(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 2 815 783 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
09.11.2016 Bulletin 2016/45

(21) Application number: **14185649.2**

(22) Date of filing: **01.12.2008**

(51) Int Cl.:
A61J 15/00 *(2006.01)* ***A61B 17/34*** *(2006.01)*
A61M 25/06 *(2006.01)* ***A61B 5/107*** *(2006.01)*
A61M 25/08 *(2006.01)* ***A61F 5/00*** *(2006.01)*
A61M 25/04 *(2006.01)* ***A61B 5/00*** *(2006.01)*
A61M 25/01 *(2006.01)* ***A61M 25/00*** *(2006.01)*

(54) **Sheath for gastrostoma and gastrostomy catheter kit**

Schleuse für Gastrostoma und Gastrostomiekatheterkit

Gaine pour gastrostoma et trousse de cathéter de gastrostomie

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MT NL NO PL PT RO SE SI SK TR

(30) Priority: **30.11.2007 JP 2007310789**
28.11.2008 JP 2008305328

(43) Date of publication of application:
24.12.2014 Bulletin 2014/52

(62) Document number(s) of the earlier application(s) in accordance with Art. 76 EPC:
08853905.1 / 2 218 475

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EP 2 815 783 B1

Printed by Jouve, 75001 PARIS (FR)

Description

[Technical Field]

[0001] The present invention relates to a sheath for gastrostoma, and, a gastrostomy catheter kit which are applied to gastrostomy in which a gastrostomy catheter is inserted in a fistula and left in a patient's body and to catheter replacement.

[0002] Patients who cannot take in nutrition through their mouths are usually given nutrients in the following three ways: intravenous nutrition administration; nasogastric nutrition administration in which a tube is inserted in the stomach or other organs through the nose; and enteral nutrition administration through a gastric fistula.

With recent developments in enteral nutrients and method of administration thereof, enteral nutrition administration through percutaneous endoscope gastrostomy (PEG) has been often employed.

[0003] Widely known methods to provide the PEG are a Pull method in which a gastric fistula tube is inserted orally, a Push method, and an Introducer method in which a tube is inserted from the patient's body surface via a sheath.

[0004] However, as to the Pull method and the Push method have the following deficiencies. Since the gastric fistula tube passes through the pharyngeal region, there is a risk of surgical site infection at a site where the gastric fistula tube is placed. In addition, it is necessary to insert the endoscope twice. On the other hand, as to in the Introducer method, since the gastric fistula tube does not pass through the pharyngeal region, the risk of surgical site infection is low and the endoscope need be inserted only once. However, the Introducer method has the following deficiency. Since it is necessary to insert a large-bore puncture needle without use of a guidewire and only a narrow-diameter balloon catheter can be placed in the patient's body via a sheath, a balloon can become deflated in a prolonged period of time, whereby management becomes complicated.

[0005] Recently, a new approach has been used widely in which a large-diameter button gastrostomy catheter is inserted from outside of the patient's body in an abdominal wall and placed directly in the stomach. In this method, an operator fixes the abdominal wall and the stomach wall together using a suture with a device for fixing the stomach wall and the abdominal wall, forms a fistula in the abdominal wall and the stomach wall using a dilator in the presence of a guidewire, inserts a large-diameter button gastrostomy catheter of which an indwelling section has been extended with the obturator in the formed fistula in the presence of the guidewire and leaves the catheter in the patient's body.

[0006] The button gastrostomy catheter used in this method is constituted of a tubular section, an indwelling section and an externally fixed section. The tubular section is provided in a state inserted in the fistula as an introduction passage for percutanelously introducing nutrients or chemicals into the stomach from outside of the patient's body. The indwelling section is attached to a distal section of the tubular section. The indwelling section is formed in a dome shape (in particular, a basket shape) from a plurality of elastically deformable arcuate strip-shaped members so as to expand radially outward of the tubular section. The externally fixed section is attached to an end (base end) of the tubular section at the side opposite to the distal section. The externally fixed section is provided to protrude radially outward of the tubular section and is made to abut the patient's body surface from outside of the body. Then, the indwelling section is deformed to adopt a reduced-diameter state (i.e., extended in a virtual extending direction of the distal end of the tubular section) using an extending device called a burator, thereby lowering insertion resistance with respect to the fistula (see, for example, Patent Document 1). The indwelling section takes a shape protruding radially outward of the tubular section in the stomach to be left there.

[0007] [Patent document 1] Japanese Unexamined Patent Application, First Publication No. 2006-296794

[Description of the Invention]

[Problems to be Solved by the Invention]

[0008] However, usually, a diameter of the fistula is substantially equivalent to an outer diameter of the tubular section. In addition, at the time of forming a new fistula using a dilator, the abdominal wall tries to bury the fistula after the dilator is removed from the patient's body. It is therefore expected that the diameter of the fistula becomes smaller before the gastrostomy catheter is inserted therein. To address this problem, the indwelling section of the button gastrostomy catheter may adopt a reduced-diameter state using the obturator. It is currently difficult, however, to reduce the outer diameter to become smaller than that of the tubular section. Accordingly, at the time of insertion of the button gastrostomy catheter, the indwelling section extends the fistula and thus insertion resistance becomes large.

[0009] Also, usually, the stomach is distended with sufficient air supplied from an endoscope at the time of forming a new fistula. However, in order to insert a large-diameter button gastrostomy catheter, a large fistula must be formed using the dilator. As a result, after the dilator is removed, air supplied from an endoscope escapes through the fistula, which may narrow the endoscopic visual field. In this case, air supply control is often necessary.

[0010] The invention has been made in view of the aforementioned circumstances and an object thereof is to provide a sheath for gastrostoma as defined in claim 1, and a gastrostomy catheter kit as defined in claim 22.

[Means for Solving the Problems]

[0011] In order to solve the aforementioned problems, the invention provides a sheath for gastrostoma according to appended claims 1-21.

[0012] The invention further provides a gastrostomy catheter kit as defined by appended claims 22-35.

[Effect of the Invention]

[0013] According to the invention, it is possible to lower insertion resistance during placement of a button gastrostomy catheter.

[0014] It is also possible to open and close an inner path easily with a configuration in which the inner path of a sheath body is opened and closed with a plug member which is removably fit into a base end of the sheath body and a configuration (a second invention) in which a sheath for gastrostoma itself includes a lid which functions as a plug member to open and close the inner path of the sheath body. With such configurations, air supply from an endoscope can be controlled easily and an endoscopic visual field can be stabilized during surgery.

[Brief Description of the Drawings]

[0015]

[Fig. 1A] Fig. 1A is a perspective view of a sheath for gastrostoma with a lid closed.
[Fig. 1B] Fig. 1B is a left cross-sectional view of the sheath for gastrostoma with the lid closed.
[Fig. 2A] Fig. 2A is a top view of the sheath for gastrostoma with the lid closed.
[Fig. 2B] Fig. 2B is a front view of the sheath for gastrostoma with the lid closed.
[Fig. 2C] Fig. 2C is a right side view of the sheath for gastrostoma with the lid closed.
[Fig. 2D] Fig. 2D is a rear view of the sheath for gastrostoma with the lid closed.
[Fig. 2E] Fig. 2E is a bottom view of the sheath for gastrostoma with the lid closed.
[Fig. 3A] Fig. 3A is a perspective view of the sheath for gastrostoma with the lid opened.
[Fig. 3B] Fig. 3B is a left cross-sectional view of the sheath for gastrostoma with the lid opened.
[Fig. 4A] Fig. 4A is a top view of the sheath for gastrostoma with the lid opened.
[Fig. 4B] Fig. 4B is a front view of the sheath for gastrostoma with the lid opened.
[Fig. 4C] Fig. 4C is a right side view of the sheath for gastrostoma with the lid opened.
[Fig. 4D] Fig. 4D is a rear view of the sheath for gastrostoma with the lid opened.
[Fig. 4E] Fig. 4E is a bottom view of the sheath for gastrostoma with the lid opened.
[Fig. 5A] Fig. 5A is a cross-sectional view of a configuration in which the sheath for gastrostoma includes an elastic member disposed outside of a base end of a sheath body as an elastic support member for elastically supporting the lid at a closed position, illustrated with the lid being at its closed position.
[Fig. 5B] Fig. 5B is a cross-sectional view of a configuration in which the sheath for gastrostoma includes an elastic member disposed outside of a base end of a sheath body as an elastic support member for elastically supporting the lid at a closed position, illustrated in a state in which the lid is moved from its closed position to release an inner path of the sheath body.
[Fig. 6A] Fig. 6A is a perspective view of a button for gastrostoma used in the invention.
[Fig. 6B] Fig. 6B is a top view of the button for gastrostoma used in the invention.
[Fig. 6C] Fig. 6C is a bottom view of the button for gastrostoma used in the invention.
[Fig. 7] Fig. 7 is a cross-sectional view of a structure of the button for gastrostoma used in the invention.
[Fig. 8A] Fig. 8A is a left cross-sectional view of an obturator and a side view of a stopper used in the invention.
[Fig. 8B] Fig. 8B is a front view of the obturator used in the invention.
[Fig. 8C] Fig. 8C is a right side view of the obturator used in the invention.
[Fig. 9A] Fig. 9A illustrates a relationship between the obturator used in the invention and the stopper attached to obturator, illustrated in a state in which the stopper can engage with an externally fixed section of a button for gastrostoma.
[Fig. 9B] Fig. 9B illustrates a relationship between the obturator used in the invention and the stopper attached to the obturator, with the stopper being in its disengaged state.
[Fig. 10A] Fig. 10A is a front view illustrating a state in which the button for gastrostoma and the obturator used in the invention are assembled together.
[Fig. 10B] Fig. 10B is a front view illustrating a state in which the button for gastrostoma and the obturator used in the invention are assembled together and the button for gastrostoma is extended.
[Fig. 11] Fig. 11 is a front view illustrating a state in which the button for gastrostoma and the obturator used in the invention are assembled together and the button for gastrostoma is extended using a guidewire.
[Fig. 12A] Fig. 12A is a front view of a dilator used in the invention.
[Fig. 12B] Fig. 12B is a front view of a narrow-diameter dilator used in the invention.
[Fig. 12C] Fig. 12C is a front view of a sheathed dilator in which the sheath for gastrostoma is combined with a dilator.
[Fig. 12D] Fig. 12D is a cross-sectional view of a sheathed dilator in which the sheath for gastrostoma is combined with a dilator.

[Fig. 13] Fig. 13 is a front view illustrating a state immediately before the button for gastrostoma extended with the obturator is disposed in the sheath for gastrostoma.

[Fig. 14] Fig. 14 is a front view illustrating a state in which the button for gastrostoma extended with the obturator is being disposed in the sheath for gastrostoma.

[Fig. 15A] Fig. 15A is a perspective view of a configuration in which a slit is formed as a notch section in the sheath body of the sheath for gastrostoma, with the lid being in its closed position.

[Fig. 15B] Fig. 15B is a perspective view of a configuration in which a slit is formed as a notch section in the sheath body of the sheath for gastrostoma, with the lid moved away from the closed position to release the inner path of the sheath body.

[Fig. 16A] Fig. 16A schematically illustrates a cross-sectional structure and a position of a handle of the sheath body of the sheath for gastrostoma, with a notched groove formed in the sheath body as a notch section.

[Fig. 16B] Fig. 16B schematically illustrates a cross-sectional structure and a position of a handle of the sheath body of the sheath for gastrostoma, with a slit formed in the sheath body as a notch section.

[Fig. 17] Fig. 17 is a cross-sectional view of a sheath for gastrostoma configured with the slits formed at two circumferential positions of the sheath body.

[Fig. 18] Fig. 18 illustrates a state in which an abdominal wall and a stomach wall have yet to be in contact with each other.

[Fig. 19] Fig. 19 illustrates a state in which the abdominal wall and the stomach wall are in contact with each other with a suture.

[Fig. 20] Fig. 20 illustrates a state in which a guidewire is placed.

[Fig. 21] Fig. 21 illustrates a state in which a dilator covered with the sheath for gastrostoma (i.e., a sheathed dilator) is being inserted in the abdominal wall and the stomach wall using a guidewire.

[Fig. 22] Fig. 22 illustrates a state in which the sheath for gastrostoma is placed.

[Fig. 23] Fig. 23 is a state in which the button for gastrostoma is being inserted in the sheath for gastrostoma.

[Fig. 24] Fig. 24 is a state in which the button for gastrostoma has been inserted from an inner path of the sheath for gastrostoma.

[Fig. 25] Fig. 25 illustrates a state in which only the button for gastrostoma is placed after the sheath for gastrostoma is removed.

[Fig. 26] Fig. 26 illustrates a state in which extension of the obturator is released.

[Fig. 27] Fig. 27 illustrates a state in which the obturator is removed.

[Fig. 28] Fig. 28 illustrates a state in which placement of the button for gastrostoma is completed.

[Fig. 29] Fig. 29 illustrates a state before the button for gastrostoma extended with the obturator is inserted in the radially expandable sheath body.

[Fig. 30] Fig. 30 illustrates a state in which the button for gastrostoma extended with the obturator is being inserted in the radially expandable sheath body.

[Fig. 31A] Fig. 31A illustrates another embodiment of the sheath for gastrostoma, which is a perspective view with the lid closed.

[Fig. 31B] Fig. 31B is a left cross-sectional view of the sheath for gastrostoma of Fig. 31A with the lid closed.

[Fig. 32A] Fig. 32A is a top view of the sheath for gastrostoma of Fig. 31A with the lid closed.

[Fig. 32B] Fig. 32B is a left side view of the sheath for gastrostoma of Fig. 31A with the lid closed.

[Fig. 32C] Fig. 32C is a front view of the sheath for gastrostoma of Fig. 31A with the lid closed.

[Fig. 32D] Fig. 32D is a right side view of the sheath for gastrostoma of Fig. 31A with the lid closed.

[Fig. 32E] Fig. 32E is a rear view of the sheath for gastrostoma of Fig. 31A with the lid closed.

[Fig. 32F] Fig. 32F is a bottom view of the sheath for gastrostoma of Fig. 31A with the lid closed.

[Fig. 33] Fig. 33 illustrates a button placed in the fistula.

[Fig. 34] Fig. 34 illustrates a state in which a cap of the button for gastrostoma has been removed.

[Fig. 35] Fig. 35 illustrates a state in which the obturator is inserted in an inner cavity of the button for gastrostoma and an externally fixed section of the button is held by a stopper.

[Fig. 36] Fig. 36 illustrates a state in which the guidewire is inserted from a guidewire insertion hole of the obturator and is made to protrude from a distal end of the button for gastrostoma.

[Fig. 37] Fig. 37 illustrates a state in which an operating section of the obturator assembled to the button for gastrostoma is pressed so that the indwelling section of the button for gastrostoma adopts an extended state.

[Fig. 38] Fig. 38 illustrates a state in which the obturator, the button for gastrostoma and the guidewire are removed, leaving the guidewire alone in the fistula.

[Fig. 39] Fig. 39 illustrates a state in which a sheath with insertion aid obtained by disposing the sheath for gastrostoma outside of the sheath insertion aid is inserted in the fistula by using the guidewire as a guidance member.

[Fig. 40] Fig. 40 illustrates a state in which the sheath insertion aid and the guidewire are removed, leaving the sheath for gastrostoma alone.

[Fig. 41] Fig. 41 illustrates a state in which the button for gastrostoma has been inserted in the fistula via the sheath for gastrostoma.

[Fig. 42] Fig. 42 illustrates a state in which the button for gastrostoma is placed in the stomach via the

sheath for gastrostoma.

[Fig. 43] Fig. 43 is a cross-sectional view of the claimed sheath for gastrostoma with a configuration in which the handle is covered with a lid via a lid hinge section other than the hinge section.

[Fig. 44A] Fig. 44A is a perspective view of a sheath for gastrostoma in which a V-shaped distal notch section that can be used as a beginning point (starting point) of vertical splitting of the sheath body is formed in the sheath body.

[Fig. 44B] Fig. 44B is an enlarged front view (an enlarged front view of an area X in Fig. 44A) illustrating a configuration near the distal notch section of the sheath body of Fig. 44A.

[Fig. 45A] Fig. 45A is a perspective view of an exemplary sheath for gastrostoma having a configuration in which a grasping ring is provided in the handle.

[Fig. 45B] Fig. 45B is a left cross-sectional view of a structure of the sheath for gastrostoma of Fig. 45A.

[Fig. 46A] Fig. 46A is a top view of the sheath for gastrostoma of Fig. 45A with the lid closed.

[Fig. 46B] Fig. 46B is a left side view of the sheath for gastrostoma of Fig. 45A with the lid closed.

[Fig. 46C] Fig. 46C is a front view of the sheath for gastrostoma of Fig. 45A with the lid closed.

[Fig. 46D] Fig. 46D is a right side view of the sheath for gastrostoma of Fig. 45A with the lid closed.

[Fig. 46E] Fig. 46E is a rear view of the sheath for gastrostoma of Fig. 45A with the lid closed.

[Fig. 46F] Fig. 46F is a bottom view of the sheath for gastrostoma of Fig. 45A with the lid closed.

[Fig. 47] Fig. 47 illustrates an exemplary method of grasping the grasping ring of the sheath for gastrostoma of Fig. 45A with fingers.

[Reference Numerals]

[0016]

1: sheath for gastrostoma
11: sheath body
11a: tapered distal end
11b: sheath body
111a: notch section (notched groove)
111a: uncut portion
111b: notch section (slit)
112: tapered portion
113: inner path
114: handle main piece (tubular piece)
115: expanded section (forming section)
115a: inner space
115b: back wall section
116: hinge section
117: lid abutting section
117a: lid abutting section
117b: lid abutting section
118: uncut portion
119: split piece
12: handle
121: handle member (first handle member)
122: handle member (second handle member)
123: inclined piece
13: lid
14: elastic member
15: sheath body
151: end notch section
152: depth section
16: grasping ring
2: gastrostomy catheter (button for gastrostoma)
21: tubular section
21c: central axis
22: indwelling section
221: strip-shaped piece
222: base end gathering section
223: distal end gathering section
23: externally fixed section
231: flexible section
232: patient contact surface
24: path
25: valve
251: slit
26: communication path
27: rod abutting section
271: rod fitting projection
272: reinforcing member
28: cap
3: obturator
31: pushing rod for extension
311: operating section
312: spring
313: rod body
314: reinforcing member
315: wire insertion groove
316: lock piece
317: distal section
32: outer case
321: cylindrical portion
322: finger plate
323: fitting portion
323a: fit-in groove
324: groove
325: groove hole
326: lock hole
33: stopper
331: arm
332: holding section
333: back plate
334: pushed-in portion
4: guidewire
5: dilator (extender)
5a: sheathed dilator
51: large-diameter dilator
511: large-diameter dilator body section
512: large-diameter dilator distal section
513: large-diameter dilator side connector
514: scale

5141: reference point (zero point)
52: narrow-diameter dilator
521: narrow-diameter dilator body section
522: narrow-diameter dilator distal section
523: narrow-diameter dilator side connector
524: guidewire path
6: sheath for gastrostoma
6a: sheath for gastrostoma
6b: sheath for gastrostoma
61: handle
611: handle member (lid side handle member)
612: handle member (main piece side handle member)
62: lid hinge section
63: lid
64: elongated plate lid member
64a: elongated plate lid member
64b: elongated plate lid member with ring
641: mounting section
642: stopper projection piece
7: sheath insertion aid
70: sheath for gastrostoma with insertion aid
71: rod-shaped body
72: tapered distal section
73: guidewire insertion hole
900: abdominal wall
901: stomach wall
902: suture

[Best Mode for Carrying Out the Invention]

[0017] Below, referring now to the drawings, preferred embodiments of the invention will be described. Examples of a sheath for gastrostoma, a sheathed dilator, a gastrostomy catheter kit and a method for splitting a sheath for gastrostoma will be described.

[0018] Although upper and lower directions are defined in the following description, these are for descriptive purposes to simply define relative positions of components of the invention. Thus, these directions do not limit directions in production and usage for implementation of the invention.

[0019] Also, in all the drawings, the same components will be denoted by the same reference numerals and duplicated description will be omitted. In the drawings, upper ends of components are illustrated at an upper side and lower ends of components are illustrated at a lower side.

[0020] Figs. 1A, 1B and 2A to 2E illustrate an example with a lid 13 of a sheath for gastrostoma 1 closed. Fig. 1A is a perspective view, Fig. 1B is a cross-sectional view, Fig. 2A is a top view, Fig. 2B is a front view, Fig. 2C is a right side view, Fig. 2D is a bottom view and Fig. 2E is a rear view.

[0021] The sheath for gastrostoma 1 is inserted in a fistula formed using a dilator in gastrostomy (see Fig. 21). A gastrostomy catheter is inserted in the sheath which has been inserted in the fistula.

[0022] As illustrated in Figs. 1A, 1B and 2A to 2E, the sheath for gastrostoma 1 is constituted of a cylindrical sheath body 11 (i.e., a sheath tube), a handle 12, and a lid 13.

[0023] The sheath body 11 includes an inner path 113 through which a gastrostomy catheter (i.e., a button for gastrostoma, see Fig. 6A and other drawings) is inserted. In addition, the inner path 113 is also used when the sheath for gastrostoma 1 (in particular, the sheath body 11) is disposed to cover a dilator illustrated in Fig. 12A in order to form a hole (hereinafter referred to as a fistula) for placing the button for gastrostoma.

[0024] The handle 12 is provided at an upper end of the sheath for gastrostoma 1. The handle 12 may be used when the sheath for gastrostoma 1 is grasped during insertion of the button for gastrostoma.

[0025] The handle 12 is constituted of a first handle member 121 and a second handle member 122 fixed to a tongue-shaped handle main piece 114 extending from one longitudinal end (i.e., an end of the sheath body 11 at the side of the handle 12: an upper end in Figs. 1A to 1E, which is hereinafter referred to as a base end) of the sheath body 11. The first handle member 121 and the second handle member 122 are planar members and are integrally fixed to the handle main piece 114 so as to sandwich the same. The handle 12 extends from the base end of the sheath body 11 as a tongue-shaped piece.

[0026] The handle main piece 114 is cut out of a resin tube together with the sheath body 11 during production of the sheath body 11. The handle main piece 114 is formed so as to be continuous to and integral with the sheath body 11. In addition, the fixing strength of the handle can be increased by an adhesive applied between the handle main piece 114 and the first handle member 121 and between the handle main piece 114 and the second handle member 122.

[0027] Note that the first handle member 121 and the second handle member 122 may be provided as separate members or may be formed integrally with each other.

[0028] Alternatively, the entire handle 12 may be constituted only of the handle main piece 114.

[0029] The handle 12 can be pivoted with respect to the sheath body 11 about a boundary section between the sheath body 11 and the handle main piece 114, which is a tongue-shaped extending portion formed continuously from the sheath body 11. That is, the boundary section functions as a hinge section 116 which enables pivotation of the handle 12 with respect to the sheath body 11. The handle 12 is provided to be pivotable with respect to the sheath body 11 via the hinge section 116.

[0030] The handle 12 pivots about the hinge section 116, i.e., about a pivot axis extending perpendicular to the axis of the sheath body 11 (i.e., a central axis of the inner path 113 denoted by reference numeral C1 in Fig. 1B). The handle 12 pivots about the hinge section 116 as illustrated by an arrow A in Fig. 1B.

[0031] In addition, the hinge section 116 may be ma-

chined to easily bend by, for example, making a cut in the boundary section, chipping to reduce thickness, and pressing a hot plate or heat ray against the hinge section to reduce thickness.

[0032] Furthermore, a resin molding product integrally constituted of the sheath body 11, the hinge section 116 and the handle main piece 114 may also be obtained through metal molding.

[0033] The handle 12 may be pivoted integrally with the lid 13, which opens and closes the inner path 113, which is a through-hole penetrating an inner side of the sheath body 11, which will be described later.

[0034] The lid 13 will now be described.

[0035] In the exemplary sheath for gastrostoma 1 illustrated in Figs. 1A, 1B, 2A to 2E and other drawings, in particular, the lid 13 is a tongue-shaped portion configured by the first handle member 121 which is fixed to the handle main piece 114, and the lid 13 extending from the handle 12 toward the inner path 113 of the sheath body 11. The lid 13 is disposed in the inner path 113 of the sheath body 11.

[0036] The first handle member 121 is disposed on an upper surface of the handle main piece 114 (i.e., an upper surface of the handle main piece 114 at a state with the lid closed as illustrated by solid lines in Figs. 1A and 1B). That is, the first handle member 121 is provided on a surface which continues from an inner surface of the sheath body 11 via the hinge surface 116. The lid 13 extends into the inner path 113 of the sheath body 11 from the hinge section 116 while being inclined toward a distal section of the sheath body 11 (i.e., an end opposite to the base end at the side of the handle 12 in the longitudinal direction of the sheath body 11 and the lower end in Figs. 1A and 1B) with respect to a virtual vertical plane extending perpendicular to an axial center of the sheath body 11.

[0037] The lid 13 pivots about the hinge section 116 within the inner path 113. The pivot axis of the lid 13 about the hinge section 116 is located at a rim section of the base end of the sheath body 11.

[0038] A pivotation radius of the lid 13 about the hinge section 116 is larger than an inner diameter D (i.e., an inner diameter of a portion where no expanded section 115, which will be described later, is formed) of the inner path 113 of the sheath body 11.

[0039] In addition, in the sheath for gastrostoma 1 of the illustrated example, the expanded section 115 (allocated type section) which carried out the allocated type in detail so that a part of circumferential direction of the base end of the sheath body 11 is expanded radially outward of the sheath body 11 is formed. The hinge section 116 is provided in the expanded section 115 and disposed at the rim section of the base end of the sheath body 11 so that a distance from the axial center of the sheath body 11 (i.e., a central axis C1 of the inner path 113) is larger than the radius of the inner path 113 by the dimension of space (i.e., an inner space 115a) provided inside the expanded section 115 which extends the inner path 113.

[0040] The expanded section 115 extends laterally from the sheath body 11 and has a U-shaped cross section (i.e., a U-shaped cross section along a plane perpendicular to the axial center of the sheath body 11). The hinge section 116 is provided at a back wall section 115b located behind the inner space 115a of the expanded section 115 from the axial center (i.e., the central axis C1 of the inner path 113) of the sheath body 11. However, a pivotation radius of the lid 13 about the hinge section 116, i.e., a distance between a pivotal center and a distal end of a portion extending from the hinge section 116 of the lid 13 and placed in the inner path 113 of the sheath body 11 is larger than the sum of the radius of the inner path 113 of the sheath body 11 and a distance L1 from the axial center of the sheath body 11 (i.e., the central axis C1) to the back wall section 115b of the expanded section 115.

[0041] In Fig. 1, the reference numeral 117 denotes a lid abutting section which a distal end of the lid 13 abuts.

[0042] The lid abutting section 117 is located at the base end of the sheath body 11 at an opposite side to the hinge section 116 across the inner path 113. The lid 13 pivots about the hinge section 116 and the distal end thereof abuts the lid abutting section 117 from the side of the distal section of the sheath body 11. The lid 13 is in its closed position to close the inner path 113 at which the distal end of the lid 13 abuts against the lid abutting section 117. When the lid 13 abuts against the lid abutting section 117, the lid abutting section 117 functions as a stopper which restricts pivotation of the lid 13 from a closed position toward a direction opposite to the distal section of the sheath body 11. With this configuration, the lid 13 does not protrude from an opening of the inner path 13 at the base end of the sheath body 11 and stays only within the sheath for gastrostoma 1.

[0043] Note that the lid abutting section 117 is not necessarily located at the side opposite to the hinge section 116 across the inner path 113 in the base end of the sheath body 11. Alternatively, for example, the entire base section of the sheath body may function as a lid abutting section in accordance with configurations of the lid 13.

[0044] The lid 13 is supported at the closed position by the bending property imparted to the hinge section 116. In addition, preferably, the lid 13 is urged to abut the lid abutting section 117 by the bending property imparted to the hinge section 116 (i.e., urged with elasticity of the hinge section 116).

[0045] That is, the lid 13 is in its closed position as illustrated in Fig. 1 in a natural state in which no force is applied to the sheath for gastrostoma 1. The hinge section 116 functions as an elastic support member which elastically supports the lid 13 at the closed position. When the lid 13 pivots about the hinge section 116 to move apart from the lid abutting section 117, elasticity of the hinge section 116 applies an urging force to the lid 13 so that the lid 13 returns to the closed position. With this

configuration, the inner path 113 can be closed with the lid 13 unless an operator grasps the handle 12 of the sheath for gastrostoma 1 with a hand.

[0046] With such a configuration in which the inner path 113 is closed with the lid 13, outflow of air supplied to the stomach from an endoscope can be prevented during surgery which will be described later. Also, of course, ingression of foreign objects, such as dust, into the sheath 1 can be avoided.

[0047] The hinge section 116 as an elastic support member which elastically supports the lid 13 at the closed position may, for example, have an arched configuration which functions as a plate spring in order to improve elasticity of the hinge section 116.

[0048] Alternatively, for example, an elastic member 14 may be provided separately from the hinge section 116 as an elastic support member which elastically supports the lid 13 to the closed position. The elastic member 14 is disposed outside of the base end of the sheath body 11 as illustrated in Figs. 5A and 5B and applies an urging force to the handle 12 in a direction in which the handle 12 is moved toward the peripheral surface of the base end of the sheath body 11. In this case, the hinge section 116 does not have necessarily function as an elastic support member and it is sufficient that the hinge section 116 has a function to provide the handle 12 and the lid 13 pivotable with respect to the sheath body 11.

[0049] Note that the elastic member 14 may be configured in various manners. For example, an elastic member (e.g., a silicone rubber elastic member and a coil spring) may be used as a draw spring. Such an elastic member extends from the base end of the sheath body 11 radially outward of the sheath body 11 and is connected to the handle 12. Alternatively, the elastic member 14 may be a flat spring which is fixed to an outer surface of the base end and the handle 12 of the sheath body 11: to apply an urging force in a direction in which the handle 12 is moved toward the peripheral surface of the base end of the sheath body 11.

[0050] In a configuration illustrated in Figs. 5A and 5B, the elastic member 14 is an elastic member made of silicone rubber. The elastic member 14 connects the base end of the sheath body 11 and an inclined piece 123 provided at an end of the handle 12 near the hinge section 116 (i.e., near a base end of the handle 12) to protrude toward the base end of the sheath body 11 in an inclined manner with respect to the plate-like handle 12. When the lid 13 is in its closed position, the inclined piece 123, as a part of the handle 12, is disposed close to the base end of the sheath body 11. When the lid 13 is moved to pivot from the closed position to an open direction, the inclined piece 123 is moved away from the base end of the sheath body 11 as the handle 12 pivots about the hinge section 116.

[0051] In this configuration, as the inclined piece 123 is moved to pivot about the hinge section 116 from its position (hereinafter, referred to as a re-approaching position) when the lid 13 is in its closed position and is separated from the re-approaching position, the elastic member 14 is subject to extension (i.e., stretching deformation or elastic deformation in an elongation direction). The extended elastic member 14 functions as a draw spring which applies an urging force to the handle 12 (in particular, to the inclined piece 123) to move back to the re-approaching position. This urging force functions as an elastic force for elastically supporting the lid 13 at the closed position.

[0052] In addition, as described above, the hinge section 116 with a function to elastically support the lid 13 to the closed position is preferably employed to provide a configuration in which the lid 13 is closed by the elastic support member in a natural state in which no force is applied to the sheath for gastrostoma 1. Alternatively, however, a configuration may be employed in which a hinge section 116 with no function to elastically support the lid 13 at the closed position is provided and a state in which the inner path 113 is closed with the lid 13 can be implemented by an operation of the handle 12. In this case, while implementing the state in which the lid 13 closes the inner path 113 by the operation of the handle 12, pressure of air supplied to the stomach from the endoscope during surgery may keep the lid 13 from closing the inner path 113.

[0053] Since the lid 13 closes the inner path 113 of the sheath for gastrostoma 1, it prevents air supplied from an endoscope which is introduced orally into the stomach from leaking out of the stomach when a dilator is removed from a fistula expanded by the dilator 5 before a button for gastrostoma 2 is inserted.

[0054] In the state in which the lid 13 is closed, it is not necessary to provide airtightness for completely preventing outflow of air toward the base end from the distal section. It suffices to prevent leakage of air supplied to the stomach from an endoscope (hereinafter, referred to as air leakage) so as to avoid a narrowed endoscopic visual field. More preferably, the lid 13 is formed to completely prevent air leakage.

[0055] Fig. 3A is a perspective view and Fig. 3B is a cross-sectional view of the sheath for gastrostoma 1 illustrated with the lid 13 opened. Also, Fig. 4A is a top view, Fig. 4B is a front view, Fig. 4C is a right side view, Fig. 4D is a rear view and Fig. 4E is a bottom view of the sheath for gastrostoma illustrated with the lid opened.

[0056] In the state in which the lid 13 is opened, it is necessary to prevent the inner path 113 from blocking a route along which the button for gastrostoma 2 and the dilator 5 are inserted. In order to receive the lid 13 pivoted from the closed position, it is preferable to provide a recess for receiving the lid inside the inner path 113. Such a recess may be implemented by, for example, an expanded section 115 provided in the sheath body 11. In the illustrated example, an inner space 115a of the expanded section 115 functions as a recess for receiving the lid 13 pivoted from the closed position. With this configuration, insertion resistance at the time of inserting the button for gastrostoma 2 and the dilator 5 in the sheath

body 11 can be lowered.

[0057] Figs. 6A to 6C and 7 illustrate an embodiment of the gastrostomy catheter 2 (hereinafter, also referred to as a button for gastrostoma) used together with the sheath for gastrostoma 1.

[0058] Fig. 6A is a perspective view, Fig. 6B is a top view, Fig. 6C is a bottom view and Fig. 7 is a front cross-sectional view of the button for gastrostoma.

[0059] As illustrated in these drawings, the button for gastrostoma 2 includes a tubular section 21, an indwelling section 22 and an externally fixed section 23.

[0060] The indwelling section 22 is provided at one longitudinal end (hereinafter, referred to as a distal end) of the tubular section 21. The externally fixed section 23 is provided at the other longitudinal end (hereinafter, referred to as a base end) of the tubular section 21.

[0061] In more detail, a through-hole which penetrates inside the tubular section 21 functions as a path 24 for introducing a nutrient (i.e., a nutrient), chemical or other fluids. The externally fixed section 23 includes a cap 28 which closes the path 24 to shield the patient's body from outside when no nutrient or other fluid is introduced in the path 24. The cap 28 is provided at a distal end of a strip-shaped flexible piece 231 to extend from the externally fixed section 23 and is removably fit to an opening of the path 24 of the tubular section 21.

[0062] A valve 25 is provided at a distal section of the tubular section 21 to prevent back flow from the stomach.

[0063] The indwelling section 22 includes a plurality of (four in the illustrated example) elastically deformable strip-shaped pieces 221 disposed about a central axis 21C of the tubular section 21 (in particular, a portion on an extended line of the central axis 21C toward the distal end).

[0064] One longitudinal end of each of the strip-shaped pieces 221 extends from a base end gathering section 222 provided integrally with a distal end of the tubular section 21. The other longitudinal end of each of the strip-shaped pieces 221 is integrated at a distal end gathering section 223 (i.e., the most distal section of the indwelling section 222). The distal end gathering section 223 is spaced away from the base end gathering section 222 and along the central axis 21C of the tubular section 21 (in particular, a portion on an extended line of the central axis 21C toward the distal end). The entire indwelling section 22 is formed as a dome (i.e., as a round basket) constituted by the plurality of arcuate strip-shaped pieces 221 disposed between the base end gathering section 222 and the distal end gathering section 223.

[0065] The one longitudinal ends of the plurality of these strip-shaped pieces 221 extends radially from the base end gathering section 222 and the other longitudinal ends of the plurality of these strip-shaped pieces 221 extend radially from the distal end gathering section 223.

[0066] Also, the indwelling section 22 has the largest outer diameter in a middle portion between the base end gathering section 222 and the distal end gathering section 223.

[0067] Preferably, the button for gastrostoma 2 is integrally molded from synthetic resin.

[0068] The longitudinal direction ends of the plurality of these strip-shaped pieces 221 are gathered together at the base end gathering section 222 and the distal end gathering section 223 of the indwelling section 22.

[0069] Figs. 8A to 8C illustrate an obturator 3 which is used to extend the protruding indwelling section 22 which has a diameter enlarged radially outward of the button for gastrostoma 2 so that the indwelling section 22 adopts a reduced-diameter state. Fig. 8A is a side cross-sectional view (left cross-sectional view of Fig. 8B), Fig. 8B is a front view and Fig. 8C is a side view (right side view of Fig. 3B) of the obturator 3.

