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(54) Title: FOUR BLADED SPECULUM

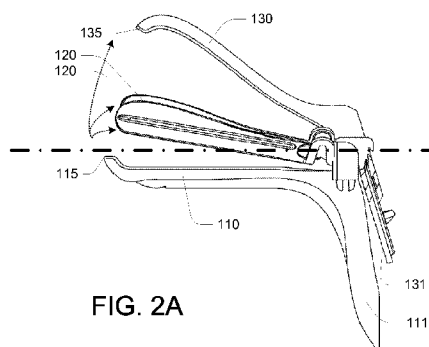


FIG. 2A

(57) Abstract: A polymeric, disposable, four bladed speculum device has a lower blade with an integral handle, a pair of oppos-
ing side blades and an upper blade pivotally coupled to the side blades for enabling upward pivoting relative to the lower blade.
Relative rotation of a yoke toward the integral handle moves the upper and lower blades toward an operative position.

WO 2011/003150 A1

FOUR BLADED SPECULUM

FIELD OF THE INVENTION

- 5 The invention relates to specula and more particularly to a four bladed speculum.

BACKGROUND OF THE INVENTION

Large numbers of women are hesitant to undergo pap smears and vaginal examinations. Some of the aforementioned hesitation is attributable to patient discomfort and the dislike of metal instruments often used in vaginal examinations.

- 10 During a routine gynaecological exam, the practitioner (or physician) visually inspects the cervix and vaginal walls using a speculum. A standard duckbill speculum has two blades that open the vagina vertically. Conventional specula are often uncomfortable according to a wide cross-section of women and technically sometimes unsuitable for the examination of overweight women. Gynaecological practitioners cannot easily
- 15 view such women's cervix during pelvic examination using the traditional duckbill specula because of the excess vaginal skin and tissue. The vaginal side walls can collapse inward because of the duckbill's lack of wall support. This obstruction restricts an examiner's access the cervix for routine cell sampling or other procedures, potentially leading to inadequate gynaecological care for these women.

20 OBJECT OF THE INVENTION

It is an object of the present invention to overcome or ameliorate at least one of the disadvantages of the prior art, or to provide a useful alternative.

It is another object of the invention in its preferred form to provide a tool giving medical practitioners a relatively improved view of the cervix.

SUMMARY OF THE INVENTION

According to an aspect of the invention there is provided a four bladed speculum device comprising:

- a first blade having an integral handle;
- 5 a second blade having a yoke for enabling upward pivoting of the second blade relative to the first blade;
- a pair of pivoting side blades.

According to an aspect of the invention there is provided a four bladed speculum device comprising:

- 10 a first blade having an integral handle;
- a second blade pivotally connected to the handle and having a yoke for enabling upward pivoting of the second blade relative to the first blade;
- a pair of pivoting side blades carried by one of the first or second blades, wherein the side blades are adapted such that the distal ends of the side
- 15 blades pivot relative to a skewed axis of rotation toward an operative position.

According to an aspect of the invention there is provided a polymeric, disposable, four bladed speculum device comprising:

- a lower blade having integral handle;
- a pair of opposing side blades each removably engagable with the lower blade;
- 20 an upper blade pivotally coupled to the side blades for enabling upward pivoting relative to the lower blade;
- the side blades being engagable with the lower blade by a coupling;
- the upper blade having an integral actuating yoke at a proximal end, which when the device is assembled, is operatively coupled to the lower blade such
- 25 that relative rotation of the yoke toward the integral handle moves the upper and lower blades toward an operative position.

Preferably, the pivoting of the side blades toward an operative position moves the distal ends of the side blades along an upward and outward trajectory. More preferably, each side blade has an integral resiliently biased hinge for biasing the

device toward a closed position. The hinge preferably has an axis of hinged rotation skewed from the horizontal and vertical.

5 Preferably one of the first or second blades has a camming lobe for camming engagement with a camming surface on the side blades. The camming engagement of the side blade deforms the hinge.

Side blades are preferably resilient and self biasing. More preferably, the side blades are polymeric, and their shape memory causes a bias toward their resting shape. The side blades preferably each comprise an interior surface that supports an extension flap that adds to the surface area of the side blade.

10 One of the first or second blades is preferably a lower blade that comprises a longitudinal channel for retaining a suction tube.

One of the first or second blades preferably comprises a hook for retaining a suction tube. The hook is preferably adapted to releasably restrain a tube having one or more holes along its length, for substantially locating an end of the tube. More preferably,
15 the hook is oriented distally to reduce the risk that the tube is dislodged during use.

Preferably, the side blades carry the second blade and are releasably engageable with the first blade. More preferably, the side blades and the second blade are releasable on occasions when only the lower blade is required for a medical examination.

20 Preferably, the first and second blades comprise an elongated central portion that is substantially "C" shaped in cross section, a distal end of each first and second blade terminates in a cupped tip, a gap being present between the tips, even when they are in a closed position.

Preferably the materials used in producing the four bladed speculum device include polymers and resins. More preferably the four bladed speculum device is disposable.

25 **BRIEF DESCRIPTION OF THE DRAWINGS**

A preferred embodiment of the invention will now be described, by way of example only, with reference to the accompanying drawings in which:

- FIG. 1A is a side view of a speculum made in accordance with the teachings of the present invention, shown in the closed position;
- FIG. 1B is a top view of the device depicted in FIG. 1A;
- FIG. 1C is a front view of the device depicted in FIG. 1A;
- 5 FIG. 1D is a rear view of the device depicted in FIG. 1A;
- FIG. 2A is a side view of the device depicted in FIG. 1A, shown in an operative open position;
- FIG. 2B is a top view of the device depicted in FIG. 2A;
- FIG. 2C is a front view of the device depicted in FIG. 2A;
- 10 FIG. 2D is a rear view of the device depicted in FIG. 2A;
- FIG. 3A is a side view of a grip blade;
- FIG. 3B is a top view of the grip blade depicted in FIG. 3A;
- FIG. 3C is a front view of the grip blade depicted in FIG. 3A;
- FIG. 3D is a rear view of the grip blade depicted in FIG. 3A;
- 15 FIG. 3E is an enlarged sectional view of the grip blade taken along line A-A of FIG3B;
- FIG. 3F is an enlarged sectional view of the grip blade taken along line A-A of FIG3B, shown restraining a first tube;
- FIG. 4A is a side view of a top blade;
- 20 FIG. 4B is a top view of the top blade depicted in FIG. 4A;
- FIG. 4C is a front view of the top blade depicted in FIG. 4A;
- FIG. 4D is a rear view of the top blade depicted in FIG. 4A;
- FIG. 4E is a sectional view of the top blade taken along line B-B of FIG4B;
- FIG. 5A is a side view of a wing blade;
- 25 FIG. 5B is a top view of the wing blade depicted in FIG. 5A;
- FIG. 5C is a front view of the wing blade depicted in FIG. 5A;
- FIG. 5D is a rear view of the wing blade depicted in FIG. 5A;
- FIG. 6A is an enlarged side view of a lock element;
- FIG. 6B is an enlarged rear view of the lock element depicted in FIG. 6A;
- 30 FIG. 7A is an enlarged front view of the assembled blades, shown in a closed position; and
- FIG. 7B is an enlarged front view of the assembled blades, shown in an operative position.

BEST MODE AND OTHER EMBODIMENTS OF THE INVENTION

Throughout this specification the terms “upper” and “lower”, “horizontal” and “vertical” etc. are used with reference to the orientation of the device as shown in Figure 1, that is, with the handle pointing down. It will be understood that in practice, the orientation of the instrument may vary. The term “distal” refers to a direction away from the practitioner and toward the patient when the device is in use.

Referring to the FIG 1A, an embodiment of an assembled four bladed speculum 100 comprises a lower blade 110 having integral handle 111, a pair of opposing side blades 120 each respectively removably engagable with the lower blade 110, and an upper blade 130 pivotally coupled to the side blades for enabling upward rotation or pivoting relative to the lower blade. In this embodiment, each of the pair of side blades 120 are removably engagable with the lower blade 110 by a coupling assembly 140. The coupling assembly, comprising two resiliently deformable catch elements 141 on each of the pair of side blades 120 (as best shown in FIG. 5A), and a respective pair of receiving bands 142 on the lower blade 110 (as best shown in FIG. 3B).

To assemble this embodiment, the pair of opposing side blades 120 are rotatably engaged on either side of the upper blade 130, by a pin (or the like) 150 on the upper blade (as best shown in FIG. 4B) into a recess 151 formed on each side blade (as best shown in FIG. 5A). This assembly, comprising the upper blade and pair of side blades, is releasably coupled to the lower blade using the coupling assembly 140. The catch elements 141 are deflected inwardly as they are pressed into a respective receiving band 142. Once the catch elements 141 are fully inserted into the respective band, the resilient bias of the catch element locks the barb 143 against the receiving band.

