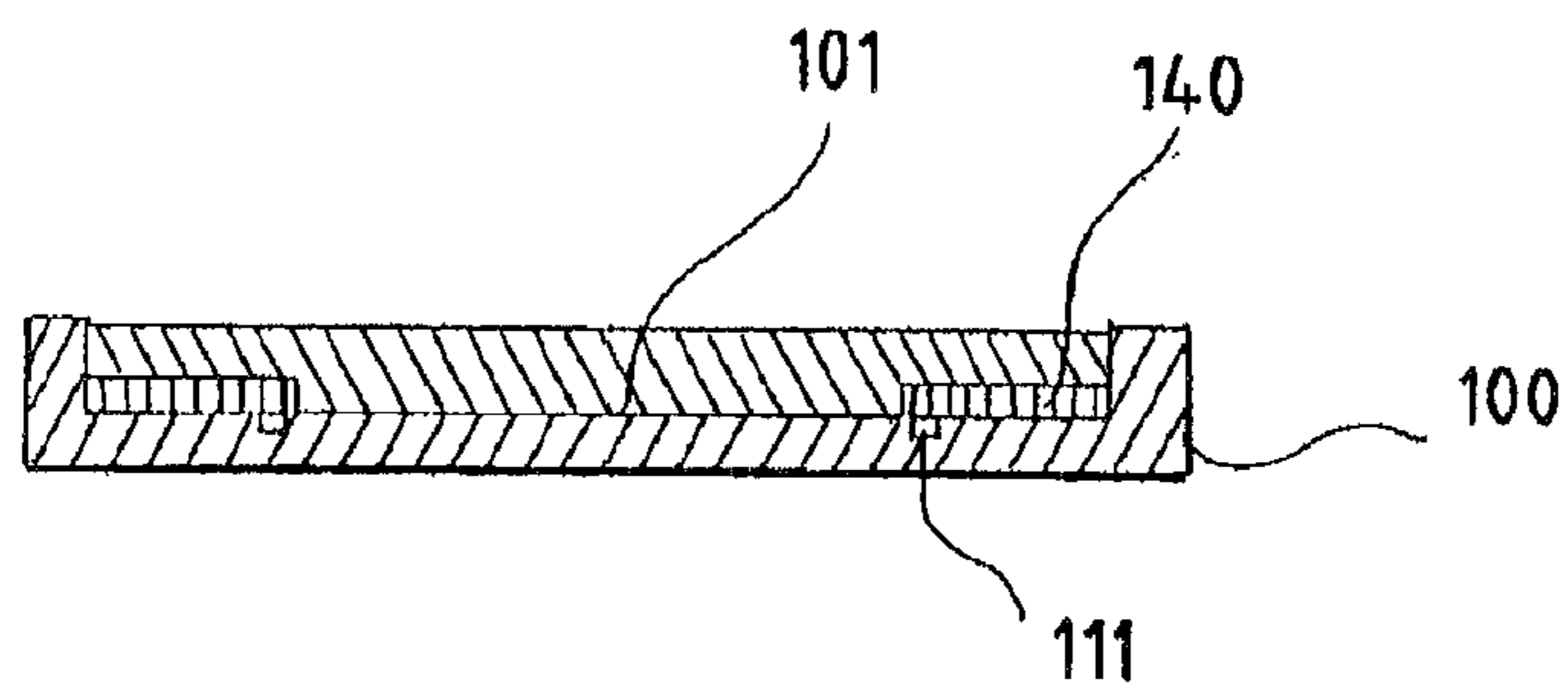


FIG. 17

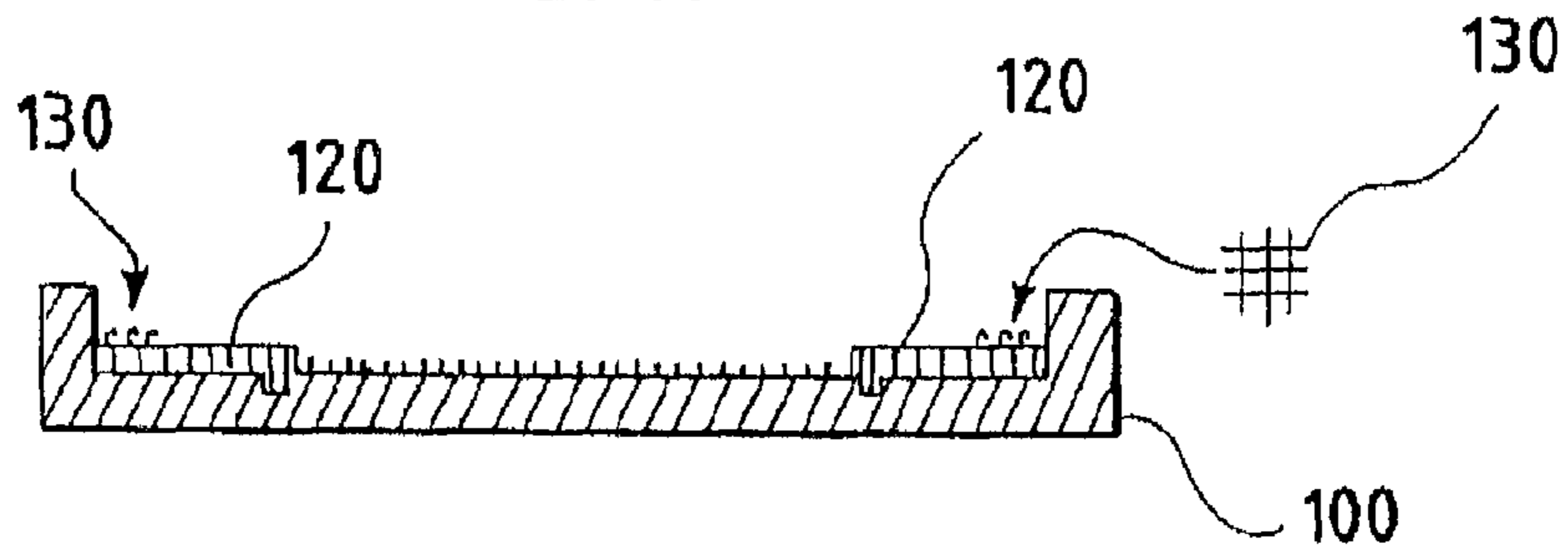


FIG. 18

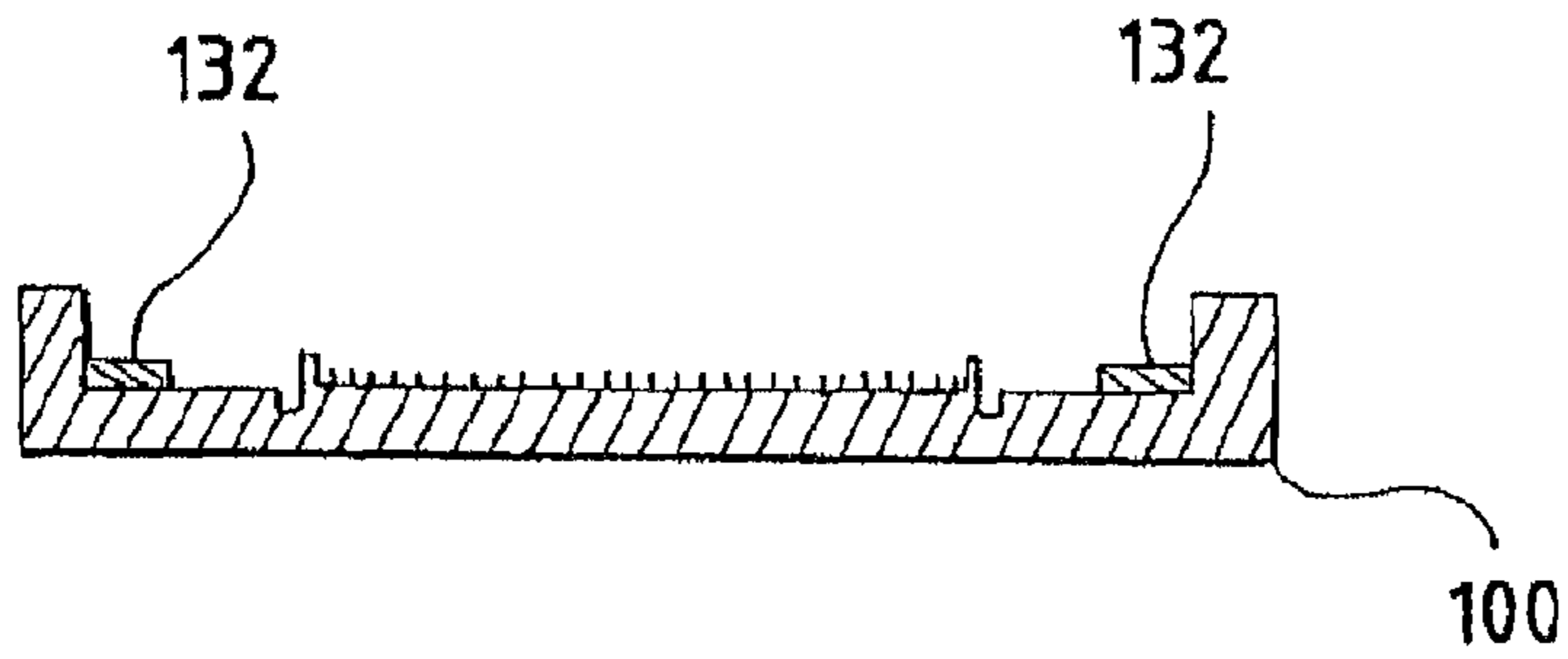


FIG. 19

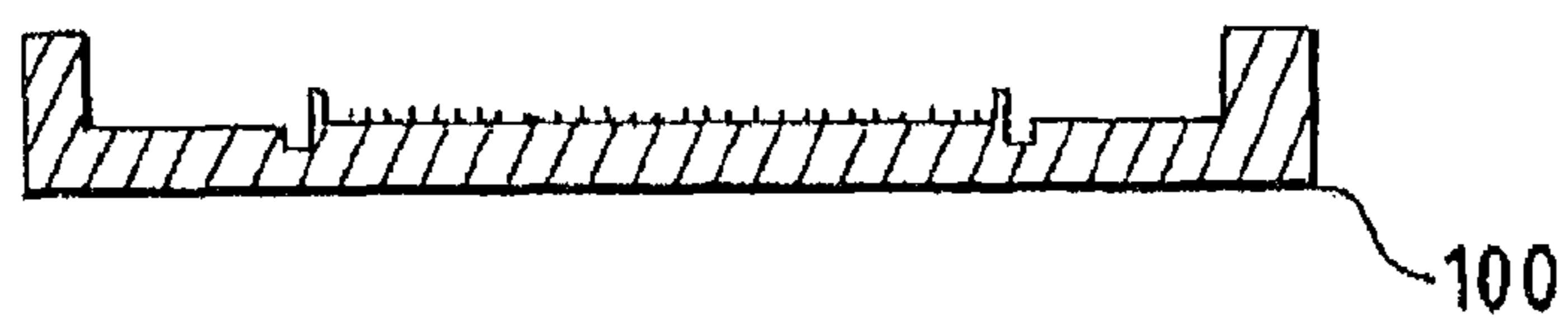


FIG. 20