[0070] Note that the obturator 3 will be described with an upper end being a base end and a lower end being a distal end in Figs. 8A to 8C.

[0071] As illustrated in Figs. 8A to 8C, the obturator 3 includes a pushing rod for extension 31, an outer case 32, a spring 312 and a stopper 33.

[0072] The pushing rod for extension 31 consists of an operating section 311, a rod body 313 and a lock piece 316. A reference numeral 317 denotes a distal section of the rod body 313 and a reference numeral 314 denotes a reinforcing member attached to the distal section 317 of the rod body 313. Also, a reference numeral 315 denotes a wire insertion groove (i.e., a guidewire path) formed along the longitudinal direction of the rod body 313.

[0073] The operating section 311 is fixedly attached to the rod body 313.

[0074] The outer case 32 includes a cylindrical portion 321, a finger plate 322, a fitting portion 323, a groove 324, a groove hole 325 and a lock hole 326. The finger plate 322, the fitting portion 323, the groove 324, the groove hole 325 and the lock hole 326 are provided in the cylindrical portion 321.

[0075] The spring 312 urges the pushing rod for extension 31 in a direction in which an amount of protrusion of the distal end distal end (in particular, the distal end of the rod body 313) of the pushing rod for extension 31 from a distal end of the outer case 32 is decreased. In particular, the spring 312 is a coil spring which is placed over the rod body 313.

[0076] The rod body 313 of the pushing rod for extension 31 is disposed inside the cylindrical portion 321 of the outer case 32 so as to be slidable in the longitudinal direction of the outer case 32. The pushing rod for extension 31 can be moved in the longitudinal direction thereof with respect to the outer case 32.

[0077] In this obturator 3, when an operator pushes the operating section 311 of the rod body 313 in a direction in which the operating section 311 is pushed into the outer case 32, the pushing rod for extension 31 is moved along the longitudinal direction of the outer case 32 to increase an amount of protrusion of the distal end of the rod body 313 from the distal end of the outer case 32. The operating section 311 the pushing rod for extension

31 fixed to a portion (a base end: also functions as a base end of the pushing rod for extension 31) protruding from one longitudinal end (base end) of the outer case 32 of the rod body 313 is moved along the longitudinal direction of the outer case 32. Thus, an amount of protrusion of the distal end of the rod body 313 from the distal end of the outer case 32 increases. Note that in the illustrated example, the distal section 317 of the rod body 313 protrudes from the distal end of the outer case 32 before the operating section 311 is pushed in (i.e., an initial state). The distal end 317, however, does not necessarily protrude from the distal end of the outer case 32.

[0078] In accordance with moving of the pushing rod for extension 31 with respect to the outer case 32 by pushing the operating section 311, the lock piece 316 of the pushing rod for extension 31 moves from the groove 324 of the outer case 32, passes through the inside of the outer case 32 and engages with the lock hole 326 of the outer case 32. In this manner, movement of the pushing rod for extension 31 with respect to the outer case 32 can be prevented (this locked state will be referred to as a protruded state hereinafter). The lock piece 316 is urged by the urging force of the spring incorporated in the rod body 313. The lock piece 316 is provided to protrude from a side surface of the rod body 313 and is able to be pushed into the rod body 313.

[0079] In the protruded state, the amount of protrusion of the distal end of the pushing rod for extension 31 (i.e., the distal end of the rod body 313) from the distal end of outer case 32 is maintained. When the lock piece 316 is pushed and disengaged from the lock hole 326 of the outer case 32 in this protruded state, the pushing rod for extension 31 moves with respect to the outer case 32 due to the urging force of the spring 312 and the lock piece 316 moves to the groove 324 from the lock hole 326 of the outer case 32 to return to the initial state. The initial state is a state in which the amount of protrusion of the distal end of the rod body 313 from the distal end of the outer case 32 is smaller (including a state in which the distal end of the rod body 313 does not protrude at all) as compared with the protruded state.

[0080] The spring 312 is provided in the pushing rod for extension 31 to enable a switchover from the protruded state to the initial state only through pushing in of the lock piece 316.

[0081] In the illustrated example, although the spring 312 is a coil spring which is disposed over the rod body 313 at the base end thereof and located between the operating section 311 and the base end of the outer case 32, arrangements and configurations of the spring 312 for enabling a switchover from the protruded state to the initial state only through pushing in of the lock piece 316 are not limited to those in the illustrated example.

[0082] As illustrated in Figs. 10A and 10B, the obturator 3 is first made to engage with the button for gastrostoma 2 in the initial state and then adopt the protruded state. In this protruded state, the distal section 317 of the rod body 313 presses the rod abutting section 27 (see Fig. 7) provided in the button for gastrostoma 2 at an inner side of the indwelling section 22 of the distal end gathering section 223 so as to move the rod abutting section 27 away from the base end gathering section 222. As illustrated in Fig. 7, the rod abutting section 27 is a wall (i.e., a rod abutting wall) formed integrally with the distal end gathering section 223 at a position opposite to the base end gathering section 222 at the inside of the indwelling section 22 of the distal end gathering section 223. In particular, in Fig. 7, the rod abutting section 27 is formed by thickening a portion opposite to the base end gathering section 222 at the inside of the indwelling section 22 of the distal end gathering section 223 and is continuous to and integral with the distal end gathering section 223.

[0083] Accordingly, when the obturator 3 engaging with the button for gastrostoma 2 (i.e., the obturator 3 at its initial state) adopts the protruded state, the distal end gathering section 223 and the rod abutting section 27 are moved away from the base end gathering section 222. As a result, the indwelling section 22 of the button for gastrostoma 2 is extended to adopt a reduced-diameter state.

[0084] The pushing rod for extension 31 functions as a member which is inserted in the indwelling section 22 of the gastrostomy catheter 2 so as to press rod abutting section 27 of the indwelling section 22, thereby extending the indwelling section 22.

[0085] The rod abutting wall 27 functions also as a reinforcing wall which reinforces the distal end gathering section 223.

[0086] As illustrated in Fig. 7, the rod abutting section 27 is reinforced by the reinforcing member 272. It is preferable that, when the obturator 3 applies the extending force to the extracorporeal section 22, the indwelling section 22 can be introduced in the patient's body easily and reliably in its reduced-diameter state without a risk of the distal section 317 of the rod body 313 of the obturator 3 breaking through the distal end gathering section 223. Reinforcement by the reinforcing member 272 is preferred also in respect of keeping a configuration of a communication path 26 (described later) which is a small bore formed through the rod abutting section 27 and the distal end gathering section 223.

[0087] The reinforcing member 272 may be formed of, for example, metal, reinforced fiber and reinforced plastic and may preferably have a mesh structure. The reinforcing member 272 is provided integrally with the rod abutting section 27 by, for example, embedding into the rod abutting section 27 as illustrated to Fig. 7, or fixing (e.g., adhesion fixing) to a surface of the rod abutting section 27 (i.e., a surface facing the distal end of the tubular section 21 of the button for gastrostoma 2).

[0088] A meshed reinforcing member 272 is easily extendable. An easily extendable configuration of the reinforcing member 272 is preferable also in respect of reducing the diameter of the indwelling section 22.

[0089] Note that the communication path 26 is formed

at the distal section of the indwelling section 22 of the button for gastrostoma 2. The communication path 26 is a bore which penetrates the rod abutting section 27 and the distal end gathering section 223 for drawing a guidewire 4 into the button for gastrostoma 2 from the distal section of the indwelling section 22. The communication path 26 is formed to penetrate the rod abutting section 27 and the distal end gathering section 223 on the central axis 21C of the tubular section 21 (in particular, a portion on an extended line of the central axis 21C toward the distal end).

[0090] In addition, a reference numeral 271 in Fig. 7 denotes a rod fitting projection provided to protrude annularly around an outer periphery of the rod abutting section 27. This rod fitting projection 271 is formed as a ring which surrounds an opening of the communication path 26 in the rod abutting section 27 coaxially with the central axis 21C (in particular, a portion on an extended line of the central axis 21C toward the distal end) of the tubular section 21 of the button for gastrostoma 2. As illustrated in Fig. 10A, when the obturator 3 is made to fit onto the button for gastrostoma 2, obturator 3, the distal section 317 of the rod body 313 of the obturator 3 is inserted in and fit into the inside of the rod fitting projection 271. Thus, the rod body 313 of the obturator 3 is aligned with the rod abutting section 27, that is, aligned coaxially with the communication path 26.

[0091] When the obturator 3 is made to fit to the button for gastrostoma 2, in particular, the obturator 3 is inserted in the path 24 of the tubular section 21 of the button for gastrostoma 2 from the side of the externally fixed section 23 and then fit to the button for gastrostoma 2.

[0092] The obturator 3 is inserted in the tubular section 21 from the distal end thereof. When the obturator 3 is fit to the button for gastrostoma 2, the peripheral surface of the outer case 32 is made to contact the inner surface of the path 24 of the tubular section 21 so that the obturator 3 is aligned with the button for gastrostoma 2 without any backlash. The distal section of the rod body 313 protruding from the distal end of the outer case 32 is inserted into the indwelling section 22 via the valve 25 (see Fig. 7) provided at an indwelling section 22 side end of the tubular section 21 and is made to abut or be disposed near the rod abutting section 27 of the indwelling section 22.

[0093] The valve 25 is made of synthetic resin and is formed in an elastically deformable umbrella shape which closes an end opening of the tubular section 21 at the side of the indwelling section 22. The valve 25 includes a slit 251 formed at the top thereof. The distal end of the rod body 313 is pushed into the indwelling section 22 from the path 24 of the tubular section 21 so as to penetrate the slit 251 and is disposed coaxially with the central axis 21C (see Fig. 7) of the tubular section 21 of the button for gastrostoma 2. Thus, in the protruded state, the distal end of the rod body 313 can press the rod abutting section 27 to extend the indwelling section 22.

[0094] As illustrated in Fig. 8B, a reinforcing member 314 is attached to the distal section 317 of the rod body 313 of the obturator 3 which is subject to a large load at the time of extension of the button for gastrostoma. In the illustrated example, the reinforcing member 314 is a thin reinforcement sleeve.

[0095] As illustrated in Fig. 11, a wire insertion groove 315 (see Figs. 8A, 9A and 9B) of the rod body 313 is formed along the longitudinal direction of the rod body 313 toward the base end of the rod body 313 from the distal end of the rod body 313. The guidewire 4 can be inserted in this wire insertion groove 315 from the opening at the distal end of the rod body 313.

[0096] Moreover, the wire insertion groove 315 is always visible from the outside of the outer case 32 via a groove hole 325 provided in the outer case 32 either when the obturator 3 is extended or when the obturator 3 is retracted. The groove hole 325 of the outer case 32 is an outlet of the guidewire 4 inserted in the wire insertion groove 315 from the button for gastrostoma 2.

[0097] A finger plate 322 is provided to protrude from the outer case 32. An operator can hold the obturator 3 easily with his or her fingers with the finger plate 322.

[0098] Moreover, a fitting portion 323 for fixedly fitting the stopper 33 which will be described later is provided on an outer periphery of the outer case 32.

[0099] The stopper 33 can function as an anchoring member for anchoring the button for gastrostoma 2 with respect to the obturator 3.

[0100] The fitting portion 323 of the obturator 3 is a plurality of (three or more) projections provided at constant intervals provided along the longitudinal direction of the outer case 32 at both sides of the outer case 32 of the obturator 3. A pair of arms 331 are provided at the stopper 33 which removably engages with a fit-in groove 323a provided between the adjacent fitting portions 323.

[0101] As illustrated in Figs. 9A and 9B or other drawings, the stopper 33 is formed as a square frame which includes a back plate 333, a plate-like pushed-in portion 334 and a pair of rod-shaped arms 331. The stopper 33 is placed over the outer case 32 of the obturator 3. The arms 331 have a function to connect the back plate 333 and the pushed-in portion 334 disposed opposite to each other across the obturator 3 inserted in an inner space of the square frame-shaped stopper 33.

[0102] A mounting position of the stopper 33 with respect to the obturator 3 is determined by the arms 331 fit to any of the fit-in groove 323a selected among the plurality of the fit-in grooves 323a. Also, the mounting position of the stopper 33 with respect to the obturator 3 can be changed by changing the fit-in groove 323a to which the arms 331 are made to fit.

[0103] The arms 331 which have been fitted to the fit-in groove 323a can be removed from the fit-in groove 323a by rotating the stopper 3 with respect to the obturator 3 in the direction of the axis of the outer case 32. As illustrated in Figs. 9A, 9B and other drawings, there are provided areas where no fitting portion 323 is provided (i.e., non-fitting areas) at 90 degrees apart from areas

where the fitting portions 323 are provided (i.e., fitting areas) about the axial direction of the outer case 32 on the outer periphery of the outer case 32 of the obturator 3. The stopper 3 can be switched between a state in which it engages with the obturator 3 and a state in which it disengages from the obturator 3 due to axial rotation of the outer case 32. The distance between the back plate 333 and the pushed-in portion 334 of the stopper 33 is larger than that between a pair of arms 331. Accordingly, when the arms 331 are in the non-fitting areas, the stopper 3 can be slidingly moved along the longitudinal direction of the outer case 32 without interference of the back plate 333 and the pushed-in portion 334 with the fitting portion 323. In this manner, the fit-in groove 323a to which the arms 331 are to be fit can be selected or changed.

[0104] In addition, the arms 331 engaging with the fit-in groove 323a of the obturator 3 can be slidingly moved along the longitudinal direction of the arms 331 with respect to the obturator 3 while being disposed inside the fit-in groove 323a. That is, the obturator 3 can be slidingly moved along the longitudinal direction of the arms 331 with respect to the stopper 33 attached to the obturator 3 with the arms 331 engaging with the fit-in groove 323a functioning as a guide.

[0105] The back plate 333 and the pushed-in portion 334 can be used as an operating piece which provides easy operation to cause the stopper 33 attached to the obturator 3 to slidingly move with respect to the obturator 3 (i.e., slidingly move in a direction perpendicular to the longitudinal direction of the obturator 3).

[0106] With this sliding movement, the stopper 33 can make a holding section 332 provided to protrude from the back plate 333 engage and disengage with respect to the externally fixed section 23 of the button for gastrostoma 2 engaging with the obturator 3.

[0107] The holding section 332 is a hook-shaped piece protruding from a surface on which the arms 331 of the back plate 333 are provided to protrude at a position separated from the arms 331 on the back plate 333. As illustrated in Figs. 10A, 10B and 11, when the stopper 33 attached to the obturator 3 is slidingly moved with respect to the obturator 3 (i.e., slidingly moved in a direction perpendicular to the longitudinal direction of the obturator 3), the holding section 332 is inserted in and removed from the patient contact surface 232 side of the externally fixed section 23 of the button for gastrostoma 2 with which the obturator 3 is engaged and is thus engaged or disengaged with respect to the externally fixed section 23.

[0108] In a state in which the pushed-in portion 334 of the stopper 33 abuts the outer case 32 of the obturator 3, the holding section 332 is separated from the externally fixed section 23 of the button for gastrostoma 2 with which the obturator 3 is engaged and thus does not anchor the button for gastrostoma 2 (i.e., a disengaged state as illustrated in Fig. 9B). In this disengaged state, the button for gastrostoma 2 can be slidingly moved freely along the longitudinal direction of the outer case 32 of the obturator 3.

[0109] From this disengaged state, when the stopper is slidingly moved with respect to the obturator 3 so that the back plate 333 is moved close to the obturator 3, the holding section 332 is inserted in the patient contact surface 232 side of the externally fixed section 23 and engages with the externally fixed section 23 (a state illustrated in Fig. 9A). The holding section 332 contacts the patient contact surface 232 and engages with the externally fixed section 23. Thus, the holding section 332 anchors the button for gastrostoma 2 so as not to move toward the distal end of the obturator 3. In this manner, when the obturator 3 engaging with the button for gastrostoma 2 adopts the protruded state from the initial state, the extending force from the pushing rod for extension 31 (in detail rod body 313) can be reliably transmitted to the indwelling section 22 while reliably keeping the indwelling section 22 in its extended state, i.e., the reduced-diameter state.

[0110] The obturator 3 can be assembled to the button for gastrostoma 2 in the following manner. As illustrated in Fig. 10A, the outer case 32 of the obturator 3 (in its initial state) is inserted in the path 24 of the button for gastrostoma 2 for engagement and the back plate 333 of the stopper 33 is pushed in the direction of the pushed-in portion 334. Thus, a body surface fixing portion 23 of the button for gastrostoma 2 is held (anchored) by the holding section 332 of the stopper 33. When the outer case 32 of the obturator 3 is inserted in the path 24 of the button for gastrostoma 2, the back plate 333 of the stopper 33 is moved away from the outer case 32 and is made to adopt the disengaged state so that the back plate 333 does not interfere with the externally fixed section 22 of the button for gastrostoma 2.

[0111] In this assembled state, as illustrated in Fig. 10B, the operating section 311 of the pushing rod for extension 31 is operated to cause the obturator 3 to adopt its protruded state and the indwelling section 22 of the button for gastrostoma 2 is extended.

[0112] Also, after the obturator 3 adopts the state of Fig. 10A, a guidewire 4 is inserted through the pushing rod for extension 31 of the obturator 3 before the obturator 3 adopts the protruded state as illustrated in Fig. 11. The guidewire 4 is inserted through the pushing rod for extension 31 of the obturator 3 (i.e., through a wire insertion groove 315 of the rod body 313) via the rod abutting section 27 of the indwelling section 22 of the gastrostomy catheter 2 and the communication path 26 (see Fig. 7) penetrating the distal end gathering section 223. The guidewire 4 is pulled out from a groove hole 325 of the outer case 32 in advance.

[0113] When the obturator 3 is made to engage with the button for gastrostoma 2, an opening of the wire insertion groove 315 provided at a distal end of the pushing rod for extension 31 of the obturator 3, the rod abutting section 27 of the indwelling section 22 of the gastrostomy catheter 2 and the communication path 26 penetrating the distal end gathering section 223 are positioned to

communicate with one another. Thus, in the set-up state, the guidewire 4 can be inserted easily in the pushing rod for extension 31.

[0114] Figs. 12A to 12D illustrate an exemplary dilator (extender) 5 for forming a fistula, Fig. 12A is a front view and Fig. 12B is a front view of a narrow-diameter dilator 52 which constitutes the dilator. Fig. 12C is a front view illustrating a state in which a dilator 5 is covered with the sheath for gastrostoma 1 (i.e., a sheathed dilator 5A) with the sheath for gastrostoma 1 being illustrated as a cross-sectional view. Fig. 12D is a cross-sectional view of a dilator 5 covered with the sheath for gastrostoma 1 (i.e., a sheathed dilator 5A).

[0115] Note, in Figs. 12A to 12D, that a left side of the paper is defined as a distal end side and a right side of the paper is defined as a rear end side.

[0116] As illustrated in Figs. 12A to 12D, the dilator 5 has a narrow-diameter dilator 52 (see Fig. 10) and a large-diameter dilator 51 which are integrated with each other (i.e., an integrated dilator). The large-diameter dilator 51 is a cylindrical body disposed over the narrow-diameter dilator 52 and is assembled to the narrow-diameter dilator 52.

[0117] The narrow-diameter dilator 52 is a rod-shaped member which includes a tapered distal section 522 (i.e., a narrow-diameter dilator distal section 522) at the distal end thereof. The narrow-diameter dilator 52 also includes a guidewire path 524 penetrating the same in the longitudinal direction.

[0118] The large-diameter dilator 51 includes a cylindrical large-diameter dilator body section 511 and a tapered large-diameter dilator distal section 512 provided to protrude from a distal end of the large-diameter dilator body section 511. The narrow-diameter dilator distal section 522 of the narrow-diameter dilator 52 protrudes from the large-diameter dilator distal section 512.

[0119] Also, connectors 513 and 523 are provided in each of the rear ends of the dilators 51 and 52. The connectors 513 and 523 fit each other with luer taper fitting. The narrow-diameter dilator 52 is integrally assembled to the large-diameter dilator 51 through fitting of the connectors 513 and 523.

[0120] As illustrated in Fig. 12A, a scale 514 is provided on a peripheral surface of the large-diameter dilator body section 511. A reference point (zero point) 5141 is provided at the large-diameter dilator distal section 512 side. The scale is used to measure the distance from the patient's body surface to an inner stomach wall. After the dilator 5 is inserted, an operator positions the reference point 5141 at the inner stomach wall and reads the scale at the side of the patient's body surface under the endoscope. With this measurement, the length of the tubular section 21 of the button for gastrostoma 2 can be selected.

[0121] Fig. 12C illustrates a state in which the dilator 5 is covered with the sheath for gastrostoma 1 to provide a sheathed dilator 5A.

[0122] The sheath for gastrostoma 1 is disposed with the distal section thereof positioned at a distal end of the large-diameter dilator body section 511. Although the sheath for gastrostoma 1 includes no means for positioning itself with respect to the dilator 5, the dilator 5 may include a movement restriction means (e.g., a projection which the base end of the sheath body 11 of the sheath for gastrostoma 1 abuts) which restricts sliding movement of the sheath for gastrostoma 1 toward the rear end thereof.

[0123] In addition, a tapered portion 112 (see Fig. 3B) is preferably provided at the distal section of the sheath for gastrostoma 1 so as to eliminate level difference between the sheath for gastrostoma 1 and the large-diameter dilator body section 511. With the tapered portion 112, it becomes possible to lower insertion resistance at the time of inserting the dilator 5 with the sheath for gastrostoma 1 disposed thereon (sheathed dilator 5A) in an abdominal wall and a stomach wall. The tapered portion 112 can be provided by, for example, tube extension or heat molding. Misalignment of the sheath for gastrostoma 1 with respect to the body section 511 of the dilator 5 can be restricted by adjusting the inner diameter of the sheath body 11 so that the inner diameter is pressed against an outer diameter of the large-diameter dilator body section 511.

[0124] Fig. 13 illustrates a state before the button for gastrostoma 2 is inserted in the inner path 113 of the sheath for gastrostoma 1. At this time, the indwelling section 22 of the button for gastrostoma 2 has been extended to have a reduced diameter by the obturator 3.

[0125] The inner diameter of the sheath body 11 of the sheath for gastrostoma 1 preferably corresponds to the outer diameter of the tubular section 21 of the button for gastrostoma 2.

[0126] However, the indwelling section 22 of the button for gastrostoma 2 which will be left in the patient's body has the maximum outer diameter larger than the outer diameter of the tubular section 21 in the initial state before its diameter is reduced and thus protrudes significantly from the tubular section 21 in a radially outward direction. Accordingly, it is often a significant technical challenge to reduce the diameter of the greatly protruding indwelling section 22 to the outer diameter of the tubular section.

[0127] On the other hand, it is preferred that the inner path 113 of a diameter of the sheath for gastrostoma 1 be substantially equivalent to the maximum outer diameter of the dilator 5. The maximum outer diameter of the dilator 5, i.e., the outer diameter of the large-diameter dilator body section 511, determines the size of the fistula to be formed. It is preferred that the size of the fistula be almost equivalent to the outer diameter of the tubular section 21 of the button for gastrostoma 2 or larger by not less than 1 to 2 mm.

[0128] A configuration has been considered for efficiently placing the indwelling section 22 by lowering resistance when the indwelling section 22 is inserted in and made to pass through the fistula of the indwelling section 22 using the sheath 1 even if the maximum outer diameter

of the extended indwelling section 22 is larger than the diameter of the inner path 113 of the sheath for gastrostoma 1. In this case, since the diameter of the sheath body 11 of the sheath 1 can be made smaller than the maximum outer diameter of the extended indwelling section 22, the size of the fistula may also be decreased.

[0129] In this configuration, since the inner diameter of the inner path 113 of the sheath for gastrostoma 1 is made smaller than the maximum outer diameter of the extended indwelling section 22, the sheath body 11 splits when a portion of the indwelling section 22 of the button for gastrostoma 2 at which outer diameter is larger than the diameter of the inner path 113 tries to pass through the inner path 113. It is preferred that the diameter of the inner path 113 of the sheath for gastrostoma 1 be larger than the outer diameter of the most distal section of the indwelling section 22.

[0130] Figs. 13 and 14 illustrate the sheath for gastrostoma 1 configured to have dimensions described above. These drawings illustrate a state in which the button for gastrostoma 2 is inserted in the sheath for gastrostoma 1. The sheath for gastrostoma 1 is configured such that the sheath body 2 can vertically split when a portion of the indwelling section 22 of the button for gastrostoma 2 which is made to adopt an extended state (reduced-diameter state) by the obturator 3 where the outer diameter is larger than the diameter of the inner path 113 tries to pass through the inner path 113. The button for gastrostoma 2 inserted in the sheath body 11 of the sheath for gastrostoma 1 has the maximum outer diameter in the reduced-diameter state of the indwelling section 22 which is larger than the diameter of the inner path 113 of the sheath for gastrostoma 1.

[0131] Since the outer diameter of the most distal section (i.e., the distal end gathering section 223) of the indwelling section 22 is smaller than the diameter of the inner path 113 of the sheath for gastrostoma 1, the most distal section can be easily inserted and made to pass through the inner path 113. However, the sheath body 11 splits when the portion of the indwelling section 22 of the button for gastrostoma 2 having the outer diameter larger than the diameter of the inner path 113 tries to pass through the inner path 113.

[0132] Also in the case illustrated in Fig. 14, insertion resistance can be lowered because an inner cavity through which the most distal section of the indwelling section 22 passes is formed of the inner path 113 of the sheath for gastrostoma 1.

[0133] Materials for constituting the sheath body 11 are not particularly limited, but preferably include polyethylene resin, polypropylene resin, polytetrafluoroethylene resin (PTFE), tetrafluoroethylene hexafluoropropylene copolymer (FEP) and tetrafluoroethylene ethylene copolymer (ETFE). Among these, fluoro-resin having low frictional resistance is preferably used as the material to constitute the sheath body 11. It is therefore possible to lower frictional resistance of the button for gastrostoma 2 and the inner path 113 when the button for gastrostoma 2 is inserted and made to pass through the inner path 113, thereby lowering insertion resistance of the button for gastrostoma 2.

[0134] Examples of configurations for making the sheath body 11 split when the portion of the indwelling section 22 having the outer diameter larger than the diameter of the inner path 113 of the sheath for gastrostoma 1 is inserted include, but are not limited to: a configuration in which a PTFE tube is used as the sheath body 11 which has an orientation in the longitudinal direction that can split vertically; a configuration which has a sheath body 11 which is locally thinned by a cut-out groove (i.e., a notch section) extending along the longitudinal direction of the sheath body 11; and a configuration in which a cut portion is formed in advance in the sheath body 11 by a slit (i.e., notch section) extending along the longitudinal direction of the sheath body 11. When notch sections, such as a cut-out groove and a slit, are formed in the sheath body 11, the sheath body 11 splits along the entire length along the portion where the notch section is formed when the indwelling section 22 is inserted.

[0135] In particular, Figs. 1A, 1B, 4A to 4E, 13 and 14 illustrate a configuration in which a notched groove 111A is formed in the sheath body 11 as a notch section.

[0136] As illustrated in Fig. 16A, the notched groove 111 A is formed in the sheath body 11 so as not to penetrate the sheath body 11 in the thickness direction. The sheath body 11 includes an uncut portion 111a formed by locally reducing the thickness of the sheath body 11 at a groove bottom side of the notched groove 111A.

[0137] The uncut portion 111a fractures when the portion of the indwelling section 22 in its reduced-diameter state having the outer diameter larger than the diameter of the inner path 113 of the sheath for gastrostoma 1 is inserted in the sheath body 11.

[0138] As a result of the fracture of the uncut portion 111a, the sheath body 11 splits vertically.

[0139] In contrast, Figs. 15A and 15B illustrate a configuration in which a slit 111B is formed in the sheath body 11 as a notch section.

[0140] In the configuration in which the slit 111B is formed, the slit 111B is formed at a portion along the longitudinal direction of the sheath body 11. An uncut portion 118 is provided on a virtual extended line of the slit 111B where no slit 111B is formed. The uncut portion 118 keeps the form of the sheath body 11 until the button for gastrostoma 2 is inserted in the sheath body 11 (in particular, until the portion of the indwelling section 22 having the outer diameter larger than the diameter of the inner path 113 of the sheath for gastrostoma 1 is inserted in the sheath body 11). In Figs. 15A and 15B, the slit 111B is not formed at both the longitudinal ends of the sheath body 11 and the uncut portions 118 are provided at both the longitudinal ends of the sheath body 11.

[0141] The uncut portion 118 fractures when the portion of the indwelling section 22 in its reduced-diameter state having the outer diameter larger than the diameter

of the inner path 113 of the sheath for gastrostoma 1 is inserted in the sheath body 11, or alternatively, when the portion presses and deforms the portion of the sheath body 11 where the slit 111B is formed from the side of the inner path 113 so that the uncut portion 118 fractures from the slit 111B. Fracture of the uncut portion 118 results in vertical splitting of the sheath body 11.

[0142] The uncut portion 118 is not necessarily formed at both longitudinal ends of the sheath body 11, but may be formed at one of the longitudinal ends of the sheath body 11 along the virtual extended line of the slit 111B. A plurality of slits 111B (i.e., a slit array) may alternatively be formed at intervals along the longitudinal direction of the sheath body 11. In this case, uncut portions 118 are defined between the slits 111B which constitute the slit array.

[0143] The length (i.e., a dimension along the longitudinal direction of the sheath body 11) of the uncut portion 118 is 0.5 to 10 mm and preferably 1 to 5 mm.

[0144] The uncut section 118 may fracture more easily with a cut-out groove (i.e., a notch section) provided to extend in the longitudinal direction of the sheath body 11.

[0145] In the sheath body 11, the load applied to the inner surface (i.e., the inner surface of the inner path 113) of the sheath body 11 is preferably not smaller than 0.5N to not greater than 5N in order to fracture at least one of the uncut portions 111a and 118. The load is more preferably not smaller than 0.5N to not greater than 3N. In this case, the sheath body 11 can be split smoothly with, for example, insertion of the indwelling section 22 in its reduced-diameter state.

[0146] Note that the notched groove 111A is advantageous to the slit 111B as the notch section in increased morphological stability of the sheath body 11 and maintainance of the configuration of the inner path 113 of the sheath body 11 when the sheath body 11 is inserted in the fistula.

[0147] In addition, in Fig. 16B, portions of the sheath body 11 located opposite to each other over the slit 111B are disposed close to each other and thus the slit 111B is substantially closed. However, it is not easy to completely close the slit 111B and to stably keep the closed state. On the contrary, the notched groove 111A is formed in the sheath body 11 so as not to penetrate the sheath body 11 in the thickness direction while providing the uncut portion 111a at the groove bottom side. Such a configuration has an advantage in that, as compared with the configuration with the slit 111B, air supplied from the endoscope does not leak in the radially outward direction of the sheath body 11 from the middle of the inner path 113 inside the sheath body 11.

[0148] In the sheath 1 of the illustrated example, the notch section is formed in the sheath body 11 only at one position along a circumferential direction of the sheath body 11. However, the sheath can include a configuration in which notch sections are formed at a plurality of positions along the circumferential direction of the sheath body 11.

[0149] Figs. 16A and 16B schematically illustrate an example in which the notch section is formed only at one position along the circumferential direction of the sheath body 11. Fig. 16A illustrates the notched groove 111A and Fig. 16B illustrates the slit 111B.

[0150] In Figs. 16A and 16B, the handle 12 is provided at a position where the handle 12 does not interfere with the notch section (i.e., the notched groove 111A or the slit 111B) in the circumferential direction of the sheath body 11.

[0151] Accordingly, when the sheath body 11 is vertically split at the notch section as a cutout line, the sheath body 11 is not divided into two or more parts but remains as a single part. Thus, there is an advantage that the entire sheath body 11 can be easily removed from the fistula when the handle 12 is drawn.

[0152] Fig. 17 schematically illustrates an example in which the notch sections (in illustrated example, the slits 111B) are formed at two positions in the circumferential direction of the sheath body 11.

[0153] The handle 12 is provided at a position where the handle 12 does not interfere with the notch sections. Here, the handle 12 is provided at each split part of the sheath body 11 (hereinafter, referred to as split pieces 119; in Fig. 17, the sheath body 11 is split into two split pieces 119) when the sheath body 11 is vertically split due to insertion of the button for gastrostoma 2. Thus, the handle 12 is provided at each of the split pieces 119.

[0154] The sheath body 11 is denoted by a reference numeral 11B in Fig. 17.

[0155] Note, of course, that the notched groove 111A may be employed in place of the slit 111B.

[0156] In the case of Fig. 16, as compared with the configuration of Fig. 17, the sheath body 11 can be drawn out of the fistula after vertical splitting in an easier manner.

[0157] It is preferable that the notch section (the notched groove 111 A and the slit 111B) be formed in a wedge-shaped cross-section with its opening width increasing from an inner surface toward an outer surface of the sheath body 11.

[0158] In the notch section with such a cross-section shape, as the sheath body 11 is extended and deformed in a radially outward direction by the indwelling section 22 inserted in the inner path 113, the cross section of the notch section is also extended. Thus, the uncut portions 111a and 118 easily fracture from the notch section.

[0159] The notch section can be formed through, for example, laser processing or machining of the sheath body 11.

[0160] Laser processing is preferable because the opening width of the notch section can be easily adjusted and a notch section with a wedge-shaped cross-section can be easily formed through controlling the focal position of laser.

[0161] Also, when the notch section is formed in a FEP-based sheath body 11 (herein the sheath body 11 includes FEP as a major component) through laser

processing (especially, laser processing with YAG laser), a portion of the sheath body 11 where the notch section has been formed can be whitened by the laser processing.

[0162] Thus, an easily visible mark is formed by this whitening so that a user can easily recognize the position of the notch section. As a result, the user can vertically split the sheath body 11 inserted in the fistula and draw out of the patient's body in an efficient manner.

[0163] Moreover, an end surface of the sheath for gastrostoma 1 at the side of the base end of the sheath body 11 is inclined with respect to the axial center (i.e., the central axis C1) of the sheath body 11.

[0164] In the sheath for gastrostoma 1 of the illustrated example, the end surface at the side of the base end of the sheath body 11 is inclined so that the side of the lid abutting section 117 is closer to the distal section of the sheath body 11 than the side of the hinge section 116.

[0165] With this configuration in which the end surface of the sheath body 11 at the side of the base end thereof is inclined with respect to the axial center (central axis C1) of the sheath body 11, the section of the opening of the inner path 113 at the base end of the sheath body 11 is increased substantially, which facilitates smooth insertion of the indwelling section 22 of the button for gastrostoma 2 in the sheath body 11 from the base end of the sheath body 11. Especially when an indwelling section 22 with the maximum outer diameter larger than the inner diameter of the sheath body 11 is pushed into the sheath body 11, such an opening section facilitates a smooth pushing operation in an efficient manner.

[0166] Next, an exemplary usage of the sheath for gastrostoma, the sheathed dilator and the gastrostomy catheter kit will be described with reference to Figs. 18 to 28.

[0167] The gastrostomy catheter kit includes the sheath for gastrostoma 1, the button for gastrostoma 2, the obturator 3 and the dilator 5. The gastrostomy catheter kit will be described later.

[0168] Before the sheath for gastrostoma 1 is used, an endoscope is inserted in the stomach of a patient, i.e., a living body, and sufficient air is supplied to make an abdominal wall 900 and a stomach wall 901 closely contact each other (as illustrated in Fig. 18, the abdominal wall 900 and the stomach wall 901 are not in close contact with each other before they are made to closely contact each other). Then, the operator confirms the stomach position with light transmitted from the endoscope, palpates the abdomen from the body surface, determines a position where the stomach wall is to be fixed, disinfects the abdomen skin and applies local anesthesia.

[0169] Subsequently, the operator fixes the abdominal wall 900 and the stomach wall 901 together with a suture using a device for fixing the stomach wall and the abdominal wall (see Fig. 19).

[0170] The abdominal wall 900 and the stomach wall 901 should be fixed together with a suture usually at two points so as to provide a site for catheter gastrostomy as a plane in the later step.

[0171] After the stomach wall and the abdominal wall are fixed together, a cannula needle is inserted in the abdominal wall and the stomach wall from the body surface to leave the guidewire 4.

[0172] The dilator 5 is inserted through the guidewire 4 which is left in the patient's body (i.e., the guidewire 4 is made to pass through the guidewire path 524 of the dilator 5). The dilator 5 with the sheath for gastrostoma 1 disposed thereon (sheathed dilator 5A) is inserted in the abdominal wall and the stomach wall from the body surface to form a one-stage fistula (see Fig. 21). At this time, the dilator is inserted while being twisted to provide safe extension.