As the assembly, comprising the upper blade and pair of side blades, is releasably coupled to the lower blade, it may be more easily released on occasion when only the lower blade is required for a medical examination.

The upper blade 130 also has an integral actuating yoke 131 at its proximal end, which when the device is assembled, is operatively coupled to the lower blade such

that relative rotation of the yoke 131 toward the integral handle 111 moves the upper and lower blades toward an operative position, as best shown in FIGs 2A, 2B, 2C, and 2D. The device is preferably biased toward a closed position.

5 A “U” shaped locking piece 160 is slidably mounted to the yoke 131. In use pointed distal ends of the locking piece can reciprocate toward and away from detents or teeth 161 that are formed onto lateral portions of each side blade. When the distal ends of the locking piece engage the detents or teeth 161, the device is locked in a selected operative position, against a bias toward a closed position. As best shown in FIG 5A, the locking teeth 161 are formed around the perimeter of side blades
10 proximal to the catch elements 141. It will be appreciated that, for an assembled device as shown in FIG 1A, the proximal ends of the side blades are substantially rigidly connected to the lower blade.

The upper blade 130 includes a camming lobe 170 for camming engagement with a camming surface 171 on the side blades 120. Upon relative rotation of the yoke 131
15 toward the integral handle 111, the camming lobe engages the camming surface to radially move the blades from the closed position toward an operative position, as best shown in FIGs 2A, 2B, 2C, and 2D. Radial movement is enabled by an integral resiliently biased hinge 121 on each side blade. It will be appreciated that the resilient bias of the hinge 121 biases the device toward a closed position.

20 It will be appreciated that the cam and cam surface arrangement deforms the side blades 120 in the area primarily around the hinge 121. The portion of the side blades proximal from the hinge contact engages the lower blade while the portion distal to the hinge deflects outward. In this embodiment the side blades are polymeric, and therefore the shape memory of the side blades causes them to return to their resting
25 shape as the yoke returns to its initial position. Thus, the side blades can be said to be self-biasing.

An alternate embodiment of a side blade can comprise a metal “U” shaped member that extends proximal to the hinge. The insert moulded metal can provides bias or restorative force to the motion of the side blade as it returns to its resting position after
30 use.

Referring initially to FIG. 1C, the hinge 121 is oriented such that the side blade pivots simultaneously upward and outward toward an operative position, as indicated in FIG. 2C. It will be appreciated that the amount of upward movement of the side blades 120, relative to the rotational movement of the upper blade 130, is determined by the profile of the cam lobe 170 and camming surface 171. It will be further appreciated that during use, upward radial moment of the side blade can provide additional support to the vaginal side walls against the force of gravity.

FIGS 3A, 3B, 3C, 3D, 3E and 3F, show the lower blade 110 having an integral handle 111 at the proximal end and receiving band 142 on each side. The lower blade comprises an elongated central portion 300 that is roughly "C" shaped in cross section. The lower blade has central longitudinal channel 310 that is adapted to receive a first tube such as a suction tube for the evacuation of liquid such as antiseptic solutions and blood. The first tube can be fastened at one end with a hook 320. Referring to FIG 3F, the hook 320 is adapted to releasably restrain a tube 350 having one or more holes 351 along its length. As shown, the hook is oriented distally to reduce the risk that the tube is dislodged during use. It will be appreciated that, when a plurality of holes is provided along the length of the tube, the end of the tube can be substantially located by selecting an appropriate hole. The tube can be located along the channel 310 and restrained in a recess 320 located in the handle 111.

FIGS 4A, 4B, 4C, 4D, and 4E show the upper blade 130 comprising an elongated central portion 400 that is roughly "C" shaped in cross section. The upper blade 130 comprises a hook 410 for fastening an end portion of a second tube. Referring to FIG. 3E, the hook 410 is adapted to releasably restrain a tube 450 having one or more holes 451 along its length. As shown, the hook is oriented distally to reduce the risk that the second tube is dislodged during use. It will be appreciated that, when a plurality of holes is provided along the length of the tube, the end of the tube can be substantially located by selecting an appropriate hole. The second tube can be further restrained in a recess 420 located in the proximal end of the upper blade.

FIGS 5A, 5B, 5C, and 5D show a side blade 120. As previously discussed, the side blades have:

-8-

- two resiliently deformable catch elements 141;
 - a recess 151, for receiving a pin 150 on the upper blade (not shown);
 - detents or teeth 161, for engaging a pointed distal end of a locking piece 160 (not shown); and
- 5 ➤ a camming surface 171, for camming engagement with a camming lobe 170 (not shown).

The side blade 120 further has an exterior longitudinal channel 510 for reducing friction during use. The profile of the side blade 120 includes an optional auxiliary surface or extension flap ridged portion 520 that, when in the closed position, can
10 reside under the upper blade, and that when in the operative open position, can expose a greater surface area for providing additional support to the vaginal side walls against the force of gravity, thereby providing more effective retraction through better contact with the vaginal wall.

A stiffening section may be added to any one or more of the blades to reduce flexing
15 of blade from external muscular force.

FIGs 6A and 6B show the locking piece 160. The locking piece has guide rails 610 for retaining and sliding engagement with the yoke 131 (not shown). The slidable engagement. This arrangement allows the pointed distal ends 620 of the locking piece to reciprocate toward and away from the detents or teeth 161 (not shown) that are
20 formed onto lateral portions of the side blades 120. Reciprocating movement of the locking piece 160 toward and away from the detents or teeth 161, respectively bring them into and out of locking engagement. Locking engagement holds the upper blade in an open operative position, which through the camming engagement between the upper blade and each side blades also hold the side blades in an open operative
25 position. An abutment flange 630 is operatively associated with the locking piece 160 to restrain sliding disengagement with the yoke 131 (not shown). A grip element 640 is also associated with the locking piece 160 to enable thumb operation of the locking assembly, thereby enabling one handed operation.

Referring to FIGs 7A and 7B, it will be appreciated that the side blades 120 move in
30 an upward and outward trajectory. In this embodiment, this is achieved by the

resiliently biased hinge 121 on each side blade having an axis of hinged rotation 710 offset from the vertical 720 (during use). The camming engagement, discussed above, deflects the side blades, such that distal ends of the side blades move along an upward and outward trajectory 711 that is substantially orthogonal to the axis of hinged rotation 710. The axis 710 is neither vertical, nor horizontal and is thus said to be skewed. It will be appreciated that other upward radial trajectories are possible by use of an alternative hinge arrangement and/or an alternative camming arrangement.

The distal end of both of the lower and upper blades each terminates in a cupped tip, 115 and 135 respectively. A gap can be present between the tips of the upper and lower blades, even when they are in the closed position, as best shown in FIG. 1C. The peripheral edge of the tips 115 and 135 lies generally in a horizontal plane when the device 100 is upright and forms a rounded or semi-circular perimeter. With particular reference to FIG. 1A, the lateral edges of the lower and upper blades (116 and 136 respectively), particularly in the area of their respective central portions, are recessed with respect to the peripheral edge of the tip. It will be appreciated that, these recesses cooperate to create space or gap for receiving the side blades.

It will be appreciated that a four bladed speculum can be constructed from a range of suitable materials. Preferably the side blades are polymeric, and therefore the shape memory of the side blades causes them to return to their resting shape as the yoke returns to its initial position. The selected material can provide a relative improved patient comfort, compared to a traditional speculum constructed of stainless steel.

In an embodiment, materials used in producing the four bladed speculum device can include polymers or resins. Such materials enable the moulding and/or construction of integrally formed features. The cost of the materials uses can be much lower than steel and therefore enable the device to be considered disposable after a single use.

It will be further appreciated that an embodiment of a four bladed speculum provides a tool capable of giving medical practitioners a relatively improved view of the cervix

It will be further appreciated that, an alternative embodiment (not shown) can comprise a lower blade having an integral handle, an upper blade that is pivotally connected to the lower blade, and a pair of opposing side blades that are retained by

the lower blade. The upper blade can also comprise an integral actuating yoke and a separate and slidable “U” shaped locking piece. In an embodiment, the upper blade can also comprise an integral actuating yoke and a separate and slidable “U” shaped locking piece. Australian Patent Application 2008202305, which is herein

5 incorporated by reference, discloses an embodiment of a four bladed speculum to which an aspect of the present invention can be incorporated.

While the present invention has been described with reference to particular details of construction, these should be understood as having been provided by way of example and not as limitations to the scope or spirit of the invention.