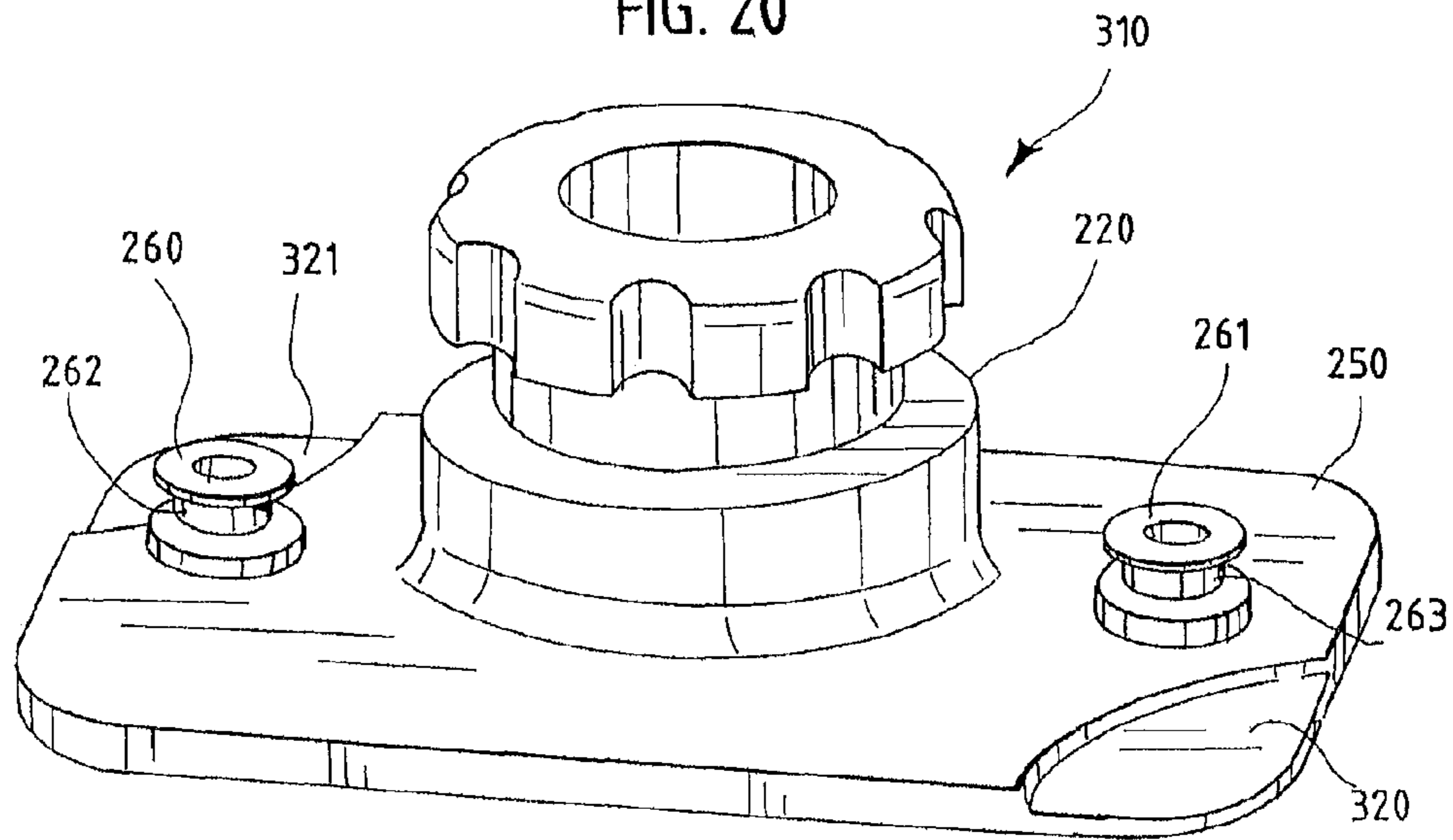


FIG. 21

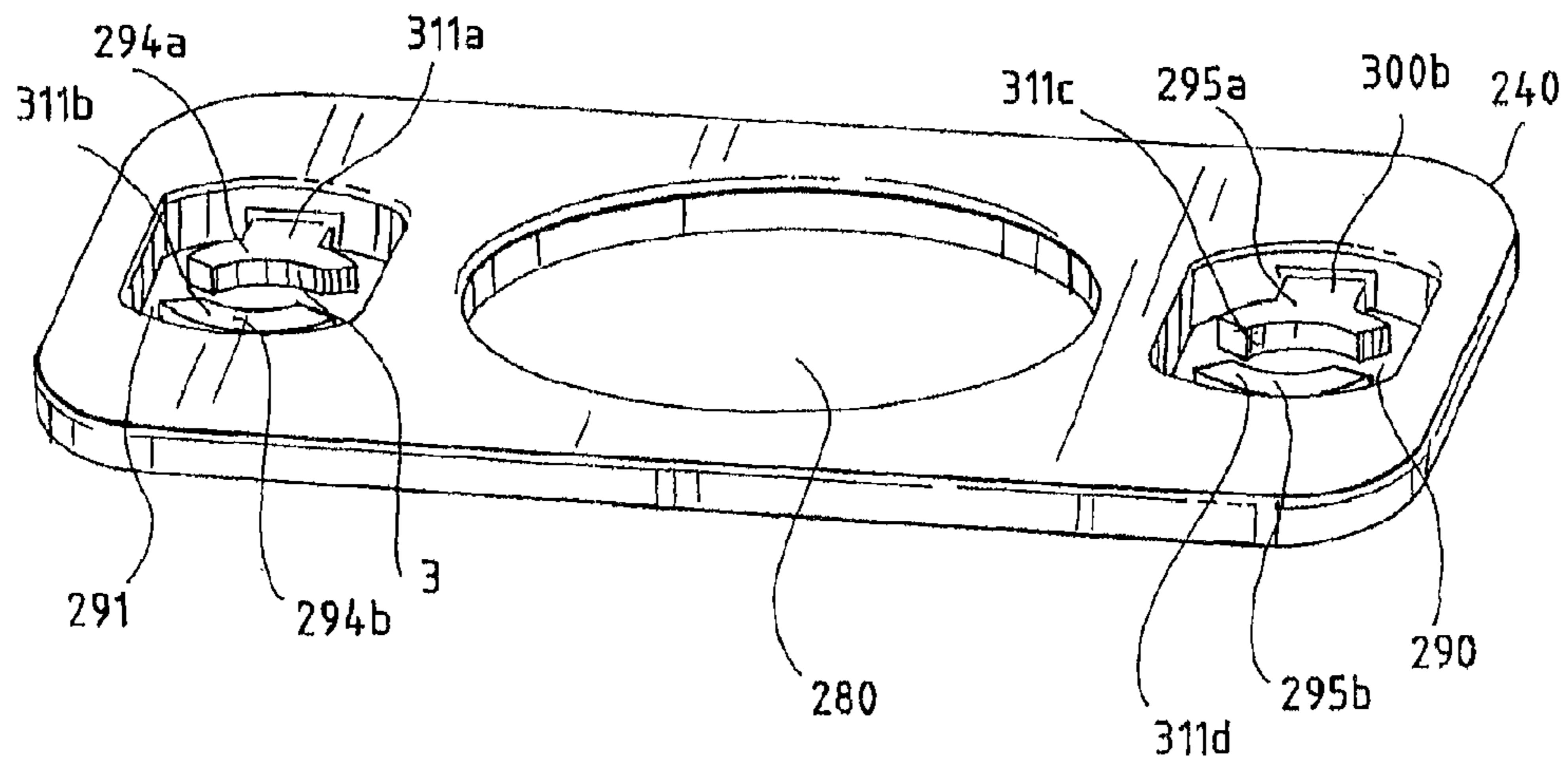


FIG. 22

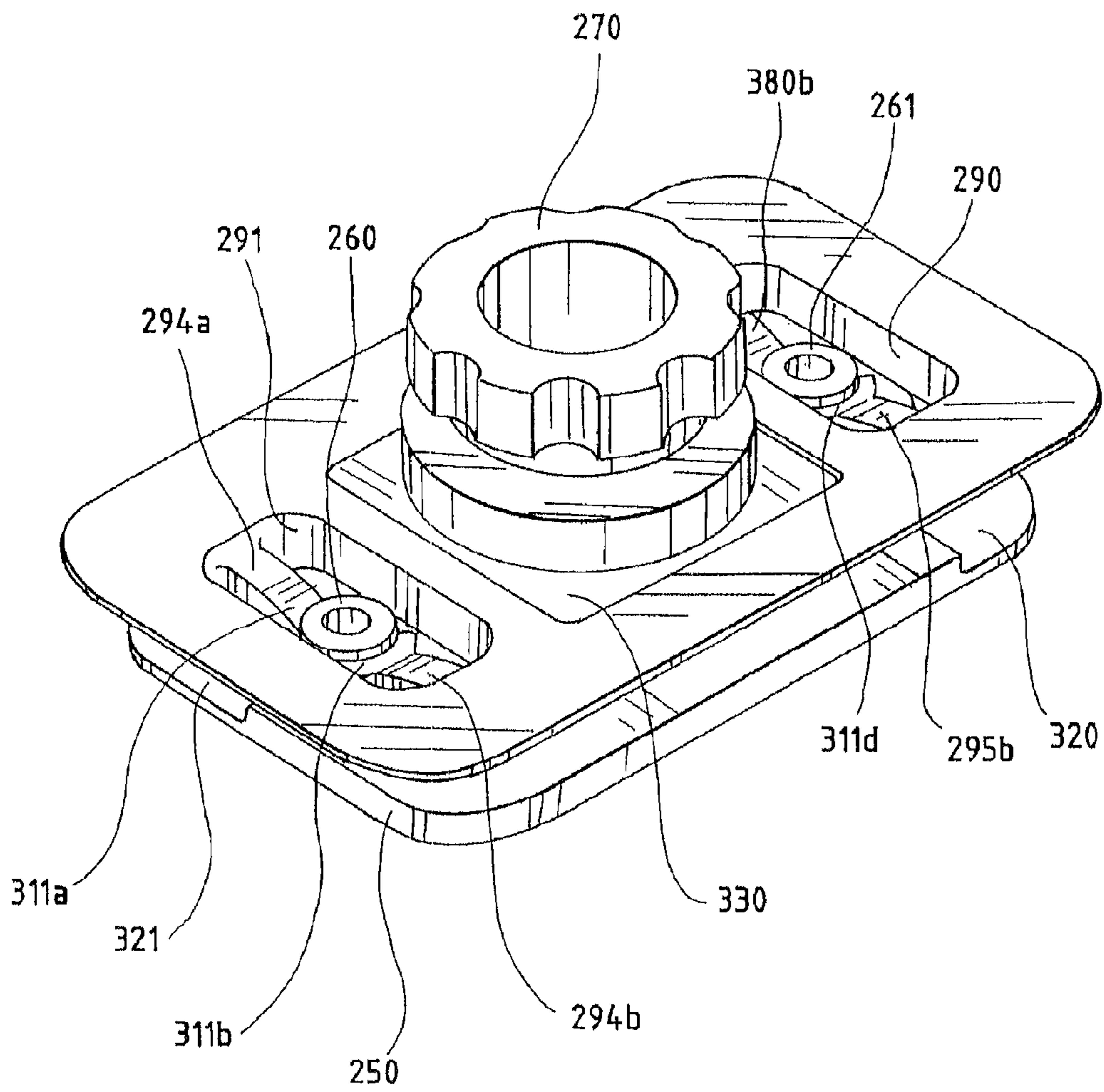


FIG. 23

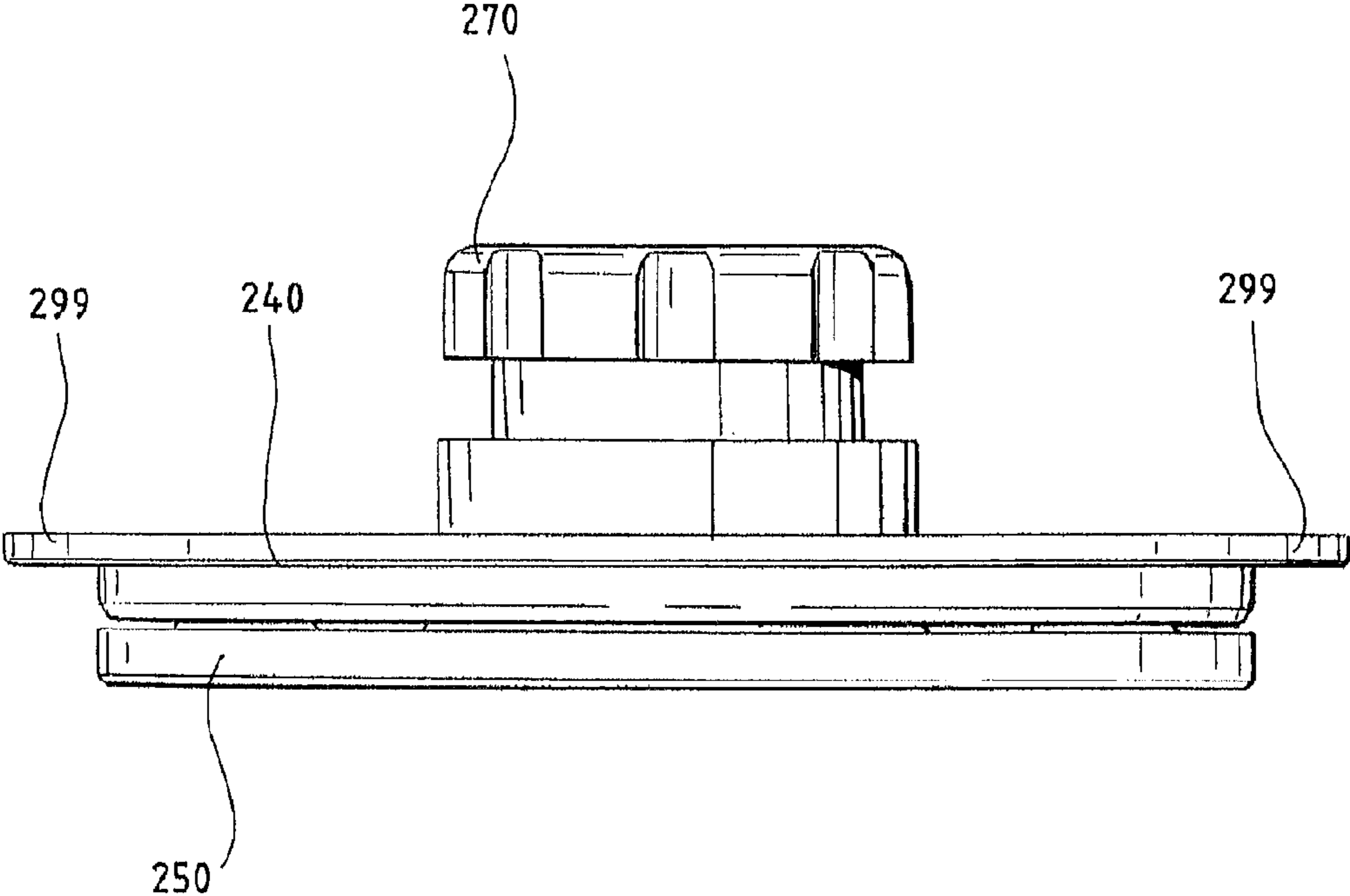
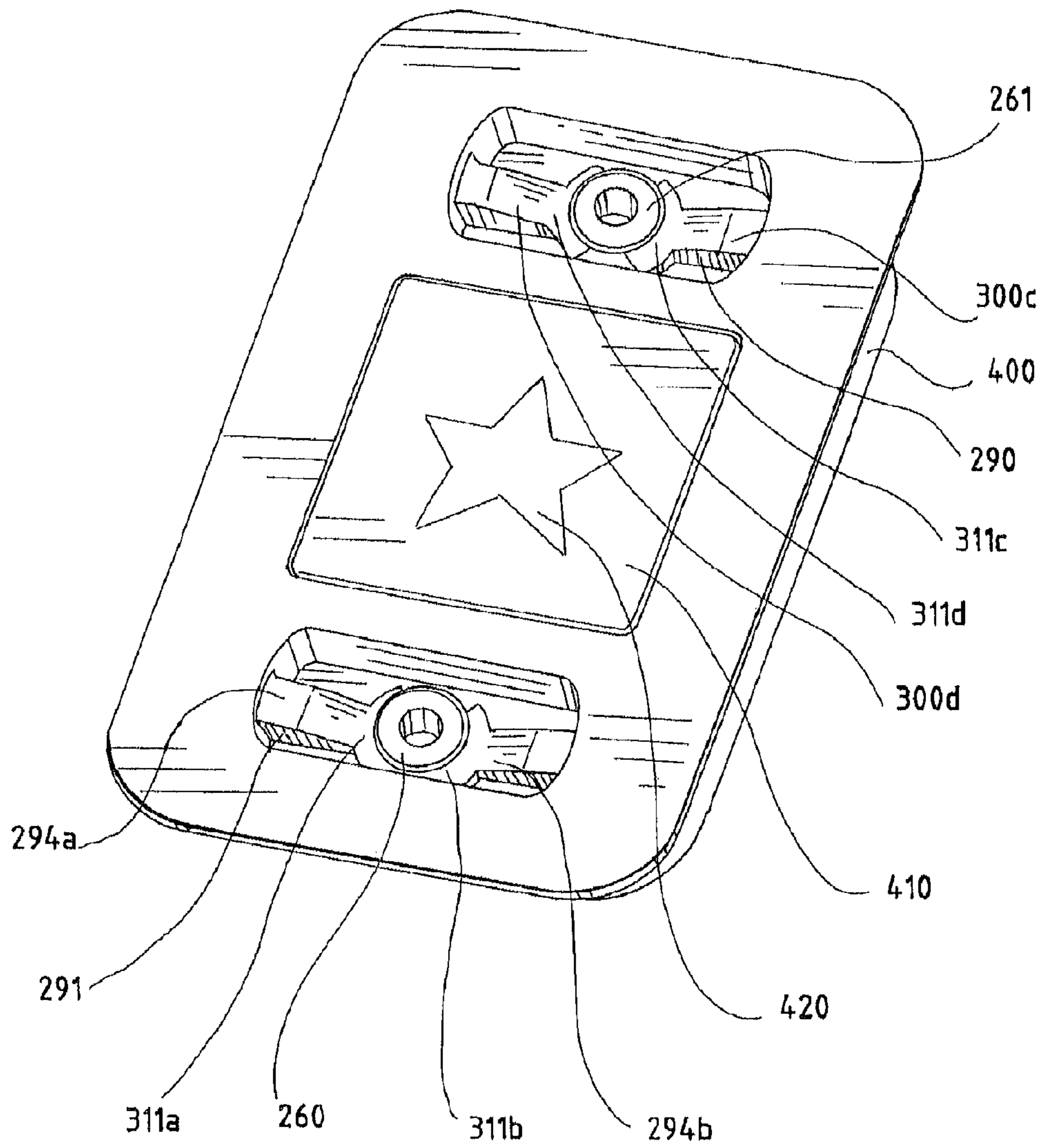