[0173] In addition, when the dilator 5 is inserted in the abdominal wall and the stomach wall to form the fistula, the operator positions the reference point 5141 of the scale 514 (see Fig. 12A) on the peripheral surface of the large-diameter dilator body section 511 at the stomach wall surface (inner surface) and reads the scale provided on the body surface side so as to measure the distance from the body surface to the stomach wall inner surface under the endoscope. With this measurement, the length of the tubular section 21 of the button for gastrostoma 2 can be selected. A position of the stopper 33 of the obturator 3 (i.e., a position at which the stopper 33 is mounted along the longitudinal direction of the outer case 32) is determined in accordance with the selection of the tube 21.

[0174] The length of a portion of the obturator 3 inserted into the tubular section 21 is determined in accordance with the length of the tubular section 21 of the button for gastrostoma 2. Adjustment of the mounting position of the stopper 33 in the longitudinal direction of the outer case 32 enables the extension force to be reliably applied by the obturator 3 to the indwelling section 22 of the button for gastrostoma 2 anchored by the stopper 33. The mounting position of the stopper 33 in the longitudinal direction of the outer case 32 is selected by selectively engaging the arm 331 of the stopper 33 with the plurality of fitting portions 323 and the plurality of fit-in grooves 323a provided along the longitudinal direction of the outer case 32.

[0175] In order to provide easy reading of the scale 514 of the dilator 5, the sheath body 11 may preferably have transparency that enables the scale 514 of the dilator 5 to be viewed from outside.

[0176] When extension is completed, the dilator 5 and the guidewire 4 are removed from the body while leaving the sheath for gastrostoma 1 (see Fig. 22).

[0177] When the dilator 5 is removed from the sheath for gastrostoma 1, the lid 13 of the sheath for gastrostoma 1 closes to block the inner path 113. The lid 13 comes to the closed position due to elasticity of the hinge section 116 as described above. The inner path 113 may also be closed with air itself supplied into the stomach from the endoscope.

[0178] Thus, leakage of the air supplied from the endoscope outside of the body can be reduced.

[0179] Then, the operator grasps the handle 12 to open the lid 13 of the sheath for gastrostoma and inserts the button for gastrostoma 2 of which indwelling section 22 has been extended with the obturator 3 in the inner path 113 of the sheath for gastrostoma (see Fig. 23).

[0180] Since the sheath for gastrostoma 1 is provided with a means which splits along the longitudinal direction, the sheath body 11 is split in the longitudinal direction and is developed when a portion of the extended indwelling section 22 of the button for gastrostoma 2 having the outer diameter larger than the inner diameter of the sheath for gastrostoma 1 is inserted in the sheath body 11. The button for gastrostoma 2 makes its indwelling section 22 pass through the sheath 1 to reach the stomach, where the indwelling section 22 is left (see Fig. 24).

[0181] In addition, when the button for gastrostoma 2 extended with the obturator 3 is inserted, the most distal section of the indwelling section 22 can be inserted smoothly with lowered insertion resistance since an insertion route is established in the inner path 113 of the sheath for gastrostoma 1.

[0182] After the button for gastrostoma 2 is placed in the stomach, the sheath for gastrostoma 1 is removed from the body in a state in which the button for gastrostoma 2 is still extended with the obturator 3 (Fig. 25).

[0183] The operator pushes the pushed-in portion 334 of the stopper 33 attached to the obturator 3 toward the back plate 333 so that the arms 331 are slid to cancel the extension of the indwelling section of the button for gastrostoma 2 (see Fig. 26).

[0184] Then, the operator withdraws the obturator 3 disposed on the button for gastrostoma 2 (see Fig: 27) and places the cap 28 attached to the externally fixed section 23 of the button for gastrostoma 2 so as to block the path 24. In this manner, leaving the button for gastrostoma 2 in the patient's body is completed (see Fig. 28).

[0185] As described above, usage of the sheath for gastrostoma 1 lowers insertion resistance during insertion of the button for gastrostoma 2 and enables easy control of the endoscope regarding air supply during gastrostomy.

[0186] Also, the sheath body 11 of the sheath for gastrostoma may be formed of a deformable material and thus expandable radially (see Fig. 29). At the time of insertion of the button for gastrostoma, if the outer diameter of the indwelling section of the button for gastrostoma 2 of which the indwelling section 22 has been extended with the obturator 3 is larger than the inner diameter of the sheath body 11, the sheath body 11 is expanded radially in accordance with the configuration of the indwelling section 22 (see Fig. 30).

[0187] Examples of the material of the sheath body 11 in this case include plastic materials or elastomeric materials, such as polyurethane resin, tetrafluoroethylene and fluorinated ethylene propylene.

[0188] In addition, the sheath body 11 may be formed as a braided product in which inelastic filaments, such as polyamide fiber and stainless steel, are braided to provide a mesh structure. In this case, the braided product which constitutes the sheath body 11 may, for example, also be constituted so that the radial extension of the sheath body 11 may shorten the sheath body 11 in the axial direction thereof.

[0189] As described above, with the sheath body 11 made of a radially expandable material, insertion resistance of the button for gastrostoma 2 can be lowered when the button for gastrostoma 2 is inserted in the inner path 113 of the sheath body 11.

[0190] In addition, the sheath body 11 made of a radially expandable material may preferably be provided with a configuration with which the sheath body 11 can be split vertically. For example, a fine wire (i.e., a wire for vertical splitting including a high tension fiber, such as polyamide fiber) is embedded along the entire axial direction length of the sheath body 11 which is made of the plastic material or the elastomeric material described above. When the operator pulls strongly an end of the wire for vertical splitting which has been made to extend toward the base end of the sheath body 11, the wire for vertical splitting is removed from the sheath body 11. Then, a thin-walled section for vertical splitting is formed in the sheath body 11. With this configuration, the sheath body 11 can be easily split vertically. In this case, for example, when the operator pulls the wire for vertical splitting from the sheath body 11 to make the sheath body 11 vertically split after the indwelling section 22 of the button for gastrostoma 2 is made to pass, from outside of the body, through the sheath body 11 which has been inserted in the fistula, the sheath body 11 can be removed from the fistula while leaving the button for gastrostoma 2 in the body.

(Another of Sheath for Gastrostoma)

[0191] As illustrated in Figs. 31A, 31B and 32A to 32E, the sheath for gastrostoma may employ a configuration in which a lid 63 is pivotably provided in a handle 61 via a hinge section 62 (hereinafter, also referred to as a lid hinge section) which is provided separately from a hinge 116.

[0192] A sheath for gastrostoma 6 illustrated in Figs. 31A and 31B has a schematic structure which includes a sheath body 11 (sheath tube), the handle 61, the lid hinge section 62 and the lid 63.

[0193] The handle 61 extends from the base end of the sheath body 11 of the sheath for gastrostoma 6 as a tongue-shaped piece. The handle 61 may be used by an operator who grasps the sheath for gastrostoma 6 when inserting the button for gastrostoma in the sheath for gastrostoma 6.

[0194] This handle 61 is configured by fixing a pair of plate-like handle members 611 and 612 to a tongue-shaped handle main piece 114 which extends from the base end of the sheath body 11. The pair of handle members 611 and 612 is attached integrally with the handle

main piece 114 so as to sandwich the handle main piece 114 therebetween.

[0195] In addition, the sheath for gastrostoma 6 of the illustrated example includes a synthetic resin-made elongated plate lid member 64 in which the lid hinge section 62 and the lid 63 are formed. This elongated plate lid member 64 is integrally molded from synthetic resin as one component. This elongated plate lid member 64 is formed of a material with rubber elasticity, such as silicone rubber and elastomer.

[0196] This elongated plate lid member 64 has a mounting section 641 via the lid hinge section 62 at a side opposite to the lid 63 and is integral with the handle 61 with the mounting section 641 fixed to the handle 61. A portion of the elongated plate lid member 64 further toward the lid 63 from the mounting section 641 is formed as a tongue-shaped piece extending from the handle 61 and inserted in the sheath body 11.

[0197] The lid 63 is disposed in the inner path 113 of the sheath body 11 and is elastically supported at a closed position (i.e., a position illustrated in Fig. 31B) at which the lid 63 closes the inner path 113 due to elasticity of the elongated plate lid member 64 itself.

[0198] In particular, the handle 61 has a configuration in which the plate-like mounting section 641 and the handle main piece 114 of the elongated plate lid member 64 are sandwiched between and integrally fixed to the pair of handle members 611 and 612.

[0199] Examples of a method (configuration) for sandwiching and integrally fixing the mounting section 641 and the handle main piece 114 of the elongated plate lid member 64 between the pair of handle members 611 and 612 (i.e., the lid side handle member 611 and the main piece side handle member 612) include the following configurations: a configuration in which the other handle member is engaged by one handle member by an engaging pawl provided to protrude from one or both of the pair of handle members 611 and 612 and the mounting section 641 and the handle main piece 114 of the elongated plate lid member 64 are sandwiched between and fixed to the pair of handle members; and a configuration in which the pair of handle members 611 and 612, the mounting section 641 of the elongated plate lid member 64 and the handle main piece 114 are made to integrally adhere together using an adhesive.

[0200] Also, the pair of handle members 611 and 612, the mounting section 641 of the elongated plate lid member 64 and the handle main piece 114 may be integrally bundled together using a bundling member for bundling the mounting section 641 of the elongated plate lid member 64 and the handle main piece 114. The bundling member is not particularly limited as long as it can bundle the mounting section 641 of the elongated plate lid member 64 and the handle main piece 114 together (i.e., it can integrate the mounting section 641 of the elongated plate lid member 64 and the handle main piece 114 together so that no relative misalignment may occur). For example, a configuration in which a heat-shrinkable tube is used and the mounting section 641 of the elongated plate lid member 64 and the handle main piece 114 are integrally bundled together through heat shrinking of this heat-shrinkable tube.

[0201] Note that the pair of handle members 611 and 612 may be provided separately from each other or may be provided integrally with each other.

[0202] In addition, it suffices that the mounting section 641 be integrally fixed to the handle 61 to form a tongue-shaped portion of which the portion of the elongated plate lid member 64 further toward the lid 63 from the mounting section 641 is extended from the handle 61 and inserted in the sheath body 11. The position at which the mounting section 641 is fixed to the handle 61 is not necessarily between the pair of handle members 611 and 612.

[0203] Moreover, the handle does not necessarily include a plate-like handle member. A configuration may be employed in which, for example, the handle includes no handle member but is constituted by the handle main piece 114 and the mounting section 641 of the elongated plate lid member 64.

[0204] As illustrated in Fig. 31B, the distal end of the lid 63 is made to abut or be disposed close to the inner wall surface of the sheath body 11 at the side opposite to the handle 61 across the inner path 113.

[0205] The lid hinge section 62 is provided at the base end side of the lid 63 and is formed as a tongue-shaped portion extending from the handle 61 of the elongated plate lid member 64.

[0206] The lid 63 extends in a manner inclined from the lid hinge section 62 toward the distal end of the sheath body 11 at an angle of smaller than 90 degrees with respect to the axial center (central axis C1) of the sheath body 11. The lid 63 is elastically supported with elasticity of the lid hinge section 62 and the distal end of the lid 63 is made to abut or be disposed close to the inner wall surface of the sheath body 11 at the side opposite to the handle 61 across the inner path 113.

[0207] The lid 63 is supported to be pivotable about the lid hinge section 62 along an axis extending perpendicular to the axial center of the sheath body 11 (i.e., an axis parallel to the pivot axis of the hinge section 116). When the lid 63 is pivoted clockwise from the closed position illustrated in Fig. 31B (i.e., pivoted toward an opening direction) to open the inner path 113 of the sheath body 11. The lid 63 pivoted from the closed position in the open direction by external force applied by, for example, insertion of a device, such as the dilator 5, into the sheath body 11 returns to the closed position with the elasticity of the lid hinge section 62 when the external force acting as displacement force in the open direction is eliminated by, for example, withdrawal of the dilator 5, which had been inserted in the sheath body 11, from the sheath body 11.

[0208] Also, pivotation of the lid 63 in a direction opposite to the direction from the closed position in the open direction, i.e., counterclockwise pivotation from the closed position in Fig. 31B, is restricted by the distal end

abutting the sheath body 11. Thus, the lid 63 can be kept in a state which closes the inner path 113 of the sheath body 11. When, for example, the handle 61 is pivoted counterclockwise about the hinge section 116 in Fig. 31B and pivoting force in a direction opposite to the open direction is applied to the lid 63 located at its closed position, pivotation of the lid 63 abutting the sheath body 11 is restricted and the lid hinge section 62 is elastically deformed. Thus, in this sheath for gastrostoma 6, a state can be kept in which the lid 63 closes the inner path 113 of the sheath body 11 when the pivoting force in a direction opposite to the open direction is applied to the lid 63. Accordingly, there is an advantage that outflow of air supplied from endoscope in the stomach can be avoided.

[0209] The distal end of the lid 63 is pressed against the sheath body 11 when the lid is pivoted from the closed direction toward the direction opposite to the open direction.

[0210] Hereinafter, a portion of the sheath body 11 where the distal end of the lid 63 is made to abut will be referred to as a lid abutting section (denoted by a reference numeral 117a).

[0211] The hinge section 116 and the lid hinge section 62 are provided in the sheath body 11 at a side opposite to the lid abutting section 117a across the inner path 113. The distal end of the lid 63 is made to abut the lid abutting section 117a from the direction of the distal end of the sheath body 11 when the lid 63 is pivoted from the closed direction in the open direction.

[0212] The lid hinge section 62 and a stopper projection piece 642 are formed between the mounting section 641 of the elongated plate lid member 64 and the lid 63.

[0213] The stopper projection piece 642 is formed as a projecting piece extending from the handle 61 and inserted in the sheath body 11 and is disposed along an inner surface of the sheath body 11 at a side opposite to the lid abutting section 117a across the inner path 113. In particular, the stopper projection piece 642 is made to abut or be disposed close to the inner surface of the expanded section 115 formed in the sheath body 11.

[0214] The lid hinge section 62 is provided at a distal end of the stopper projection piece 642 in a direction in which the stopper projection piece 642 protrudes from the handle 61. The lid 63 extends from the distal end of the stopper projection piece 642 in a direction in which the stopper projection piece 642 protrudes from the handle 61 in a manner inclined toward the distal end of the sheath body 11 at an angle of smaller than 90 degrees with respect to the axial center (central axis C1) of the sheath body 11. The lid hinge section 62 is located in a connecting section at which the stopper projection piece 642 and the lid 63 continue to each other. The lid hinge section 62 corresponds to a bending section at which the elongated plate member 64 is formed to be bent.

[0215] When force is applied to the lid 63 to pivot the same from the closed position in the open direction, pivotation of the lid 63 with respect to the sheath body 11 is restricted by the stopper projection piece 642 being pressed against the inner surface of the sheath body 11. Pivotation of the lid 63 from the closed position in the open direction is allowed due to elastic deformation of the lid hinge section 62.

[0216] At this time, pivotation of the handle 61 following the lid 63 can be restricted by the stopper projection piece 642 which is not pivoted even when the lid 63 is pivoted from the closed position in the open direction due to elastic deformation of the lid hinge section 62. Thus, since the position of the handle 61 with respect to the sheath body 11 is stabilized, failure of a user of this sheath for gastrostoma 6 to grasp the handle 61 with the fingers occurs less often, thereby securing good workability. That is, the configuration of this sheath for gastrostoma 6 is that, when the handle 61 is pivoted clockwise in Fig. 31B about the hinge section 116, the stopper projection piece 642 is pressed against the inner wall surface of the sheath body 11 and pivotation is restricted. Thus, pivotation of the lid 63 from the closed position in the open direction is restricted to keep the state in which the inner path 113 of the sheath body 11 is closed.

[0217] That is, the sheath for gastrostoma 6 is less often affected by the pivotation of the handle 61 about the hinge section 116 in the state in which the lid 63 is disposed at the closed position and the lid 63 is elastically supported at the closed position with the elasticity of the lid hinge section 62 in the state in which no external force is applied to the handle 61 or the elongated plate lid member 64. Thus, in the event that the user of the sheath for gastrostoma 6 inadvertently touches the handle 61, the lid 63 is not easily pivoted in the open direction and, even when being pivoted in the open direction, the lid 63 returns to its closed position immediately. Accordingly, the state in which the lid 63 closes the inner path 113 of the sheath body 11 can be stably continued.

[0218] In addition, the stopper projection piece 642 formed of a material with rubber elasticity, such as silicone rubber and elastomer, is disposed between the handle 61 and the lid hinge section 62. When the handle 61 is pivoted, the stopper projection piece 642 elastically deforms so that following displacement of the lid hinge section 62 or the lid 63 with respect to the handle 61 occurs less often. This configuration also contributes to effectively maintaining the state in which the lid 63 closes the inner path 113 of the sheath body 11.

[0219] Note that any materials can be used for the elongated plate lid member 64 as long as they provide the lid hinge section 62 with elasticity that allows the lid 63 to pivot from the closed position (the position illustrated in Figs. 31A and 31B) to a position at which the lid 63 touches the inner surface of the sheath body 11 at a side opposite to the lid abutting section 117a, and allows the lid 63 to return to the closed position from position at which the lid 63 touches the inner surface of the sheath body 11 at a side opposite to the lid abutting section 117a. Such materials are not limited to materials with rubber elasticity, such as silicone rubber and elastomer described above, but various synthetic resin materials can

be employed. For example, materials that can be used for forming the sheath body 11 may also be employed as the materials of the elongated plate lid member 64.

[0220] In the sheath for gastrostoma, for example, in the elongated plate lid member, the lid hinge section and the lid may be formed integrally with each other from a material with rubber elasticity, such as silicone rubber and elastomer. Alternatively, only the lid hinge section may be formed of a material with rubber elasticity, such as silicone rubber and elastomer, and other portions may be formed of a hard material with no rubber elasticity, such as rigid resin or metal.

[0221] The sheath for gastrostoma 6 described here may also be used in an operation to form a fistula (gastrostomy) and place the button for gastrostoma 2 in the patient's body as in the sheath for gastrostoma described above with reference to Figs. 1A and 1B.

[0222] As in the sheath for gastrostoma described above, the dilator 5 may be inserted in the sheath body 11 to provide a sheathed dilator (see Fig. 39).

[0223] In addition, as described above, in the sheath for gastrostoma 6, the lid 63 is pivoted from the closed position in the open direction when the dilator 5 is inserted in the sheath body 11, and the lid 63 pivoted from the closed position in the open direction returns to the closed position with the elasticity of the lid hinge section 62 when the dilator 5 inserted in sheath body 11 is removed from the sheath body 11 to close the inner path 113 of the sheath body 11. Since it is possible to prevent outflow of air supplied into the stomach from an endoscope in the state in which the sheath for gastrostoma 6 is inserted in the fistula, the sheath for gastrostoma 6 can be suitably used in an operation for forming a fistula and placing the button for gastrostoma 2 in the patient's body and in an operation for replacing the button for gastrostoma 2 placed in the patient's body.

[0224] Here, a procedure of replacing the button for gastrostoma 2 placed in the patient's body using the sheath for gastrostoma 6 will be described.

[0225] Fig. 33 illustrates the button for gastrostoma 2 placed in the patient's body.

[0226] In order to replace the button for gastrostoma 2, as illustrated in Fig. 34, the cap 28 fitted into the opening of the path 24 of the button for gastrostoma 2 at the side of the externally fixed section 23 is removed from the opening of the path 24 to release the opening of the path 24. Then, as illustrated in Fig. 35, the obturator 3 is inserted in the path 24 from outside of the body and placed in the button for gastrostoma 2 (i.e., the distal section 317 of the pushing rod for extension 31, i.e., the distal end of the outer case 32 is inserted in the path 24 of the button for gastrostoma 2 and the stopper 33 (in particular, the holding section 332) is engaged by the externally fixed section 23 of the button for gastrostoma 2). A guidewire 4 is inserted through the path 24 in the tubular section 21 of the button for gastrostoma 2 to reach the stomach from outside of the body using the wire insertion groove 315 of the obturator 3 as illustrated in Fig. 36. Subsequently, as illustrated in Fig. 37, the obturator 3 is operated so that the indwelling section 22 of the button for gastrostoma 2 is extended (i.e., reduced in diameter) and the obturator 3 and the button for gastrostoma 2 are removed from the fistula to the outside of the body together (see Fig. 38). As illustrated in Fig. 38, the guidewire 4 is left in the patient's body.

[0227] Then, as illustrated in Fig. 40, the sheath for gastrostoma 6 is inserted in the fistula and placed in the patient's body.

[0228] At this time, as illustrated in Fig. 39, it is preferable to, for example, insert a sheath insertion aid 7 having a rod-shaped appearance in the sheath body 11 to assemble a sheath for gastrostoma with an insertion aid 70 (hereinafter, also referred to as a sheath with insertion aid). The sheath with insertion aid 70 is inserted in the fistula and then the sheath for gastrostoma 6 is inserted in the fistula for placement of the button for gastrostoma 2.

[0229] The sheath insertion aid 7 includes a rod-shaped body 71 and a tapered distal section 72 having a tapering configuration provided to protrude from one longitudinal end (distal end) of the rod-shaped body. In the sheath insertion aid 7, an outer diameter of the rod-shaped body 71 is equivalent to or slightly smaller than the inner diameter of the sheath body 11 and thus the sheath insertion aid 7 can be removably inserted in the sheath body 11. This sheath insertion aid 7 includes a guidewire insertion hole 73 to penetrate the same in the longitudinal direction. The guidewire 4 is inserted in the guidewire insertion hole 73 so that the sheath insertion aid 7 is disposed outside of the guidewire 4. One of both ends of the guidewire insertion hole 73 opens at a distal end of the tapered distal section 72 of the sheath insertion aid 7 and the other opens at an end (rear end) of the rod-shaped body 71 at the side opposite to the tapered distal section 72.

[0230] As illustrated in Fig. 39, the procedure of inserting the sheath for gastrostoma 6 in the fistula using the sheath with insertion aid 70 and leaving in the patient's body is as follows. First, a portion of the guidewire 4 placed in the patient's body extending from the fistula toward outside of the body is inserted in the guidewire insertion hole 73 of the sheath insertion aid 7 and the sheath insertion aid 7 and the entire sheath with insertion aid 70 are disposed outside of the guidewire 4. After the sheath with insertion aid 70 is inserted in the fistula with the guidewire 4 as a guidance member, the sheath insertion aid 7 is removed outside of the body while leaving the sheath for gastrostoma 6 in the fistula, as illustrated in Fig. 40.

[0231] The sheath with insertion aid 70 is assembled by inserting the sheath insertion aid 7 in the opening at the side of the base end of the sheath body 11 of the sheath for gastrostoma 6 from the distal end and then making the tapered distal section 72 of the sheath insertion aid 7 protrude from the distal end of the sheath body 11. By making the tapered distal section 72 protrude from

the distal end of the sheath body 11, insertion resistance at the time of inserting the sheath with insertion aid 70 in the fistula (inserting from the tapered distal section 72 side) can be lowered and insertion can be performed smoothly. The tapered distal section 72 also has a function to extend the fistula when the sheath with insertion aid 70 is inserted in the fistula.

[0232] It suffices that the sheath insertion aid 7 have a function to facilitate the procedure of inserting the sheath for gastrostoma 6 and the entire sheath with the insertion aid 70 in the fistula and extend the fistula, and thus the sheath insertion aid 7 does not necessarily have a function to form a new fistula. However, the sheath insertion aid 7 may also be used for fistulization. In this case, the dilator described above may be used as a sheath insertion aid 7.

[0233] In the sheath with insertion aid 70 in which the sheath insertion aid 7 is inserted in the sheath for gastrostoma 6, as illustrated in Fig. 39, the lid 63 of the sheath for gastrostoma 6 is moved from the closed position in the open direction by the sheath insertion aid 7 inserted in the sheath body 11 and is housed in the expanded section 115 (inside the inner space 115a) at the base end of the sheath body 11. As illustrated in Fig. 40, immediately after the sheath insertion aid 7 is removed from the sheath for gastrostoma 6, the lid 63 returns to the closed position with the elasticity of the lid hinge section 62. That is, when the sheath insertion aid 7 is removed from the sheath for gastrostoma 6 of the sheath with insertion aid 70 inserted in the fistula, the lid 63 closes the inner path 113 of the sheath body 11 automatically with no operation of the handle 61, thereby preventing ingression of foreign object into the inner path 113. When an endoscope is used, there is an advantage that outflow of air supplied from the endoscope to the stomach can be avoided.

[0234] The following configurations can be commonly applied to the sheath for gastrostoma: a configuration with a sheath body 11 in which the sheath insertion aid 7 can be inserted; and a configuration in which the sheath with insertion aid 70 can be assembled by inserting the sheath insertion aid 7 in the sheath body.

[0235] As illustrated in Fig. 31B, it is noted that the distal section (a bottom section in Fig. 31B) of the sheath body 11 of the sheath for gastrostoma 6 is formed as a tapered distal end 11 a which is tapered from the sheath body 11 to reduce its diameter. The inner diameter of the distal end of the tapered distal end 11a, i.e., the minimum inner diameter of the tapered distal end 11a, is substantially equivalent to the outer diameter of the sheath insertion aid 7.

[0236] This tapered distal end 11a has a function to avoid the formation of a level difference resulting from a difference between the outer diameter of the sheath insertion aid 7 and the inner diameter of the sheath body 11 inserted in the sheath body 11 and to smoothly insert the sheath body 11 of the sheath for gastrostoma 6 in the fistula. The configuration providing a tapered distal end 11 a at the distal section of the sheath body 11 can be commonly applied to each embodiment according to the invention.

[0237] Next, the obturator 3 is assembled to and disposed in the button for gastrostoma 2 for a fistula to be newly formed as illustrated in Fig. 41. The operating section 311 of the obturator 3 is operated (i.e., pushed) to extend (i.e., reduce in diameter) the in-body fixing portion 23 of the button for gastrostoma 2. The button for gastrostoma 2, while keeping a state in which the in-body fixing portion 23 is extended, is inserted in the inner path 113 of the sheath body 11 of the sheath for gastrostoma 6 placed in the fistula from the in-body fixing portion 23. Then, the in-body fixing portion 23 is made to protrude inside the patient's body from the sheath for gastrostoma 6 (see Fig. 42).

[0238] Then, in the same manner as described above with reference to Figs. 25 to 28, the sheath for gastrostoma 6 is removed from the patient's body, the in-body fixing portion 23 is stopped to advance (i.e., extend) and the obturator 3 is removed outside of the patient's body. In this manner, placement of the button for gastrostoma 2 for newly provided fistula in the patient's body is completed.

[0239] In the replacement of the button for gastrostoma 2 using the sheath for gastrostoma 6, as described above, when the sheath insertion aid 7 is removed from the sheath for gastrostoma 6 of the sheath with insertion aid 70 inserted in the fistula, a state can be obtained in which the lid 63 closes the inner path 113 of the sheath body 11 automatically without requiring operation of the handle 61. Thus, time and effort to close the inner path 113 can be omitted.

[0240] When the sheath insertion aid 7 is withdrawn from the sheath for gastrostoma 6 of the sheath with insertion aid 70 inserted in the fistula, a state can be obtained in which the lid 63 closes the inner path 113 of the sheath body 11 automatically without requiring operation of the handle 61. Thus, outflow of air supplied to the stomach from the endoscope can be prevented. Such an advantage is not limited to replacement of the button for gastrostoma 2 but may be provided in new gastrostomy. Gastrostomy using the sheath for gastrostoma 6 is achieved by using the sheath for gastrostoma 6 in place of the sheath for gastrostoma 1 in gastrostomy described with reference to Figs. 18 to 28.

[0241] In addition, replacement of the button for gastrostoma 2 described with reference to Figs. 34 to 42 can also be carried out using the sheath for gastrostoma 1 described with reference to Figs. 1A and 1B.

[0242] Using the sheath for gastrostoma (sheath for gastrostoma according to the invention) in replacement of the button for gastrostoma 2 has an advantage that insertion resistance at the time of insertion of the button for gastrostoma 2 (sheath for gastrostoma for replacement) can be lowered.

[0243] As illustrated in Fig. 43, the sheath for gastrostoma according to the claim has a configuration in which

an elongated plate lid member 64A configured by omitting the stopper projection piece 642 from the elongated plate lid member 64 as described above (sheath for gastrostoma 6A).

[0244] The handle 61 can be configured the same as that of the sheath for gastrostoma 6 as described above. The sheath for gastrostoma 6A has a configuration in which the lid 63 is elastically supported with elasticity of the hinge section 116 and elasticity of the lid hinge section 62 at a closed position at which the lid 63 closes the inner path 113 of the sheath body 11.

[0245] The lid 63 is formed as a tongue-shaped piece extending from the lid hinge section 62 and inserted in the sheath body 11. The lid 63 extends in a manner inclined toward the distal end of the sheath body 11 at an angle of smaller than 90 degrees with respect to the central axis C1 of the sheath body 11.

[0246] The distal end of the lid 63 is made to abut against a portion of the sheath body 11 at the side opposite to the hinge section 116 and the lid hinge section 62 across the inner path 113 when the lid 63 is pivoted from the closed position to the direction opposite to the open direction. Hereinafter, a portion of the sheath body 11 where the distal end of the lid 63 is made to abut will be referred to as a lid abutting section which is denoted by a reference numeral 117b. The hinge section 116 and the lid hinge section 62 are located at the side opposite to the lid abutting section 117b across the inner path 113.

[0247] The lid 63 can be pivoted toward the open direction against elasticity of the hinge section 116 and the lid hinge section 62 (i.e., pivoted in the direction in which the lid 63 is moved away from the lid abutting section 117b, i.e., clockwise in Fig. 43) and can return the closed position with elasticity of the hinge section 116 and the lid hinge section 62 from its pivoted position.

[0248] With this sheath for gastrostoma 6A, in a state in which, for example, a user of the sheath for gastrostoma 6A does not grasp the handle 61 with fingers and thus no external force is applied to the handle 61 and the lid 63, the lid 63 is elastically supported at the closed position (i.e., a position illustrated in Fig. 43) with the elasticity of the hinge section 116 and the lid hinge section 62.

[0249] Also, the lid hinge section 62 is configured to undergo elastic deformation (bending deformation) with smaller force than the hinge section 116 requires. Thus, with the sheath for gastrostoma 6A, elastic deformation of the lid hinge section 62 enables pivoting operation of the handle 61 freely regardless of the position of the lid 63. If, in the configuration of Fig. 43, no lid hinge section 62 is provided and the lid 63 is pivoted integrally with the handle 61, pivotation of the handle 61 in the counterclockwise direction in Fig. 43 is restricted when the lid 63 is abutting the lid abutting section 117b. Thus, the orientation of the handle 61 with respect to the sheath body 11 is restrained. On the contrary, in a configuration in which the lid hinge section 62 is provided as described above, the handle 61 can be pivoted counterclockwise in Fig. 43 (a position denoted by a reference numeral 61 of imaginary line in Fig. 43: hereinafter, also referred to as a "retracted position") even if the lid 63 is abutting the lid abutting section 117b. Accordingly, a greater degree of freedom of an angle (orientation) of the handle 61 with respect to the sheath body 11 is provided. Thus, the handle 61 can, for example, be kept at a desired orientation during insertion of the button for gastrostoma 2, thereby improving insertion operability of the button for gastrostoma 2. When, for example, the handle 61 is disposed at the retracted position, interference of the fingers which are grasping the handle 61 with the button for gastrostoma 2 to be inserted in the sheath body 11 can be avoided and thus interference of the inserting operation can be avoided.

[0250] The lid hinge section provides an increased degree of freedom of angle (orientation) of the handle 61 with respect to the sheath body 11 also in the sheath for gastrostoma 6 described with reference to Fig. 31.

[0251] Also, although the position of the lid hinge section 62 is near the hinge section 116, the lid hinge section 62 is provided separately from the hinge section 116. Thus, the lid 63 can be pivoted due to elastic deformation of the lid hinge section 62 when the handle 61 does not pivot about the hinge section 116. Accordingly, when the lid 63 is pivoted in the open direction by the sheath insertion aid 7 inserted in the inner path 113 of the sheath body 11 of the sheath for gastrostoma 6A, for example, following pivotation of the handle 61 to the lid 63 can be prevented. Thus, since change in the position of the handle 61 accompanying pivotation of the lid 63 can be prevented, failure of a user of the sheath for gastrostoma 6A to grasp the handle 61 with the fingers occurs less often, thereby securing good workability.

[0252] As illustrated in Figs. 44A and 44B, the sheath for gastrostoma employs a sheath body 15 which includes a V-shaped distal notch section 151 configured to recess from an end surface at the base end of the sheath body 11 and a notched groove 111A formed to extend in the longitudinal direction (axial center direction) of the sheath body 11 from a depth section 152 of the distal notch section 151 toward the distal end of the seal body 11.

[0253] The sheath for gastrostoma which employs the sheath body 15 provides an advantage that, when the sheath body 15 is to be vertically split, vertical splitting can be performed easily and smoothly from the depth section 152 of the distal notch section 151.

[0254] Figs. 44A and 44B illustrate a sheath for gastrostoma 6B configured by employing, in the sheath body 11 of the sheath for gastrostoma 6 described with reference to Figs. 31A, 31B and other drawings, the sheath body 15 which includes the distal notch section 151 and the notched groove 111A which extends toward the distal end of the seal body 11 from the depth section 152 of the distal notch section 151. However, such a sheath body configured to include the distal notch section 151 and the notched groove 111A which extends toward the

distal end of the seal body 11 from the depth section 152 of the distal notch section 151 is applicable to each embodiment according to the invention.

[0255] As illustrated in Figs. 45A to 47, the sheath for gastrostoma may also employ a configuration in which a grasping ring 16 is provided at the side opposite to the hinge section 116 of the handle 61. The user can insert the fingers to grasp the sheath for gastrostoma.

[0256] A sheath for gastrostoma 6C illustrated in Figs. 45A to 47 has a schematic structure in which the grasping ring 16 is provided at the side opposite to the hinge section 116 of the handle 61 of the sheath for gastrostoma 6 described with reference to Figs. 31A, 31B and other drawings. The sheath for gastrostoma 6C employs an elongated plate lid member with a ring 64B in place of the elongated plate lid member 64. The elongated plate lid member with the ring 64B is provided integrally with the grasping ring 16, the mounting section 641, the stopper projection piece 642, the lid hinge section 62 and the lid 63. The mounting section 641 of the elongated plate lid member with ring 64B is integrated with the handle 61.

[0257] The elongated plate lid member with ring 64B is configured to include the grasping ring 16 at the opposite side of the lid hinge section 62 across the mounting section 641 of the elongated plate lid member 64.

[0258] Here, the elongated plate lid member with ring 64B is integrally formed from a material with rubber elasticity, such as silicone rubber and elastomer.

[0259] The method (configuration) of integrally forming the mounting section 641 of the elongated plate lid member with ring 64B with the handle 61 may be the same as the method (configuration) of integrally forming the mounting section 641 of the elongated plate lid member 64 with the handle 61.

[0260] As illustrated in Fig. 47, the sheath for gastrostoma 6C has an advantage that, since the user of the sheath for gastrostoma 6C can firmly hold the sheath body 11 by grasping the grasping ring 16 with fingers, the user can, for example, reliably insert the button for gastrostoma 2 in the sheath body 11 without dropping. In a procedure in which the sheath insertion aid 7 is inserted in the sheath body 11 to assemble the sheath with insertion aid 70, insertion and assembly can be reliably performed similarly.

[0261] The user may preferably grasp the grasping ring 16 with the fingers in the following manner from the viewpoint of reliability. As illustrated in Fig. 47, one or more fingers (e.g., one or more of the middle finger, the third finger and the little finger) of one hand are placed inside the grasping ring 16 to be caught in the grasping ring 16.

[0262] However, the method of grasping the grasping ring 16 is not limited to the same. Another method of grasping the grasping ring 16 may be employed in which, for example, one or more fingers (e.g., one or more of the middle finger, the third finger and the little finger) of one hand are placed inside the grasping ring 16 to be caught in the grasping ring 16 and the handle 61 is grasped with the rest of the fingers of the same hand.

[0263] Note that the grasping ring 16 is not necessarily made of a material with rubber elasticity and is thus flexible. Instead, the grasping ring 16 may be formed of rigid resin. It is advantageous, however, to employ a grasping ring 16 made of a material with rubber elasticity and thus configured to be excellent in bendability and flexibility from the view point of good workability since a grasping ring 16 made of a hard material may interfere with the operation.

[0264] In addition, it suffices that the grasping ring 16 be securely fixed to the handle 61 at the side opposite to the hinge section 116 of the handle 61. Thus, the elongated plate lid member with the ring 64B is not necessarily employed and the grasping ring 16 may be fixed to the handle as a separate member from members that constitute the mounting section 641, the lid hinge section 62 and the lid 63.