10 To assist the reader, the following legend is provided.

Number	Brief description of item
100	Four bladed speculum
110	Lower blade
111	Integrated handle
115	cupped tip of lower blade
116	lateral edges of lower blade
120	Side Blade
121	Hinge
130	Upper Blade
131	Yoke
135	Cupped tip of upper blade
136	Lateral edges of upper blade
140	Coupling assembly
141	Deformable catch elements
142	Receiving bands
150	Pin
160	Locking piece
161	Locking teeth
170	Camming lobe
171	Camming surface

300	Elongated central portion of lower blade
310	Central longitudinal channel of lower blade
320	Hook
350	Tube
351	Hole in tube
400	Elongated central portion of upper blade
410	Hook
450	Tube
451	Hole in tube
510	Exterior longitudinal channel of side blade
520	Extension flap ridged portion of side blade
610	Guide rails of locking piece
620	Pointed distal ends of locking piece
630	Abutment flange of locking piece
640	Grip element of locking piece
710	Skewed axis of hinged rotation
711	Upwardly radial trajectory
720	Vertical orientation

Although the invention has been described with reference to specific examples, it will be appreciated by those skilled in the art that the invention may be embodied in many other forms.

Reference throughout this specification to “one embodiment” or “an embodiment” means that a particular feature, structure or characteristic described in connection with the embodiment is included in at least one embodiment of the present invention. Thus, appearances of the phrases “in one embodiment” or “in an embodiment” in various places throughout this specification are not necessarily all referring to the

same embodiment, but may. Furthermore, the particular features, structures or characteristics may be combined in any suitable manner, as would be apparent to one of ordinary skill in the art from this disclosure, in one or more embodiments.

In the claims below and the description herein, any one of the terms comprising,
5 comprised of or which comprises is an open term that means including at least the elements/features that follow, but not excluding others. Thus, the term comprising, when used in the claims, should not be interpreted as being limitative to the means or elements or steps listed thereafter. For example, the scope of the expression a device comprising A and B should not be limited to devices consisting only of elements A
10 and B. Any one of the terms including or which includes or that includes as used herein is also an open term that also means including at least the elements/features that follow the term, but not excluding others. Thus, including is synonymous with and means comprising.

Similarly, it is to be noticed that the term coupled, when used in the claims, should not
15 be interpreted as being limitative to direct connections only. The terms “coupled” and “connected”, along with their derivatives, may be used. It should be understood that these terms are not intended as synonyms for each other. Thus, the scope of the expression a device A coupled to a device B should not be limited to devices or systems wherein an output of device A is directly connected to an input of device B.
20 It means that there exists a path between an output of A and an input of B which may be a path including other devices or means. “Coupled” may mean that two or more elements are either in direct physical, or that two or more elements are not in direct contact with each other but yet still co-operate or interact with each other.

As used herein, unless otherwise specified the use of the ordinal adjectives “first”,
25 “second”, “third”, etc., to describe a common object, merely indicate that different instances of like objects are being referred to, and are not intended to imply that the objects so described must be in a given sequence, either temporally, spatially, in ranking, or in any other manner.

As used herein, unless otherwise specified the use of terms “horizontal”, “vertical”,
30 “left”, “right”, “up” and “down”, as well as adjectival and adverbial derivatives

thereof (e.g., “horizontally”, “rightwardly”, “upwardly”, etc.), simply refer to the orientation of the illustrated structure as the particular drawing figure faces the reader, or with reference to the orientation of the structure during nominal use, as appropriate. Similarly, the terms “inwardly” and “outwardly” generally refer to the orientation of a surface relative to its axis of elongation, or axis of rotation, as appropriate.

Similarly it should be appreciated that in the above description of exemplary embodiments of the invention, various features of the invention are sometimes grouped together in a single embodiment, figure, or description thereof for the purpose of streamlining the disclosure and aiding in the understanding of one or more of the various inventive aspects. This method of disclosure, however, is not to be interpreted as reflecting an intention that the claimed invention requires more features than are expressly recited in each claim. Rather, as the following claims reflect, inventive aspects lie in less than all features of a single foregoing disclosed embodiment. Thus, the claims following the Detailed Description are hereby expressly incorporated into this Detailed Description, with each claim standing on its own as a separate embodiment of this invention.

Furthermore, while some embodiments described herein include some but not other features included in other embodiments, combinations of features of different embodiments are meant to be within the scope of the invention, and form different embodiments, as would be understood by those in the art. For example, in the following claims, any of the claimed embodiments can be used in any combination.

In the description provided herein, numerous specific details are set forth. However, it is understood that embodiments of the invention may be practiced without these specific details. In other instances, well-known methods, structures and techniques have not been shown in detail in order not to obscure an understanding of this description.

Thus, while there has been described what are believed to be the preferred embodiments of the invention, those skilled in the art will recognize that other and further modifications may be made thereto without departing from the spirit of the invention, and it is intended to claim all such changes and modifications as fall within

the scope of the invention. For example, any formulas given above are merely representative of procedures that may be used. Functionality may be added or deleted from the block diagrams and operations may be interchanged among functional blocks. Steps may be added or deleted to methods described within the scope of the present invention.

It will be appreciated that an embodiment of the invention can consist essentially of features disclosed herein. Alternatively, an embodiment of the invention can consist of features disclosed herein. The invention illustratively disclosed herein suitably may be practiced in the absence of any element which is not specifically disclosed herein.

What is claimed is:

1. A polymeric, disposable, four bladed speculum device comprising:
 - a lower blade having integral handle;
 - a pair of opposing side blades each removably engagable with the lower blade;
 - 5 an upper blade pivotally coupled to the side blades for enabling upward pivoting relative to the lower blade;
 - the side blades being engagable with the lower blade by a coupling;
 - the upper blade having an integral actuating yoke at a proximal end, which when the device is assembled, is operatively coupled to the lower blade such
 - 10 that relative rotation of the yoke toward the integral handle moves the upper and lower blades toward an operative position.
2. The device of claim 1, wherein:
 - an "U" shaped locking piece is slidably mounted to the yoke.
3. The device of claim 2, wherein:
 - 15 one or more teeth are formed onto lateral portions of each side blade; and
 - a locking piece having distal ends that reciprocate toward and away from the teeth so that when the distal ends engage the teeth, the device is locked in a selected operative position, against a bias toward a closed position.
4. The device of claim 3, wherein:
 - 20 the teeth are formed around a perimeter of the side blades proximal to a catch element.
5. The device of claim 1, wherein:
 - the upper blade includes a camming lobe for camming engagement with a camming surface on the side blades.
- 25 6. The device of claim 5, wherein:
 - the camming lobe engages the camming surface to radially move the side blades from a closed position toward an operative position.

7. The device of claim 6, wherein:
a radial movement is enabled by an integral resiliently biased hinge on each side blade that biases the device toward a closed position.
8. The device of claim 6, wherein:
5 the camming lobe and camming surface act to deform the side blades in the area around a hinge;
a portion of each side blade engages the lower blade while a portion of each side blade distal to the hinge deflects outward.
9. The device of claim 1, wherein:
10 a shape memory of the side blades causes them to return to their resting shape as the yoke returns to its initial position.
10. The device of claim 6, wherein:
a metal "U" shaped member extends proximal to hinge of a side blade and provides bias or restorative force to the motion of the side blade as it returns to
15 its resting position after use.
11. The device of claim 1, wherein:
each side blade has a hinge that is oriented such that the side blade pivots simultaneously upward and outward toward an operative position.
12. The device of claim 1, wherein:
20 each side blade further comprises a coupling comprising two resiliently deformable catch elements that engage a receiving band on an adjacent lower blade.
13. The device of claim 12, wherein:
the side blades are removably engagable with the lower blade.
- 25 14. The device of claim 1, wherein:
the lower blade has central longitudinal channel that is adapted to receive a first tube.

15. The device of claim 14, wherein:

the first tube can be fastened to the lower blade by a hook formed on the lower blade.

16. The device of claim 1, wherein:

5 the upper blade comprises an elongated central portion that is generally "C" shaped in cross section and a hook for fastening an end portion of a second tube.

17. The device of claim 1, wherein:

10 a side blade has an exterior longitudinal channel for reducing friction during use.

18. The device of claim 1, wherein:

a profile of each side blade includes an extension flap ridged portion that, when in a closed position, can reside under the upper blade.

19. The device of claim 1, wherein:

15 a distal end of each of the lower and upper blades terminates in a cupped tip, a gap being present between the tips of the upper and lower blades, even when they are in a closed position.

20. The device of claim 1, wherein:

20 the lower and upper blades each have a recess that creates a gap for receiving the side blades.