FIG. 24



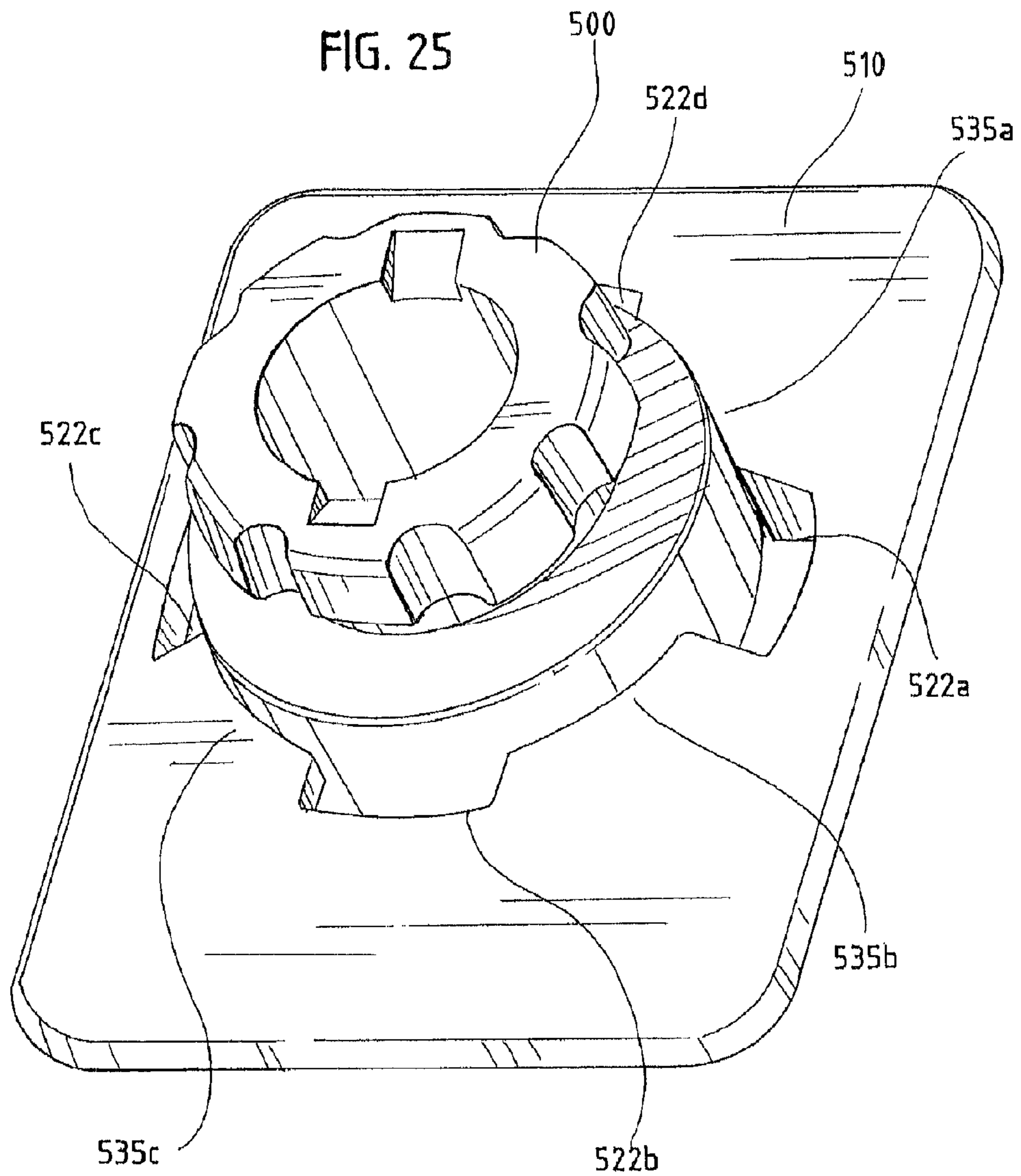
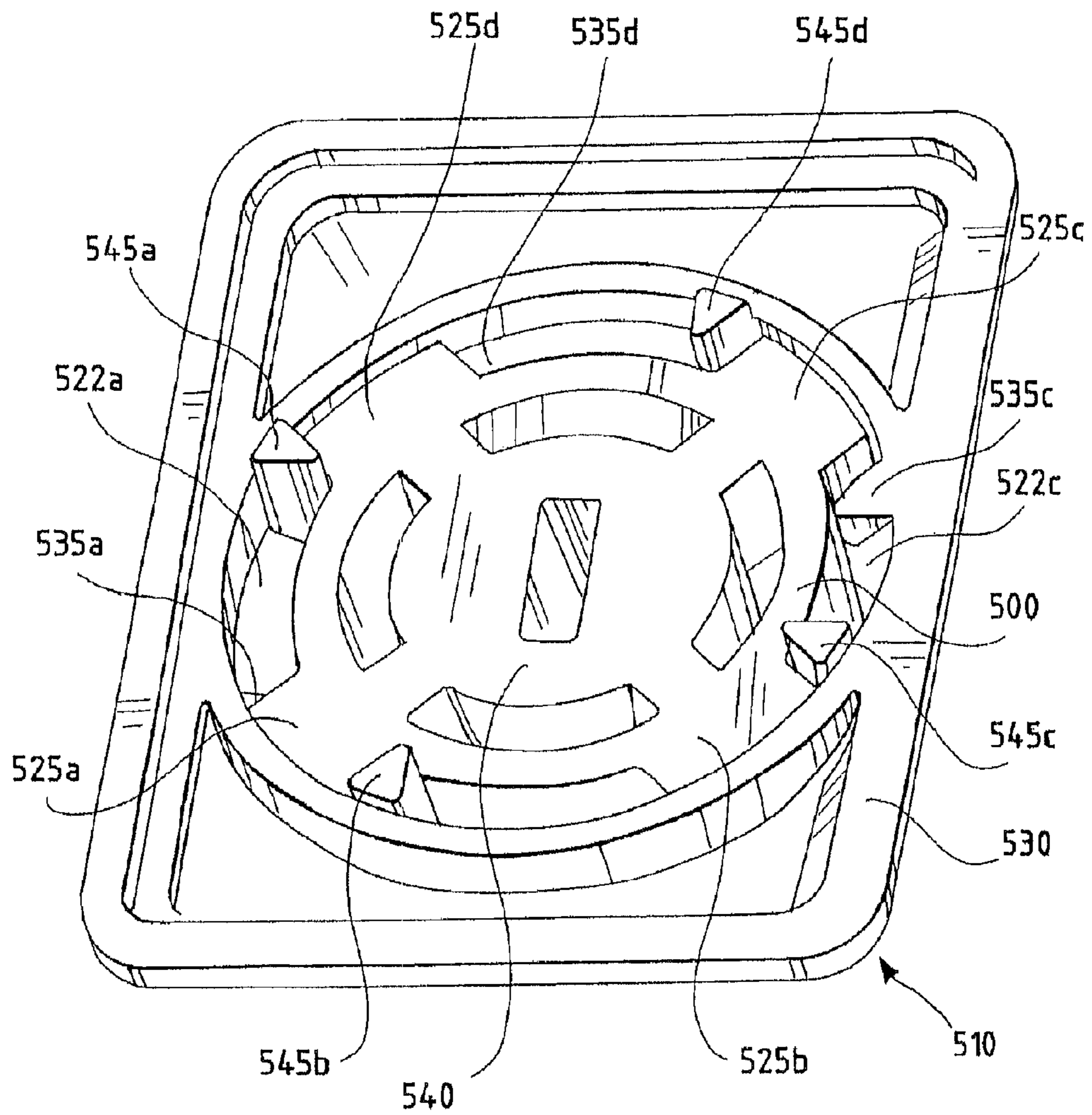


