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(54) **INSUFFLATING ACCESS SYSTEM**

INSUFFLIERENDES ZUGANGSSYSTEM

SYSTÈME D'ACCÈS PAR GONFLEMENT

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(73) Proprietor: **APPLIED MEDICAL RESOURCES CORPORATION**
Rancho Santa Margarita, CA 92688 (US)

(72) Inventors:
- **ALBRECHT, Jeremy, J.**
  Ladera Ranch,
  CA 92694 (US)
- **JOHNSON, Gary, M.**
  Mission Viejo,
  CA 92692 (US)
- **BRUSTAD, John, R.**
  Dona Point,
  CA 92629 (US)

(74) Representative: **Dolleymores**
9 Rickmansworth Road
Watford, Hertfordshire WD18 0JU (GB)

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Description

BACKGROUND

Technical Field

[0001] This application is directed to an insufflating access system.

Description of the Related Art

[0002] In laparoscopic procedures in which a patient's abdomen is insufflated or inflated with gas, placing a device through which the abdomen is insufflated, also referred to as a first entry device, is often problematic. Because the peritoneum directly contacts the organ bed, a device puncturing the peritoneum can also damage the underlying organ bed. Placing subsequent devices is less dangerous because the insufflating the abdomen lifts the peritoneum above a gas-fill space or cavity above the organ bed, thereby reducing the risk of inadvertent damage thereto.

[0003] Several techniques are used to achieve pneumoperitoneum in laparoscopic surgery. A first technique uses a Veress needle, which is a sharp needle placed blindly through the abdominal wall into the abdominal cavity. An insufflation gas, for example, CO_2, is then pumped through the hollow Veress needle and into the abdominal cavity, thereby insufflating the peritoneal cavity. The Veress needle technique, also known as a controlled stab, is capable of damaging organs such as the intestinal tract. The technique provides little or no feedback to the surgeon that any damage to an anatomic structure has occurred.

[0004] A second technique is known as the Hassan technique in which a surgeon performs a mini-laparotomy through the abdominal layers into the abdominal cavity, through which a trocar is inserted and the abdomen insufflated. The Hassan technique is a cut-down technique that results in larger abdominal defects and increased patient scarring. The technique is also difficult to perform on obese patients with very thick abdominal walls.

[0005] In a third technique, the surgeon places a trocar optically, visualizing the abdominal layers as the trocar is placed through the abdominal wall through a laparoscope disposed within the obturator of the trocar. The tip of the obturator can penetrate about 2 cm (about 0.75") into the organ bed of the abdominal cavity when placing the cannula and establishing pneumoperitoneum.

[0006] In a fourth technique, the abdominal layers are visualized while the trocar is advanced though the abdominal wall. As soon as the tip of the obturator punctures the peritoneum, gas is pumped through the trocar system into the abdominal cavity through vent holes disposed at the tip of the obturator. The fourth technique uses a vacuum release, which causes the organs to fall away from the abdominal wall, thereby creating a space in the abdominal cavity for the obturator tip. Accordingly, the abdominal cavity can be inflated with minimal penetration into the space. As soon as the tip of the obturator punctures the peritoneum, gas enters the abdominal cavity through the vent holes in the tip of the obturator, thereby reducing the negative pressure caused by the surgeon's lifting of the abdominal wall, and in turn, creating a space above the organ bed into which the trocar system is fully inserted into the cavity. A seal is disposed within the obturator that provides a gas tight seal both with and without the laparoscope in place. The vent holes at the tip of the obturator allow moisture and tissue to enter the obturator, however, which obscure the field of view within the obturator tip. Gas flowing directly past the laparoscope within the obturator can cool the laparoscope, thereby fogging of the lens thereof.

[0007] European Patent Application EP 1733707 A1, US Patent Application Publication number US2005/007 851A1 and International Patent Application WO 03/020140 Al disclose known access systems of the type to which the present invention relates.