[0265] Moreover, although a configuration in which the grasping ring 16 is employed in the sheath for gastrostoma 6 described with reference to Figs. 31A, 31B and other drawings has been illustrated in Figs. 45A to 47, the configuration in which the grasping ring 16 is provided at the side opposite to the hinge section 116 of the handle as described above is applicable to each embodiment or example.

[0266] Furthermore, the invention provides a gastrostomy catheter kit which includes the sheath for gastrostoma 1, the button for gastrostoma 2, the obturator 3 and the dilator 5. Preferably, the gastrostomy catheter kit is configured to, for example, collectively carry the sheath for gastrostoma 1, the button for gastrostoma 2, the obturator 3 and the dilator 5 in a casing. The sheath for gastrostoma 1 and the dilator 5 may be a sheathed dilator 5A in which the sheath for gastrostoma 1 is disposed over the dilator 5. The gastrostomy catheter kit may include a sheath for gastrostoma for replacement or a sheath with insertion aid 70 in which the insert sheath insertion aid 7 is inserted in the sheath for gastrostoma for replacement. A gastrostomy catheter kit with a sheath for gastrostoma for replacement which does not constitute the sheath with insertion aid 70 may include the sheath insertion aid 7 which can be inserted in the sheath body of the sheath for gastrostoma for replacement. The sheath for gastrostoma for replacement, the sheath with insertion aid 70 and the sheath insertion aid 7 to be employed are housed in the casing.

[0267] Of course, the gastrostomy catheter kit may further include a guidewire.

[0268] A configuration is employed in which a lid is pivotably provided on the sheath body via the hinge section separately from the handle.

[0269] Also, the invention includes a configuration in which a diameter (inner diameter) of the inner path of the sheath for gastrostoma is the same or larger than the maximum outer diameter of the extended indwelling section.

[Industrial Applicability]

[0270] As described above, according to the invention, it is possible to lower insertion resistance at the time of placing a button gastrostomy catheter in the patient's body during gastrostomy and catheter replacement in which a gastrostomy catheter is inserted in a fistula and left. A stable endoscopic visual field during surgery can be provided.

Claims

1. A sheath (6) for gastrostoma comprising:

a cylindrical sheath body (11) in which a gastrostomy catheter can be inserted;
a handle (12) provided to protrude at one longitudinal end of the sheath body; and
a lid (63) which is provided in the handle via a lid hinge section (62) and disposed in an inner path (113) which is a through-hole defined in the sheath body,

wherein the handle (12) is provided pivotably at the base end which is an end at the side of the handle of the sheath body via a hinge section (116) other than the lid hinge section (62); and
the lid (63) is disposed in its closed position at which the lid closes the inner path and is able to open and close the inner path (113) of the sheath body (11) through pivotation about the lid hinge section (62).

2. The sheath for gastrostoma according to claim 1, wherein:

the sheath body is provided with a lid abutting section (117) against which the lid is made to abut at a distal end which is an end opposite to the base end of the sheath body through pivotation about the hinge section (116); and
the lid is made to abut against the lid abutting section in its closed position where the lid closes the inner path and is pivoted from the closed position toward the distal section of the sheath body to release the inner path.

3. The sheath for gastrostoma according to claim 2, wherein the hinge section (116) and the lid hinge section (62) are provided in the sheath body at a side opposite to the lid abutting section across the inner path and an end of the lid at the side opposite to the lid hinge section is made to abut against the lid abutting section.

4. The sheath for gastrostoma according to claim 1, wherein:

the lid hinge section is disposed at an end of a stopper projection piece (642) which is provided to protrude from the handle, inserted in the sheath body and is disposed along an inner surface of the sheath body at a side opposite to the lid abutting section across the inner path; and
when the lid receives a force to cause the same to pivot from the closed position in an open direction, the stopper projection piece is pressed against the inner surface of the sheath body to restrict pivotation of the stopper projection piece with respect to the sheath body.

5. The sheath for gastrostoma according to claim 4, wherein the stopper projection piece is made of a material with rubber elasticity.

6. The sheath for gastrostoma according to claim 1, wherein the lid hinge section is made of a material with rubber elasticity and constitutes a lid elastic support member for elastically supporting the lid at the closed position.

7. The sheath for gastrostoma according to claim 1, wherein the lid hinge section and the lid are formed from a material with rubber elasticity.

8. The sheath for gastrostoma according to any one of claims 1 to 7, wherein a mounting section (641) which constitutes a part of the handle, the lid hinge section and the lid are formed integrally as one component from synthetic resin.

9. The sheath for gastrostoma according to claim 1, wherein a handle main piece (114) which constitutes a part or all of the handle, the sheath body and the hinge section are formed integrally as one component from synthetic resin.

10. The sheath for gastrostoma according to claim 1, wherein one or more notch sections are formed which facilitate vertical splitting of the sheath body in a longitudinal direction.

11. The sheath for gastrostoma according to claim 10, wherein the notch section (111A) is a notched groove formed in the sheath body so as not to penetrate the sheath body in the thickness direction, and an uncut portion (11a) is provided by locally reducing the thickness of the sheath body at a bottom side of the notched groove.

12. The sheath for gastrostoma according to claim 11, wherein the sheath body includes a V-shaped distal notch section configured to recess from an end surface at the base end of the sheath body and the notched groove (111A) is formed to extend toward a distal end of the seal body from a depth section of

the distal notch section.

13. The sheath for gastrostoma according to claim 10, wherein:

the notch section (111B) is a slit formed to extend along the longitudinal direction of the sheath body, the slit being formed at a part along the longitudinal direction of the sheath body and being shorter than the entire longitudinal direction length of the sheath body; and
the sheath body has an uncut portion (18) at which no slit is formed along a virtual extended line of the slit.

14. The sheath for gastrostoma according to claim 11, wherein a load applied to the inner surface of the sheath body is not smaller than 0.5N to not greater than 5N in order to fracture at least one of the uncut portions (11a, 118).

15. The sheath for gastrostoma according to claim 10, wherein the notch section is formed in a wedge-shaped cross-section with its opening width increasing from an inner surface toward an outer surface of the sheath body.

16. The sheath for gastrostoma according to claim 10, wherein the handle is provided at a position where the handle does not interfere with the notch section in a circumferential direction of the sheath body.

17. The sheath for gastrostoma according to claim 16, wherein the notch section is formed only at one position along the circumferential direction of the sheath body and only one handle is provided.

18. The sheath for gastrostoma according to claim 1, wherein an end surface of the sheath body at the side of the base end is inclined with respect to an axial center of the sheath body.

19. The sheath for gastrostoma according to claim 1, wherein the material of the sheath body contains fluororesin.

20. The sheath for gastrostoma according to claim 19, wherein the fluororesin comprises any one of PTFE, ETFE and FEP.

21. The sheath for gastrostoma according to claim 1, wherein the sheath body is formed of a stretch-deformable material and is thus radially expandable.

22. A gastrostomy catheter kit, comprising:

a gastrostomy catheter (2) for percutaneously feeding a nutrient or a chemical into the patient's stomach from outside of the body; an obturator; and the sheath for gastrostoma according to claim 1, wherein:

the gastrostomy catheter includes a tubular section (21) which includes an inner path for introducing a nutrient or a chemical into the stomach from outside of the body, and an indwelling section (22) which is attached to a distal section of the tubular section and is formed as a dome protruding radially outward of the tubular section, in which the indwelling section can reduce its diameter due to the extending force applied by the obturator for extending the indwelling section.

23. The gastrostomy catheter kit according to claim 22, wherein:

the obturator (3) includes an outer case (32), a pushing rod for extension (31) which includes a rod body (313) inserted in the outer case to be movable in a longitudinal direction of the outer case and a stopper for anchoring the gastrostomy catheter to the outer case; and
in a state in which the gastrostomy catheter is anchored to the outer case with the stopper (33), a distal end of the pushing rod for extension is configured to be inserted protruding from the outer case of the rod body in the indwelling section of the gastrostomy catheter thereby pressing the most distal section of the indwelling section so as to extend the indwelling section.

24. The gastrostomy catheter kit according to claim 22, wherein the gastrostomy catheter and the obturator include a guidewire path and the obturator is configured to reduce the diameter of the indwelling section of the gastrostomy catheter in a state in which the obturator is disposed outside of the guidewire which is inserted in the gastrostomy catheter.

25. The gastrostomy catheter kit according to claim 22, further comprising a dilator (5) that can be used to form a fistula and which is configured to be removably disposed within the sheath body.

26. The gastrostomy catheter kit according to claim 25, wherein the dilator includes a guidewire path which penetrates the dilator in the longitudinal direction.

27. The gastrostomy catheter kit according to claim 25, wherein the dilator has a scale (514) on a peripheral surface thereof for measurement of a distance between an inner stomach wall and an outer body surface.

28. The gastrostomy catheter kit according to claim 27, wherein the sheath body has transparency that enables the scale of the dilator to be viewed from outside.

29. The gastrostomy catheter kit according to claim 26, wherein the dilator has a narrow-diameter dilator (52) and a large-diameter dilator (51) which are integrated together, the narrow-diameter dilator including the guidewire path inside thereof and the large-diameter dilator being disposed outside of the narrow-diameter dilator and assembled to the narrow-diameter dilator.

30. The gastrostomy catheter kit according to claim 22, wherein an inner diameter of the sheath body is smaller than the maximum outer diameter of the indwelling section (22) of the gastrostomy catheter which adopts a reduced-diameter state due to the extending force applied by the obturator (3).

31. The gastrostomy catheter kit according to claim 30, wherein the sheath body is vertically splittable when the gastrostomy catheter is inserted with the indwelling section (22) being in its reduced-diameter state by the obturator (3).

32. The gastrostomy catheter kit according to claim 22, wherein an inner diameter of the sheath body is larger than the maximum outer diameter of the indwelling section (22) of the gastrostomy catheter which adopts a reduced-diameter state due to the extending force applied by the obturator (3).

33. The gastrostomy catheter kit according to claim 22, further comprising a sheath insertion aid (7) having a rod-shaped appearance which is configured to be inserted in the sheath body, the sheath insertion aid including a rod-shaped body (71) and a tapered distal section (72) having a tapering configuration provided to protrude at one longitudinal end of the rod-shaped body.

34. The gastrostomy catheter kit according to claim 33, wherein the sheath insertion aid includes a guidewire insertion hole (73) which penetrates the sheath insertion aid along the longitudinal direction.

35. The gastrostomy catheter kit according to claim 33 or 34, wherein the sheath insertion aid is configured to function as a dilator used for forming a fistula.

Patentansprüche

1. Hülle (6) für eine Gastrostoma, umfassend:

einen zylindrischen Hüllenkörper (11), in den ein Gastrostomiekatheter eingesetzt werden kann;
einen Griff (12), der derart vorgesehen ist, dass er an einem Längsende des Hüllenkörpers vorsteht; und
einen Deckel (63), der in dem Griff mittels eines Deckelgelenkabschnitts (62) vorgesehen und in einem Innenweg (113) angeordnet ist, der ein in dem Hüllenkörper definiertes Durchgangsloch ist,

wobei der Griff (12) mittels eines Gelenkabschnitts (116), der von dem Deckelgelenkabschnitt (62) verschieden ist, schwenkbar an dem Basisende vorgesehen ist, das ein Ende an der Seite des Griffs des Hüllenkörpers ist; und
der Deckel (63) in seiner geschlossenen Position angeordnet ist, in der der Deckel den Innenweg schließt, und den Innenweg (113) des Hüllenkörpers (11) durch Verschwenkung um den Deckelgelenkabschnitt (62) öffnen und schließen kann.

2. Hülle für eine Gastrostoma nach Anspruch 1, wobei:

der Hüllenkörper mit einem Deckelanschlagabschnitt (117) versehen ist, gegen den der Deckel durch Verschwenkung um den Gelenkabschnitt (116) an einem distalen Ende anschlägt, das ein Ende gegenüber dem Basisende des Hüllenkörpers ist; und
der Deckel gegen den Deckelanschlagabschnitt in seiner geschlossenen Position anschlägt, in der der Deckel den Innenweg schließt, und von der geschlossenen Position zum distalen Abschnitt des Hüllenkörpers geschwenkt wird, um den Innenweg frei zu geben.

3. Hülle für eine Gastrostoma nach Anspruch 2, wobei der Gelenkabschnitt (116) und der Deckelgelenkabschnitt (62) in dem Hüllenkörper an einer Seite gegenüber dem Deckelanschlagabschnitt quer über den Innenweg vorgesehen sind, und ein Ende des Deckels an der Seite gegenüber dem Deckelgelenkabschnitt gegen den Deckelanschlagabschnitt anschlägt.

4. Hülle für eine Gastrostoma nach Anspruch 1, wobei:

der Deckelgelenkabschnitt an einem Ende eines Stoppervorsprungsstücks (642) angeordnet ist, das derart vorgesehen ist, dass es von dem Griff vorsteht, in den Hüllenkörper eingesetzt ist und entlang einer Innenoberfläche des Hüllenkörpers an einer Seite gegenüber dem Deckelanschlagabschnitt quer über den Innenweg angeordnet ist; und
wenn der Deckel eine Kraft empfängt, die ihn veranlasst, von der geschlossenen Position in eine Öffnungsrichtung zu schwenken, das Stop-

pervorsprungsstück gegen die Innenoberfläche des Hüllenkörpers gedrückt wird, um eine Verschwenkung des Stoppervorsprungsstücks bezüglich des Hüllenkörpers zu begrenzen.

5. Hülle für eine Gastrostoma nach Anspruch 4, wobei das Stoppervorsprungsstück aus einem Material mit Gummielastizität hergestellt ist.

6. Hülle für eine Gastrostoma nach Anspruch 1, wobei der Deckelgelenkabschnitt aus einem Material mit Gummielastizität hergestellt ist und ein elastisches Deckelstützelement zum elastischen Stützen des Deckels in der geschlossenen Position bildet.

7. Hülle für eine Gastrostoma nach Anspruch 1, wobei der Deckelgelenkabschnitt und der Deckel aus einem Material mit Gummielastizität hergestellt sind.

8. Hülle für eine Gastrostoma nach einem der Ansprüche 1 bis 7, wobei ein Montageabschnitt (641), der einen Teil des Griffs bildet, der Deckelgelenkabschnitt und der Deckel integral als eine Komponente aus Kunstharz gebildet sind.

9. Hülle für eine Gastrostoma nach Anspruch 1, wobei ein Griffhauptstück (114), welches einen Teil des Griffs oder den gesamten Griff bildet, der Hüllenkörper und der Gelenkabschnitt integral als eine Komponente aus Kunstharz gebildet sind.

10. Hülle für eine Gastrostoma nach Anspruch 1, wobei ein oder mehr Kerbenabschnitte gebildet sind, die ein vertikales Spalten des Hüllenkörpers in einer Längsrichtung erleichtern.

11. Hülle für eine Gastrostoma nach Anspruch 10, wobei der Kerbenabschnitt (111A) ein Kerbrille ist, die in dem Hüllenkörper derart gebildet ist, dass sie den Hüllenkörper in der Dickenrichtung nicht durchdringt, und ein ungeschnittener Bereich (11a) durch lokales Verringern der Dicke des Hüllenkörpers an einer Bodenseite der Kerbrille vorgesehen ist.

12. Hülle für eine Gastrostoma nach Anspruch 11, wobei der Hüllenkörper einen V-förmigen distalen Kerbenabschnitt umfasst, der derart gebildet ist, dass er von einer Endoberfläche am Basisende des Hüllenkörpers ausgespart ist, und die Kerbrille (111A) derart gebildet ist, dass sie sich zu einem distalen Ende des Hüllenkörpers von einem Tiefenabschnitt des distalen Kerbenabschnitts aus erstreckt.

13. Hülle für eine Gastrostoma nach Anspruch 10, wobei:

der Kerbenabschnitt (111 B) ein Schlitz ist, der derart gebildet ist, dass er sich entlang der Längsrichtung des Hüllenkörpers erstreckt, wobei der Schlitz an einem Teil entlang der Längsrichtung des Hüllenkörpers gebildet ist und kürzer ist als die gesamte Länge des Hüllenkörpers in Längsrichtung; und

der Hüllenkörper einen ungeschnittenen Bereich (18) entlang einer virtuell verlängerten Linie des Schlitzes aufweist, an dem kein Schlitz gebildet ist.

14. Hülle für eine Gastrostoma nach Anspruch 11, wobei eine auf die Innenoberfläche des Hüllenkörpers ausgeübte Last nicht kleiner als 0,5N bis nicht größer als 5N ist, um wenigstens einen der ungeschnittenen Bereiche (11a, 118) zu brechen.

15. Hülle für eine Gastrostoma nach Anspruch 10, wobei der Kerbenabschnitt mit einem keilförmigen Querschnitt gebildet ist, wobei seine Öffnungsweite von einer Innenoberfläche zu einer Außenoberfläche des Hüllenkörpers zunimmt.

16. Hülle für eine Gastrostoma nach Anspruch 10, wobei der Griff an einer Position vorgesehen ist, an der der Griff keine Auswirkungen auf den Kerbenabschnitt in einer Umfangsrichtung des Hüllenkörpers hat.

17. Hülle für eine Gastrostoma nach Anspruch 16, wobei der Kerbenabschnitt nur an einer Position entlang der Umfangsrichtung des Hüllenkörpers gebildet ist, und nur ein Griff vorgesehen ist.

18. Hülle für eine Gastrostoma nach Anspruch 1, wobei eine Endoberfläche des Hüllenkörpers an der Seite des Basisendes bezüglich einer axialen Mitte des Hüllenkörpers geneigt ist.

19. Hülle für eine Gastrostoma nach Anspruch 1, wobei das Material des Hüllenkörpers Fluorharz enthält.

20. Hülle für eine Gastrostoma nach Anspruch 19, wobei das Fluorharz PTFE, ETFE oder FEP umfasst.

21. Hülle für eine Gastrostoma nach Anspruch 1, wobei der Hüllenkörper aus einem streckverformbaren Material gebildet und daher radial ausdehnbar ist.

22. Gastrostomiekatheterkit, umfassend:

einen Gastrostomiekatheter (2) zum perkutanen Zuführen eines Nährstoffs oder einer Chemikalie in den Magen des Patienten von außerhalb des Körpers; einen Obturator, und die Hülle für eine Gastrostoma nach Anspruch 1, wobei:

der Gastrostomiekatheter einen Röhrenabschnitt (21) umfasst, der einen Innenweg zum Einführen eines Nährstoffs oder einer

Chemikalie in den Magen von außerhalb des Körpers umfasst, und einen Verweilabschnitt (22), der an einem distalen Abschnitt des Röhrenabschnitts angebracht und als eine Kuppel gebildet ist, die radial aus dem Röhrenabschnitt heraus vorsteht, wobei der Verweilabschnitt aufgrund der durch den Obturator ausgeübten Streckkraft zum Strecken des Verweilabschnitts seinen Durchmesser verringern kann.

23. Gastrostomiekatheterkit nach Anspruch 22, wobei:

der Obturator (3) ein Außengehäuse (32) umfasst, ferner eine Schiebestange zur Verlängerung (31), die einen Stangenkörper (313) enthält, der in das Außengehäuse in einer Längsrichtung des Außengehäuses beweglich eingesetzt ist, und einen Stopper zum Verankern des Gastrostomiekatheters am Außengehäuse; und in einem Zustand, in dem der Gastrostomiekatheter an dem Außengehäuse mit dem Stopper (33) verankert ist, ein distales Ende der Schiebestange zur Verlängerung dazu ausgelegt ist, vom Außengehäuse des Stangenkörpers vorstehend in den Verweilabschnitt des Gastrostomiekatheters eingesetzt zu werden, wodurch der distalste Abschnitt des Verweilabschnitts gedrückt wird, um den Verweilabschnitt zu verlängern.

24. Gastrostomiekatheterkit nach Anspruch 22, wobei der Gastrostomiekatheter und der Obturator einen Führungsdrahtweg umfassen, und der Obturator dazu ausgelegt ist, den Durchmesser des Verweilabschnitts des Gastrostomiekatheters in einem Zustand zu verringern, in dem der Obturator außerhalb des Führungsdrahts angeordnet ist, der in den Gastrostomiekatheter eingesetzt ist.

25. Gastrostomiekatheterkit nach Anspruch 22, ferner umfassend einen Dilator (5), der zum Bilden einer Fistel verwendet werden kann, und der dazu ausgelegt ist, entfernbar innerhalb des Hüllenkörpers angeordnet zu sein.

26. Gastrostomiekatheterkit nach Anspruch 25, wobei der Dilator einen Führungsdrahtweg umfasst, der den Dilator in der Längsrichtung durchdringt.

27. Gastrostomiekatheterkit nach Anspruch 25, wobei der Dilator auf seiner Umfangsoberfläche eine Skala (514) zum Messen eines Abstands zwischen einer inneren Magenwand und einer äußeren Körperoberfläche aufweist.

28. Gastrostomiekatheterkit nach Anspruch 27, wobei der Hüllenkörper Transparenz aufweist, die eine Betrachtung der Skala des Dilators von außen erlaubt.

29. Gastrostomiekatheterkit nach Anspruch 26, wobei der Dilator einen Dilator (52) mit engem Durchmesser und einen Dilator (51) mit großem Durchmesser aufweist, die miteinander integriert sind, wobei der Dilator mit engem Durchmesser in sich den Führungsdrahtweg enthält, und der Dilator mit großem Durchmesser außerhalb des Dilators mit engem Durchmesser angeordnet und an dem Dilator mit engem Durchmesser angebracht ist.

30. Gastrostomiekatheterkit nach Anspruch 22, wobei ein Innendurchmesser des Hüllenkörpers kleiner ist als der maximale Außendurchmesser des Verweilabschnitts (22) des Gastrostomiekatheters, der aufgrund der von dem Obturator (3) ausgeübten Streckkraft einen Zustand mit verringertem Durchmesser annimmt.

31. Gastrostomiekatheterkit nach Anspruch 30, wobei der Hüllenkörper vertikal spaltbar ist, wenn der Gastrostomiekatheter eingesetzt wird, wobei der Verweilabschnitt (22) in seinem Zustand mit durch den Obturator (3) verringertem Durchmesser ist.

32. Gastrostomiekatheterkit nach Anspruch 22, wobei ein Innendurchmesser des Hüllenkörpers größer ist als der maximale Außendurchmesser des Verweilabschnitts (22) des Gastrostomiekatheters, der einen Zustand mit verringertem Durchmesser aufgrund der vom Obturator (3) ausgeübten Streckkraft annimmt.

33. Gastrostomiekatheterkit nach Anspruch 22, ferner umfassend eine Hülleneinführhilfe (7) mit einer stangenförmigen Gestalt, die dazu ausgelegt ist, in den Hüllenkörper eingesetzt zu sein, wobei die Hülleneinsetzhilfe einen stangenförmigen Körper (71) und einen verjüngten distalen Abschnitt (72) mit einer Verjüngungskonfiguration umfasst, die dazu ausgelegt ist, an einem Längsende des stangenförmigen Körpers vorzustehen.

34. Gastrostomiekatheterkit nach Anspruch 33, wobei die Hülleneinsetzhilfe ein Führungsdrahteinsetzloch (73) umfasst, das die Hülleneinsetzhilfe entlang der Längsrichtung durchdringt.

35. Gastrostomiekatheterkit nach Anspruch 33 oder 34, wobei die Hülleneinsetzhilfe dazu ausgelegt ist, als ein Dilator zu funktionieren, der zum Bilden einer Fistel verwendet wird.

Revendications

1. Gaine (6) pour gastrotomie, **caractérisée en ce**

qu'elle comprend :

un corps de gaine cylindrique (11) dans lequel un cathéter de gastrostomie peut être inséré ;
une poignée (12) fournie de sorte à faire saillie au niveau d'une extrémité longitudinale du corps de gaine ; et
un couvercle (63) qui est fourni dans la poignée par l'intermédiaire d'une section d'articulation de couvercle (62) et disposé dans un chemin interne (113) qui est un orifice traversant défini dans le corps de gaine,

dans laquelle la poignée (12) est fournie de manière pivotante au niveau de l'extrémité de base qui est une extrémité au niveau du côté de la poignée du corps de gaine par l'intermédiaire d'une section d'articulation (116) autre que la section d'articulation de couvercle (62) ; et
le couvercle (63) est disposé dans sa position fermée au niveau de laquelle le couvercle ferme le chemin interne et est capable d'ouvrir et de fermer le chemin interne (113) du corps de gaine (11) par pivotement autour de la section d'articulation de couvercle (62).

2. Gaine pour gastrotomie selon la revendication 1, dans laquelle :

le corps de gaine est doté d'une section de butée de couvercle (117) contre laquelle le couvercle est amené à buter au niveau d'une extrémité distale qui est une extrémité opposée à l'extrémité de base du corps de gaine par pivotement autour de la section de gaine (116) ; et
le couvercle est amené à buter contre la section de butée de gaine dans sa position fermée où le couvercle ferme le chemin interne et il est pivoté à partir de la position fermée vers la section distale du corps de gaine pour libérer le chemin interne.

3. Gaine pour gastrotomie selon la revendication 2, dans laquelle la section d'articulation (116) et la section d'articulation de couvercle (62) sont fournies dans le corps de gaine au niveau d'un côté opposé à la section de butée de couvercle à travers le chemin interne et une extrémité du couvercle au niveau du côté opposé à la section d'articulation de couvercle est amenée à buter contre la section de butée de couvercle.

4. Gaine pour gastrotomie selon la revendication 1, dans laquelle :

la section d'articulation de couvercle est disposée à une extrémité d'une pièce de saillie d'arrêt (642) qui est fournie de sorte à faire saillie à partir de la poignée, insérée dans le corps de gaine, et est disposée le long d'une surface interne du corps de gaine au niveau d'un côté opposé à la section de butée de couvercle à travers le chemin interne ; et
lorsque le couvercle reçoit une force amenant celui-ci à pivoter à partir de la position fermée dans une direction d'ouverture, la pièce de saillie d'arrêt est poussée contre la surface interne du corps de gaine de sorte à limiter le pivotement de la pièce de saillie d'arrêt par rapport au corps de gaine.

5. Gaine pour gastrotomie selon la revendication 4, dans laquelle la pièce de saillie d'arrêt est faite d'un matériau en caoutchouc élastique.

6. Gaine pour gastrotomie selon la revendication 1, dans laquelle la section d'articulation de couvercle est faite d'un matériau en caoutchouc élastique et constitue un élément de support élastique de couvercle pour supporter élastiquement le couvercle en position fermée.

7. Gaine pour gastrotomie selon la revendication 1, dans laquelle la section d'articulation de couvercle et le couvercle sont faits à partir d'un matériau en caoutchouc élastique.

8. Gaine pour gastrotomieselon l'une quelconque des revendications 1 à 7, dans laquelle une section de montage (641) qui constitue une partie de la poignée, la section d'articulation de couvercle et le couvercle sont formés d'un seul tenant comme un seul composant à partir de résine synthétique.

9. Gaine pour gastrotomie selon la revendication 1, dans laquelle une pièce principale de poignée (114) qui constitue une partie ou la totalité de la poignée, le corps de gaine et la section d'articulation sont formés d'un seul tenant comme un seul composant à partir de résine synthétique.

10. Gaine pour gastrotomie selon la revendication 1, dans laquelle une ou plusieurs section(s) d'entaille est/sont formée(s), facilitant le sectionnement vertical du corps de gaine dans une direction longitudinale.

11. Gaine pour gastrotomie selon la revendication 10, dans laquelle la section d'entaille (111A) est une rainure entaillée formée dans le corps de gaine de manière à ne pas pénétrer le corps de gaine dans la direction de l'épaisseur, et une partie non découpée (11a) est fournie par réduction locale de l'épaisseur du corps de gaine au niveau d'un côté inférieur de la rainure entaillée.

12. Gaine pour gastrotomie selon la revendication 11,

dans laquelle le corps de gaine comprend une section d'entaille distale en forme de V configurée de sorte à s'enfoncer à partir d'une surface d'extrémité au niveau de l'extrémité de base du corps de gaine et la rainure entaillée (111A) est formée de sorte à s'étendre vers une extrémité distale du corps de joint à partir d'une section de profondeur de la section d'entaille distale.

13. Gaine pour gastrotomie selon la revendication 10, dans laquelle :

la section d'entaille (111B) est une fente formée de sorte à s'étendre le long de la direction longitudinale du corps de gaine, la fente étant formée au niveau d'une partie le long de la direction longitudinale du corps de gaine et étant plus courte que la longueur totale dans la direction longitudinale du corps de gaine ; et
le corps de gaine présente une partie non découpée (18) au niveau de laquelle il n'est pas formé de fente le long d'une ligne virtuelle étendue de la fente.

14. Gaine pour gastrotomie selon la revendication 11, dans laquelle une charge appliquée à la surface interne du corps de gaine n'est pas inférieure à 0,5 N et pas supérieure à 5 N afin de rompre au moins une des parties non découpées (11a, 118).

15. Gaine pour gastrotomie selon la revendication 10, dans laquelle la section d'entaille est formée en une section transversale en forme de coin avec sa largeur d'ouverture s'agrandissant à partir d'une surface interne vers une surface externe du corps de gaine.

16. Gaine pour gastrotomie selon la revendication 10, dans laquelle la poignée est fournie au niveau d'une position où la poignée n'interfère pas avec la section d'entaille dans une direction circonférentielle du corps de gaine.

17. Gaine pour gastrotomie selon la revendication 16, dans laquelle la section de gaine est formée uniquement au niveau d'une position le long de la direction circonférentielle du corps de gaine et uniquement une poignée est fournie.

18. Gaine pour gastrotomie selon la revendication 1, dans laquelle le corps de gaine au niveau de l'extrémité de base est incliné par rapport à un centre axial du corps de gaine.

19. Gaine pour gastrotomie selon la revendication 1, dans laquelle le matériau du corps de gaine contient une résine fluorée.

20. Gaine pour gastrotomie selon la revendication 19, dans laquelle la résine fluorée comprend n'importe lequel parmi du PTFE, de l'ETFE et du FEP.

21. Gaine pour gastrotomie selon la revendication 1, dans laquelle le corps de gaine est formé d'un matériau déformable par étirement et il est de ce fait extensible dans un sens radial.

22. Trousse de cathéter de gastrostomie, **caractérisée en ce qu'**elle comprend :

un cathéter de gastrostomie (2) pour l'alimentation percutanée d'un nutriment ou d'un produit chimique dans l'estomac du patient à partir de l'extérieur du corps ;
un obturateur ; et la gaine pour gastrotomieselon la revendication 1, dans laquelle :

le cathéter de gastrostomie comprend une section tubulaire (21) qui comprend un chemin interne pour l'introduction d'un nutriment ou d'un produit chimique dans l'estomac à partir de l'extérieur du corps, et une section à demeure (22) qui est fixée à une section distale de la section tubulaire et est formée comme un dôme faisant saillie vers l'extérieur dans un sens radial à partir de la section tubulaire, dans laquelle la section à demeure peut réduire son diamètre sous l'effet de la force d'extension appliquée par l'obturateur pour étendre la section à demeure.

23. Trousse de cathéter de gastrostomie selon la revendication 22, dans laquelle :

l'obturateur (3) comprend un boîtier externe (32), une tige de poussée pour l'extension (31) qui comprend un corps de tige (313) inséré dans le boîtier externe de sorte à être mobile dans une direction longitudinale du boîtier externe et un élément d'arrêt pour l'ancrage du cathéter de gastrostomie sur le boîtier externe ; et
dans un état dans lequel le cathéter de gastrostomie est ancré au boîtier externe avec l'élément d'arrêt (33), une extrémité distale de la tige de poussée pour l'extension est configurée de sorte à être insérée de manière à faire saillie à partir du boîtier externe du corps de tige dans la section à demeure du cathéter de gastrostomie de façon à presser la section la plus distale de la section à demeure de sorte à étendre la section à demeure.

24. Trousse de cathéter de gastrostomie selon la revendication 22, dans laquelle le cathéter de gastrostomie et l'obturateur comprennent un chemin de fil-

guide et l'obturateur est configuré pour réduire le diamètre de la section à demeure du cathéter de gastrostomie dans un état dans lequel l'obturateur est disposé à l'extérieur du fil-guide qui est inséré dans le cathéter de gastrostomie.

25. Trousse de cathéter de gastrostomie selon la revendication 22, comprenant en outre un dilatateur (5) qui peut être utilisé pour former une fistule et qui est configuré pour être disposé de manière amovible à l'intérieur du corps de gaine.

26. Trousse de cathéter de gastrostomie selon la revendication 25, dans laquelle le dilatateur comprend un chemin de fil-guide qui pénètre dans le dilatateur dans la direction longitudinale.

27. Trousse de cathéter de gastrostomie selon la revendication 25, dans laquelle le dilatateur possède une échelle graduée (514) sur la surface périphérique de celui-ci pour la mesure d'une distance entre une paroi d'estomac interne et une surface de corps externe.

28. Trousse de cathéter de gastrostomie selon la revendication 27, dans laquelle le corps de gaine possède une transparence qui permet à l'échelle graduée du dilatateur d'être visualisée à partir de l'extérieur.

29. Trousse de cathéter de gastrostomie selon la revendication 26, dans laquelle le dilatateur possède un dilatateur de diamètre étroit (52) et un dilatateur de diamètre large (51) qui sont intégrés l'un à l'autre, le dilatateur de diamètre étroit comprenant le chemin de fil-guide à l'intérieur de celui-ci et le dilatateur de diamètre large étant disposé à l'extérieur du dilatateur de diamètre étroit et assemblé sur le dilatateur de diamètre étroit.

30. Trousse de cathéter de gastrostomie selon la revendication 22, dans laquelle un diamètre interne du corps de gaine est inférieur au diamètre externe maximal de la section à demeure (22) du cathéter de gastrostomie qui adopte un état à diamètre réduit sous l'effet de la force d'extension appliquée par l'obturateur (3).

31. Trousse de cathéter de gastrostomie selon la revendication 30, dans laquelle le corps de gaine est apte à être sectionné verticalement lorsque le cathéter de gastrostomie est inséré avec la section à demeure (22) étant dans son état à diamètre réduit par l'obturateur (3).

32. Trousse de cathéter de gastrostomie selon la revendication 22, dans laquelle un diamètre interne du corps de gaine est supérieur au diamètre externe maximal de la section à demeure (22) du cathéter de gastrostomie qui adopte un état à diamètre réduit sous l'effet de la force d'extension appliquée par l'obturateur (3).

33. Trousse de cathéter de gastrostomie selon la revendication 22, comprenant en outre un élément d'aide à l'insertion de la gaine (7) possédant une apparence en forme de tige qui est configuré pour être inséré dans le corps de gaine, l'élément d'aide à l'insertion de la gaine comprenant un corps en forme de tige (71) et une section distale conique (72) possédant une configuration conique fournie de sorte à faire saillie au niveau d'une extrémité longitudinale du corps en forme de tige.

34. Trousse de cathéter de gastrostomie selon la revendication 33, dans laquelle l'élément d'aide à l'insertion de la gaine comprend un orifice d'insertion de fil-guide (73) qui pénètre dans l'élément d'aide à l'insertion de la gaine le long de la direction longitudinale.

35. Trousse de cathéter de gastrostomie selon la revendication 33 ou 34, dans laquelle l'élément d'aide à l'insertion de la gaine est configuré pour fonctionner en tant qu'un dilatateur utilisé pour former une fistule.