FIG. 26



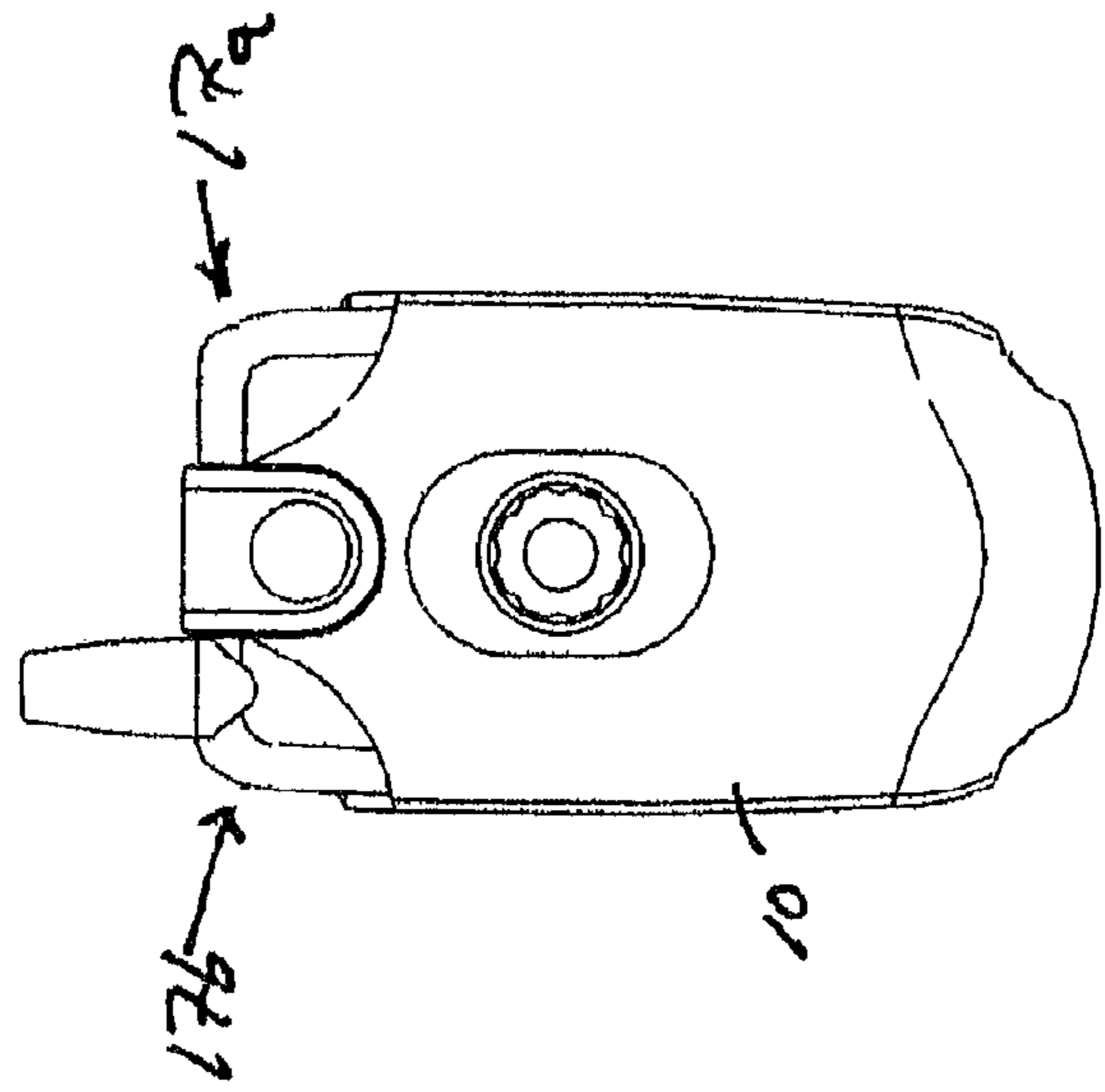


Fig. 29

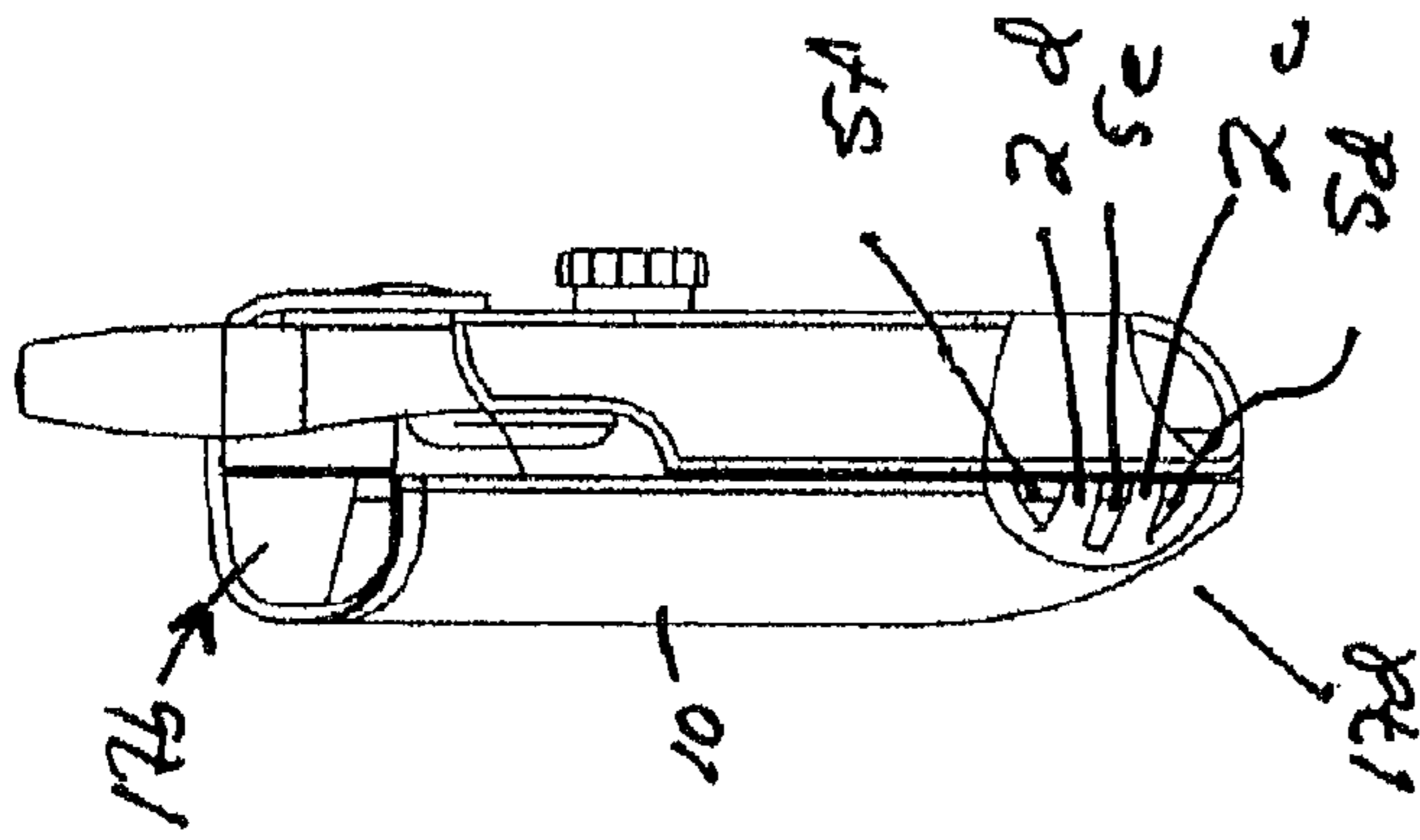


Fig. 28

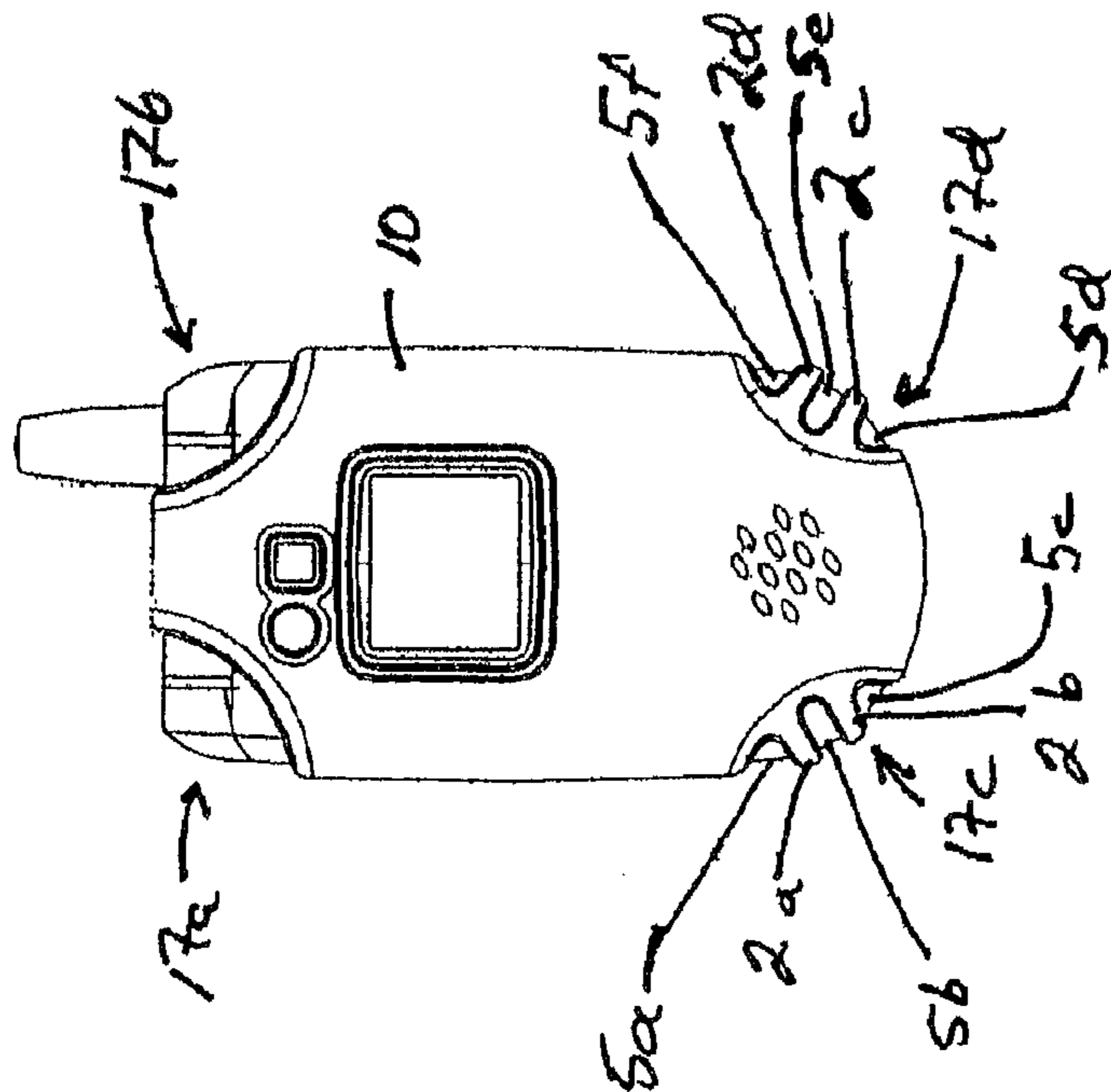
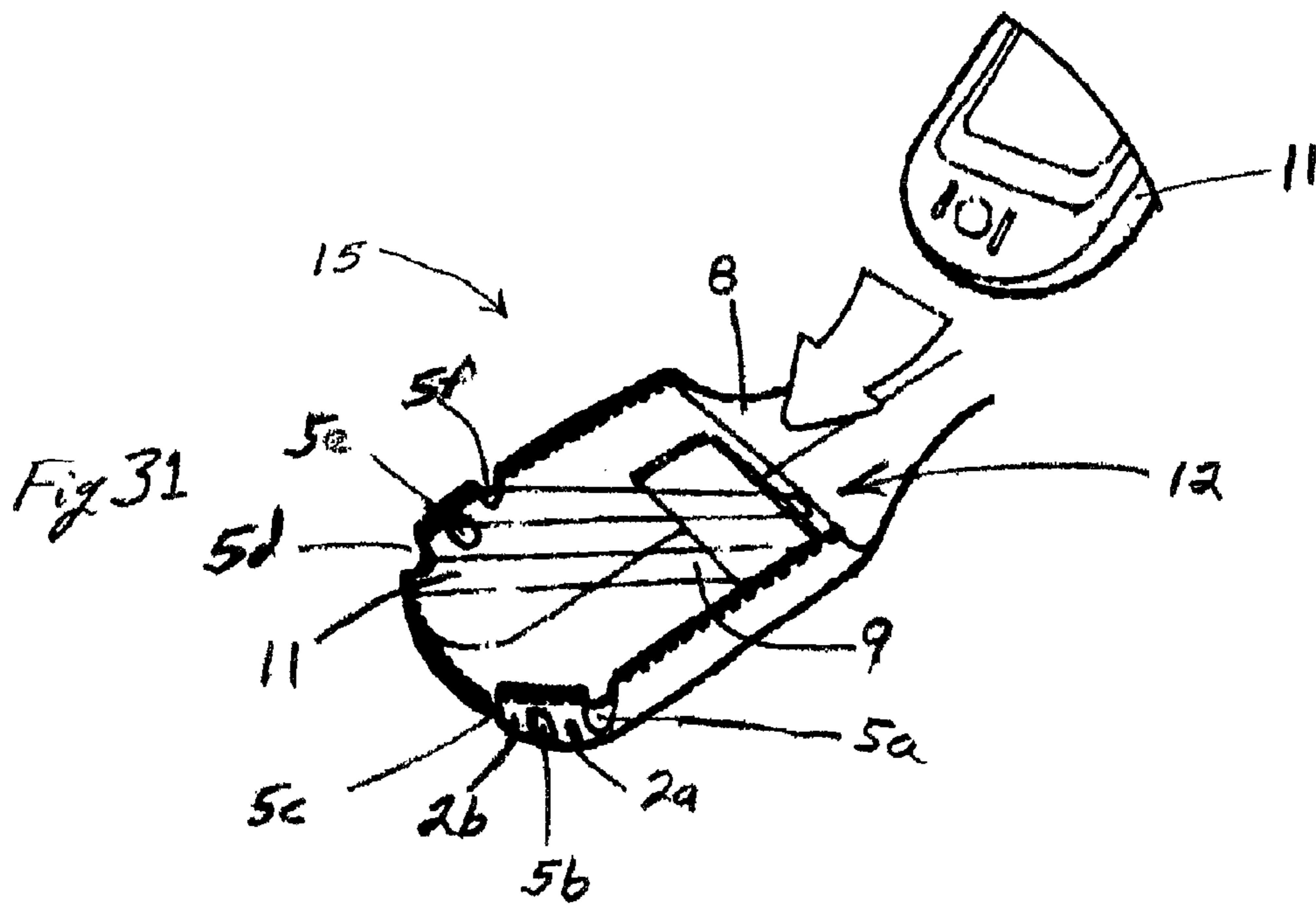