1/11

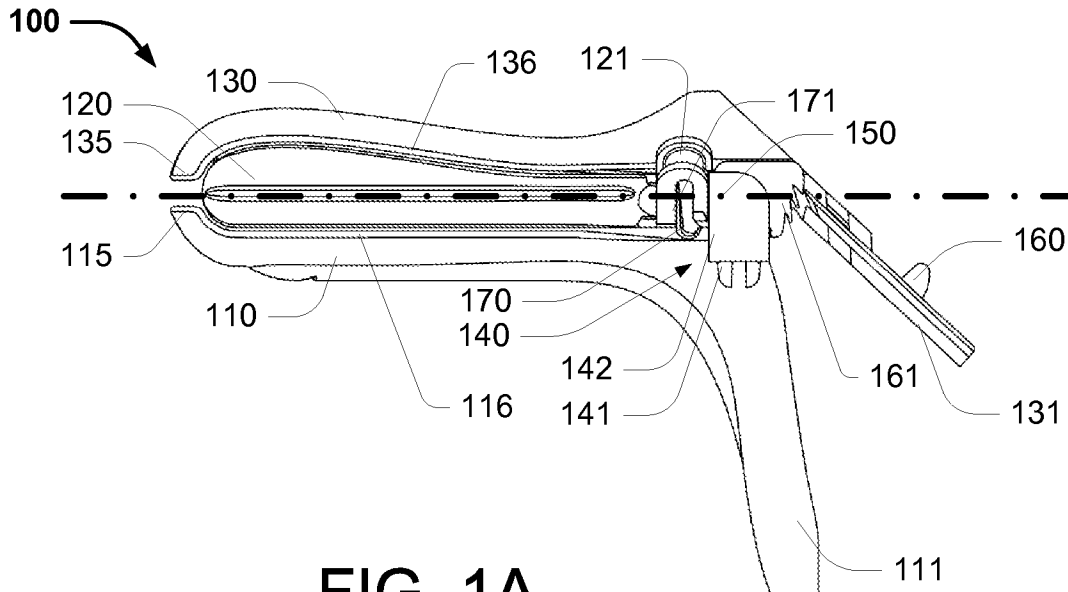


FIG. 1A

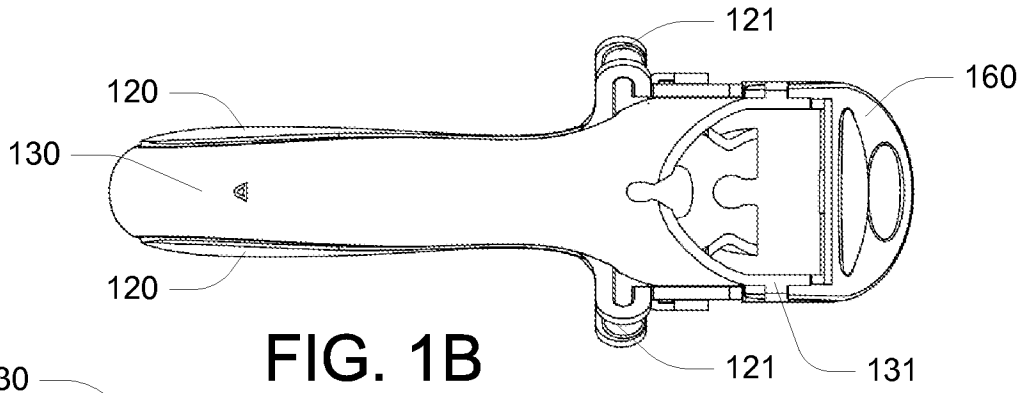


FIG. 1B

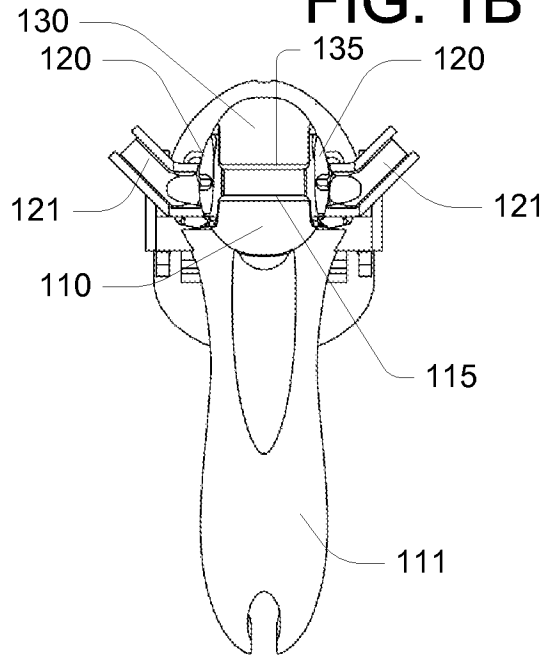


FIG. 1C

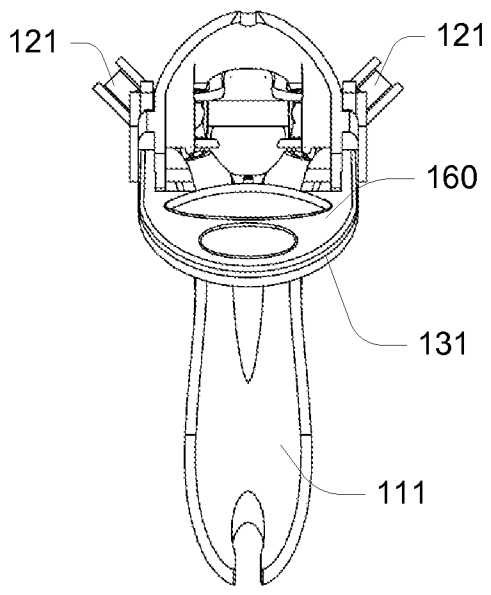


FIG. 1D

2/11

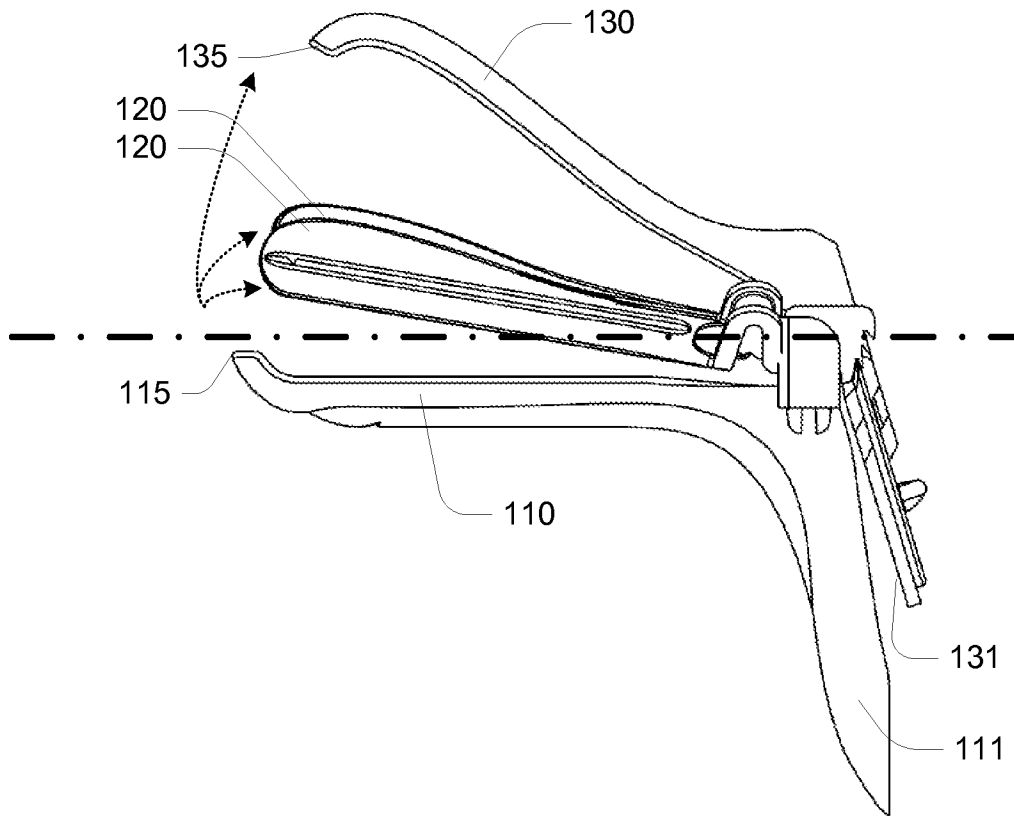


FIG. 2A