FIG. 1A

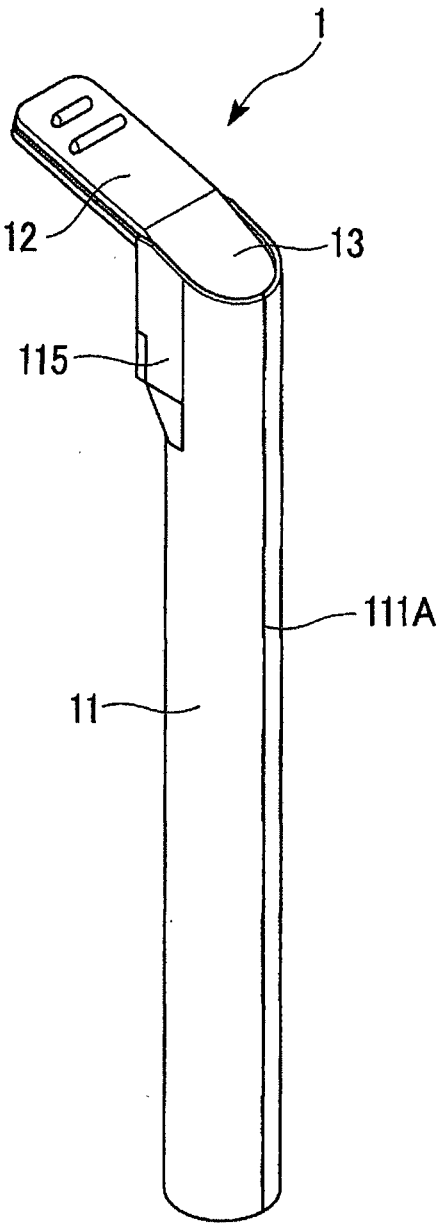
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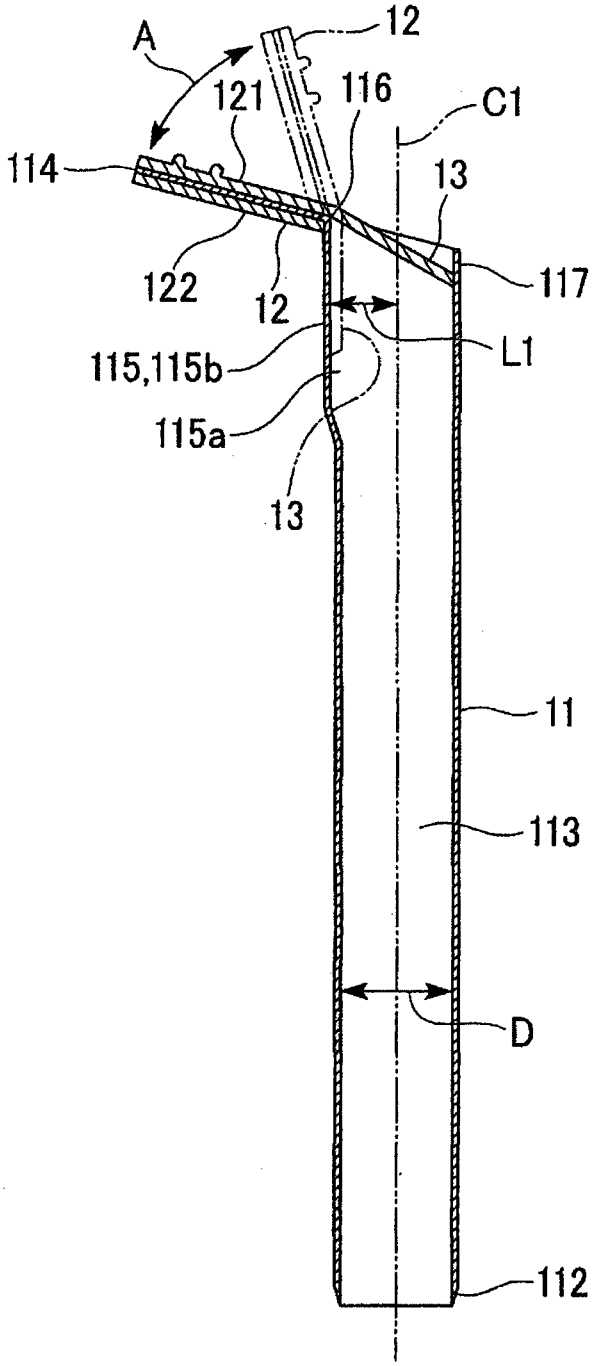
FIG. 1B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D
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FIG. 2A

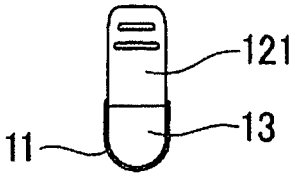

FIG. 2B

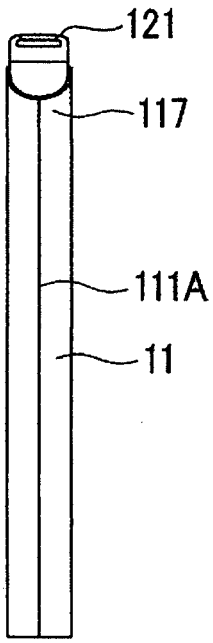

FIG. 2C

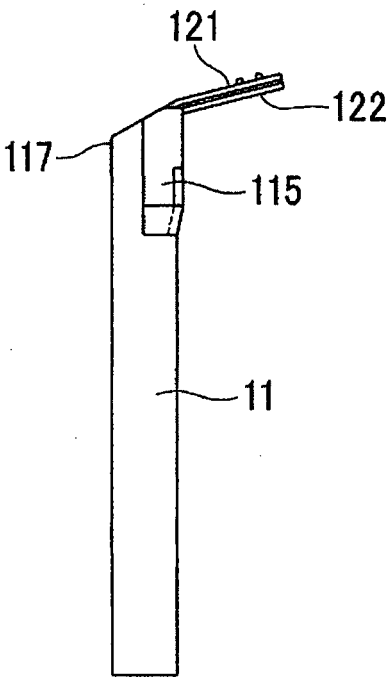

FIG. 2D

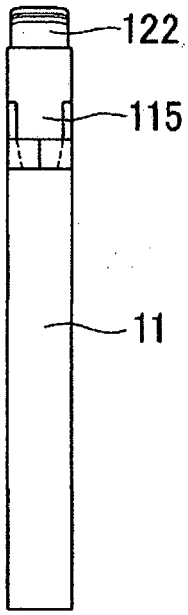

FIG. 2E

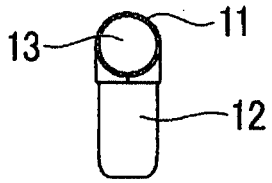

FIG. 3A

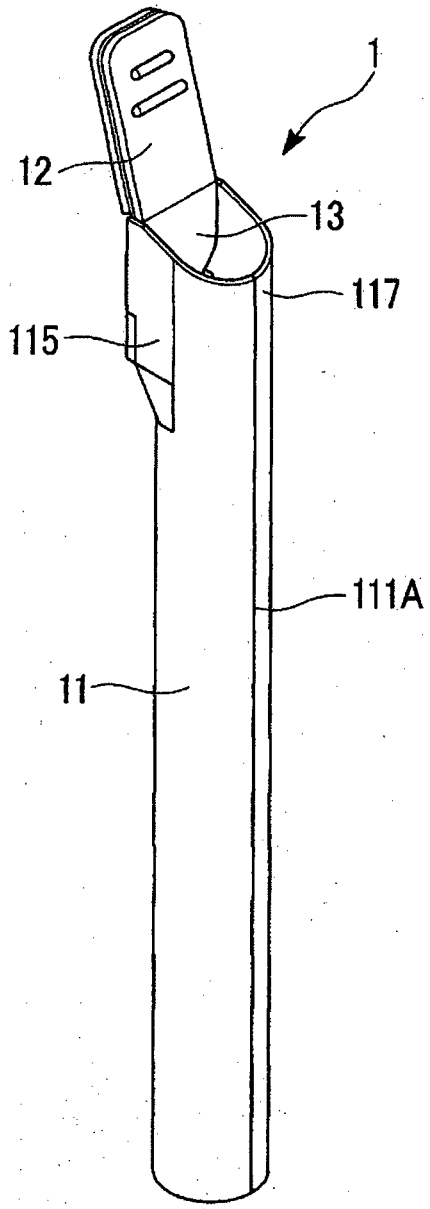
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FIG. 3B

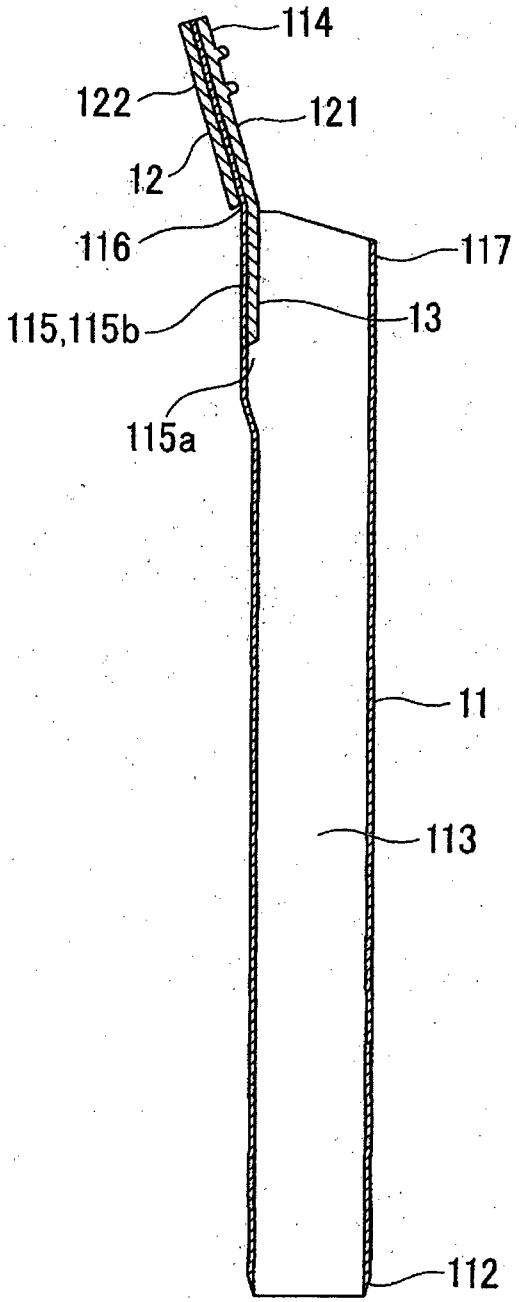
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FIG. 4A

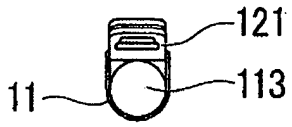

FIG. 4B

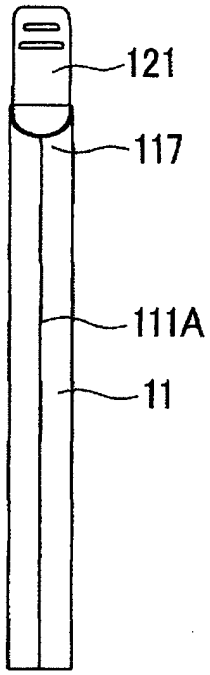

FIG. 4C

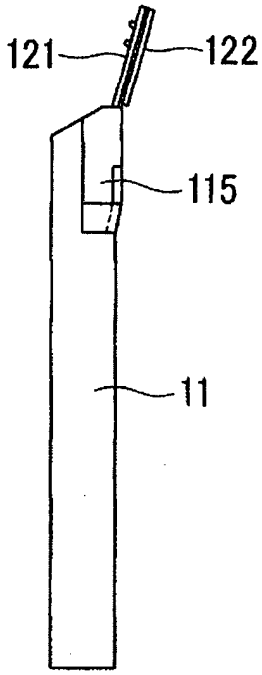

FIG. 4D

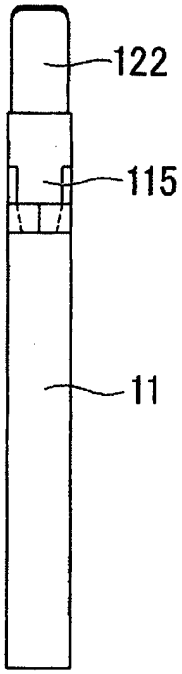

FIG. 4E

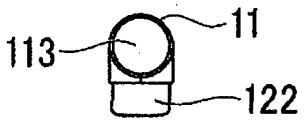

FIG. 5A

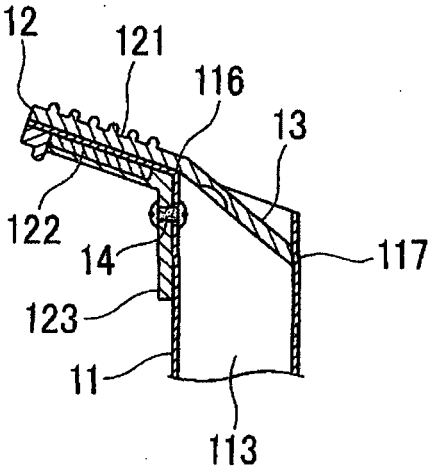
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FIG. 5B

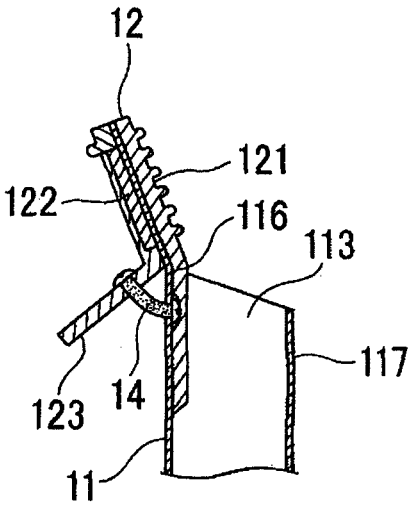
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FIG. 6A

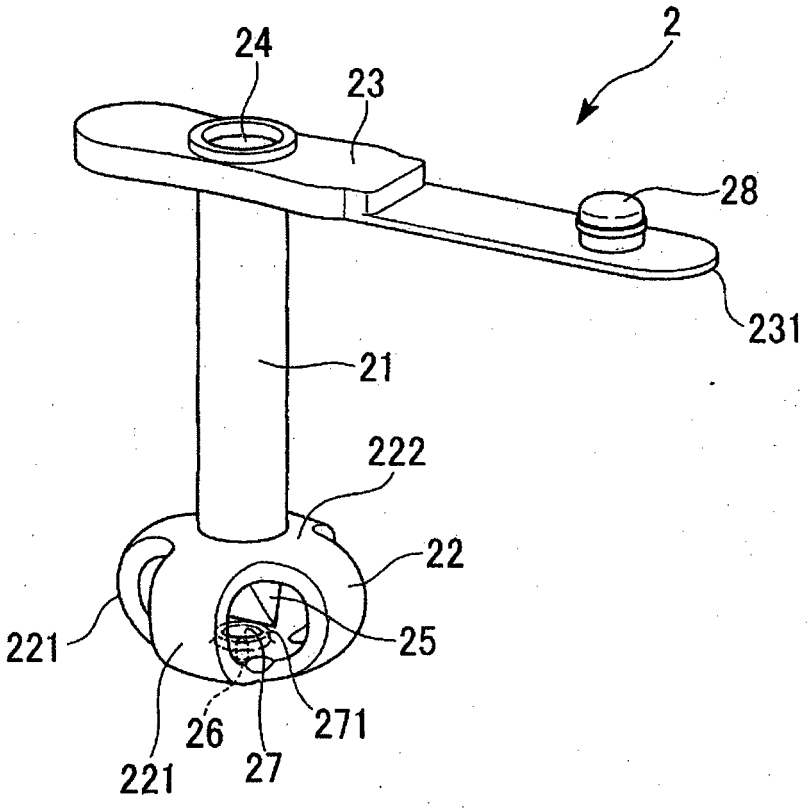

FIG. 6B

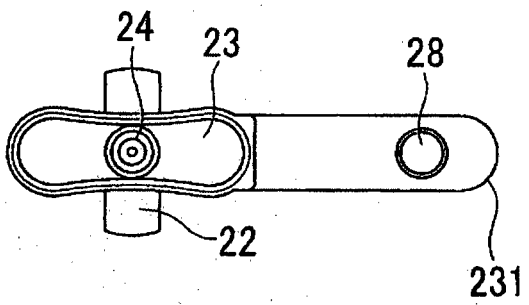

FIG. 6C

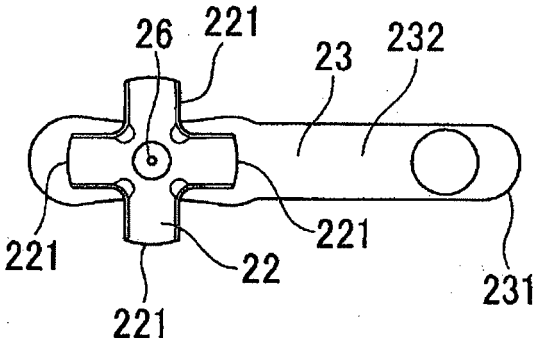

FIG. 7

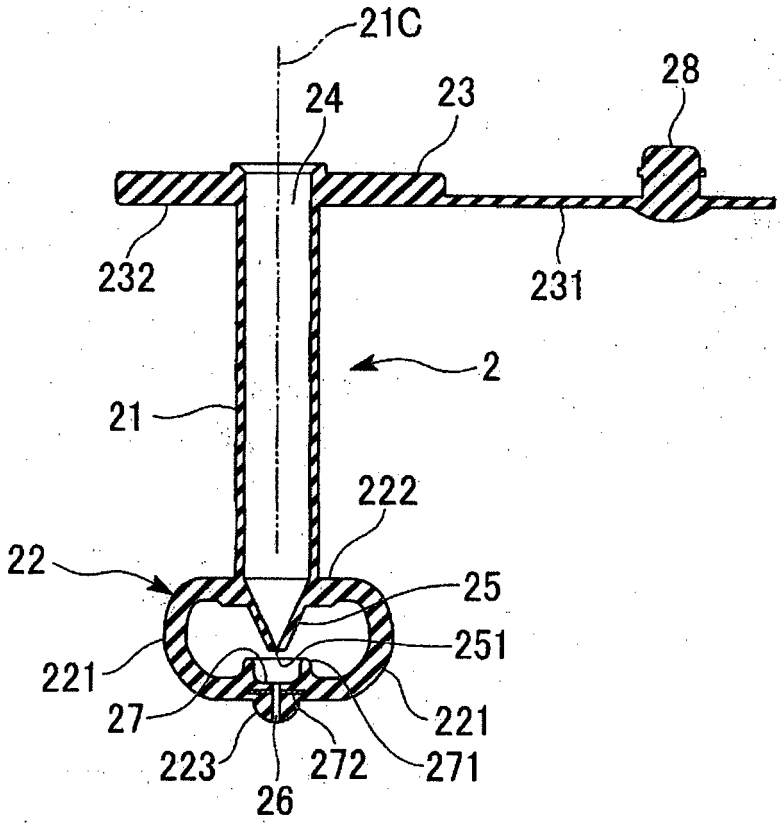

FIG. 8A FIG. 8B FIG. 8C

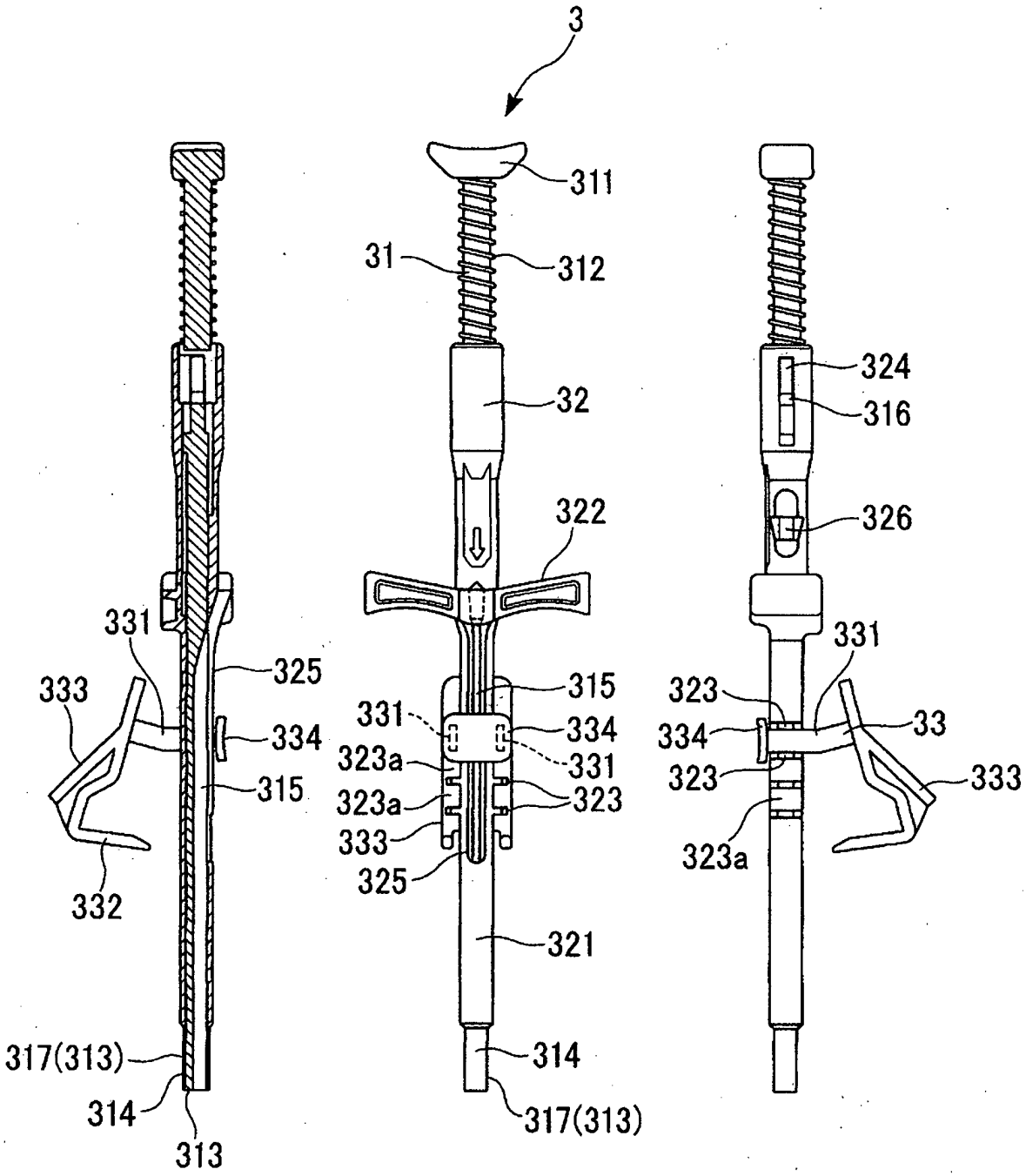

FIG. 9A

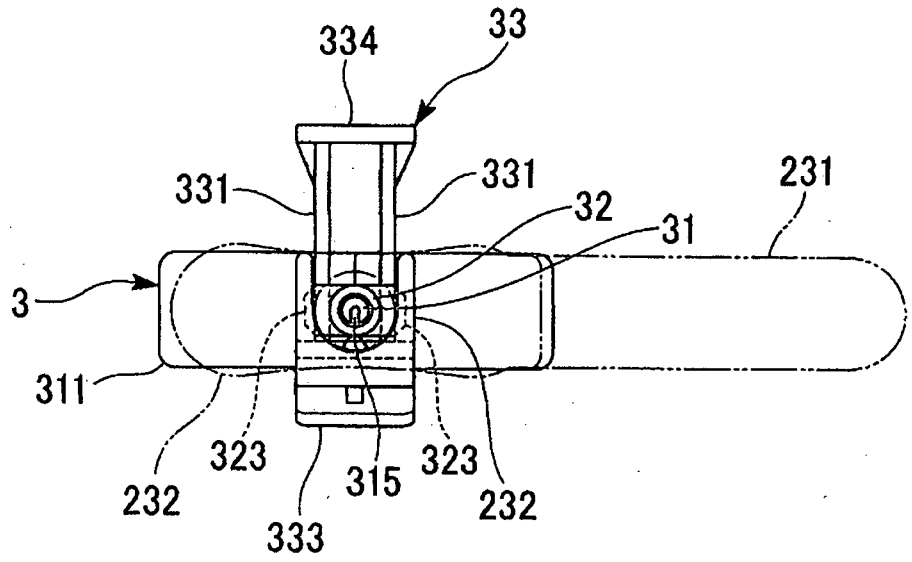
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FIG. 9B

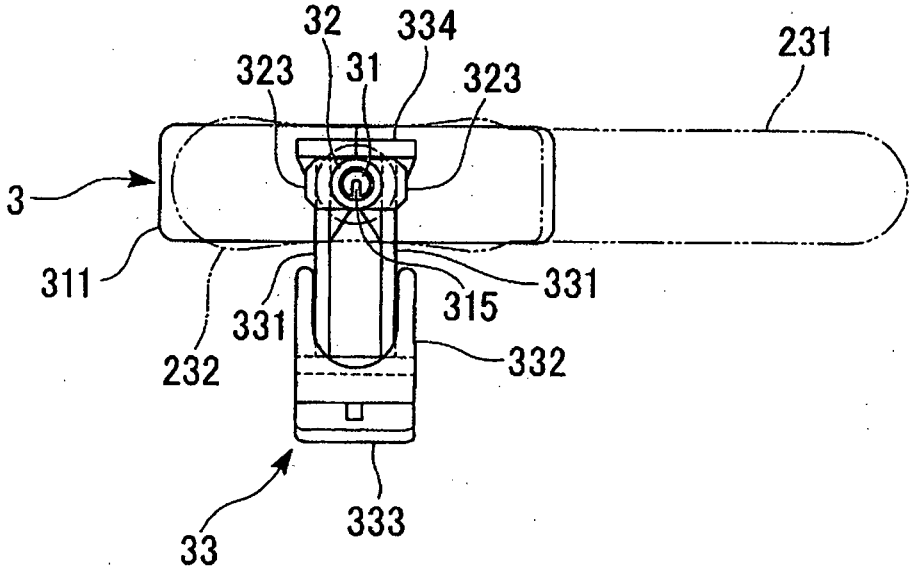
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FIG. 10A