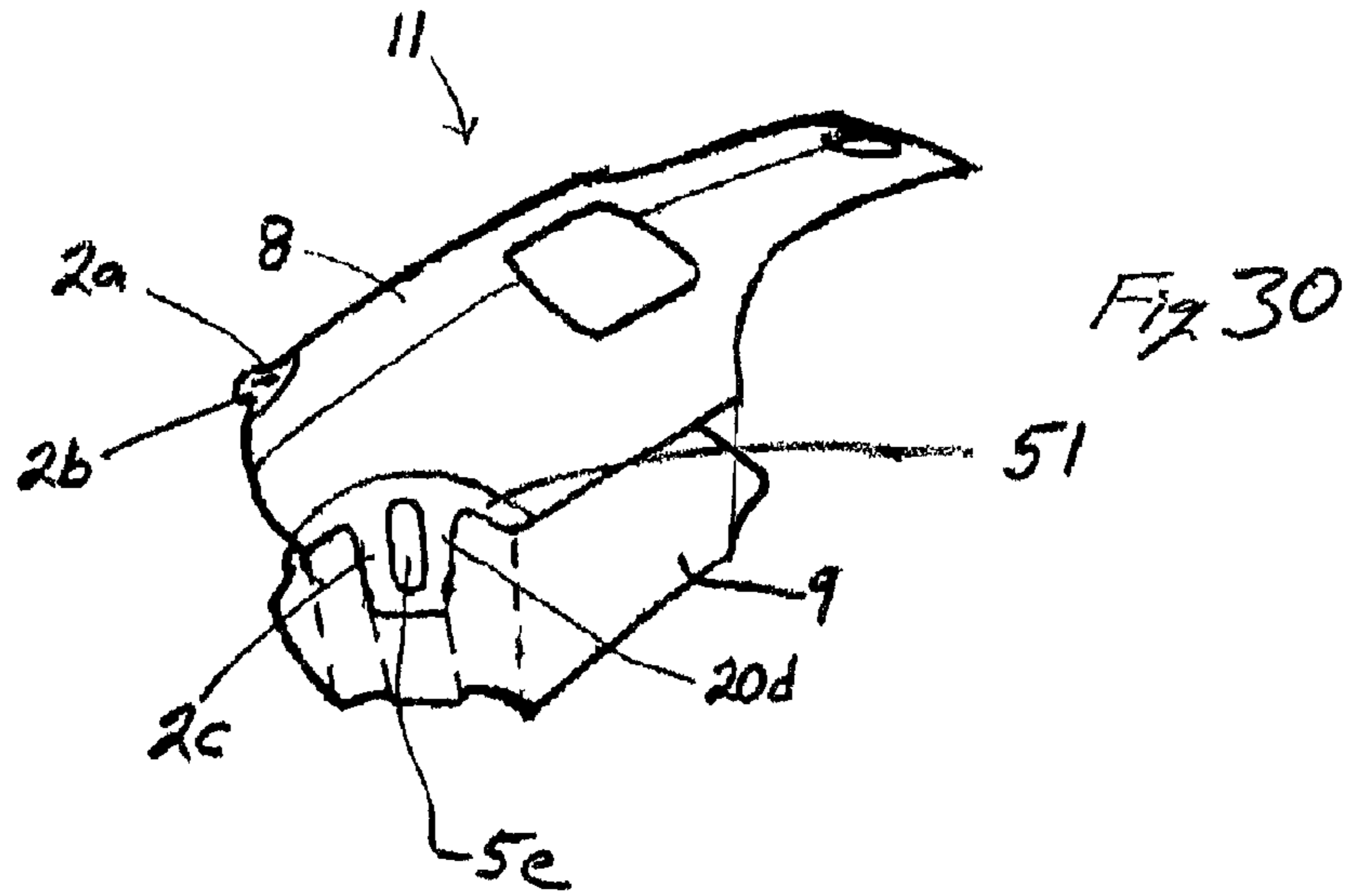


Fig. 27



PORTABLE DEVICE CASE WITH CORNER PROTECTOR

Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates the additions made by reissue.