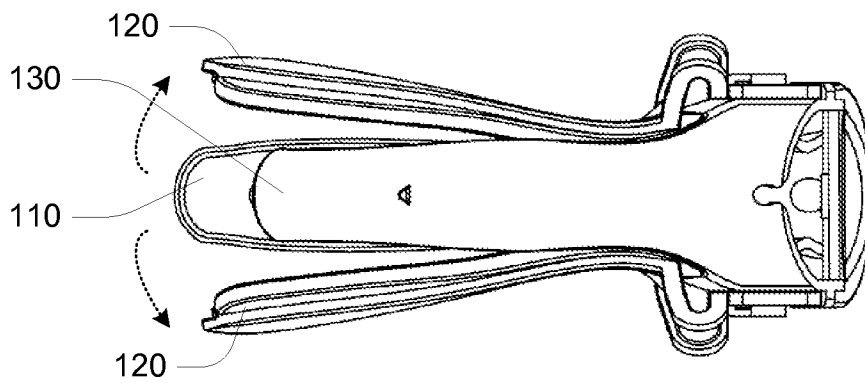


FIG. 2B

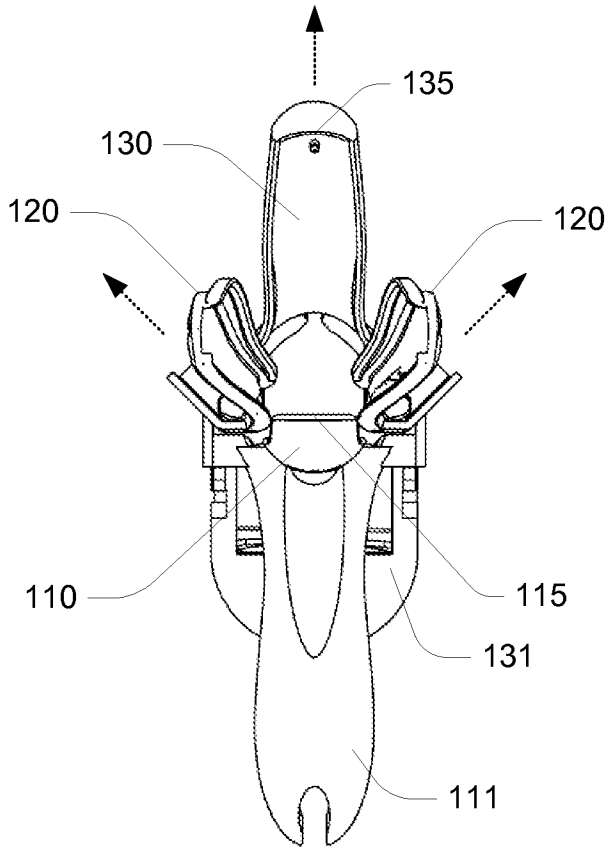


FIG. 2C

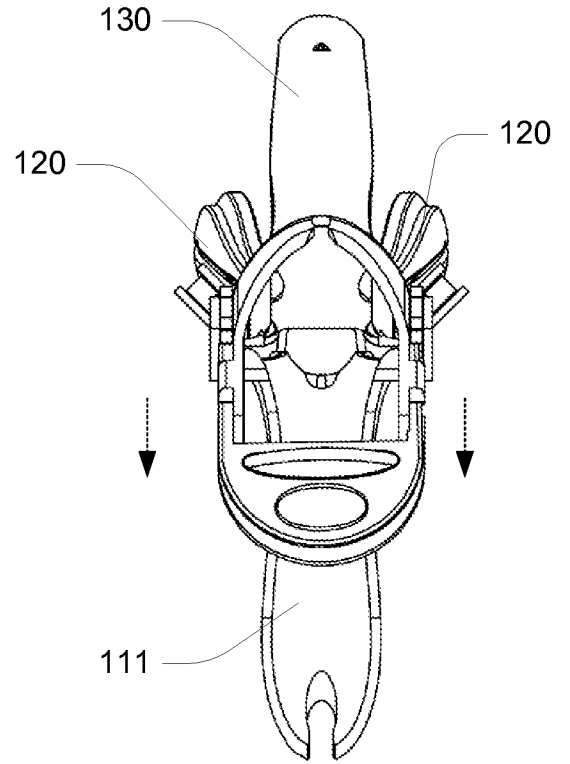


FIG. 2D

4/11

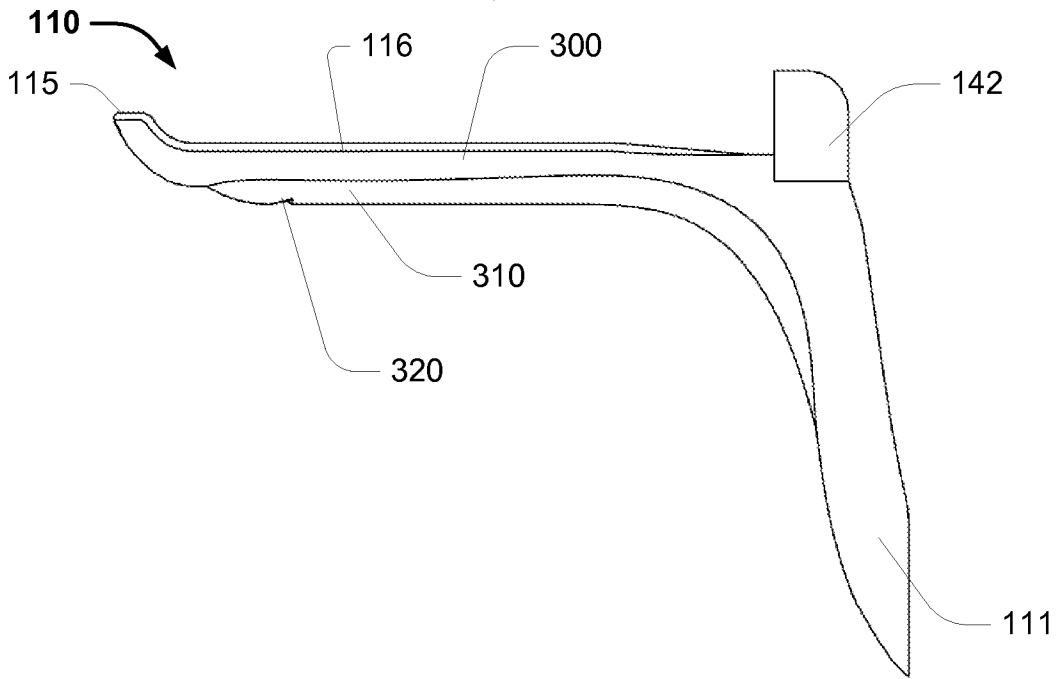


FIG. 3A

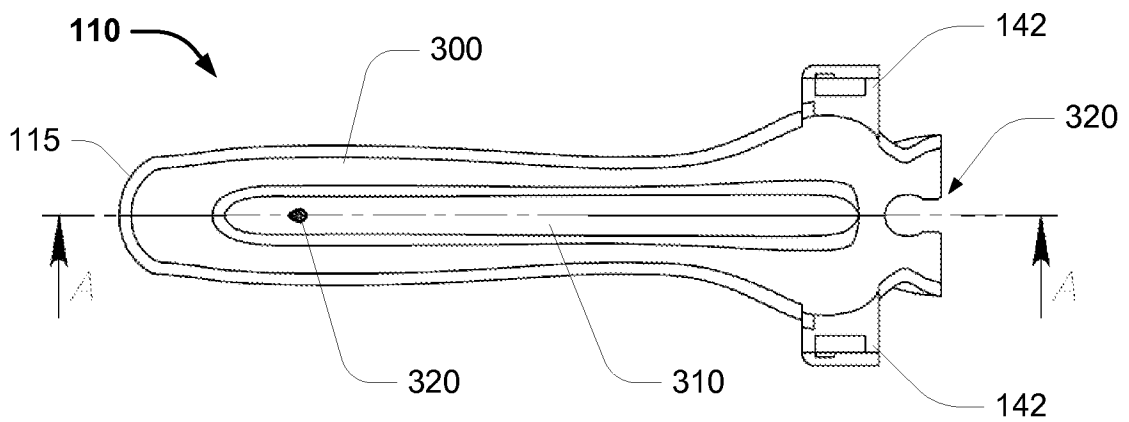


FIG. 3B

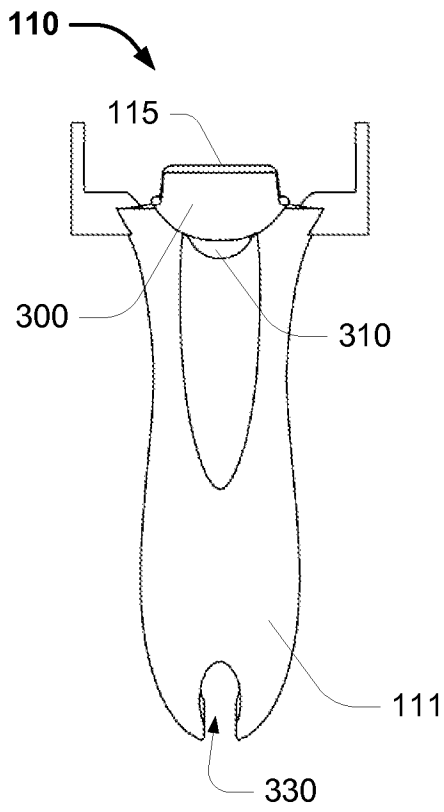