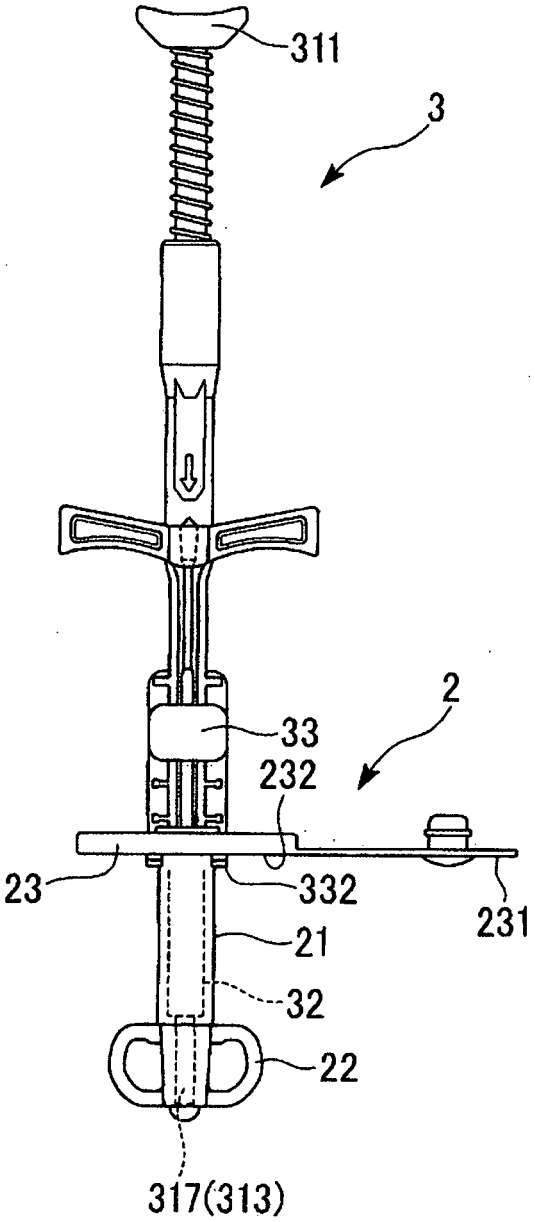


FIG. 10B

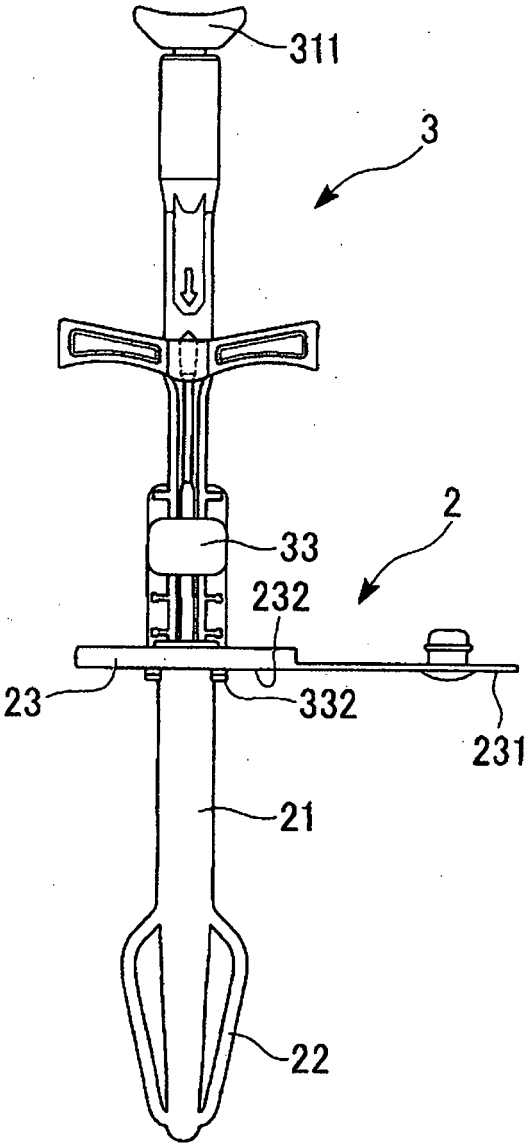


FIG. 11

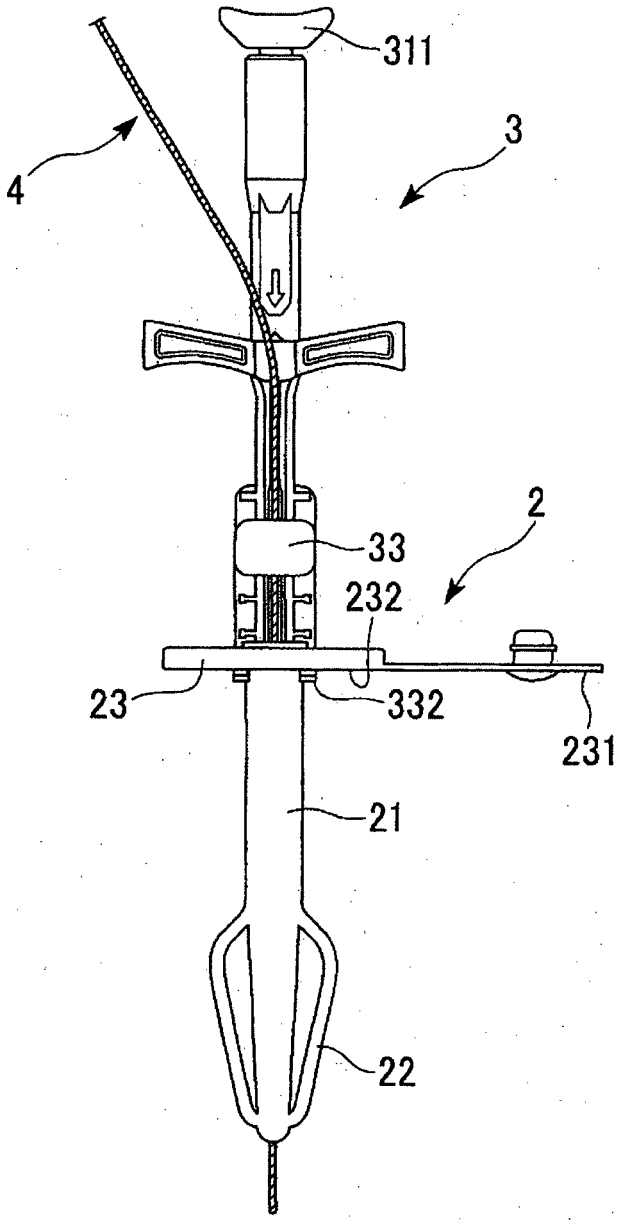


FIG. 12A

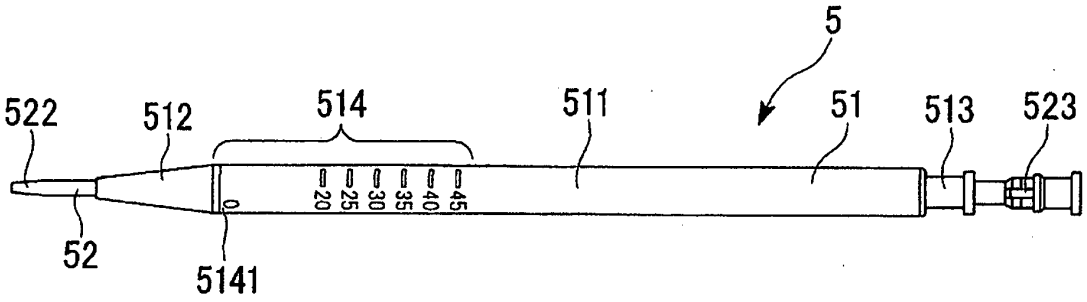


FIG. 12B

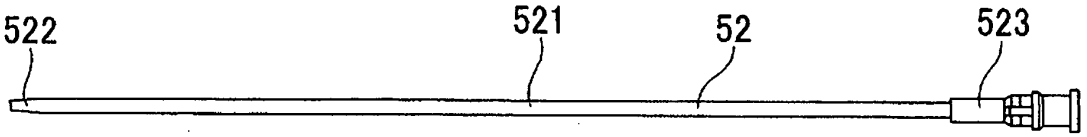


FIG. 12C

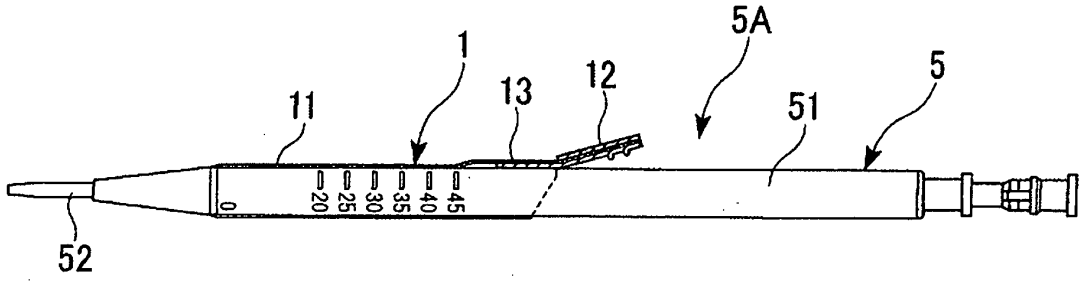


FIG. 12D

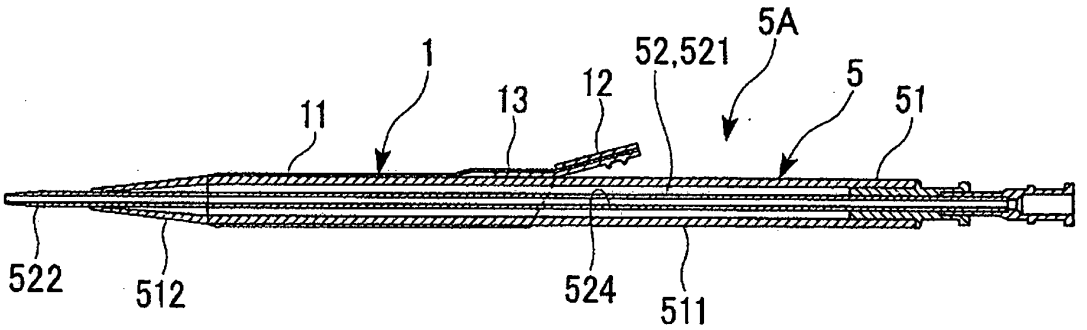


FIG. 13

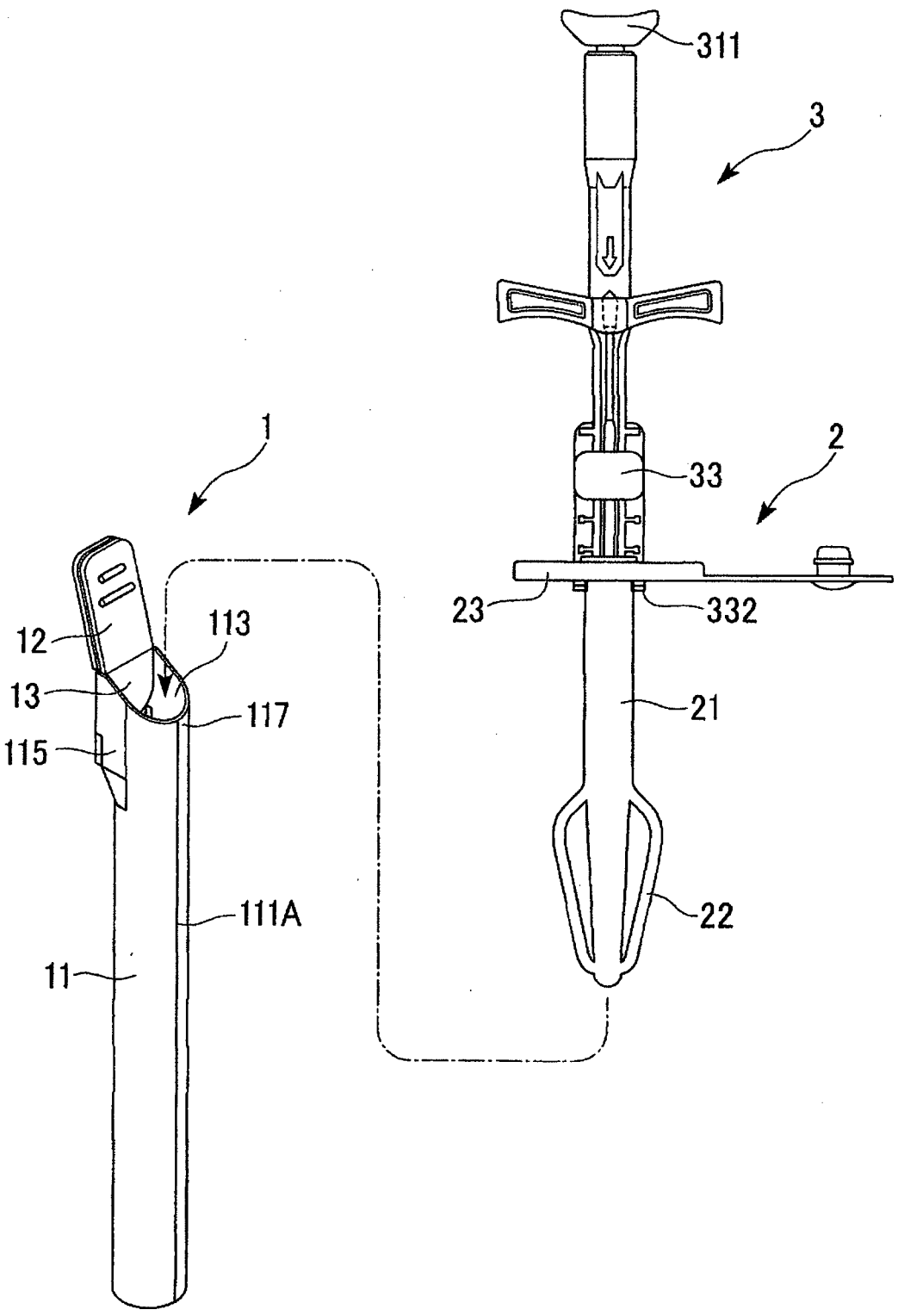


FIG. 14

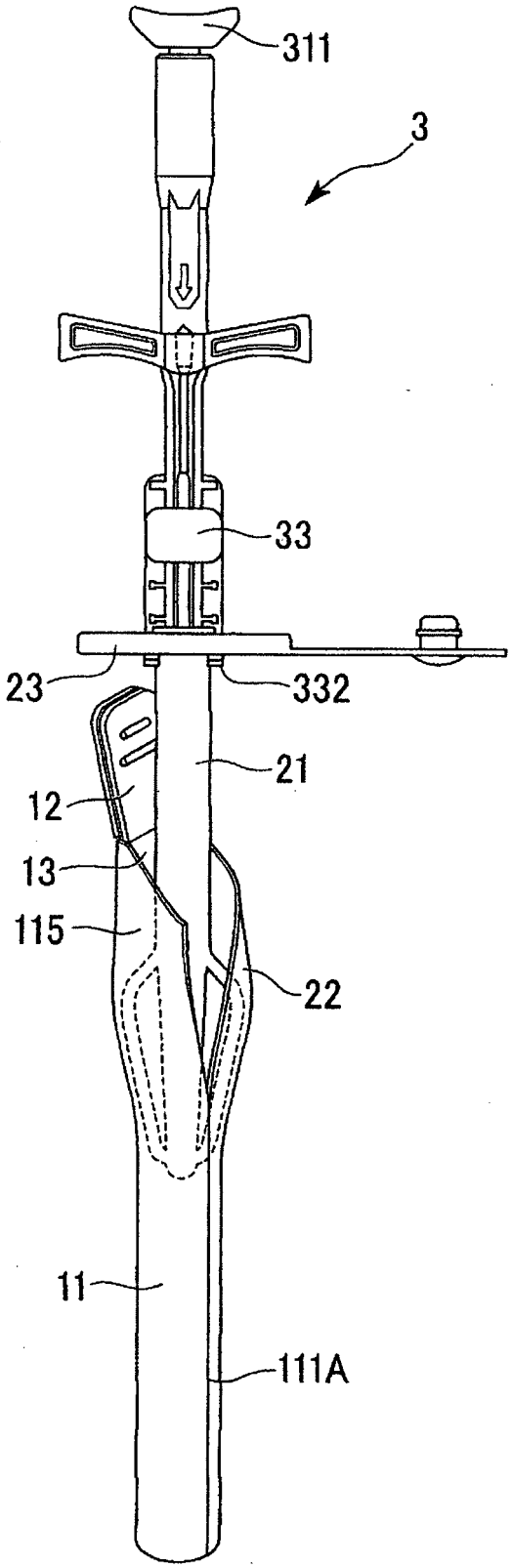


FIG. 15A

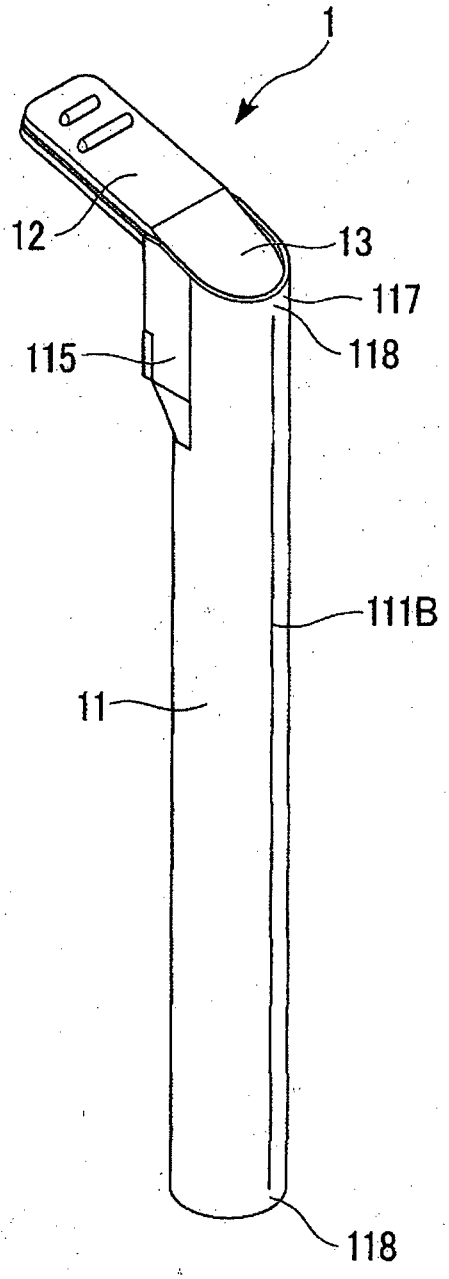


FIG. 15B

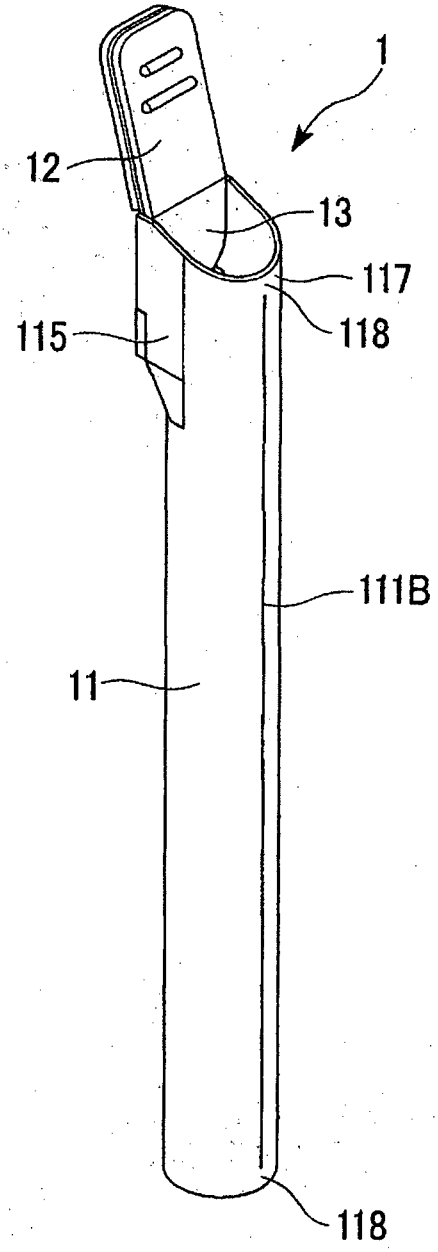


FIG. 16A

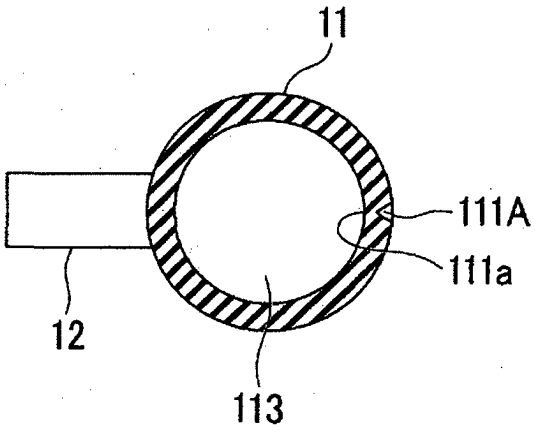


FIG. 16B

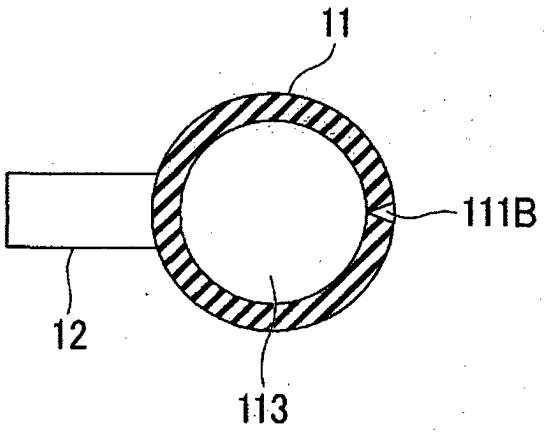


FIG. 17

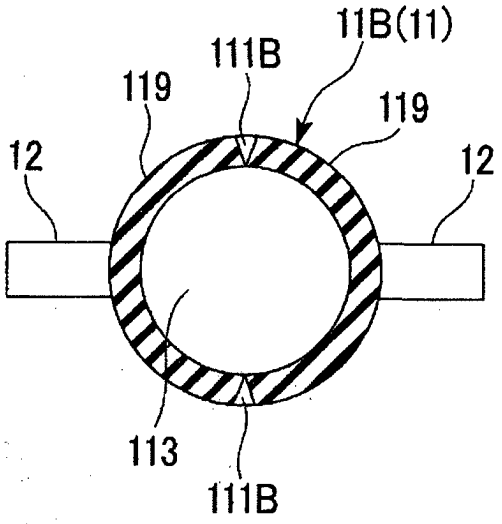


FIG. 18

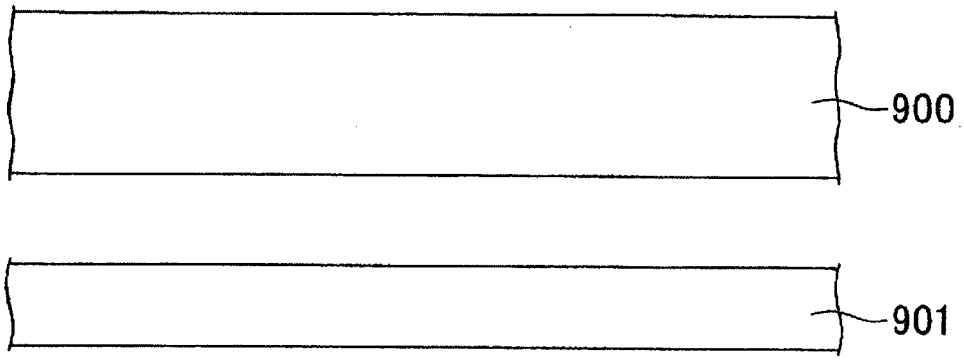


FIG. 19

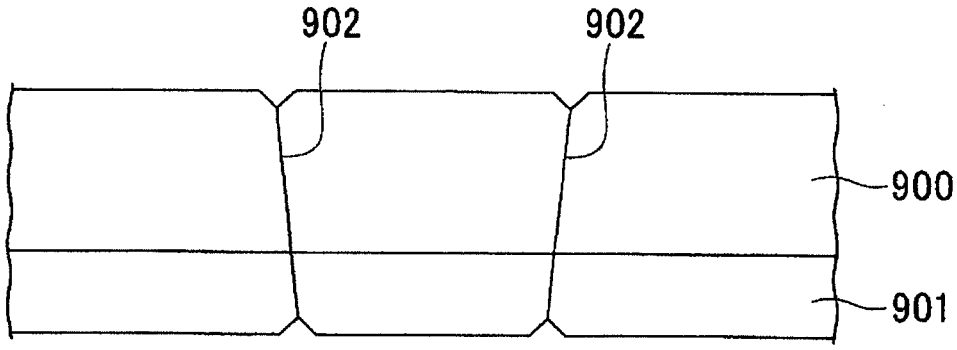


FIG. 20

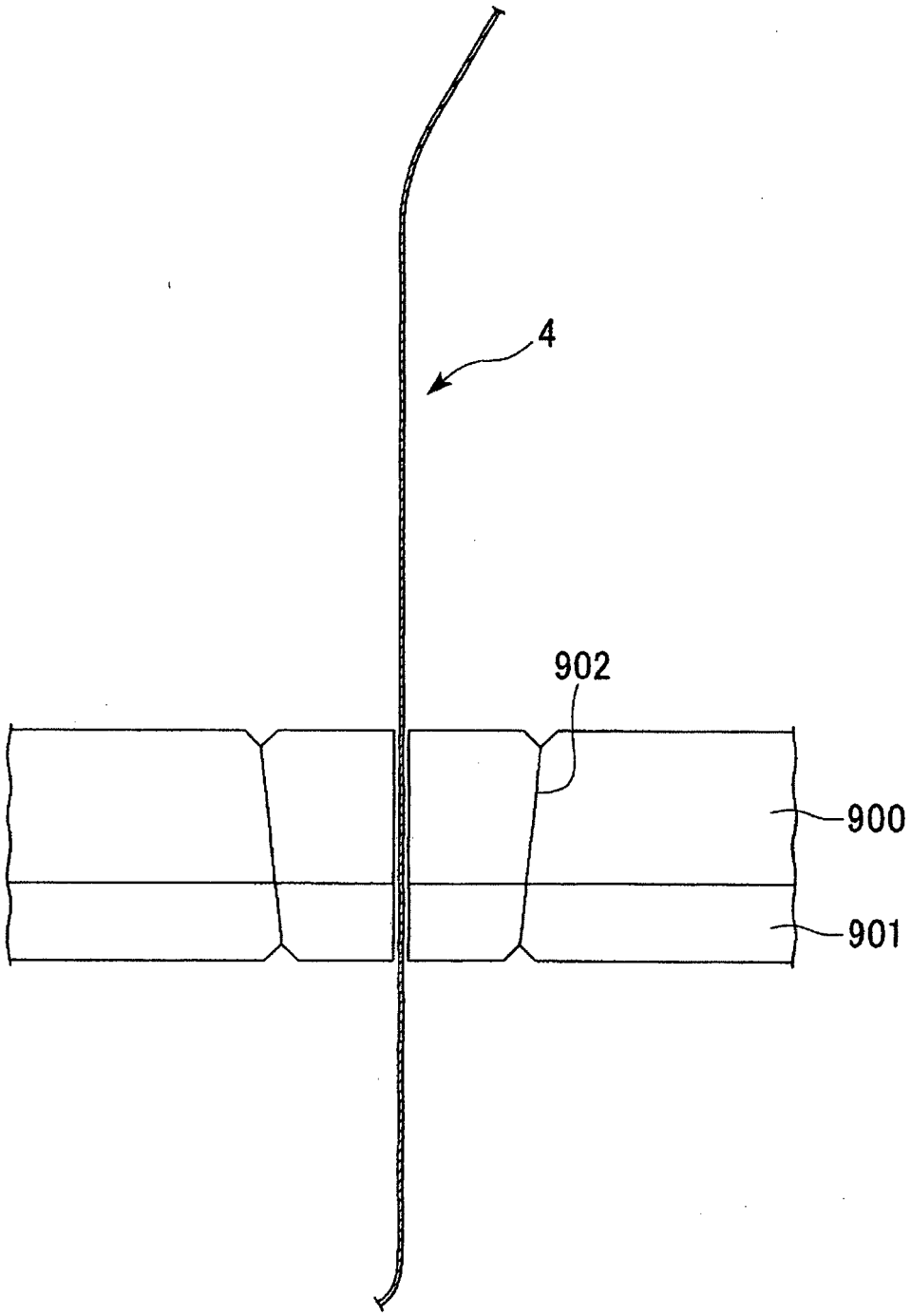


FIG. 21

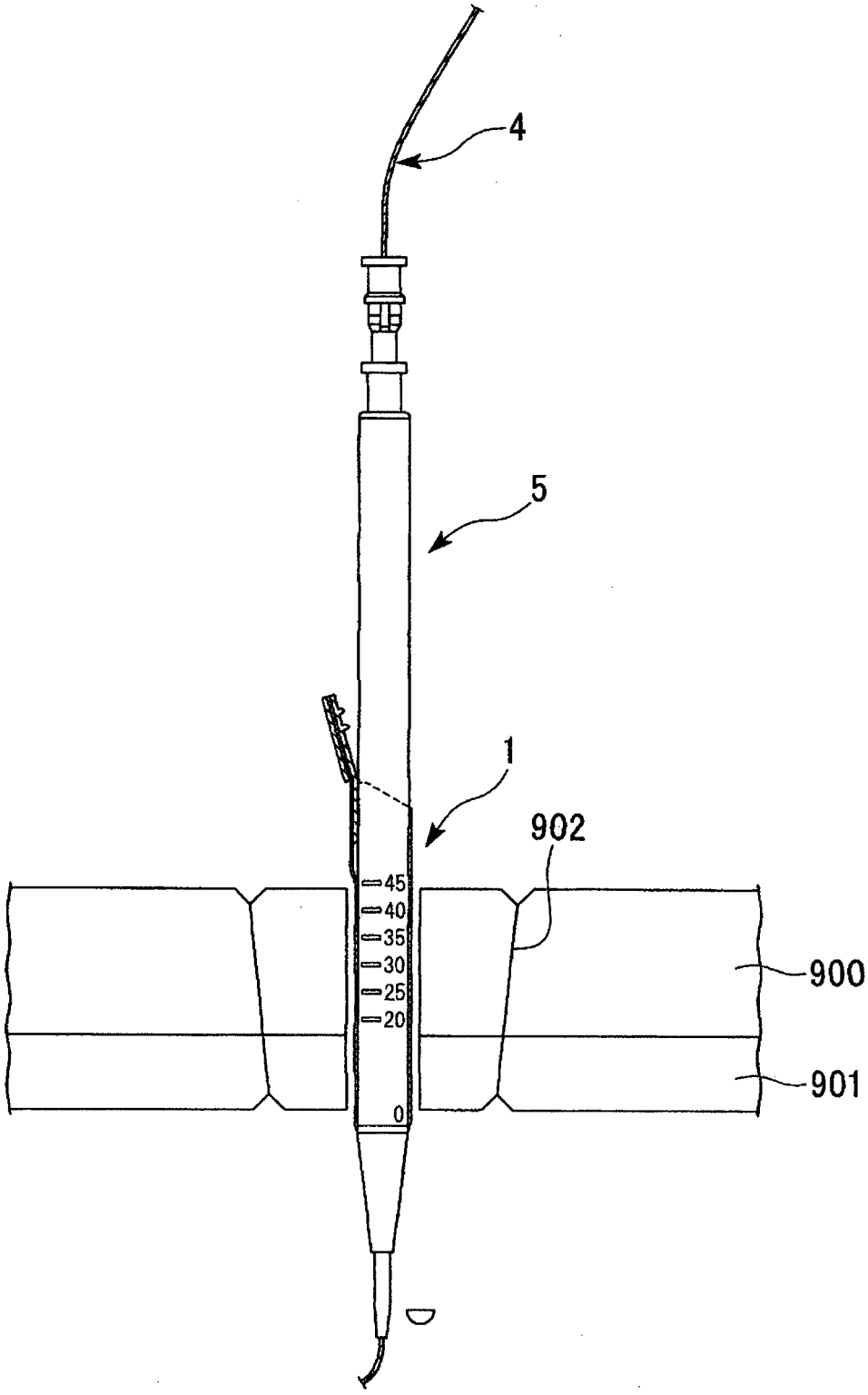


FIG. 22

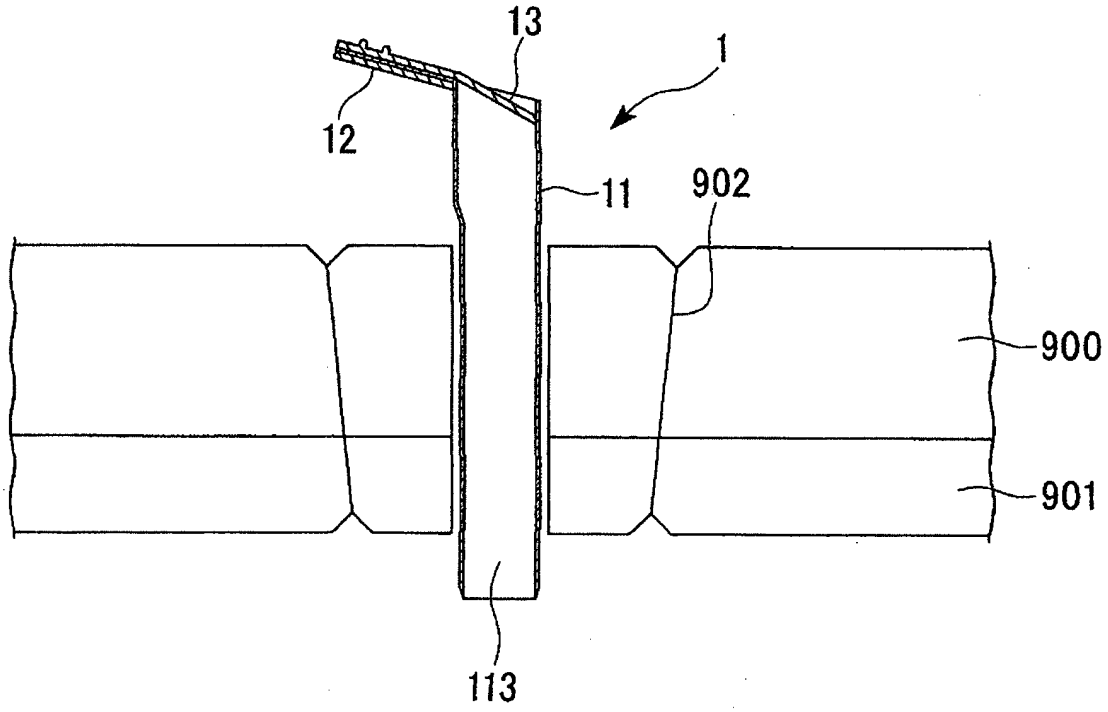


FIG. 23

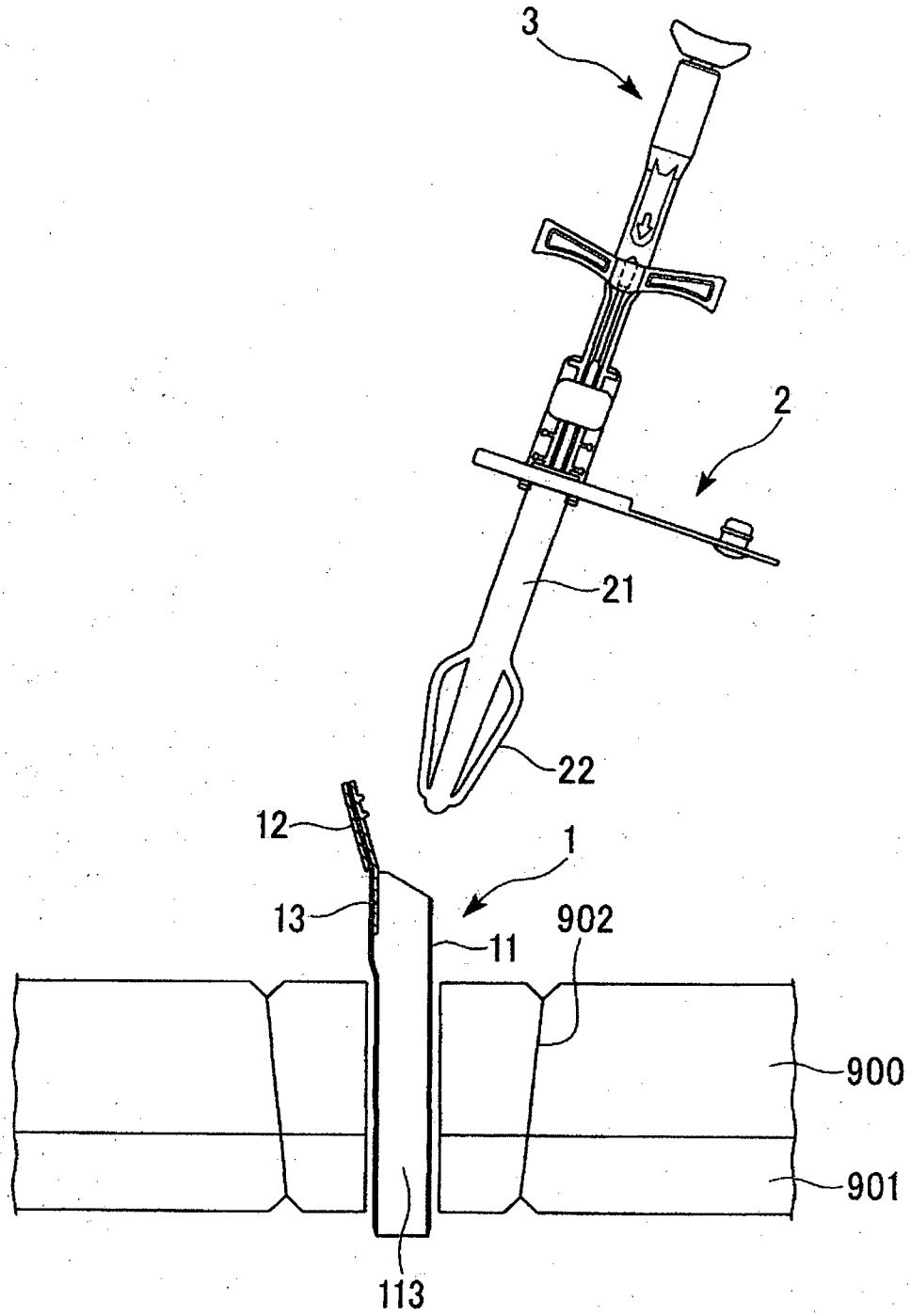


FIG. 24

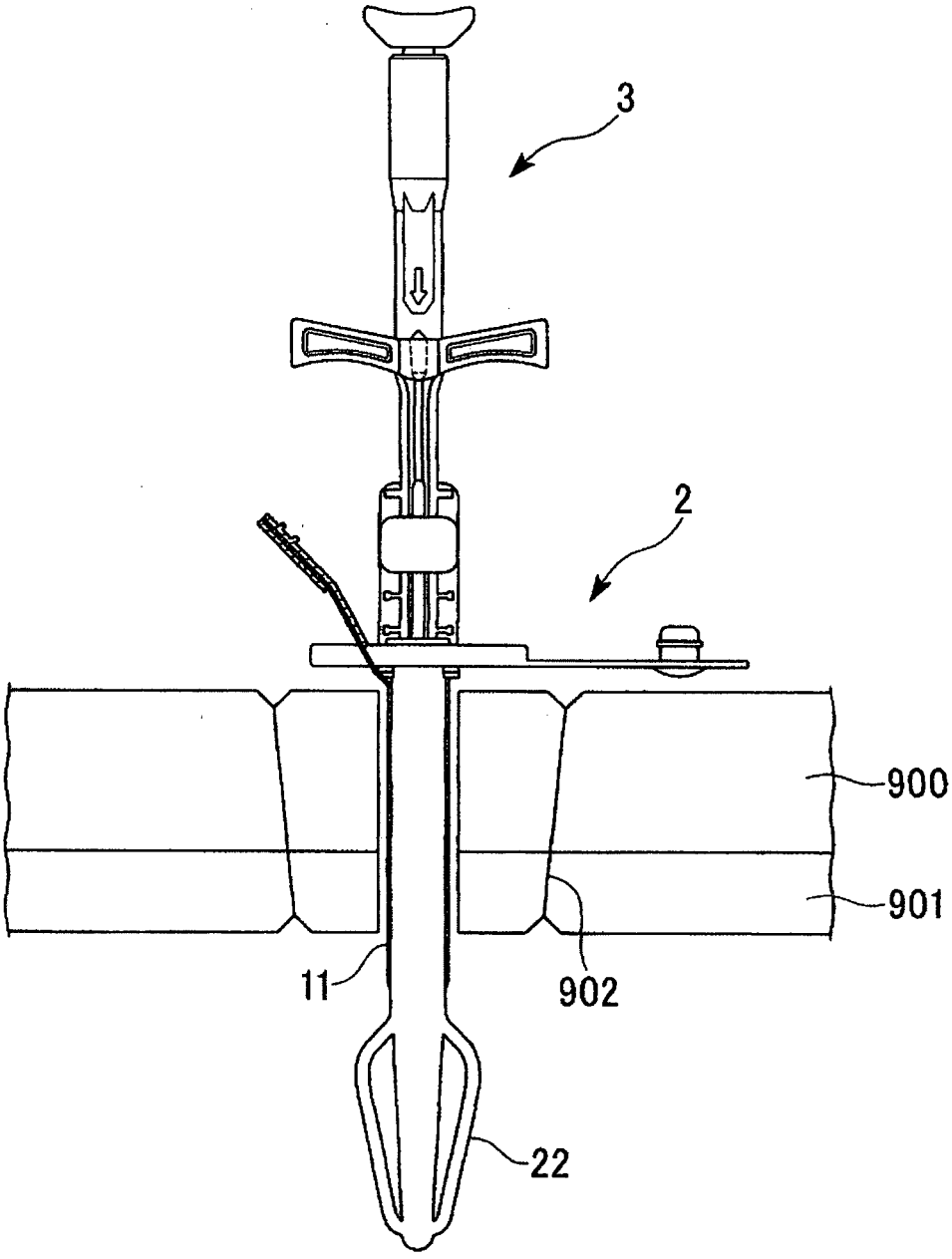


FIG. 25

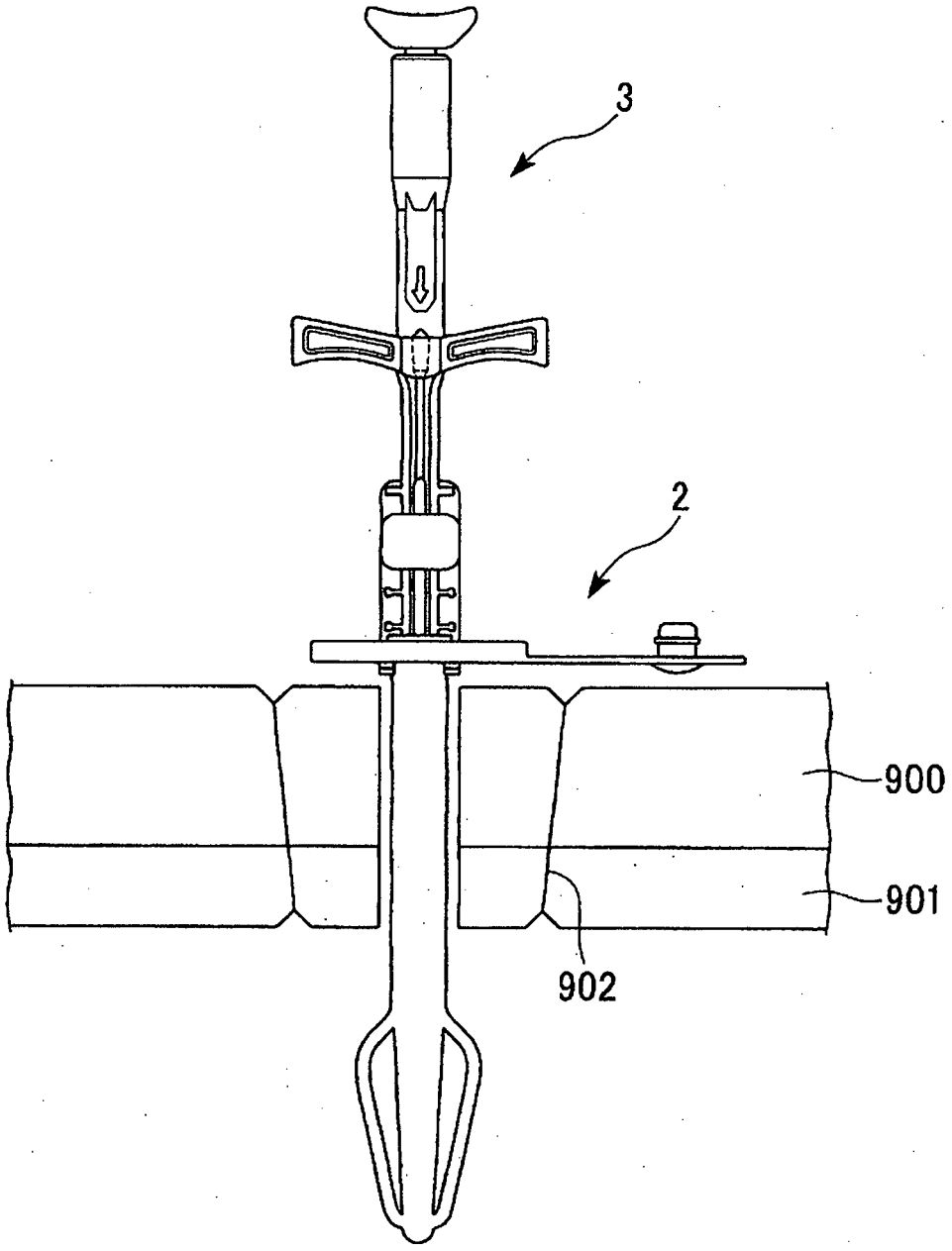


FIG. 26

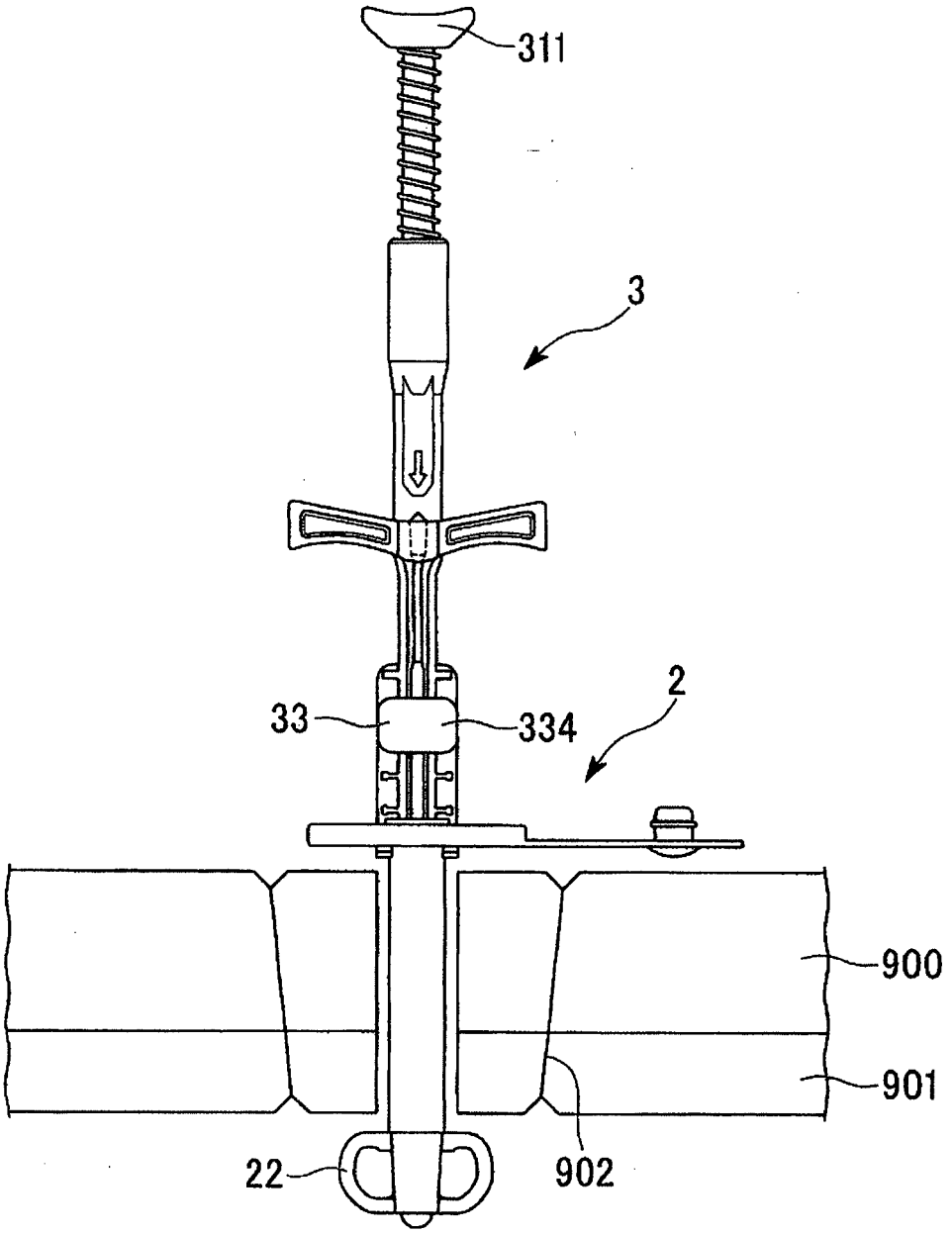


FIG. 27

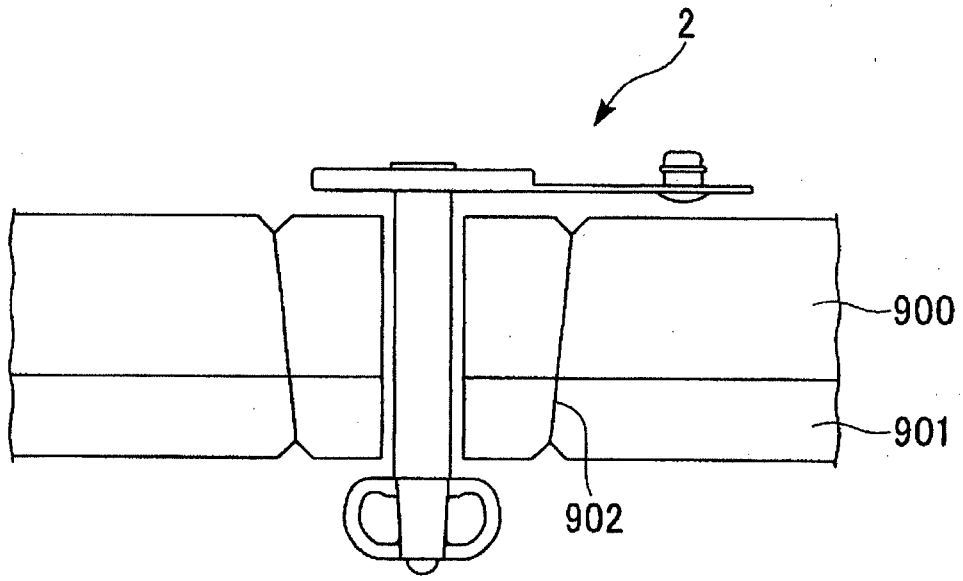


FIG. 28

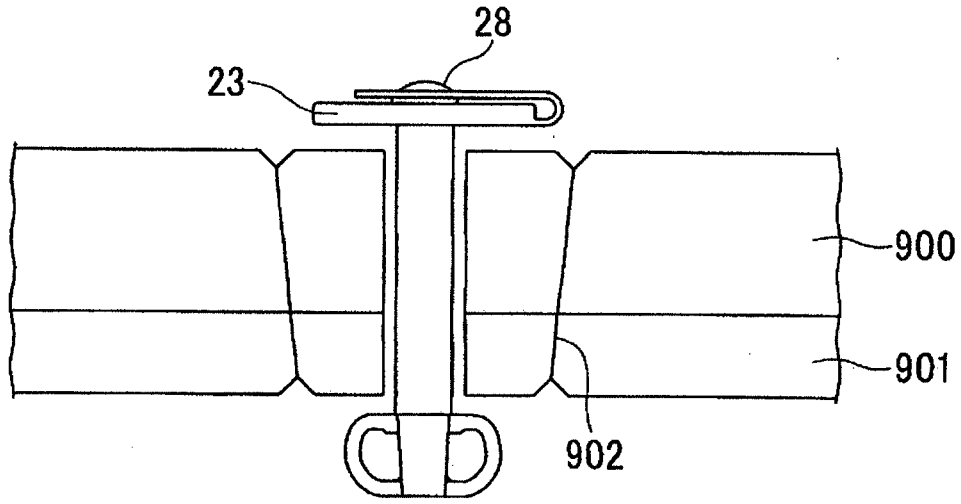


FIG. 29

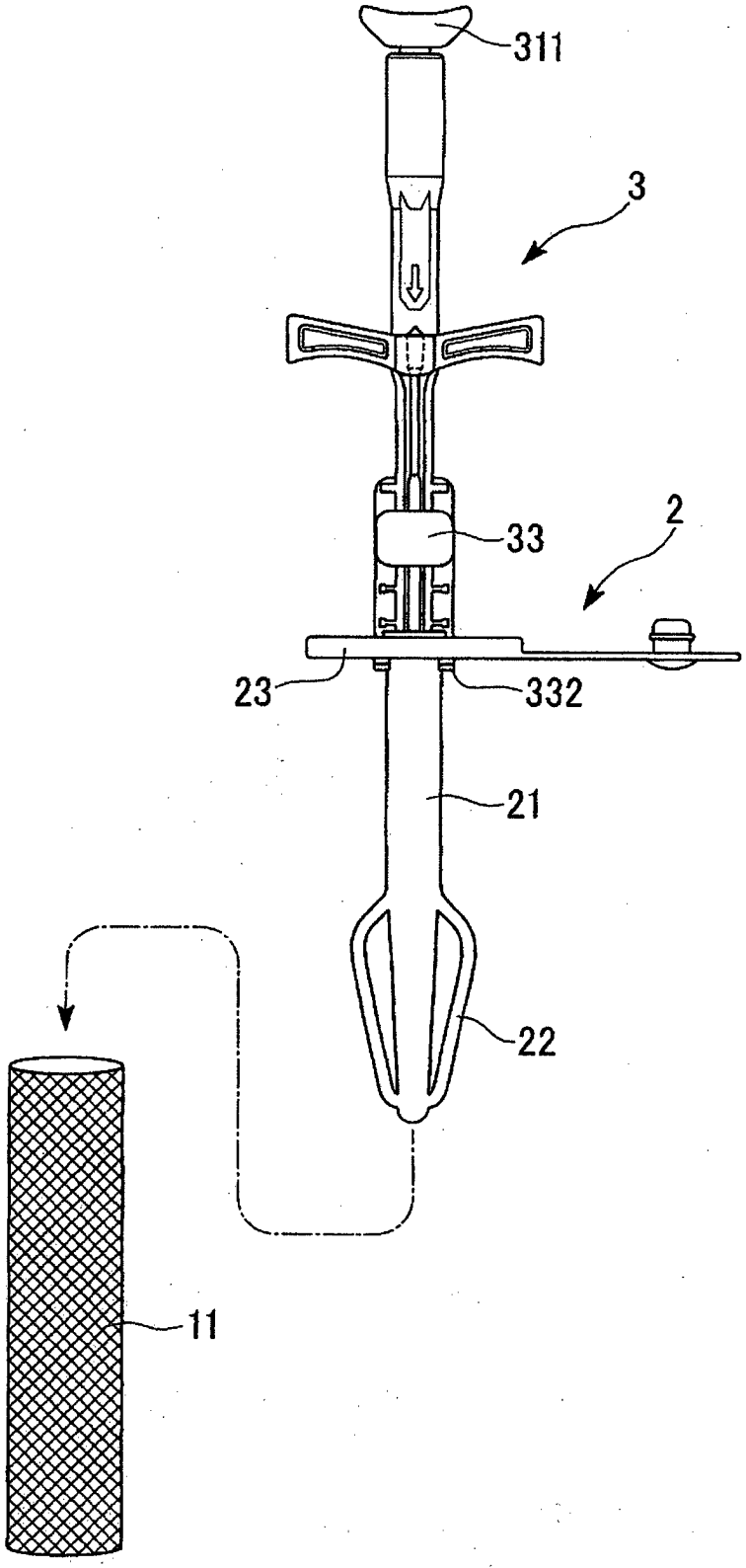


FIG. 30

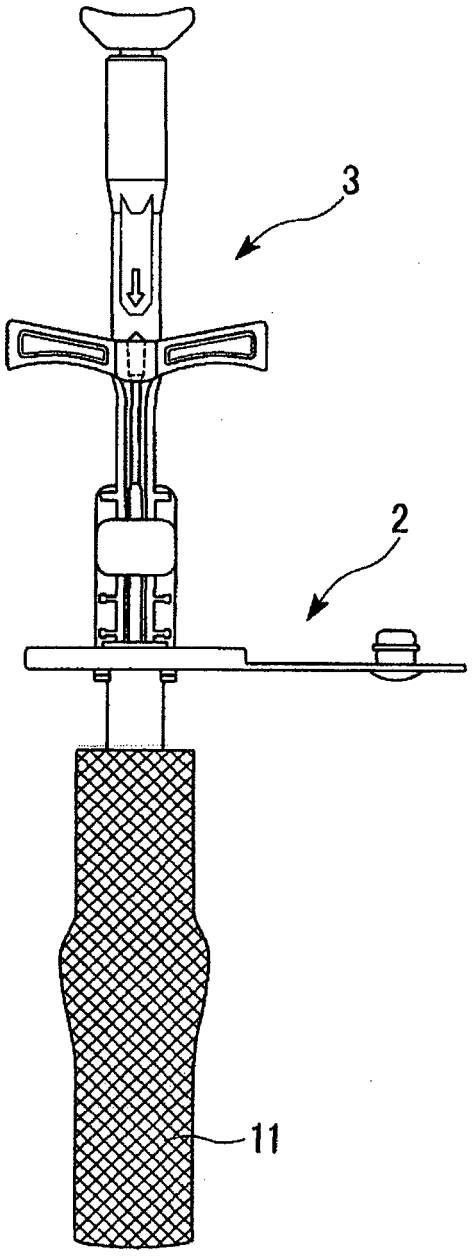


FIG. 31A

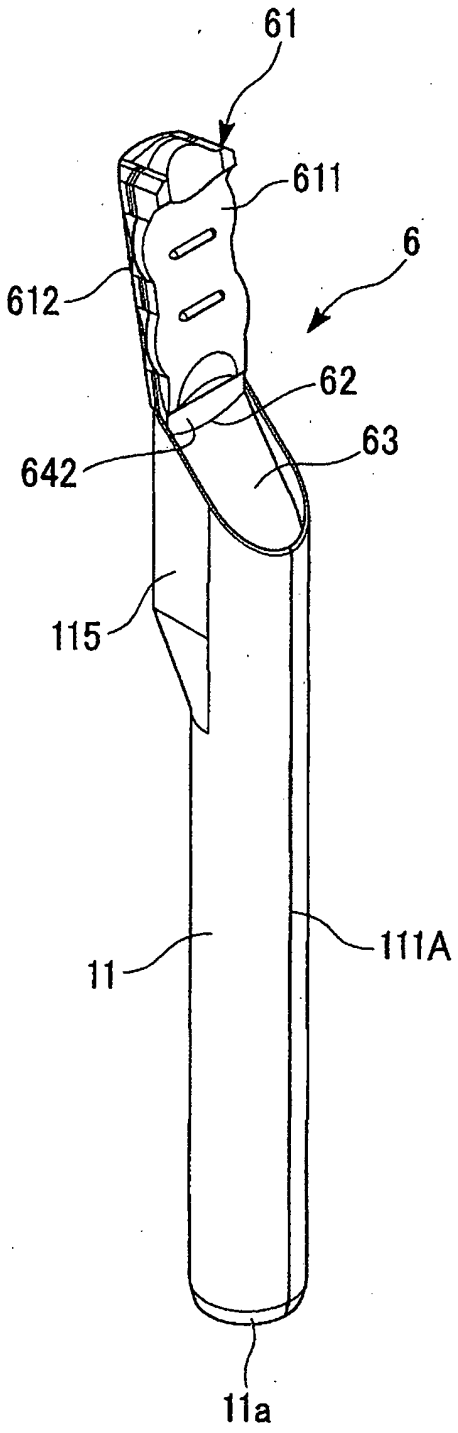