RELATED APPLICATION

This application claims priority to U.S. Provisional Application No. 60/756,157 filed on Jan. 4, 2006. The Application is also a continuation in part of U.S. Non-provisional application Ser. No. 11/275,443 filed on Jan. 3, 2006, which claims the benefit of U.S. Provisional Application No. 60/641,204, filed Jan. 3, 2005, the contents of which are incorporated herein by reference in their entirety.

FIELD OF THE INVENTION

This invention relates to carrying cases for portable electronic devices, such as cell phones, cameras, MP3 players, and PDAs. More particularly, the invention relates to cases having corner protectors. Further, the invention relates to a case for a clamshell type cellular phone. The invention also relates to methods for producing the case using a co-molding process.

BACKGROUND OF THE INVENTION

Cell phones, pagers, PDA's, MP3 players, and other portable electronic devices have become increasingly popular. Users of the devices like to keep the devices readily accessible on their person. Due to their portable nature, the devices are also subject to being dropped and otherwise roughly handled, which can result in damage to the electronics inside, or to the plastic housing of the device. To address the above concerns, cases have been developed to both carry and protect the portable electronic devices. These cases often include a clip or other retaining structure to allow the case to be removably attached to the user's clothing, such as a belt.

The clips or retainers commonly used are removeably attached to the case by fastening to a plastic post, which itself is attached to the case. The plastic post can be an integral part of the case, being formed of the same material as the case. In other prior art embodiments, the post is a separate piece, sewn into or otherwise permanently attached to the case. While this provides a secure attachment post for the clip, the post becomes a cumbersome and unwanted protrusion when the clip is removed. The case disclosed herein is provided with a detachable post, thereby providing a case unburdened with unnecessary protrusions. The case disclosed herein also provides an attachment point for other accessories such as a light, velcro, keychain or magnets.

The portable electronic cases of the prior art are generally constructed of leather, nylon, or other material provided in sheets. The material is cut to predetermine sizes to form panels, which are then sewn or otherwise attached to form a pocket for holding the portable electronic device. With this type of construction, if one desires parts of a panel to have different physical properties, such as elasticity, texture, color or clarity, different pieces of material must be physically joined to one another to create a panel having the desired characteristics. Typically, the materials are joined by stitching, heat weld, or adhesive. The seams created at the joints add unwanted bulk and add to the cost of construction. It is

therefore desirable to produce a case that includes different physical properties, but does not require pieces to be mechanically joined. To that end, the case disclosed herein is constructed of a co-molded material.

For cases designed for clamshell devices, such as cellular phones, the prior art teaches cases having two detachable pocket sections. Each pocket section fits over a section of the clamshell phone and are then connected by a snap, zipper, or velcro. Because of the nature of the case materials, if the pocket sections were not detachable, there would be no way to place the case on the phone, as leather and nylon do not stretch sufficiently to allow one pocket to be placed on the phone and then have the other pocket placed on the phone. By use of the co-molded material described herein, sufficient elasticity may be incorporated into the case to allow the case to be constructed as a single unit. In other words, the two pockets do not have to be separable. Further, the elasticity of the material allows the case to give and fit the contours of the phone in a superior fashions when compared to the prior art.

SUMMARY OF THE INVENTION

The invention disclosed herein is an improvement for cases typically used with cell phones and portable electronic devices. Some of the cases described include cut out areas or apertures or areas without material at corners of the device. The apertures allow for reduced thickness and bulk where the case would normally cover the corners of the device. This aperture or open area allows the cell phone case to be constructed without the need to notch or dart the case material to allow the material to fit the curve of the corner of the cell phone or other portable device.

However, the resulting apertures are not without their problems. The apertures leave the corners of the cell phone exposed and unprotected. If the cell phone or other portable electronic device is dropped, the exposed corner of the device may be subject to impact with the ground, possibly resulting in damage of breakage of the device. Thus, it is object of the invention to provide protection to the cell phone or electronic device, while still providing a construction that eliminates or reduces the issues associated with sewing or otherwise bonding materials to fit a curved surface.

The disclosure describes an improved portable electronics case and a method of constructing the same. The cell phone case is formed of a co-molded material produced by pouring a first liquid plastic into a mold, and then pouring a second liquid plastic into the mold, the second plastic having physical characteristics different from the first. Once set, the material is removed from the mold and sewn to form pockets for the electronic device.

If the case is to be used for a clamshell type cellular phone, two pockets are formed, the pockets sharing a common or continuous panel. Further, the disclosure describes a unitary case for clamshell phones, allowing for both donning and removal of the case onto the phone as a unit.

Further, the disclosure describes a case including a removable post or attachment point for a clip. The retainer used to hold the removable post, may be used to house other devices, such as a light, keychain, velcro, magnets, or other useful items.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective of a case for a clamshell phone, the case having a removable post.

FIG. 2 is a perspective view of a case for a clamshell phone, showing a clip.

3

FIG. 3 is a perspective view showing a clip and post interface.

FIG. 4 is a cutaway drawing showing removal of the post from the retainer.

FIG. 5 is a sectional view of FIG. 4.

FIG. 6 is a perspective view showing the donning of the case onto a clamshell phone.

FIG. 7 is a perspective view showing the insertion of the phone into the second pocket.

FIG. 8 is a perspective view showing the case on a clamshell phone.

FIG. 9 is a perspective view showing the case on a closed clamshell phone

FIG. 10 is a top view of a mold for a case panel having a first texture portion, piping, and two non-texture portions.

FIG. 10a is a cross sectional view of the mold.

FIG. 10b is a second cross sectional view of the mold.

FIG. 11 is a cross sectional view of the mold showing a first substance or layer in the non-textured area of the mold.

FIG. 12 is a cross-sectional view of the mold showing a second substance located in the textured area of the mold.

FIG. 13 is a cross-sectional of the mold showing third substance poured over the previous two substances.

FIG. 14 is a cross-sectional view of the mold, including areas of piping, and showing a first substance poured into the piping.

FIG. 15 is a cross-sectional view of the mold showing a second material layered over the piping in the first non-textured area of the mold.

FIG. 16 shows a third substance layered over the previous two substances and overlaying the entire panel area of the mold.

FIG. 17 is a cross-sectional view of the mold showing a first substance poured into the non-textured area of the mold showing a scrim located on top of the first substance.

FIG. 18 is a cross-sectional view of the mold showing a reinforcement member placed into the mold about the perimeter.

FIG. 19 is a cross sectional view of an empty mold.

FIG. 20 is a perspective view of an alternate embodiment of a base.

FIG. 21 is a perspective view of an alternate embodiment retainer and base with a rectangular aperture.

FIG. 22 shows a post including a lug with a non-circular portion.

FIG. 23 is a side view of a post and retainer in a secured relationship.

FIG. 24 is an alternate base without a post.

FIG. 25 is a perspective view of a bayonet mount post and retainer.

FIG. 26 is a bottom perspective view of a bayonet mount post and retainer.

FIG. 27 is a front view of a cell phone in a cell phone case including corner protection.

FIG. 28 is a side view of a cell phone in a cell phone case including corner protection.

FIG. 29 is a rear view of a cell phone in a cell phone case including corner protection.

FIG. 30 is a perspective view showing an exploded view of two panels prior to forming a pocket of a cell phone case.

FIG. 31 is a diagram showing a typical construction of a cell phone case showing panels of material assembled to form a pocket and a cell phone being inserted into the pocket.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Shown herein as the preferred embodiment is a case for a clamshell cellular phone. One skilled in the art will recognize

4

the construction, materials, and methods can be applied to other cases for portable electronic devices, and need not be limited to the clamshell design shown in the figures. With reference to the figures, the case 10 includes a first pocket 15 and a second pocket 20 for receiving a portion of the cell phone 11. The case 10 includes a backbone panel 25. The backbone panel 25 forms part of both the first pocket 15 and the second pocket 20. The first pocket 15 includes a face sheet 30, made of a clear material allowing a user to see the display 31 of the cell phone 1, when the cell phone 11 is inserted into the first pocket 15. The face sheet 30 is attached to the backbone panel 25 about part of its perimeter to form the first pocket 15. In an alternate embodiment, intermediate side panels 35 and 36 (as used on the second pocket 20) are used to attach the backbone panel 25 to the face sheet 30. The various components forming the first pocket 15 are attached to one another using heat welding, adhesive, stitching 21, or any other construction method to join two materials known in the art. One skilled in the art will recognize that the pockets of the case 10 can be formed of any number of panels, so as to suit the shape of the phone 11 or other portable device.

As shown in FIG. 3, the panels may include a stress relief notch 39 or notches in alternate embodiments. The stress relief notch is a small cut out located in the perimeter of the panel immediately adjacent to areas where panels are joined or otherwise connected or stitched together. The stress relief notches allow the panel to stretch without overly stressing or stretching the stitched area. One skilled in the art will recognize the stress relief notches are optional, and may take on many different shapes. As shown in FIG. 3, the stress relief notch 39 is located adjacent the area where the backbone panel 25 and an intermediate side panel 36 are joined. It is preferred that the stress relief notches are approximately 2 to 4 millimeters wide and 2 to 4 millimeters deep. It is preferred the stress relief notches have a generally curved shape, so as to prevent formation of a stress riser as might be the case if the contours of the stress relief notch were angular. For instance, if the stress relief notch were shaped such that it included a vertex, when stressed or stretched, a tear in the panel material could begin at the vertex of the notch.

The backbone panel 25 can include a window 48 to allow a user to see the outside display of the cell phone 11. The window 48 is formed of a clear material. The window 45 is joined to the backbone panel 25 by heat welding, adhesive, or stitching 21, or any other construction know in the art. With a judicious selection of materials, the window 35 may be co-molded into the backbone panel 25 during the manufacture of the backbone panel 25, as described herein for other structures.

The second pocket 20 is formed in a similar fashion, by attaching the backbone panel 25 to a front panel 37 about portions of its perimeter. As shown in the drawings, the second pocket 20 includes side panels 35 and 36. One skilled in the art will recognize that many different configurations, panels, and places to attach the pieces together may be used to produce the first pocket 15 and second pocket 20.

The first pocket 15 and second pocket 20 are to be joined by a continuous piece of material; that is the first 15 and second 20 pocket are not attached by velcro, snaps, buttons, zippers, or any other structure which allows easy detachment and reattachment from and to one another. With the single or continuous panel forming part of both pockets, a backbone panel 25 is formed linking the two pockets.