SUMMARY OF THE INVENTION

[0008] The present invention provides an access system in accordance with Claim 1. This may permit insufflation of a body cavity prior to the insertion of a cannula into the body cavity. The access system has a closed configuration, in which a distal end of the access system is fluidly isolated from the fluid flow channel, and an open configuration, in which the distal end of the access system is fluidly connected to the fluid flow channel, thereby permitting fluid flow, for example, an insufflation gas into a body cavity.

[0009] In some embodiments, the trocar seal assembly further comprises a zero seal.

[0010] In some embodiments, the distal end of the cannula comprises an angled tip.

[0011] In some embodiments, the fluid port is disposed on the trocar seal assembly.

[0012] In some embodiments, the fluid flow seal is integrated with a cannula tip disposed at the distal end of the cannula. In some embodiments, the fluid flow seal is disposed proximal of the distal end of the cannula. In some embodiments, the fluid flow seal is substantially perpendicular to the longitudinal axis of the axis channel. In some embodiments, the fluid flow seal is not perpendicular to the longitudinal axis of the axis channel.

[0013] In some embodiments, the obturator further comprises an instrument well open at a proximal end of the obturator, extending longitudinally through the body of the obturator, terminating at the tip of the obturator, and dimensioned to receive a laparoscope therein, wherein at least a portion of the tip of the obturator is transparent. Some embodiments further comprise a laparoscope.

[0014] In some embodiments, the fluid flow channel comprises a space defined by the lumen of the cannula and the body of the obturator. In some embodiments, the

fluid flow channel comprises an instrument well disposed in the body of the obturator.

[0015] In some embodiments, in the closed position, the obturator is displaced distally in the access channel compared with the open position. In some embodiments, in the closed position, the obturator is displaced proximally in the access channel compared with the open position. In some embodiments, in the closed position, the obturator is rotated in the access channel compared with the open position.

[0016] Some embodiments further comprise means for visually monitoring the position of the penetrating tip through a laparoscope.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] FIG. **1A** is a perspective view of an embodiment of an insufflating access system in accordance with the present invention, in an open configuration. FIG. **1B** is a side cross section of the insufflating access system illustrated in FIG. **1A** in a closed configuration. FIG. **1C** is a side see-through view of another embodiment of an insufflating access system in accordance with the present invention, in an open configuration.

[0018] FIG. **2A** is a side cross section of another embodiment of an insufflating access system in accordance with the present invention, a closed configuration. FIG. **2B** is a side cross section of the insufflating access system illustrated in FIG. **2A** in an open configuration. FIG. **2C** is a perspective view of an embodiment of an obturator of the insufflating access system illustrated in FIGS. **2A** and **2B.**

[0019] FIGS. **3A-3C** schematically illustrate a method for placing an access device.

DETAILED DESCRIPTION OF CERTAIN EMBODIMENTS

[0020] FIG. **1A** is a perspective view of an embodiment of an insufflating access system **300** in accordance with the present invention, in an open configuration. FIG. **1B** is a side cross section of the insufflating access system **300** illustrated in FIG. **1A** in a closed configuration. An insufflating access system **300** comprising a trocar **310** and an obturator **360** slidably insertable into the trocar **310.** The insufflating system **300** also comprises a fluid flow channel, which is discussed in greater detail below. The trocar **310** comprises a proximal end and a distal end. A trocar seal assembly **320** is disposed at the proximal end of the trocar, and an elongate cannula **330** extends from the trocar seal assembly **320** and is disposed at the distal end of the trocar **310**. An access channel extends through the trocar seal assembly **320** and the cannula **330**, from the proximal end to the distal end of the trocar. The access channel defines a longitudinal axis..

[0021] A fluid port **150** is disposed on the housing of the trocar seal assembly **320**. The fluid port **150** comprises a stopcock in the illustrated embodiment, and terminates in a fitting that permits coupling to a fluid and/or suction source, for example, a Luer fitting. Embodiments of the fluid port **150** are useful for introducing and/or venting an insufflation gas, for example, carbon dioxide, therethrough. Other fluids are introduced and/or vented in other embodiments.