FIG. 3C

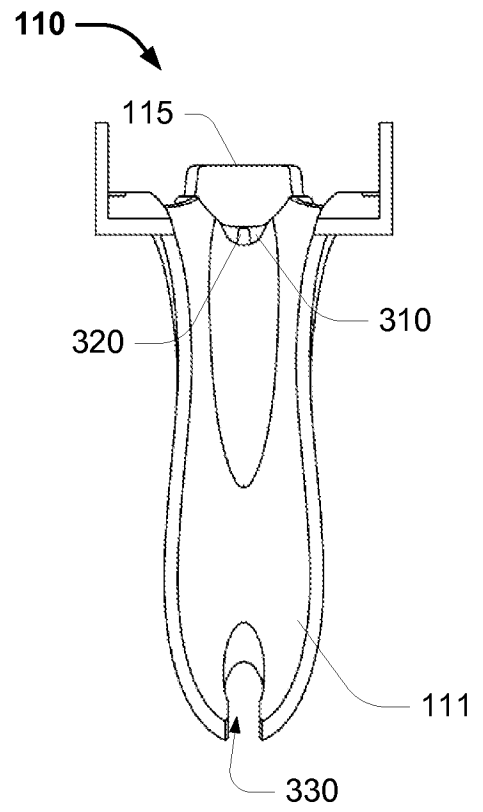


FIG. 3D

6/11

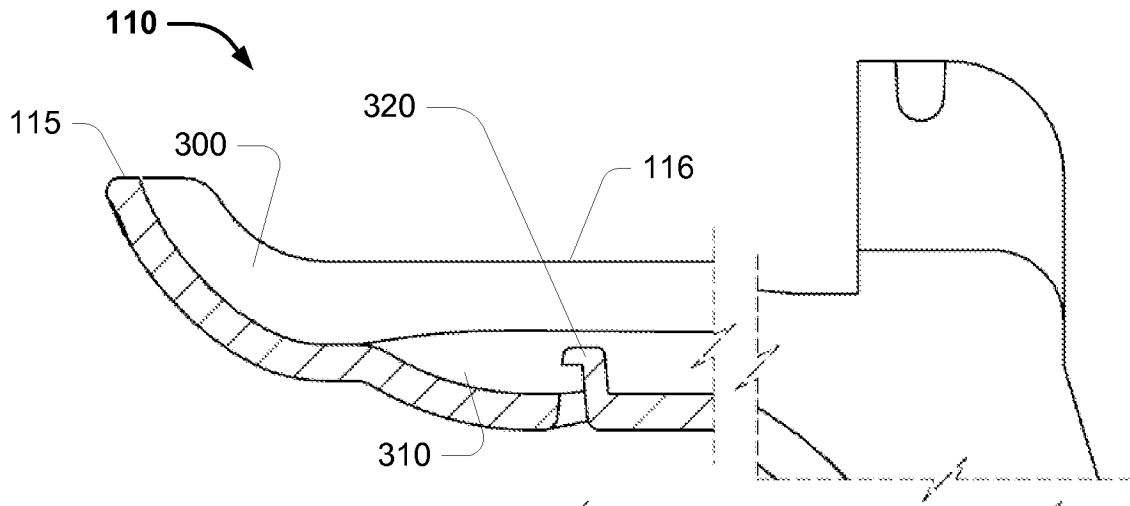


FIG. 3E

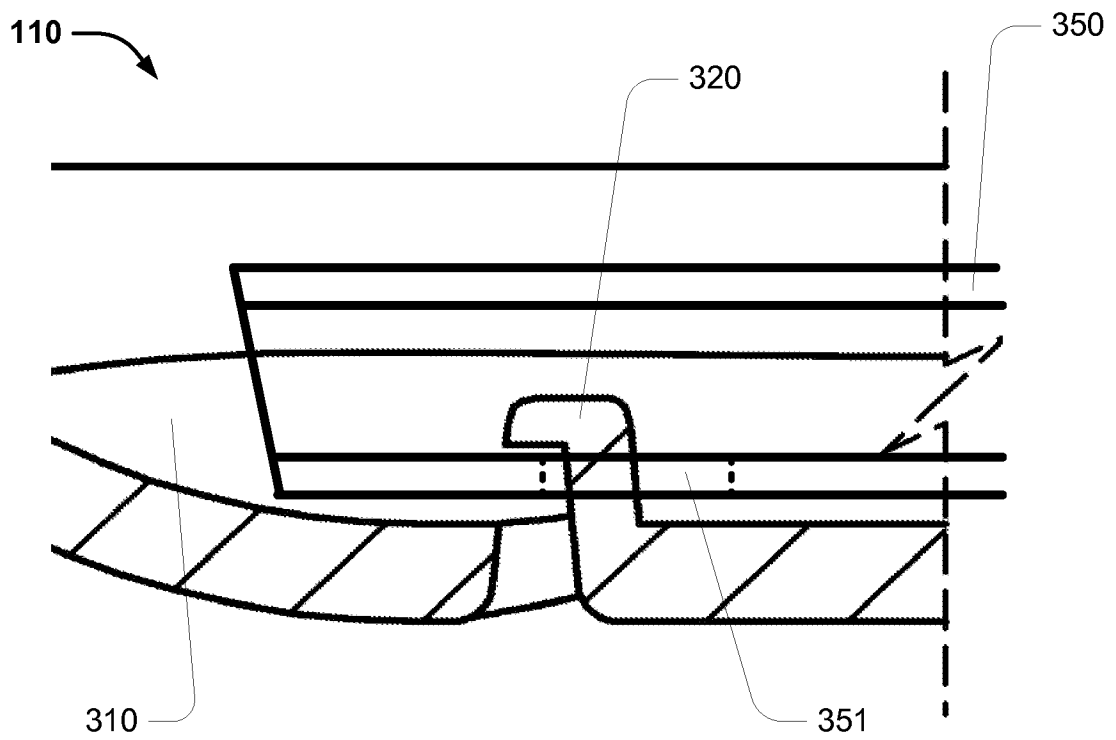


FIG. 3F

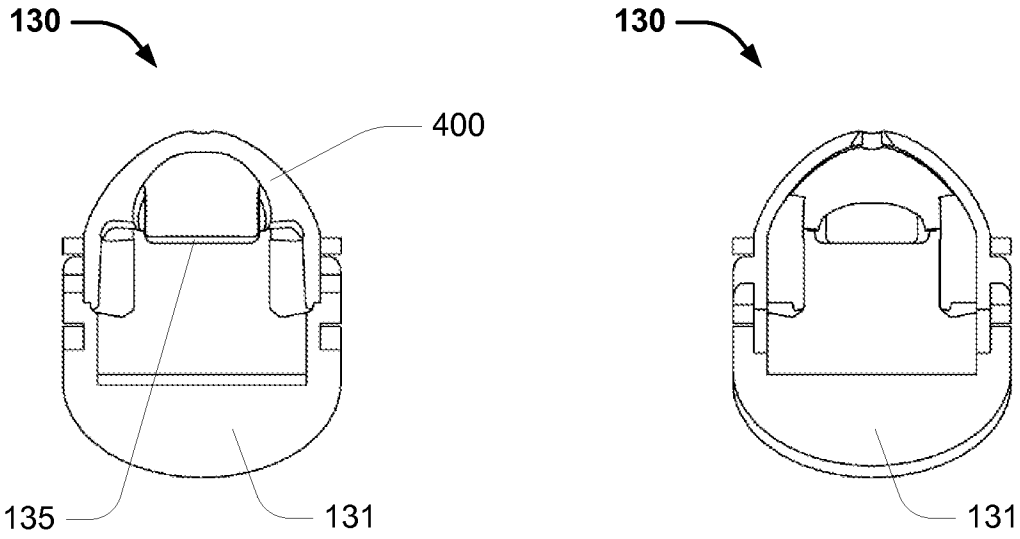


FIG. 4C

FIG. 4D

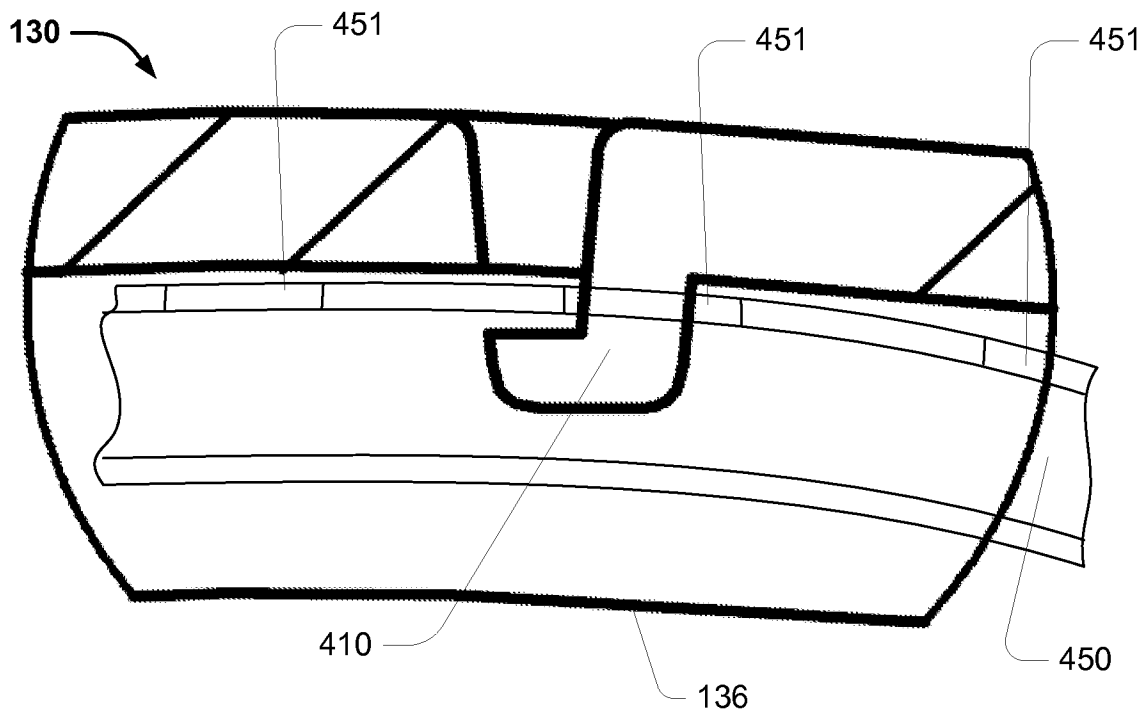


FIG. 4E

9/11