FIG. 31B

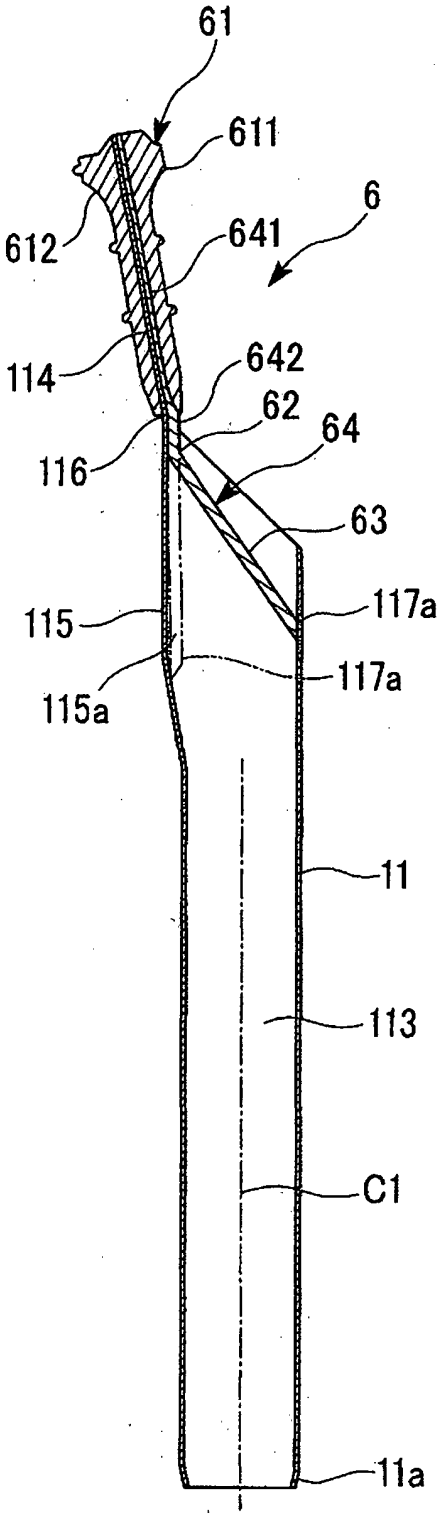


FIG. 32A

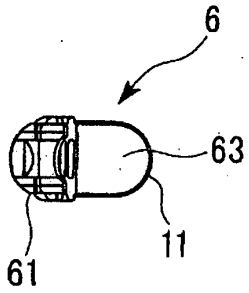


FIG. 32B

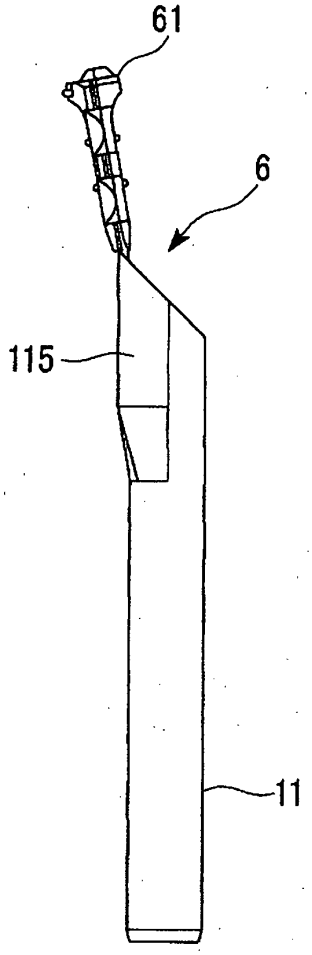


FIG. 32C

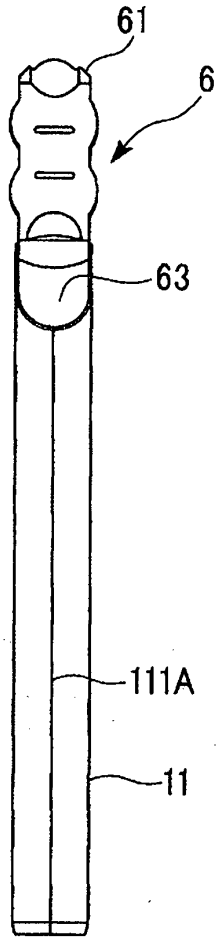


FIG. 32D

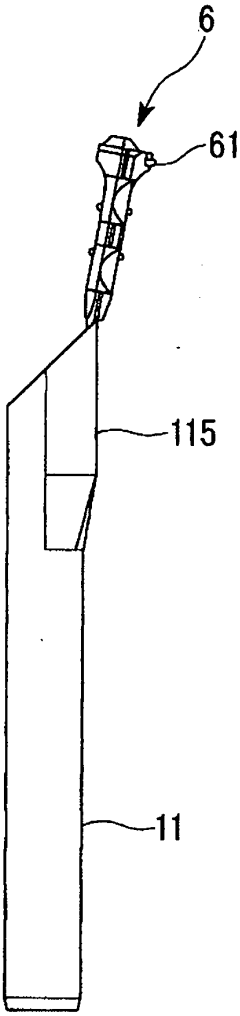


FIG. 32E

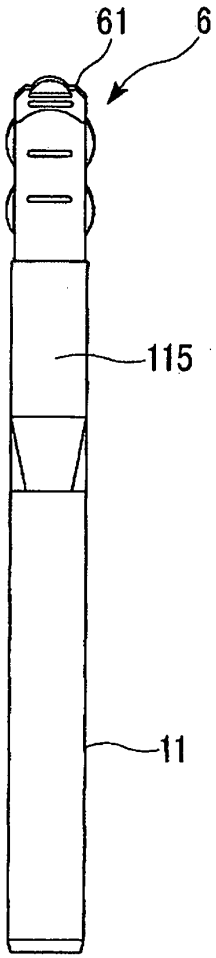


FIG. 32F

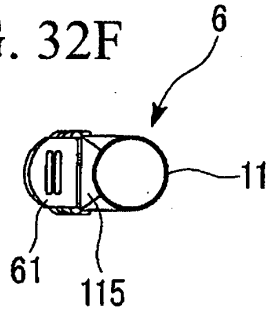


FIG. 33

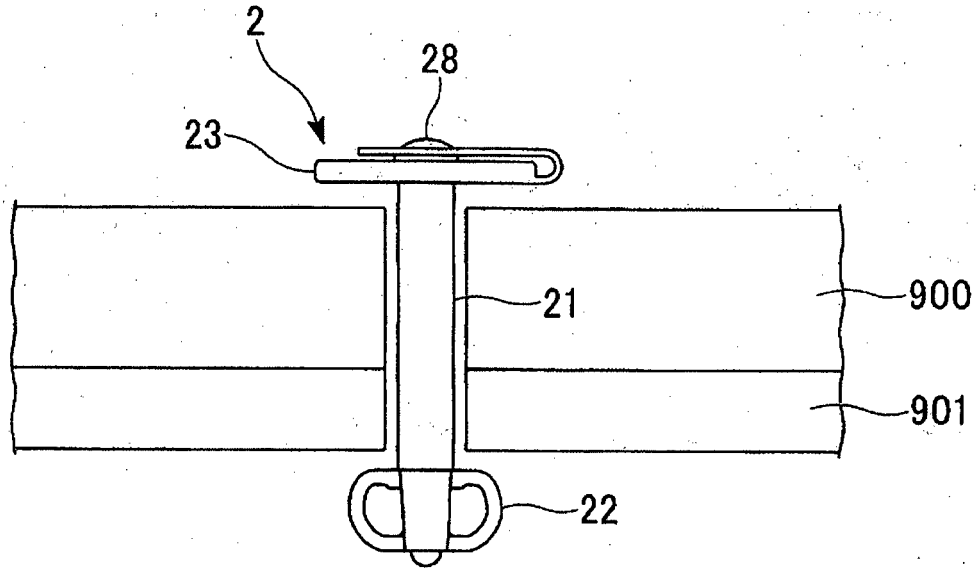


FIG. 34

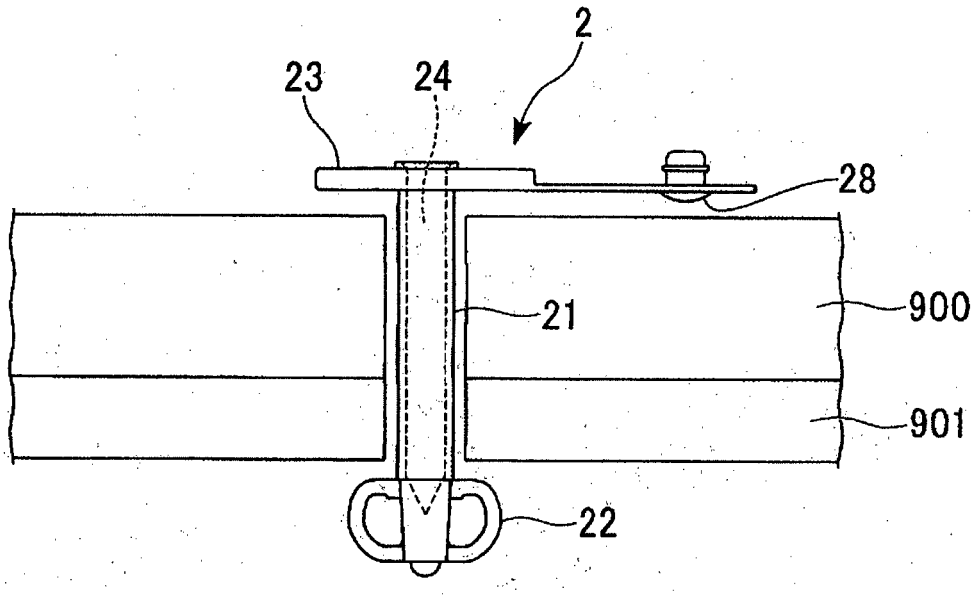


FIG. 35

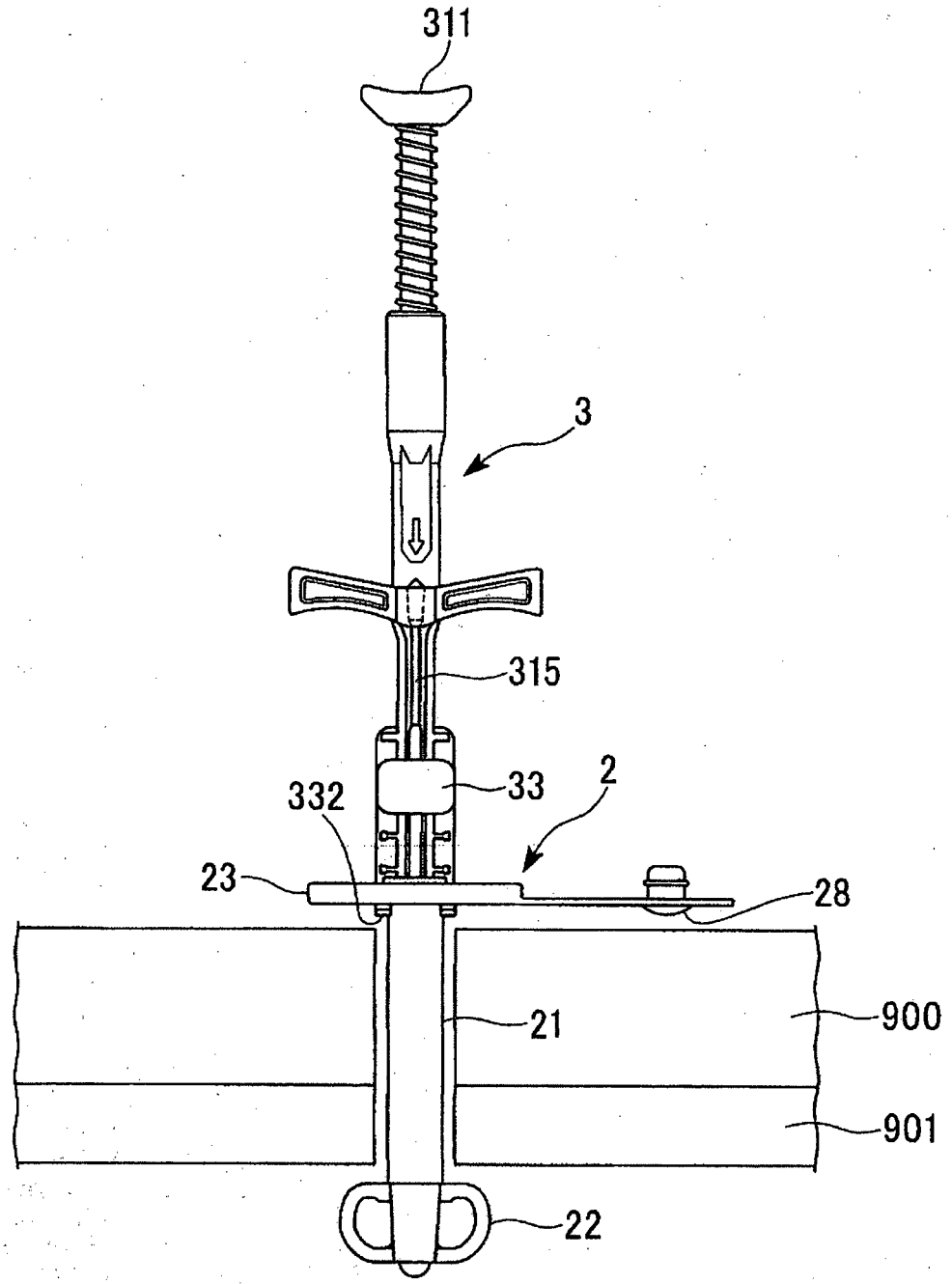


FIG. 36

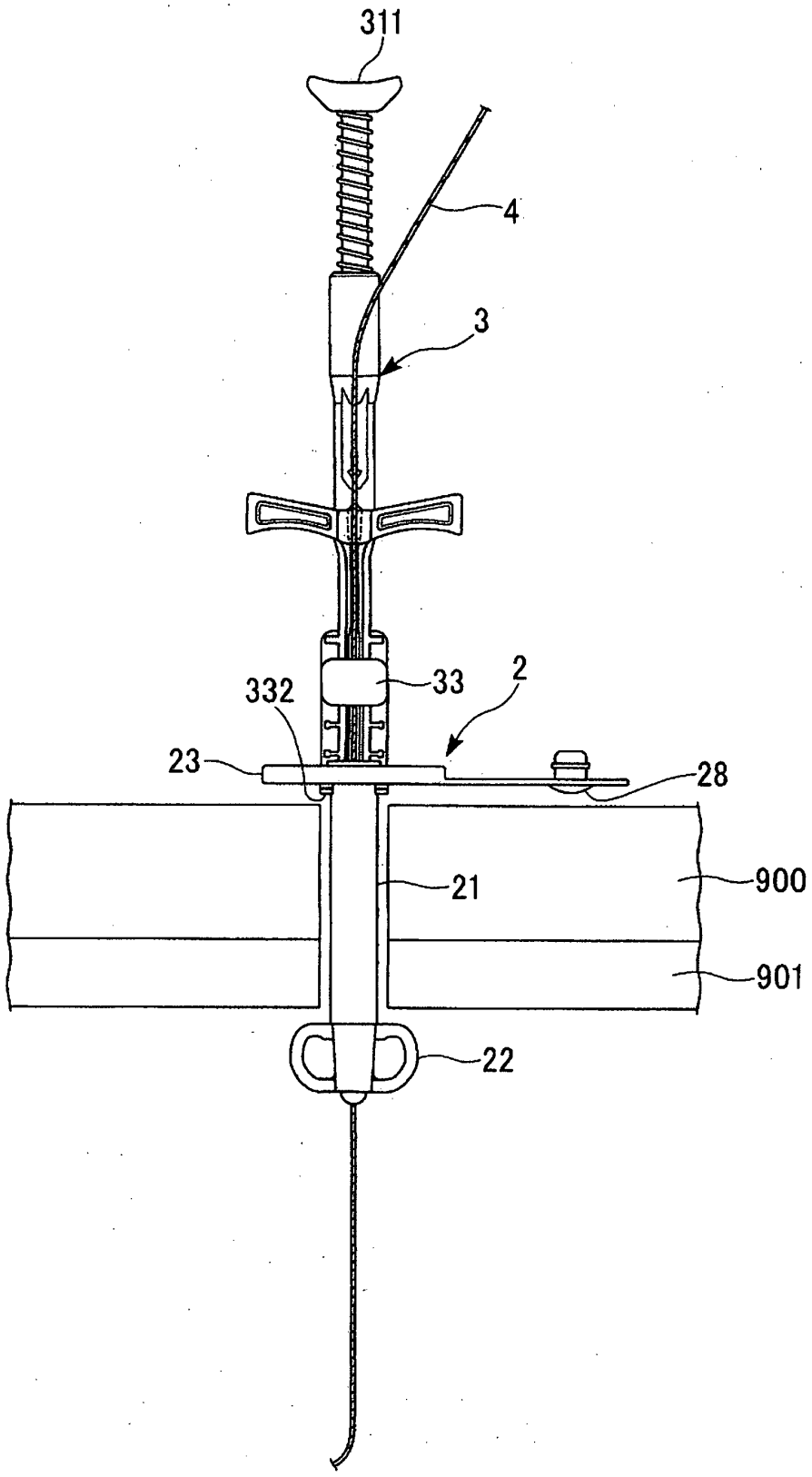


FIG. 37

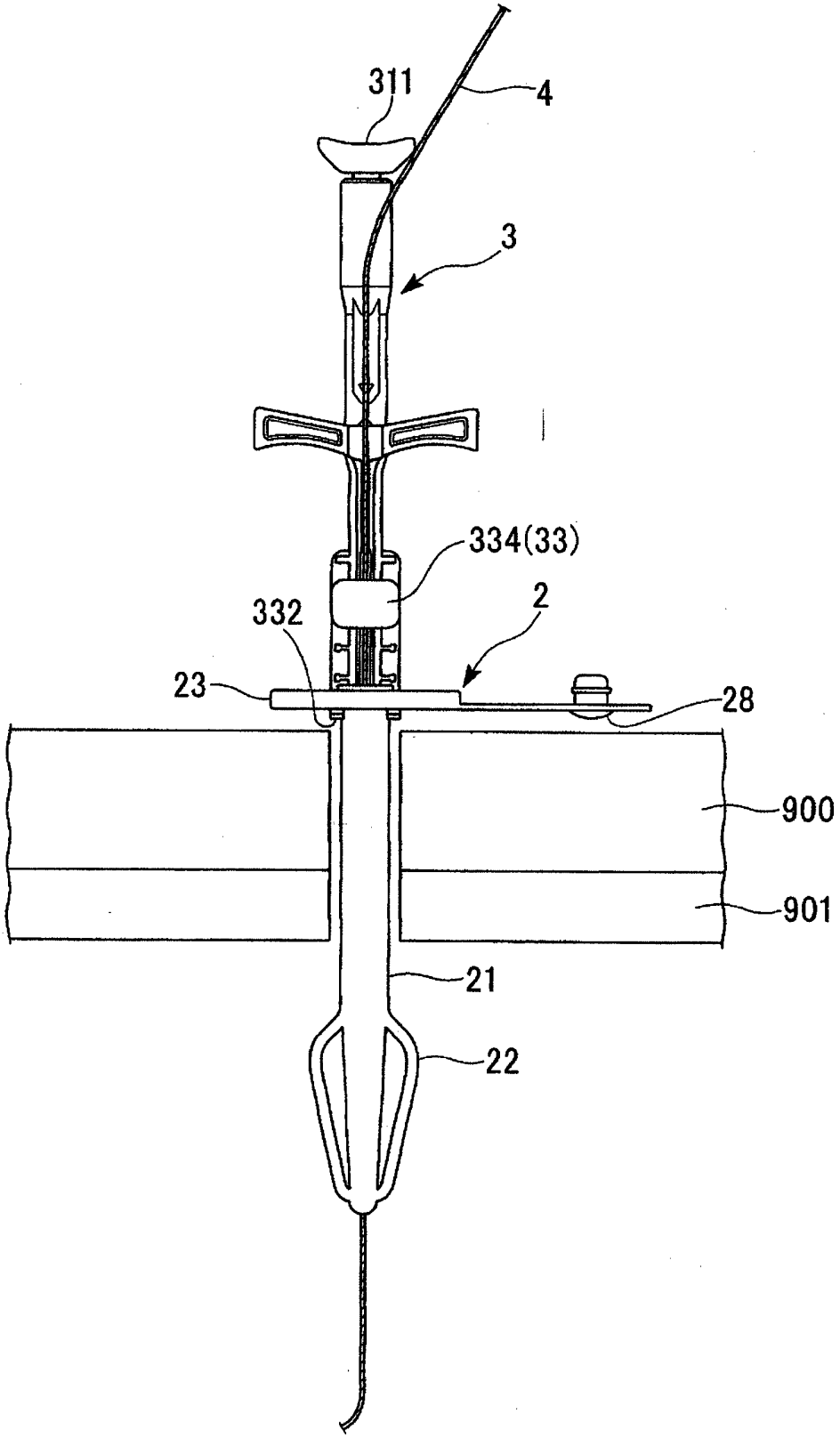


FIG. 38

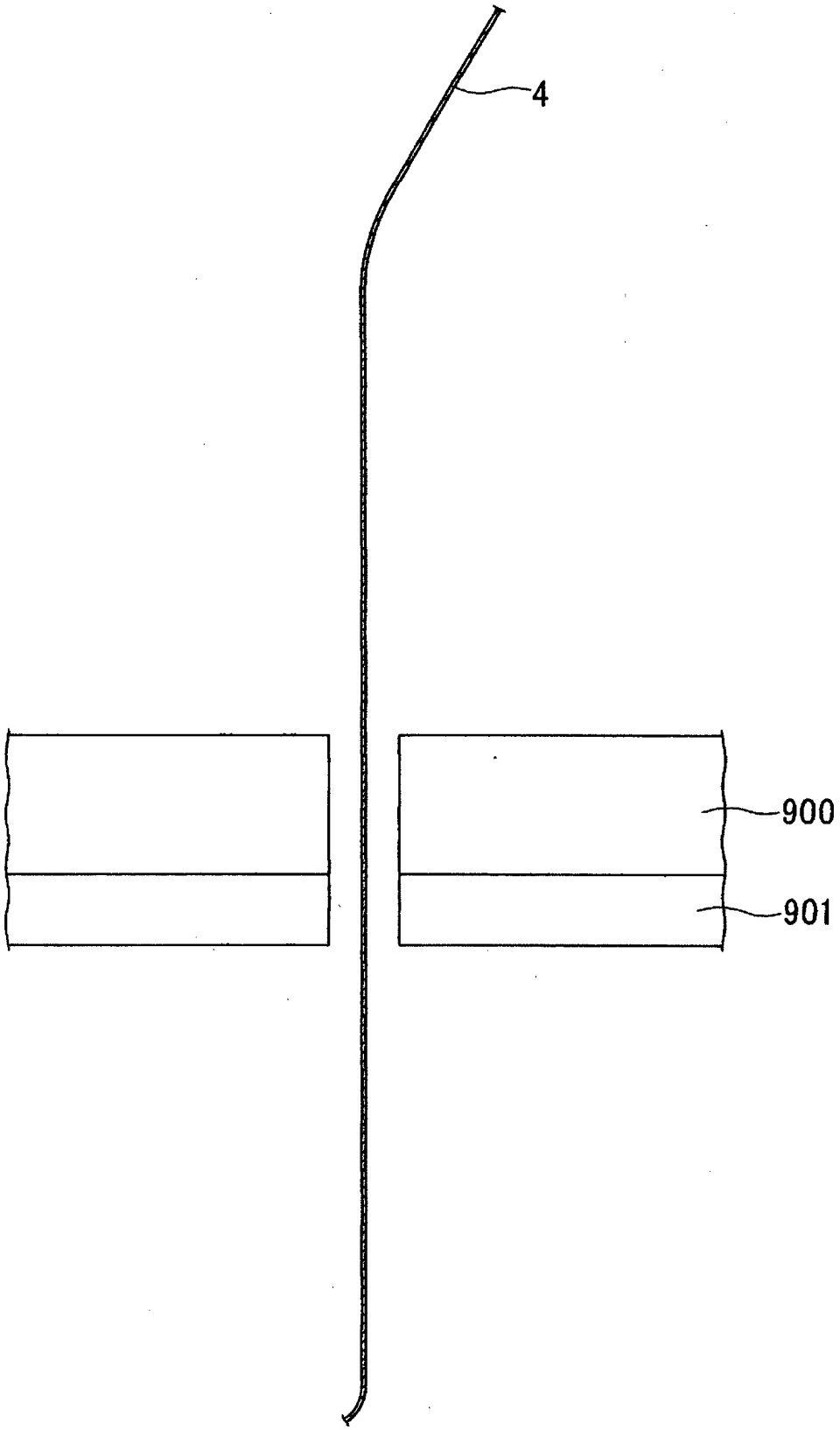


FIG. 39

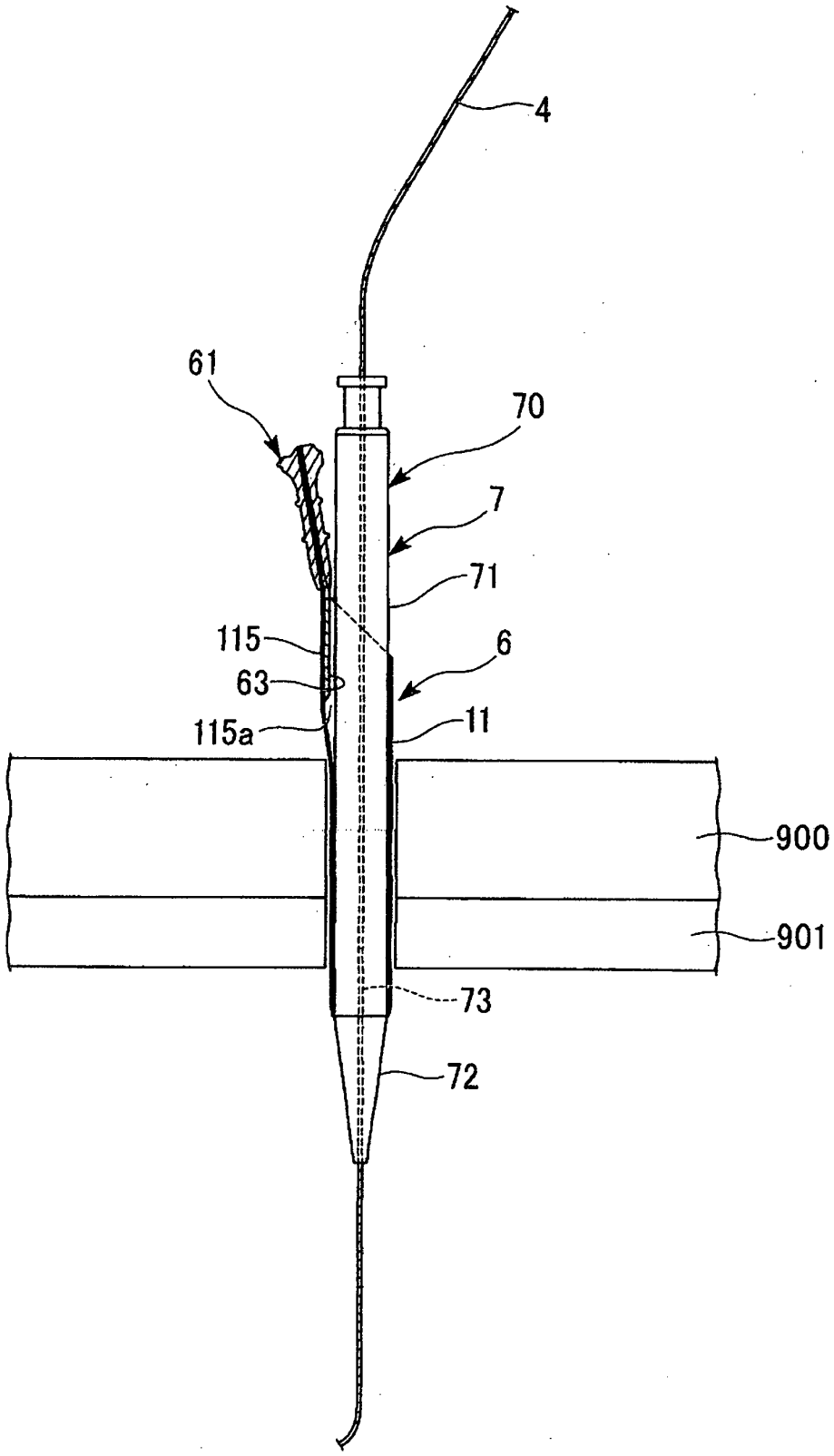


FIG. 40

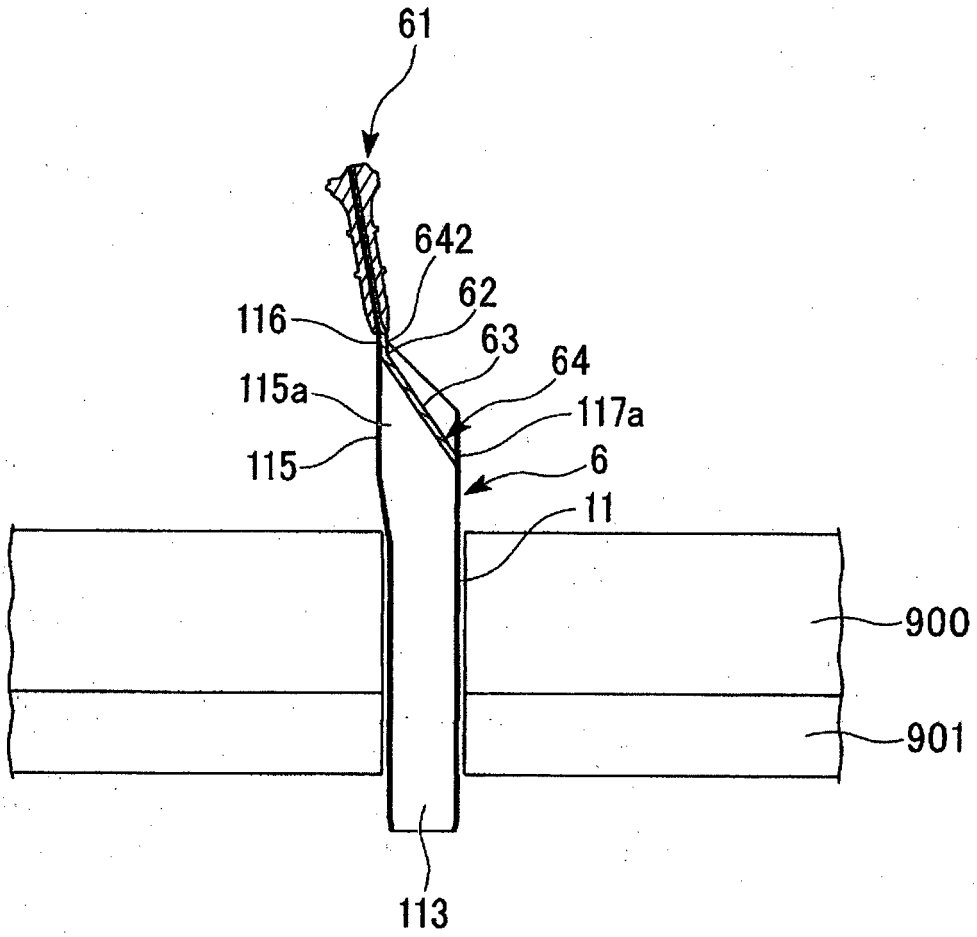


FIG. 41

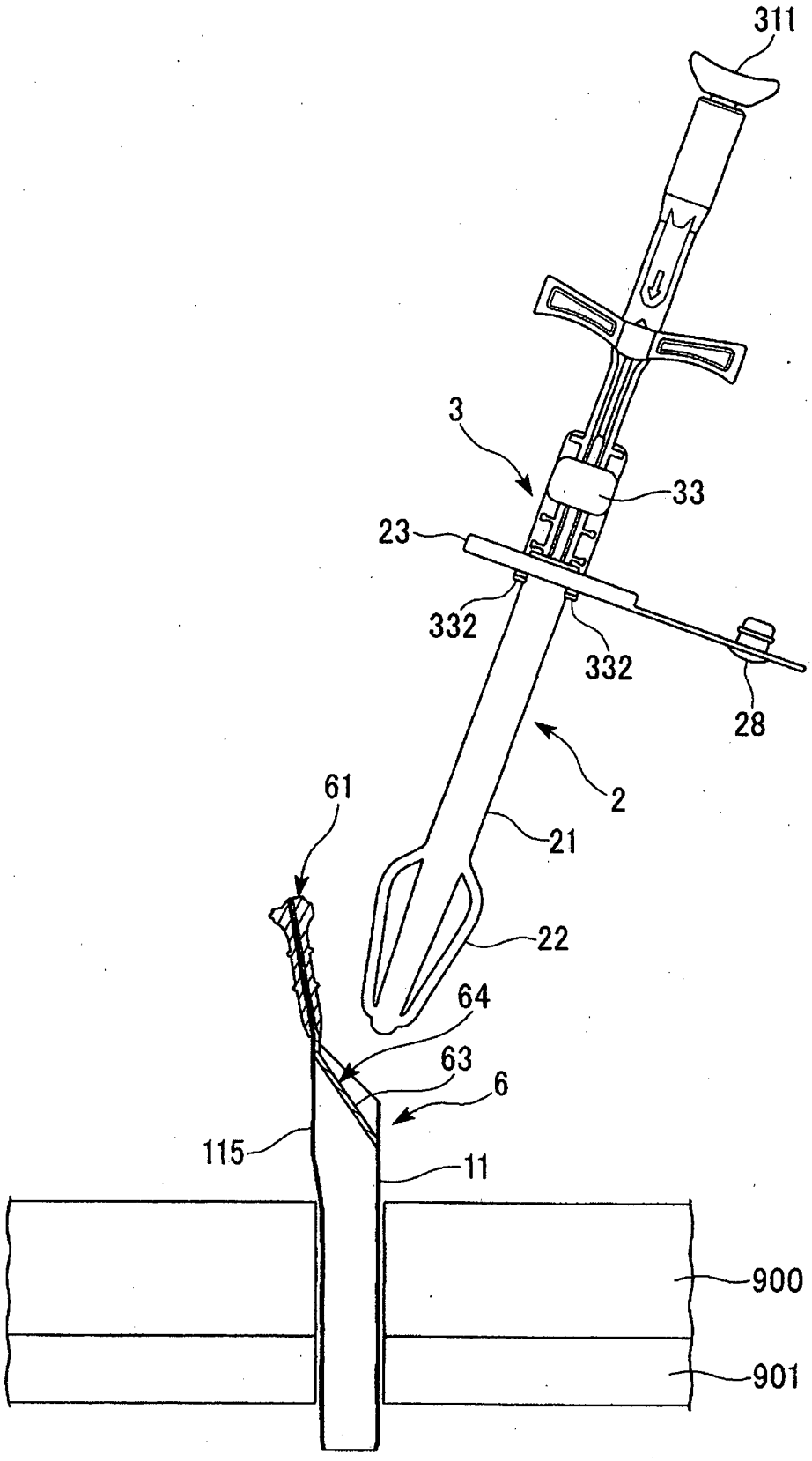


FIG. 42

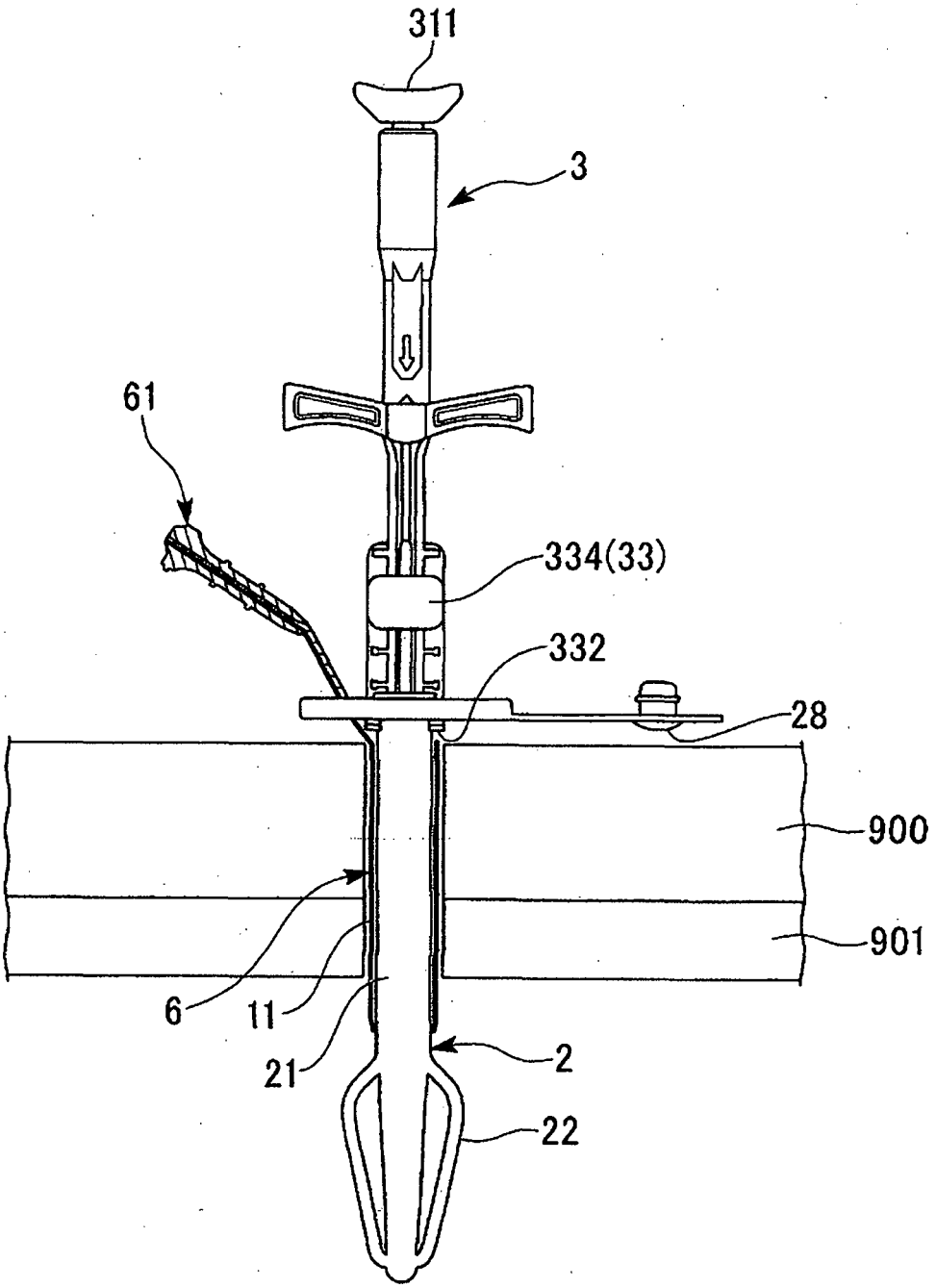


FIG. 43

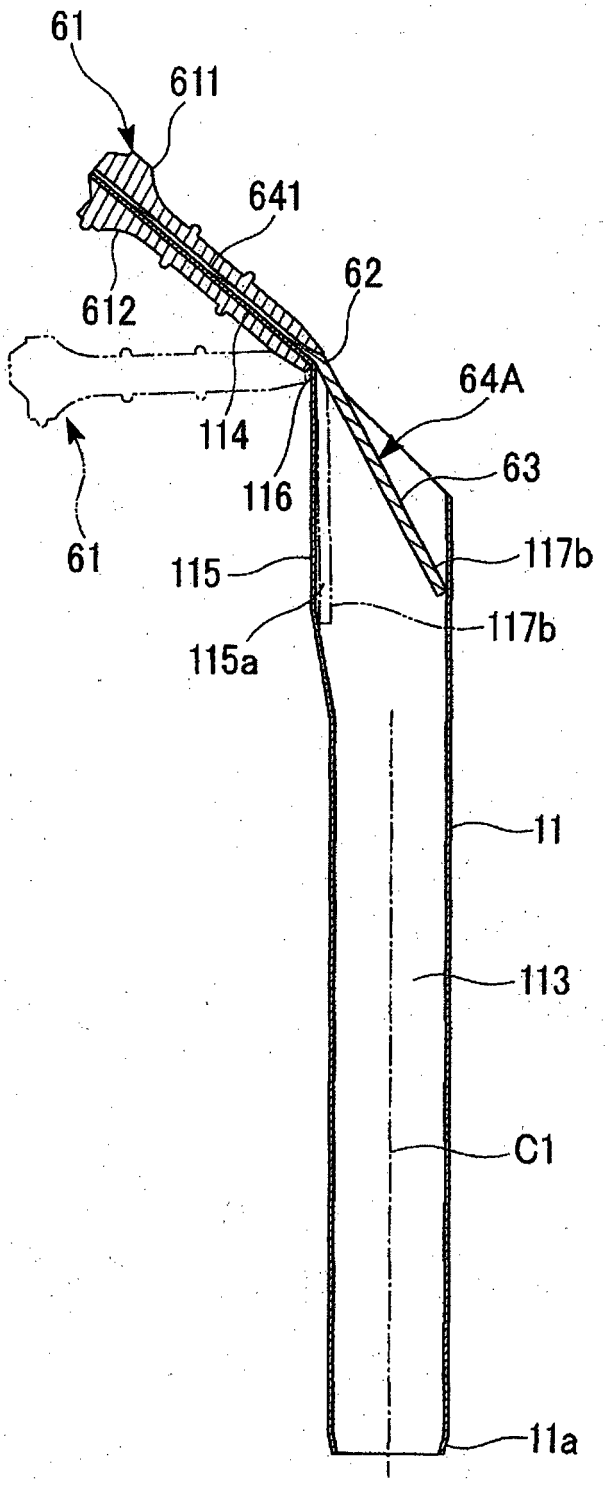

61
611
641
62
612
64A
114
63
116
61
115
117b
115a
117b
11
113
C1
11a

FIG. 44A

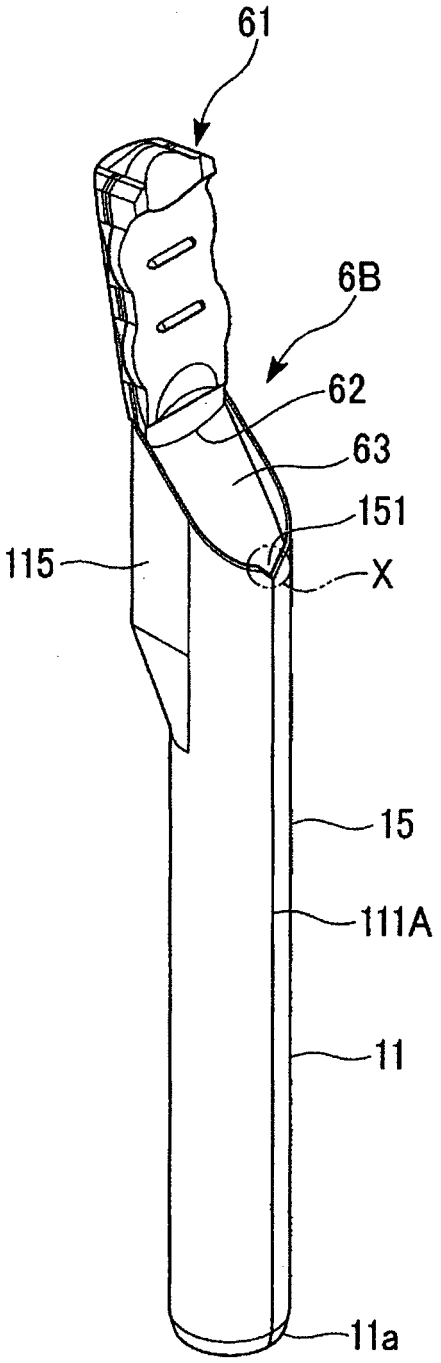


FIG. 44B

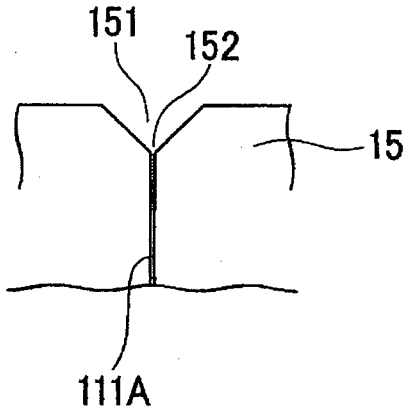


FIG. 45A

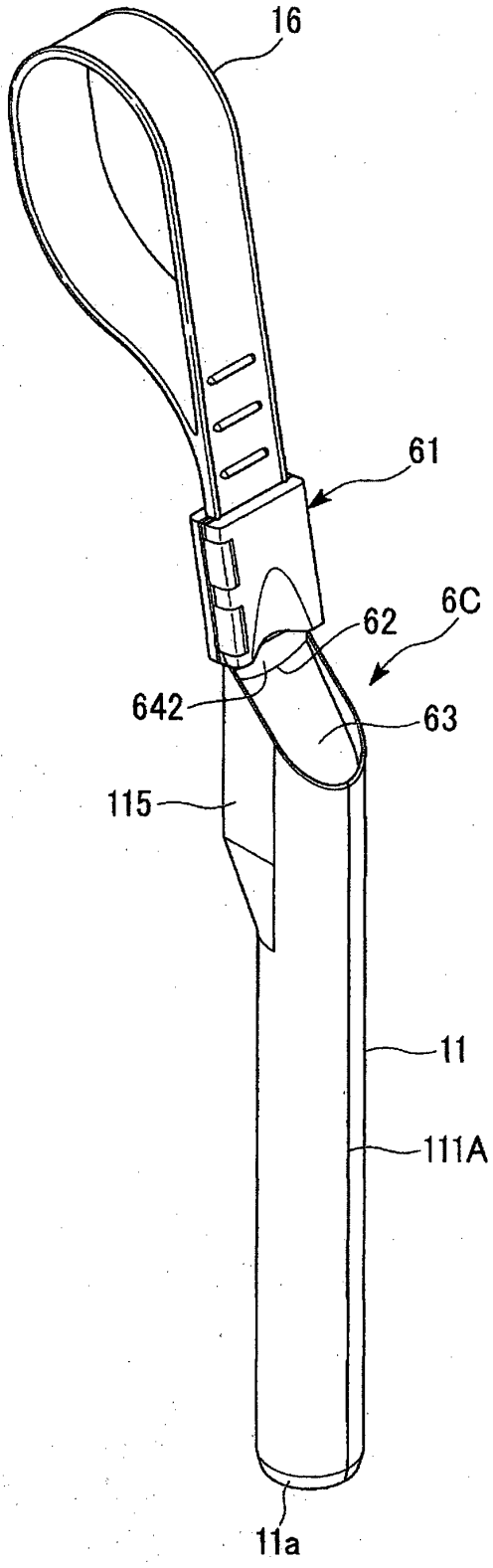


FIG. 45B

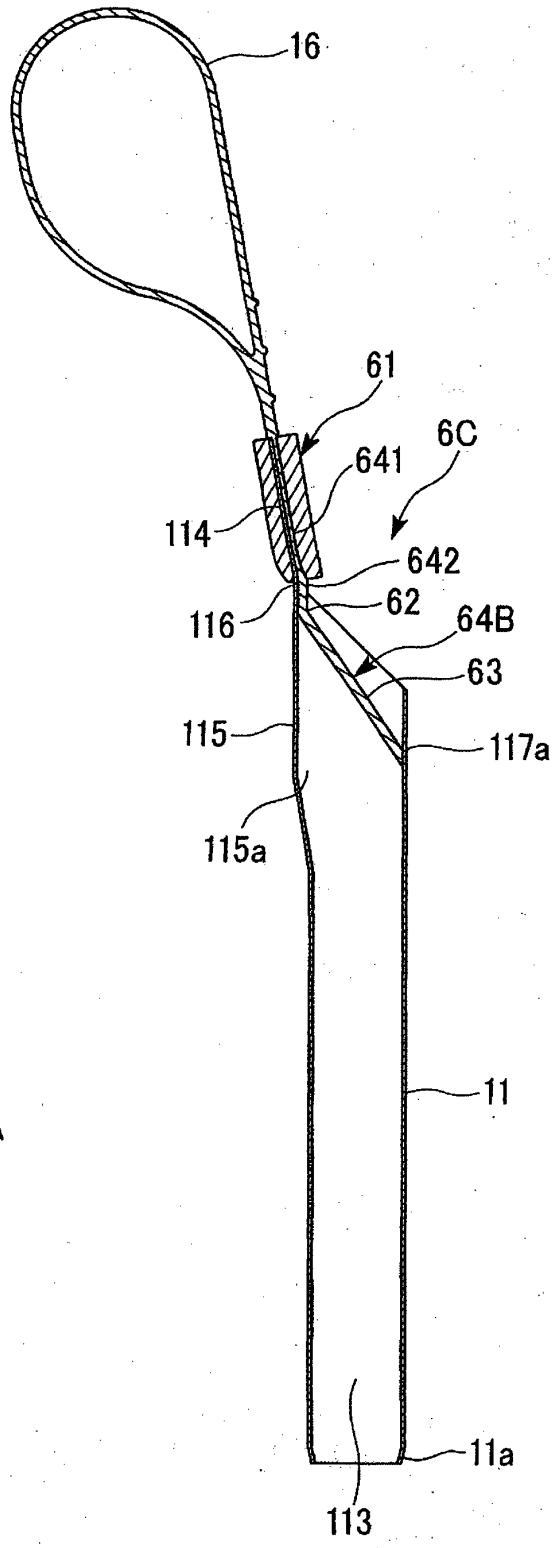


FIG. 46A

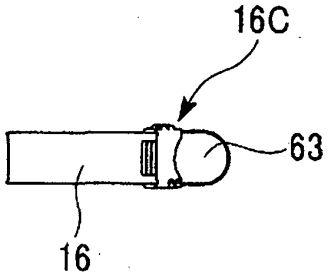


FIG. 46B FIG. 46C FIG. 46DFIG. 46E

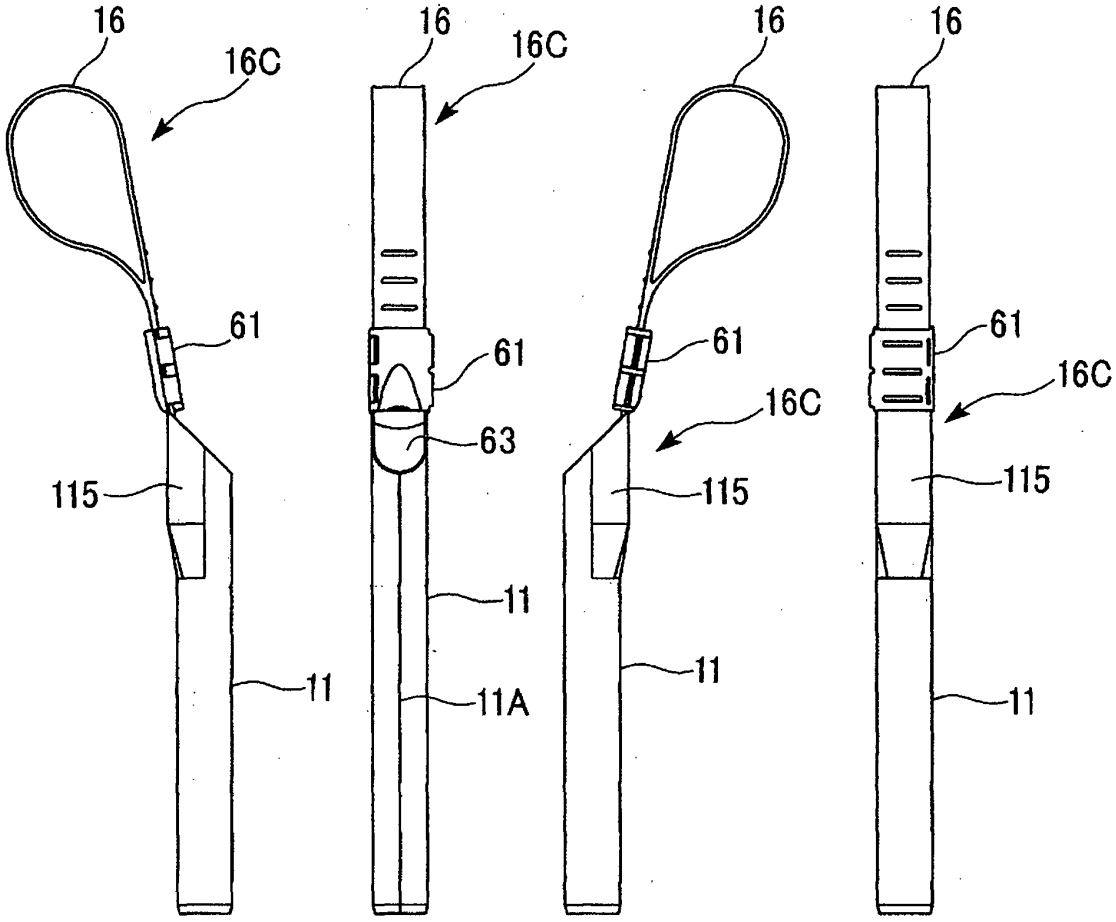


FIG. 46F

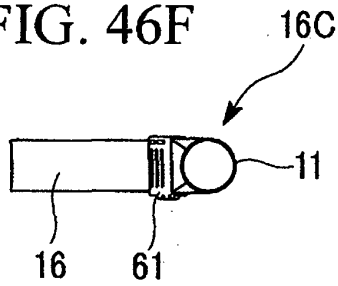