[0022] The trocar **310** is typically manufactured in a range of sizes to accommodate instruments of different diameters, for example, up to about 5 mm, up to about 8 mm, up to about 11 mm, up to about 12 mm, or up to about 15 mm. Embodiments of the trocar **310** have working cannula lengths of about 55 mm, about 75 mm, about 100 mm, or about 150 mm. A gas flow channel incorporates an instrument well, thereby increasing the cross sectional area thereof.

[0023] As best seen in FIG. **1B**, the obturator **360** comprises at least one proximal opening **372** and at least one distal opening **374**, both of which perforate the body **362** of the obturator into the instrument well **368.** In the illustrated embodiment, the at least one proximal opening **372** and the at least one distal opening **374** are both generally circular or oval, but in other embodiments, independently have other suitable shapes.

[0024] A fluid flow seal **340** is disposed at or integrated with the cannula tip **332** in the illustrated embodiment. Some embodiments of the trocar **310** further comprise a second fluid flow seal, either in addition to or instead of the fluid flow seal **340**. Some embodiments of the second fluid flow seal comprise a tubular member, disposed in the seal assembly **320**, through which the obturator **360** extends, wherein the tubular member comprises at least one opening that is aligned with the at least one proximal opening **372** when the obturator is in an open position, thereby permitting fluid flow therethrough. The at least one opening in the tubular member is not aligned with the at least one proximal opening **372** when the obturator is in a closed position, thereby preventing fluid flow therethrough.

[0025] In the illustrated embodiment, the access system **300** is converted from the open configuration illustrated in FIG. **1A** to the closed configuration illustrated in FIG. **1B** by rotating the obturator **360**, for example, using the handle **362**. In the illustrated embodiment, the obturator **360** is rotated about 180° between the views illustrated in FIGS. **1A** and **1B**, although those skilled in the art will understand that other rotational angles are used in other embodiments. The particular rotational angle depends on factors including the size and shape of the distal opening **374**, the location of the distal opening **374**, the location of the fluid flow seal **340**, the angle of the fluid flow seal **340**. In the illustrated embodiment, fluid flows from the fluid port **350**, into the proximal opening **372**, into the instrument well **368**, and out of the distal opening **374**. In the illustrated embodiment, the distal opening **374** is exposed in the open configuration. In the closed configuration, the distal opening **374** is positioned proximal of the fluid flow seal **340**, which forms a seal with a portion

of the body **362** of the obturator distal of the distal opening **374**, thereby preventing fluid flow therefrom.

[0026] FIG. **1C** is a see-through view of another embodiment of an insufflating access system **300** in accordance with the present invention, in an open configuration. In the illustrated embodiment, the fluid flow seal **340** is disposed in the lumen **334** of the cannula proximal to the tip **332**. In the illustrated embodiment, the access system **300** is converted from the illustrated open configuration to a closed configuration by withdrawing the obturator longitudinally toward the proximal end, thereby positioning the distal opening **374** proximal of the fluid flow seal **340**. The fluid flow seal **340** seals with a portion of the body **362** of the obturator distal of the distal opening **374**, thereby preventing fluid flow therefrom.