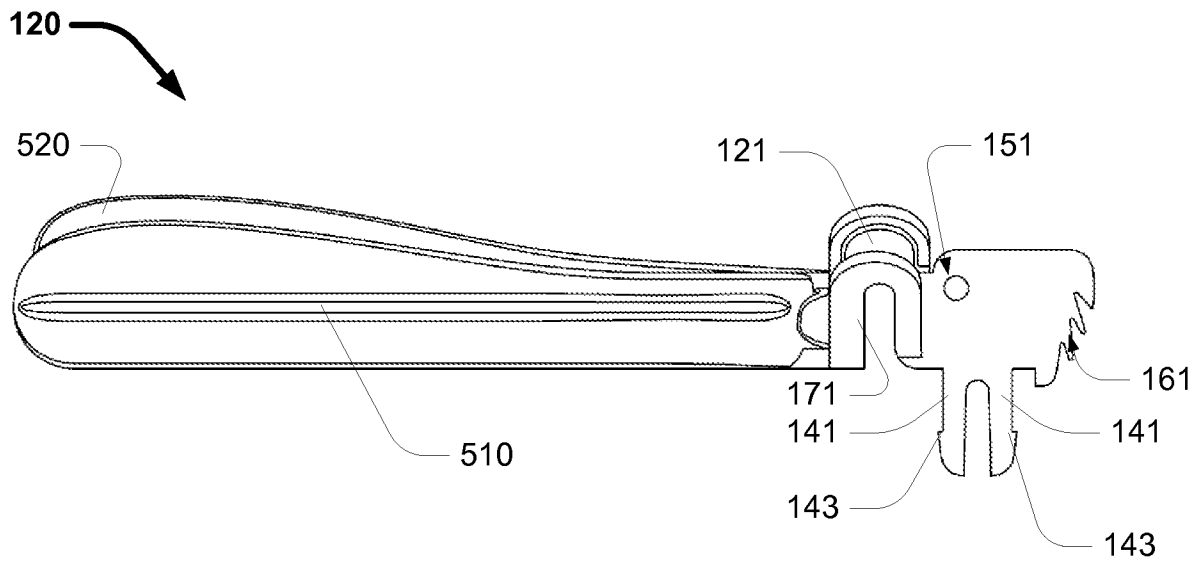


FIG. 5A

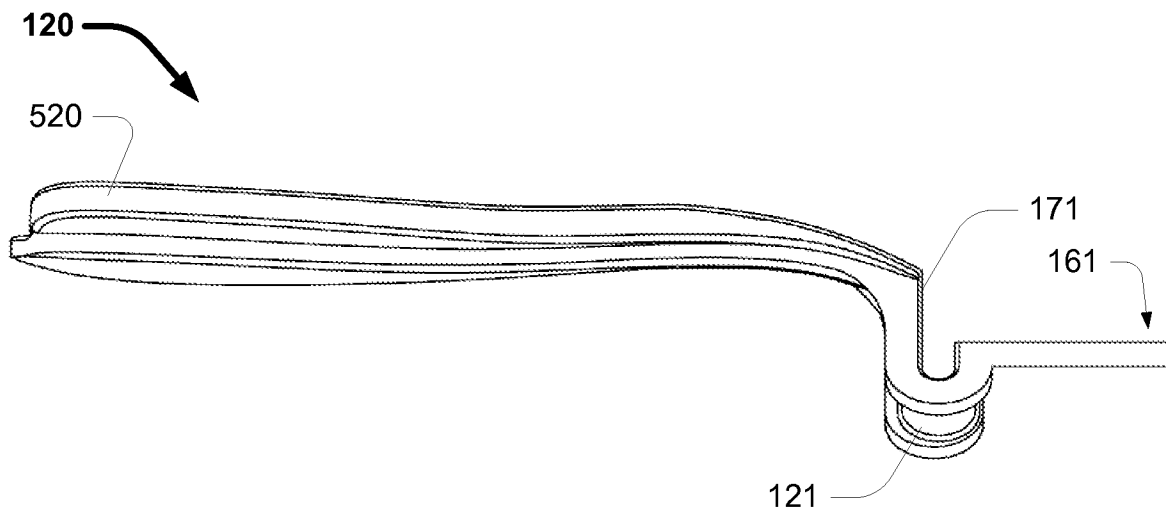


FIG. 5B

10/11

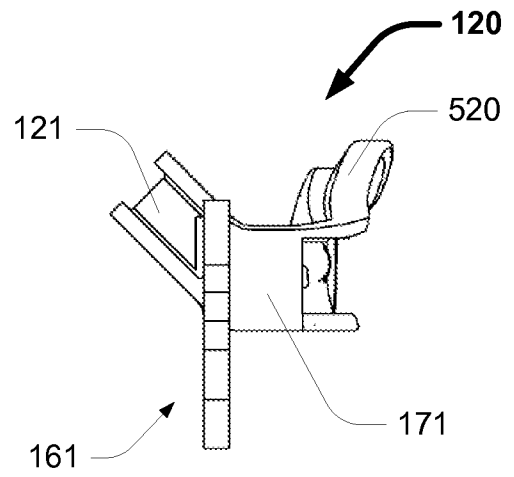
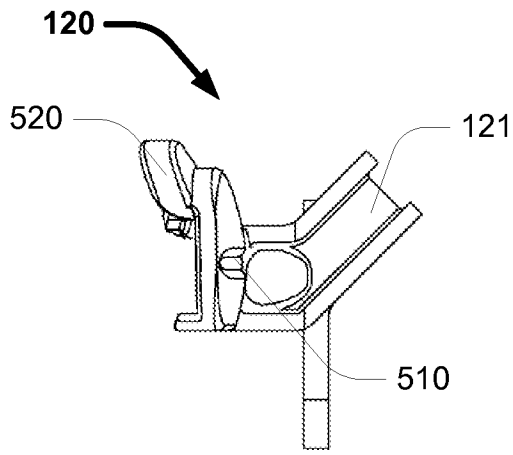


FIG. 5C

FIG. 5D

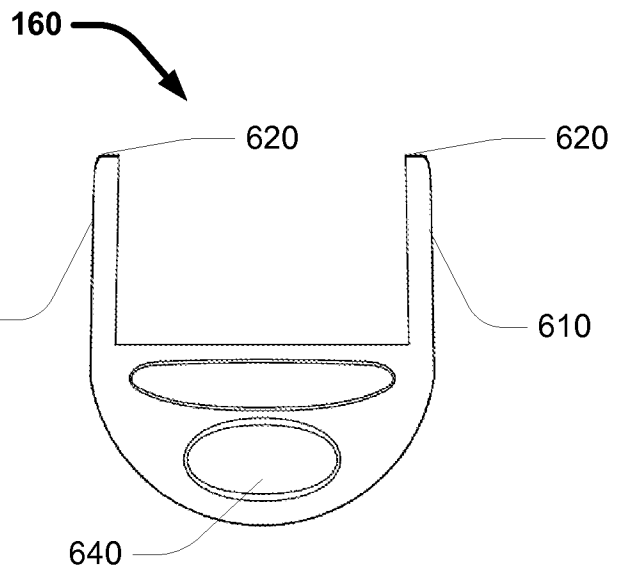
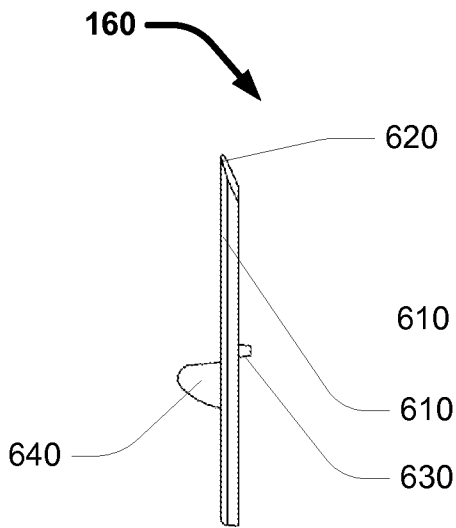