In use, the case 10 is placed onto the phone 11 by inserting part of the opened phone into one or the other of the first pocket 15 or the second pocket 20. Since the face sheet 30 is typically longer than the front panel 37, thereby creating a

5

first pocket **15** that is deeper than the pocket formed by the front panel **37**, when donning, it is preferable to insert the phone **11** into the first pocket **15** before inserting the phone into the second pocket **20**, as shown in FIG. **6**. The shorter length of the front panel **37** allows for easier insertion as the backbone panel **25** need not be stretched as far when compared to inserting the phone into the shorter pocket first. Unlike the prior art, which required the case to be separated into two pieces in order to be placed on the phone, the elasticity of the backbone panel **25** allows the case to be stretched far enough to allow both the first **15** and second **20** pockets to be placed on the cell phone **11** without the need to separate one pocket from the other. Thus, once the cover portion **40** of the cell phone **11** is inserted into the first pocket **15**, the user stretches the backbone panel **25** until the edge **46** of the front panel **37** clears the body portion **47** of the cell phone **11**, thereby allowing the body portion **47** to be inserted into the second pocket **20**, as shown in FIG. **7**. The user then releases the tension on the backbone panel **25**, allowing the center portion **45** to contract, and draw the second pocket **20** over the body portion **47** of the phone **11**, as shown in FIG. **8**.

Although the backbone panel **25** forms part of both the first **15** and second **20** pockets, and is one continuous piece, it need not be a uniform or homogenous piece. In other words, the backbone panel **25** may be formed of a plurality of pieces or materials attached to each other by stitching, heat welding, adhesive, or other permanent attachment. For instance, the center portion **45** can be formed of an elastic material, while the portions forming the pockets **15**, **20** can be of a less elastic material.

In the preferred embodiment, the backbone panel **25** is formed by co-molding. Other parts of the case may also be formed by this process. Co-molding allows the part or panel being manufactured to easily incorporate different properties, colors, textures, shapes or other characteristics, while allowing for efficient construction. To construct the backbone panel or other part, a mold **100** is constructed. As shown in FIG. **10**, the mold **100** is a negative mold, typically machined from a metal, such as brass. One skilled in the art will recognize the mold **100** may be created in other ways. The mold **100** may include a textured area **101** having features such as cross hashing to improve grip, piping **111**, or other physical treatment to produce and create different features upon the surface of the panel being manufactured. In some embodiments, the mold is deeper in some regions to create a thicker material in that region.

As shown in FIGS. **11-13**, the panel is created in layers. To make the panel, a first substance **120** is poured into the mold **100**. In some instances the first substance **120** is the only substance used, but may be poured multiple times to cover and retain other structures such as a scrim, window, or reinforcement between the layers created. The first substance **120** and any other substance poured thereafter, may be a material such as silicone, thermosets and thermoplastics, including PVC, EPE, or any other material used in the polymer co-molding art. The first substance **120** may be poured to cover the entire mold **100** or only certain regions as shown in FIG. **11**, depending upon the desired characteristics of the corresponding region of the panel.

For instance, the first substance **120** is placed in the mold **100** only in the area for piping **111**, as shown in FIG. **14**. In other embodiments, the first substance is placed only in the area for texture. One skilled in the art will recognize the variations are unlimited. The first substance **120** is poured to a depth to cover the piping **111**, or other desired area but does not extend into the other areas where the substance is not

6

desired. In this fashion, the first substance's **120** characteristics, such as color, will be applied only to the piping of the case or other article.

In the instance of the first substance **120** being EPE, the liquid EPE is placed in the desired area of the mold **100** at room temperature. The EPE is then spread out and forced into the desired areas, such as piping **111** or textured area **101**, where air voids are likely. The mold **100** containing the EPE is then heated, and then cooled to room temperature.

The second material **140** is then poured. The second material **140** may have different properties than the first material **120**. For instance, the second material **140** may be of a different color or texture. In some embodiments, the area of the mold **100** into which the second material **140** is poured may have a surface treatment or texture **101** to produce a surface texture on the finished product.

In a similar fashion, other pours may be made of either the same material, or different ones, until the panel having the desired characteristics is complete.

FIGS. **10** through **18** show sample configurations for panels manufactured using the co-molding process. As one skilled in the art will recognize, these are merely examples, other configurations are possible. FIG. **10** generally depicts a mold having a textured area **101**, which will impart a textured surface to the panel made in the mold. The textured area **101** is delineated from the non-textured area **103** by walls **104**. Walls **104** prevent the material poured into the textured area **101** from flowing into the non-textured area **103**, until the height of the walls is exceeded. In the preferred embodiment, a first layer of material occupy the textured area **101** up to the height of the walls **104**. As one skilled in the art will recognize, multiple layers could occupy the textured area **101**.

Shown in FIG. **11**, a first material **120** having a first characteristic is poured into the non-textured area **103** to form a first layer of material. Subsequent to the pour of the first material **120**, a second material **140** is poured into the textured area **101** to form a first layer of the second material **140**. The layers of material both first and second, are generally co-planar, although it is not necessary. Subsequently, a third material **123** is poured over the entire mold, thus overlaying the first material **120** and the second material **140** in such a fashion, a layered panel is produced, as previously discussed, each layer of material or each pour of material can have different characteristics. When layered as to described in a mold for a backbone panel **25** as shown in FIG. **10**, the result is a central portion of the panel having a first physical characteristic, such as texturing, and the remaining portions of the panel having no texturing. As previously discussed, variations are endless.

With reference to the mold shown in FIG. **11**, a particularly useful layout of material may be used to create the backbone panel for a clamshell phone case. For the first layer, a material having a first elastic characteristic is poured in the first region, such as textured area **101**. A second material having a second elastic characteristic is poured into a second region, such as non-textured area **103**. A third pour of the second material is then poured to cover both of the previous layers of material, thereby connecting them. One skilled in the art will recognize a third material, or the first material, can be used for the third pour. Additionally, the characteristic need not be elasticity, but may be selected from the group of color, texture, additive suspended in the material, heat resistance or melting point.

Once the desired materials are poured and cured, the co-molded panel is removed from the mold and sewn or otherwise attached to other panels to produce the case.

In other embodiments, the co-molding process allows other structures to be placed or integrated into the panel. For

instance, once the first substance **120** is poured, additional materials can be placed into the mold, to create a panel having areas with different characteristics. The materials may be the same substance, or include a second substance **140** for co-

molding, or may include other materials or structures, such as 5
scrims, reinforcements, or windows, judiciously placed within the mold to create areas having particular structural characteristics.

For instance, a scrim **130** or other woven or non-woven reinforcement may be placed in areas where there will be 10
stitching during the assembly of the case. Such scrims are placed where the panel will be stitched to lesson the likelihood of the stitching pulling through the case material. Similarly, a scrim can be placed in the area of the aperture for the clip post, thereby reinforcing that area. In other embodiments, the window **48** is placed in the mold prior to the second material pour, thereby eliminating the need to stitch the window **48** in place, as the window will be co-molded between the first material and the second material, and thereby retained. In another example shown in FIG. **18**, reinforcement 15
patches **132** are placed in areas of high wear, such as edges, prior to the first pour. In other embodiments, an elastic panel is placed to connect the two pocket portions, thereby forming a portion of the continuous or backbone panel **25**. These advantages can result in significant economies during manufacture which are not possible if the material is created as a sheet, and then cut to size to form the case. If such additional structures are to be included, it is preferable that the structures are placed in the mold **100** after at least one pour has taken place, and the structure is placed over at least part of the pour, so that the structure is retained between the first and later layers of materials, However, such placement depends on the structure. The reinforcement patches **132**, may be exposed on the exterior of the panel, and hence should be in the mold prior to the first pour.

In other embodiments, and as a direct result of co-molding process, portions of a panel can be thicker or thinner than other sections. For instance, areas where the finished product will include stitching can easily be made thicker to prevent pull through. Other areas, such as the textured area of the mold in FIG. **11**, or areas where the panel fits over an edge of the phone, may be thinner to provide less bulk. In other 20
embodiments, portions of the case that fit edges of the phone may be thicker to provide impact protection.

In additional to the layers shown in the figures, a final lining material such as rayon, may be applied either by spraying or laminating, onto the last poured layer. The lining material allows the cellular phone, or other portable device, to easily slide into and out of the case.

With reference to FIGS. **27-31**, a cell phone **11** is shown 25
inside a cell phone case **10**. One skilled in the art will recognize the cell phone case **10** as being formed, as shown in FIGS. **30** and **31**, of sheets of material **8** and **9** which are attached about portions of their perimeter to form a pocket **12** for the cell phone **11** or other electronic device, as shown in FIG. **30**. Such cell phone cases are known in the prior art, and also described in the previous paragraphs of this application. The case of the present invention could also be a clamshell case as shown in FIGS. **1-9**, and **27-29**, or a non-clamshell case.

As shown in FIGS. **26-28**, the cell phone case **10** includes open areas **17 a-d** at the corners of the cell phone case **10**. **17a** and **17b** are completely open, and do not offer protection to the corners of the cell phone **15**.

Areas **17c** and **17d** include strips of material **2a-d**, which 30
divide the open areas **17c** and **17d** and provide some material over the otherwise exposed corners of the cell phone **11**.

Defined another way, open areas **17a** and **d** include strips of material **2a-d**, thereby defining a plurality of apertures **5a-f**. One skilled in the art will recognize the number of apertures can be varied. For example, the open areas **17c** and **d** could include netting, or strips of material placed in different directions.

As shown in FIG. **29**, the strips of material **2c** and **d** are part of the first panel of material **8**. The strips of material **2a-d** need not be of the same material as the first panel **8**. The strips, or other structures placed at the corners of the case, thereby protecting the corners of the electronic device in the case, can be of a different material, preferably one that will protect the device in the case from impact. Similarly, the strips of material, or other structures forming the corner protectors need not 15
be part of the first panel **8**. The strips of material or corner protectors can be part of the second panel **9** or any other panel.

For example, a co-molding process, such as described previously herein, could be used to place protective structures, such as strips, molded corner protectors, netting, or other structures, at the corners of the case. These structures can be thicker than the sheets of material **8** and **9** forming the walls of the case **10**, to allow for more protection to the corners. For instance, with reference to FIG. **30**, the corner area **51**, including strips of material **2c** and **d**, can be of a thicker material than the sheet of material **8**. Similarly, corner area **51** can be of a thinner material to reduce bulk. The material comprising corner area **51** can be attached to the sheet of material **8** by any known means, such as sewing, heat welding, adhesive, or more preferably, co-molding. In other embodiments, a pre-formed corner structure can be co-molded to the sheet of material **8** during manufacturing.

Is an alternate embodiment, reinforcement members or other preformed structures, that is structures molded to the contours of the case, are placed within the open areas and secured to the material or panels of the cell phone case **10** to provide protection at the corners of the electronic device or cell phone **11**. Because the structures are molded or formed, they can be made of a specific thickness that is different than the panels forming the case **10**.

The case **10**, no matter how produced, can include a detachable clip **200**. With reference to FIGS. **1-5**, the detachable clip **200** is affixed to the case **10** by a post **210**. Indeed, the detachable clip **200** and post **210** can be incorporated into many different cases, not just the clamshell case **10** depicted in the Figures. This arrangement of clip and post is well known in the prior art. The post **210** includes a base **212** and an outwardly extending lug **214**. The detachable clip **200** attaches to the lug **214**, allowing the user to securely attach the case to his clothing.