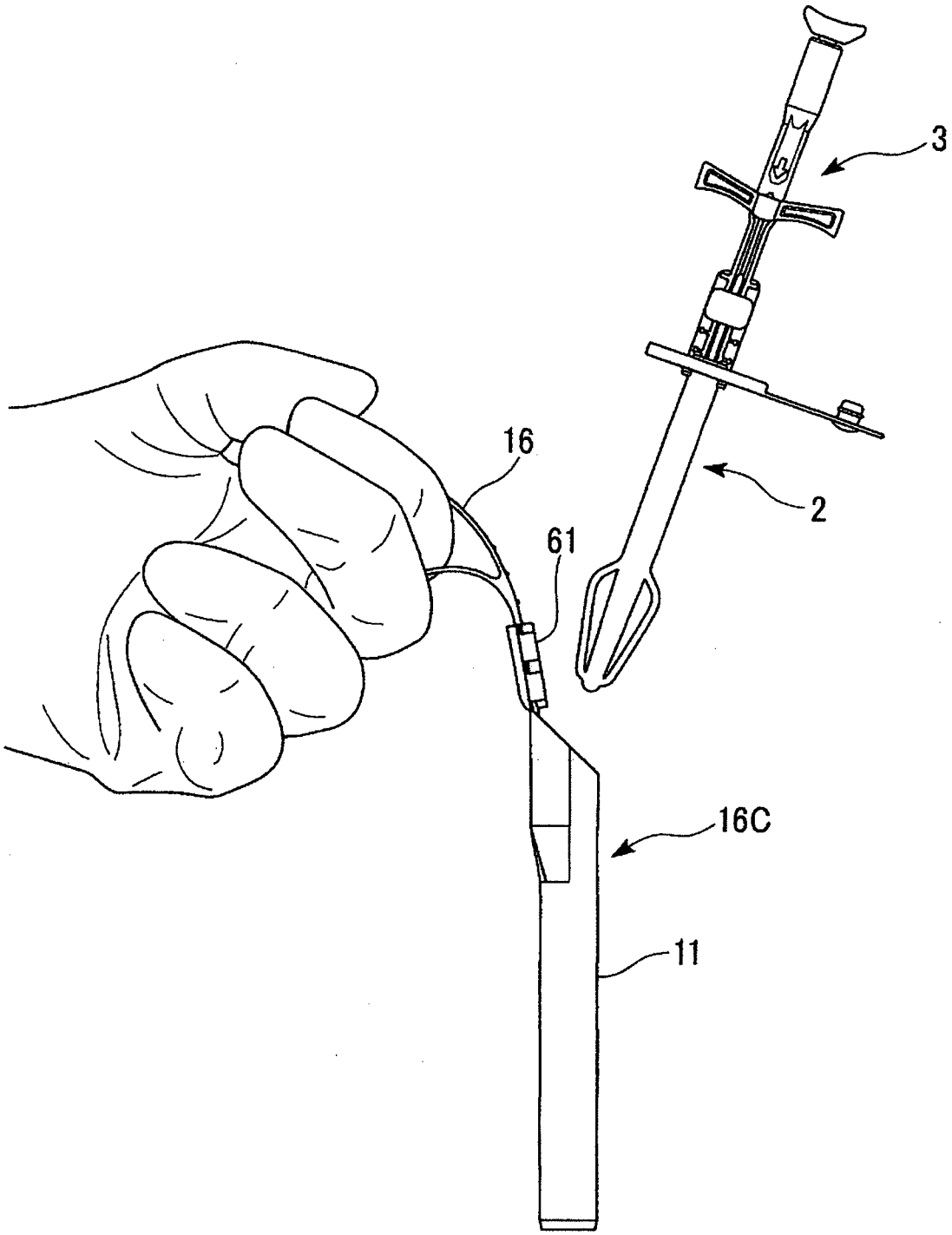


FIG. 47



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 2006296794 A **[0007]**

专利名称(译)	用于胃瘘和胃造口术导管套件的护套		
公开(公告)号	EP2815783B1	公开(公告)日	2016-11-09
申请号	EP2014185649	申请日	2008-12-01
[标]申请(专利权)人(译)	住友电木株式会社 铃木YUTAKA		
申请(专利权)人(译)	住友电木CO.，LTD. 铃木，YUTAKA		
当前申请(专利权)人(译)	住友电木CO.，LTD. 铃木，YUTAKA		
[标]发明人	SUZUKI YUTAKA MATSUNAMI HIDEAKI SAKAGUCHI YUKIHIKO IKEDA MASAO NAKAYAMA TOMOKAZU KAMATA KEIJI TANAKA RYO		
发明人	SUZUKI, YUTAKA MATSUNAMI, HIDEAKI SAKAGUCHI, YUKIHIKO IKEDA, MASAO NAKAYAMA, TOMOKAZU KAMATA, KEIJI TANAKA, RYO		
IPC分类号	A61J15/00 A61B17/34 A61M25/06 A61B5/107 A61M25/08 A61F5/00 A61M25/04 A61B5/00 A61M25/01 A61M25/00		
CPC分类号	A61M25/0668 A61B5/1076 A61B5/42 A61B17/3415 A61J15/0007 A61J15/0023 A61J15/0026 A61J15/003 A61J15/0038 A61J15/0065 A61M25/0662 A61M29/00 A61M2025/0008 A61M2025/0681		
代理机构(译)	BREVALEX		
优先权	2007310789 2007-11-30 JP 2008305328 2008-11-28 JP		
其他公开文献	EP2815783A2 EP2815783A3		
外部链接	Espacenet		

摘要(译)

本发明提供了一种用于胃造口术的护套（1），一种护套扩张器，一种胃造瘘术导管套件以及一种用于分割胃造瘘术的护套的方法。胃造口用护套（1）包括插入有胃造口导管（2）的护套主体（11）和手柄（12）。胃造口术用护套（1）在将胃造口术导管插入瘘管中以在患者体内进行置换之前，将其插入瘘管时会降低胃造瘘术导管的插入阻力。根据本发明，用于胃造口术的护套，带鞘的扩张器，用于具有插入辅助物的胃造口术的护套，胃造口术导管套件以及用于分裂胃造口术的护套的方法，其可以在将导管放置在患者体内时降低插入阻力。本发明提供了在手术期间便于内窥镜的空气供应控制并稳定内窥镜视野的技术。

FIG. 1A

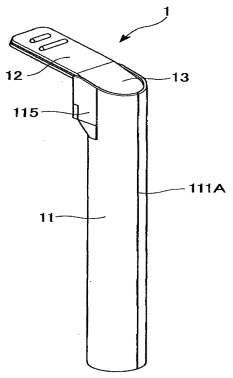
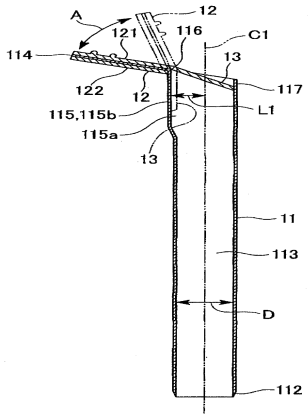

1
12
13
115
111A
11

FIG. 1B


A
12
121
116
C1
114
13
122
12
117
L1
115,115b
115a
13
11
113
D
112