FIG. 6A

FIG. 6B

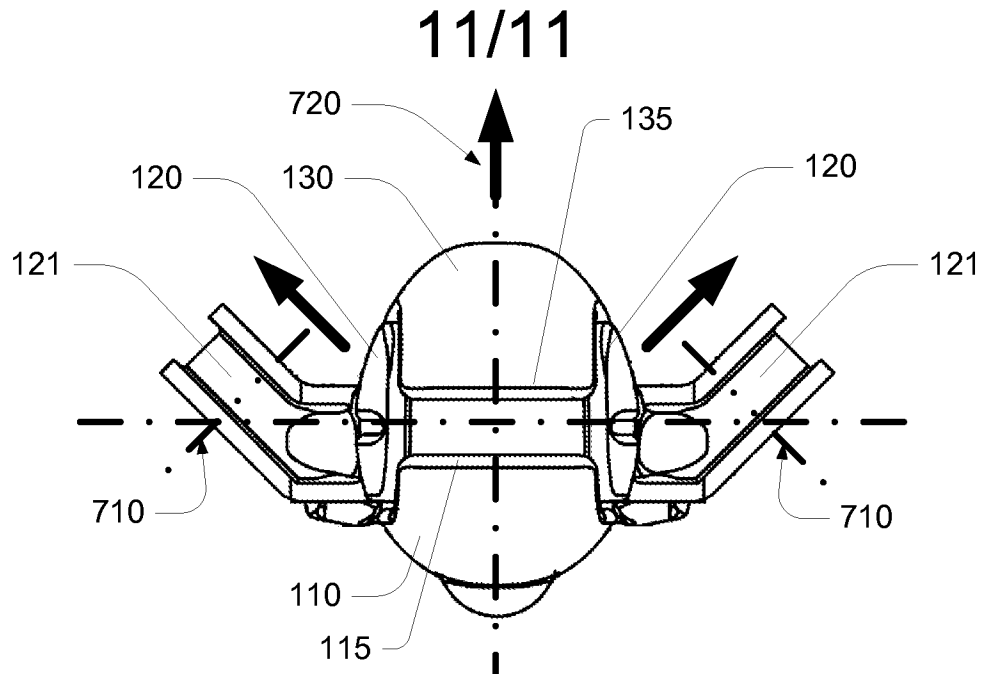


FIG. 7A

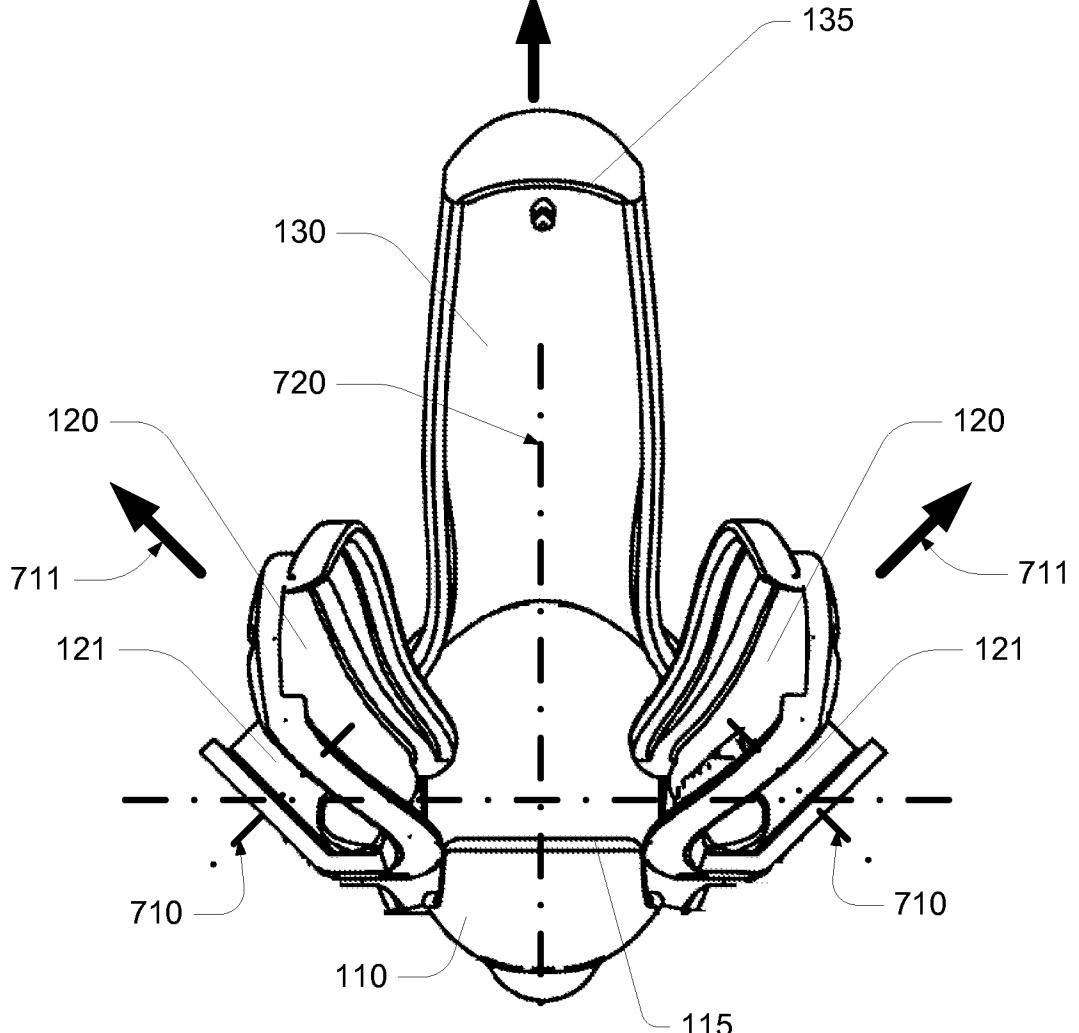


FIG. 7B

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU2010/000876

A. CLASSIFICATION OF SUBJECT MATTER		
Int. Cl.		
A61B 1/303 (2006.01) A61B 1/32 (2006.01)		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols)		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
EPODOC, WPI: ECLA; IPC: A61B 1/-, A61M 29/- & keywords: Speculum, dilator, retractor, four, multi, plural, quad, blade, leaf, protrude, arm, finger and like terms		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 1999/012466 A1 (MCA MEDICAL PRODUCTS PTY. LTD) 18 March 1999 Figure 1, 2, 3 and 6, Page 4 - summary of invention	1 - 16, 19, 20
P, X	AU 2008202305 A1 (WANG) 17 September 2009 Abstract, Figure 1, 2 and 9, Page 6, line 31, Page 7, 8 and 9	1 - 16, 19, 20
A	WO 1998/011818 A1 (MEDITECH INTERNATIONAL PTY. LTD) 26 March 1998 Abstract, Figure 3	
<input type="checkbox"/> Further documents are listed in the continuation of Box C <input checked="" type="checkbox"/> See patent family annex		
* Special categories of cited documents:		
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"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family	
"P" document published prior to the international filing date but later than the priority date claimed		
Date of the actual completion of the international search 10 September 2010	Date of mailing of the international search report 21 SEP 2010	
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. +61 2 6283 7999	Authorized officer Rashmi Basu AUSTRALIAN PATENT OFFICE (ISO 9001 Quality Certified Service) Telephone No : +61 2 6283 2867	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/AU2010/000876

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Patent Document Cited in Search Report		Patent Family Member					
WO	9912466	AU	89665/98	BR	9815648	CA	2303412
		CN	1269706	EP	1011413	HK	1029509
		HU	0004846	ID	23904	NO	20001093
		NZ	503198	OA	11461	PL	339139
		US	6174282	US	6287251	US	2002016528
		US	6436033	ZA	9808233		
AU	2008202305	NONE					
WO	9811818	AU	41915/97	ZA	9708403		
							END OF ANNEX