The post **210** is removably attached to the case **10**. The case **10** includes an aperture **216** sized to allow the lug **214** to fit through yet is not large enough to allow the base **212** to pass. The post **210** is positioned so that the lug **214** extends outwardly away from the case **10**, and the base **212** remains in the case **10**, the base **212** being too large to fit through the aperture **216**. The base **212** is retained in position by a retainer **220**, the retainer **220** limiting movement and securing the base **212** when engaged. When disengaged, the retainer **220** allows the post **210** to be removed from the case **10**.

In the preferred embodiment, the base **212** is a generally thin, flat member, having a perimeter including two parallel straight portions **222** and two curved portions **230**. The retainer **220** is slightly thicker than the base **212**, and includes a recess **225** to receive the base **212**. The recess **225** may go entirely through the retainer **220** as an aperture. The perimeter of the recess **225** is generally concentric with the perimeter of the base **212**. The retainer **220** includes tabs **226** which extend 65

over the base 212, to keep the base 212 from moving in a direction perpendicular to the base 212. In the preferred embodiment, the tabs 226 are located to extend over the curved portions 230 of the base 212. The retainer 220 is attached to the inside of the case 10 so that it is located about the aperture 216. The retainer 220 is attached to the case by any means known in the art, including stitching, heat weld, and adhesive. The retainer 220 could also be co-molded into the case 10, or formed as part of the case.

In use, the post 210 is attached to the case 10 by inserting the lug 214 into the aperture 216 from the inside of the case. The retainer 220 is convexly flexed to allow the curved portion 230 of the base 212 to be inserted under a tab 226. Once positioned, the retainer 220 is unflexed and the opposite curved portion 223 is allowed to snap under the remaining tab 226, thereby securing the base 212 between the case 10 material and the tabs 226.

To remove the post, the retainer 220 is again convexly flexed to snap base 212 over the tab 226, allowing the base to be disengaged from the retainer 220 and the lug 214 to be pushed through the aperture 216, thereby removing the post 210 from the case 10. In such a fashion, the post 210 may be selectively attached to the case, or removed, as desired by the user.

One skilled in the art will recognize other structures could be used to connect a post to a retaining structure on the case. An example of such an embodiment includes a retainer 240 and base 250 that include mating structures that allow the base 250 to be separated and reconnected to the retainer 240.

In the embodiment shown in FIG. 20, the base 250 includes a plurality of shafts 260 and 261 extending from the base 250 on the same side of the base 250 as the lug 270. The shafts 260 and 261 are preferably positioned on either side of the lug 270 at a distance sufficient to allow of a mating structure on the retainer 240 to secure the shafts 260 and 261. In the embodiment shown in FIG. 20, the shafts include a recessed portion 262 and 263 for interacting with complimentary structure on the retainer 240, to allow the post 310 to be attached and unattached from the retainer 240.

The retainer 240 includes an aperture 280 sized to allow the lug 270 to pass through. As shown in FIGS. 20 and 21, the aperture 280 is round. The aperture 280 may be any shape so long as the lug 270 can pass through as shown in FIGS. 22 and 23. Although it is preferred that the aperture 280 take a perimeter shape similarly shaped and sized to the lug 270, such correspondence is not necessary. The outer perimeters of the base 250 and the retainer 240 are generally co-extensive, although either structure may be larger or smaller than the other. In instances where the base 250 perimeter extends beyond the perimeter of the retainer 240, the portion of the base 250 extending is raised so as to form a lip about portions of or about the entire perimeter of the retainer 240.

The base 250 can also include separation recesses 320 and 321 at its perimeter. The separation recesses are areas exposed to the perimeter that are of reduced thickness. When the base 250 and retainer 240 are mated, the separation recesses allow space between the two structures to allow a fingernail or other object to lever the two structures apart.

The retainer 240 includes a plurality of receivers 290, 291 for receiving and engaging the shafts 260 and 261. In the embodiment shown in FIGS. 20 and 21, the receivers 290 and 291 include members or tabs 294 a and b and 295 a and b to engage the recessed portions 263 and 262 of shafts 260 and 261 when the shafts 260 and 261 are inserted into the receivers 290 and 291. In the embodiment shown, the tabs 294 a and b and 295 a and b include a resilient portions 300 a-d attached to the retainer 240. The resilient portions 300 a-d flex to allow

arc portions 311 a-d to slide over the distal end of the shafts 260 and 261 and seat in the recesses 262 and 263. One skilled in the art will recognize that other types of arranged could be used to secure the posts 260 and 261 to the retainer 240.

In an alternate embodiment shown in FIG. 22, the aperture 280 in the retainer 240 is rectangular. Additionally, the lug 270 includes a portion 330, which is shaped to compliment and fit inside of aperture 280. Such engagement prevents or reduces relative movement between the retainer 240 and base 250 in a direction parallel to the major plane of the retainer 240, thus reducing forces applied to the receiver 291 and 290, which might cause undesired separation of the base 250 from the retainer 240. One skilled in the art will recognize other non-circular shapes will also accomplish the same stability and prevent rotation of the lug 270 in the aperture. FIG. 23 also shows a retainer 240 with a perimeter flange 299.

As shown in FIG. 24, an alternate base 400 includes a raised portion 410, but does not include a lug or post for attachment of a clip. Such a base 400 is used to occupy or otherwise obstruct the aperture 280 when the base with the lug is removed. Use of the alternate base 400 thus renders a case without the projecting lug or post, resulting in a generally smooth case. The portion of the base 400 visible through the aperture 280 can include indicia 420 such as advertising, logos, or other indications of sponsorship.

One skilled in the art will recognize that other types of constructions may be utilized in attaching the post to the case. One such constructive is a bayonet mount, as shown in FIGS. 25 and 26. The post 500 is attached to a mounting base 510.

The mounting base 510 includes an aperture having a plurality of notches 522 a-d about its perimeter. The notches 522 a-d are sized and spaced so as to accept projections 525 a-d position about the bade of the post 500. The bottom 530 mounting base 510 is attached to the outside surface of the case by stitching adhesive, rivets, or other means of mechanical attachment. When attached to the outside of the case, the use of the bayonet mount allows the post 500 to be inserted and removed from the outside of the case. Thus, the case does not need an aperture.

In use, the post 500 is inserted into aperture base end 540 first, such that projections 525 a-d are inserted into notches 522 a-d. Adjacent notches 525 a-d are flanges 535 a-d. The flanges are generally arcuate in shape and form part of the aperture 520 perimeter, thus restraining the post 500 from side to side movement. The flanges 535 a-d are of a thickness less than the thickness of the base 510, so as to accommodate the projections 525 a-d when the post 500. The base 510 also includes stops 545 a-b on the flanges 535 a-b so that rotation of the post is stopped, preventing over rotation of the post 500.

The embodiments disclosed herein are illustrative of the invention and are not meant to limit the scope of the invention.

The invention claimed is:

1. A case for portable device, the case being formed of panels of material attached to form a pocket for receiving the device, the case including:

a first panel [of] comprising a first polymer material attached to a second panel [of] comprising a second polymer material to form a pocket for receiving the portable device, the first material being a different material from the second material, the case including a plurality of apertures at a corner of the device when the device is placed in the case,

wherein the plurality of apertures are defined by strips of material extending across an open corner of the case, the strips of material comprising one or more of the first material and the second material.

11

2. The case of claim 1, wherein the strips of material are two in number.

3. The case of claim 1, wherein the strips of material defining the apertures extend from first panel and are attached to the second panel.

4. A case for a portable device, the case including:
a plurality of panels of a *polymer* material, the panels assembled to form a pocket for receiving the portable device, the pocket including a second *polymer* material incorporated into the pocket, the second material positioned to protect corners of the portable device when the device is in the case,

wherein the second material is thicker than the material forming the panels.

5. The case of claim 4, wherein the second material is co-molded to at least one of the plurality of panels.

6. A case for a portable device, the case including, a first panel [of] comprising a first *polymer* material shaped to have strips of material extending therefrom, and a second panel [of] comprising a second *polymer* material,

the first panel attached to the second panel to form a pocket having an opening for receipt of the portable device, the strips of material attached to the second panel to form part of the pocket, *the strips of material comprising one or more of the first material and the second material*, wherein the strips of material define a plurality of apertures.

7. The case of claim 6, wherein the strips of material are positioned near corners of the device when the device is in the case.

8. The case of claim 6, wherein the strips of material are co-molded to the first panel.

9. The case of claim 8, wherein the strips of material are thicker than the rest of the first panel.

10. The case of claim 6, wherein the strips of material are thicker than the rest of the first panel.

11. The case of claim 9, wherein the strips of material include an aperture.

12. *The case of claim 4, wherein the second material is thicker at the corners of the case than the panels forming the pocket.*

13. *The case of claim 4, wherein the material forming the panels is molded and allowed to cool before the second material is molded to at least one of the plurality of panels.*

14. *The case of claim 5, wherein co-molding the second material to the at least one of the plurality of panels comprises molding the material forming the panels, allowing the material forming the panels to cool, and molding the second material to the at least one of the plurality of panels.*

15. *A case for a portable device, the case comprising: a pocket configured for receiving the portable device, the pocket comprising a first outer polymer material co-molded with a second inner polymer material, the first outer material being a different material from the second inner material;*

12

wherein the first outer material has open areas at corners of the pocket; and

wherein the second inner material is positioned at the corners of the pocket within the open areas in the first outer material, and protect corners of the portable device when the portable device is in the case.

16. *The case of claim 15, wherein the first outer material is more elastic than the second inner material.*

17. *The case of claim 15, wherein the first outer material is a different color than the second inner material.*

18. *The case of claim 15, wherein the first outer material is a different texture than the second inner material.*

19. *The case of claim 15, wherein the second inner material is thicker than the first outer material.*

20. *The case of claim 15, wherein the pocket comprises a plurality of panels formed from the first outer material.*

21. *The case of claim 15, wherein elasticity of the first outer material co-molded with the second inner material allows the case to give and fit the contours of the portable device.*

22. *The case of claim 15, further comprising a second pocket for further receiving the portable device.*

23. *The case of claim 15, wherein the portable device is a nonclamshell portable device.*

24. *A case for a portable device, the case comprising: a pocket configured for receiving the portable device, the pocket comprising a first outer polymer material co-molded with a second inner polymer material; wherein the first outer material has open areas at corners of the pocket;*

wherein the second inner material is positioned at the corners of the pocket within the open areas in the first outer material, and protect corners of the portable device when the portable device is in the case; and wherein the first outer material or the second inner material comprise one or more selected from the group consisting of silicone, a thermoset, a thermoplastic, PVC, EPE, and a polymer.

25. *The case of claim 15, wherein the first outer material is allowed to cool before molding the second inner material to the first outer material.*

26. *A case for a portable device, the case comprising: a first polymer material forming part of a pocket for receiving the portable device, the pocket having open areas at corners thereof through the first material; and*

a second polymer material co-molded to the first material and positioned within the open areas to protect corners of the portable device when the device is in the case, the first material being a different material from the second material.

27. *The case of claim 26, wherein the first material forms a plurality of panels to form the pocket.*

28. *The case of claim 26, wherein the first material is allowed to cool before molding the second material to the first material.*

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