[0027] FIG. **2A** is a side cross section of another embodiment of an insufflating access system **400** in accordance with the present invention, in a closed configuration. FIG. **2B** is a side cross section of the insufflating access system **400** illustrated in FIG. **2A** in an open configuration. The insufflating access system **400** is generally similar to the insufflating access systems described above, and comprises a trocar **410** and an obturator **460**. In the illustrated embodiment, the trocar **410** is generally similar to the embodiment described above. The trocar **410** comprises a fluid flow seal **440** disposed in the lumen **434** of a cannula **430** thereof, proximal of the tip **432** of the cannula. In the illustrated embodiment, the fluid flow seal **440** is generally perpendicular to a longitudinal axis of the trocar **310.**

[0028] As best seen in FIG. **2C**, which is a perspective view of an embodiment of an obturator **460**, the obturator **460** comprises a plurality of openings **472** disposed longitudinally and circumferentially on the body **462** of the obturator, which extend into the instrument well **468**. The illustrated embodiment comprises a plurality of proximal openings **472***a*, a plurality of distal openings **472***b*, and a plurality of optional intermediate openings **472***c*.

[0029] In converting the access system **400** from the closed configuration illustrated in FIG. **2A** to the open configuration illustrated in FIG. **2B**, the obturator **460** is translated proximally along the longitudinal axis. In the closed configuration illustrated in FIG. **2A**, the fluid flow seal **440** seals with a portion of the body **462** of the obturator distal of the distal openings **472***b*, thereby preventing fluid flow out of the tip **432** of the cannula at the distal end of access system **400**. In the open configuration illustrated in FIG. **2B**, because the body **462** of the obturator is proximal of the fluid flow seal **440**, the body **462** and fluid flow seal **440** do not cooperate in forming a seal in the fluid flow channel **480**. Accordingly, fluid flow is possible from the fluid port **450** into and through the fluid flow channel **480**. In the illustrated embodiment, the fluid flow channel **480** comprises both the instrument well **468** and a space between the lumen **434** of the cannula and the body **462** of the obturator. As best seen in FIG. **2B**, in the illustrated embodiment, the proximal openings **472***a* are disposed proximal to the cannula **430** within the trocar seal assembly **420**, thereby increasing a cross sectional area around the proximal openings **472***a* and increasing fluid flow therethrough. Fluid continues flowing longitudinally towards the distal end of the access system **400** through both the instrument well **468** and the space between the lumen **434** of the cannula and the body **462** of the obturator. At the distal end of the obturator **460**, fluid exits the instrument well **468** through the distal openings **472***c* and continues distally in the space between the lumen **434** of the cannula and the body **462** of the obturator. The fluid exits the access system **400** through the tip **432**.

[0030] Although embodiments of the insufflating access system are applicable to any endoscopic application using insufflation, a prototypical application is in laparoscopic procedures. Consequently, for purposes of illustration only, the following describes an embodiment of a method for inserting an endoscopic port or trocar of an insufflating access system, and establishing pneumoperitoneum in laparoscopic surgery with reference to Figures 3A to 3C, where the access system shown is for illustrative purpose and is not in accordance with the present invention.

[0031] The obturator **160** is inserted into the trocar **110** and positioned in the closed configuration illustrated in FIG. **3A.** A laparoscope (not shown) is inserted into the instrument well **168** of the obturator and the laparoscope coupled with an imaging system, for example, a camera and a video monitor. The fluid port **150** is fluidly coupled to a source of pressurized insufflation gas.

[0032] The user positions the tissue penetrating tip **166** in an incision made at a desired location on the patient's abdomen **500** and advances the insufflating access system **100** through the abdominal wall **502** as illustrated schematically in FIG. **3A**. The user monitors the position of the tip **166** through the laparoscope and imaging system. When the user observes the tip **166** penetrating the peritoneum **504**, as illustrated in FIG. **3B**, the user converts the access system **100** to the open configuration. In the illustrated embodiment, the user urges the obturator **160** proximally, for example, pulling on the handle **162** to convert the access system **100** to the open configuration illustrated in FIG. **3C**. As discussed above, in some embodiments, the obturator **160** and/or trocar **110** comprise one or more marks or indicia that indicate the position of the obturator **160** in the open position. With the access system **100** in the open configuration, insufflation gas flows from the source of insufflation gas, into the fluid port **150**, into the proximal end of the fluid flow channel, longitudinally through the fluid flow channel, past the fluid flow seal, past (in this embodiment) the partially withdrawn tip **166** of the obturator, and out the tip **132** of the cannula. The gas flows through the opening in the peritoneum into the abdominal cavity, thereby insufflating the abdominal cavity **506** and establishing pneumoperitoneum as illustrated in FIG. **3C**.

[0033] Accordingly, embodiments of the access system **100** and method provide an accurate and simple

method for gaining access to the abdominal cavity for laparoscopic surgery. In other embodiments, the insufflating access system **100** provides access to the abdominal cavity through another surface adjacent to the peritoneal lining of the abdominal cavity, for example, the cul-de-sac of the vagina, any point along the gastro-intestinal tract from the diaphragm to the anus, or one of the great vessels such as the abdominal aorta or vena cava. Embodiments of the access system **100** and method provide access to other internal structures, for example, the kidney, the stomach, and/or the third ventricle of the brain, or any hollow organ for which accurate and shallow entry and the subsequent flow of gas or liquid is desired.

[0034] Disposing a fluid flow seal between the obturator and the distal end of the cannula permits the device **100** to be fluidly coupled with a source of CO_2 while the device **100** is advanced through the abdominal wall **502**. As soon as the peritoneum **504** is punctured by the tip **166** of the obturator, the surgeon stops forward movement of the device **100** and dislocates the fluid flow seal between the obturator and the cannula, thereby allowing the gas to flow through the gas flow channel and out of the device **100**. The gas, following a path of least resistance, flows between the tip **166** and the abdominal wall **502**, through the opening made in the peritoneum **504**, and finally into the abdominal cavity **504**. Consequently, pneumoperitoneum is established with reduced penetration into the organ bed because the tip **166** of the obturator does not extend as far beyond the peritoneum as in embodiments in which the tip comprises vent holes through which gas insufflates the abdominal cavity. Embodiments of the device **100** also do not comprise at least one of: seals within the obturator and gas channels around the laparoscope. Some embodiments eliminate or reduce the possibility of fluid and/or tissue entering the visual field within the obturator tip **166**. In some embodiments, the peritoneum **504** is punctured and the abdominal cavity **504** insufflated without further penetration of the tip **166** beyond the peritoneum **504** and into the abdominal cavity **506** or organ bed.

[0035] While certain embodiments have been particularly shown and described with reference to exemplary embodiments thereof, it will be understood by those of ordinary skill in the art that various changes in form and details may be made therein without departing from the scope of the present invention as defined by the following claims.

Claims

1. An insufflating surgical access system (100) comprising:

a trocar (110) comprising:

a proximal end (112) and a distal end (114);

a trocar seal (120) assembly disposed at the proximal end of the trocar (110), the trocar seal assembly (120) comprising an instrument seal (122);

an elongate cannula (130) disposed at the distal end (114) of the trocar, the cannula (130) comprising a tubular wall defining a lumen (134), an open proximal end, and an open distal end;

an access channel (116) defining a longitudinal axis, extending through the trocar seal assembly (120) and the lumen (134) of the cannula (130), from the proximal end (112) of the trocar to the distal end (114) of the trocar;

a fluid port (150) disposed at the proximal end (112) of the trocar; and

a fluid flow seal (140) disposed in the access channel (116);

an obturator (160) comprising:

an elongate body (162) comprising a proximal end and a distal end;

a tissue penetrating tip (166) disposed at the distal end; and

a handle (164) disposed at the proximal end,

wherein the obturator (160) is slidably insertable into a proximal end of the access channel (116), and the tip (166) of the obturator (160) extends out of the distal, open end of the cannula (130) when fully inserted therethrough; and

a fluid flow channel (180) fluidly connected to the fluid port (150) of the trocar, and extending to a distal end of the insufflating access system (100),

wherein the obturator (160) in the access channel(116) has a closed position, in which the body (162) of the obturator (160) sealingly contacts the fluid flow seal (140), thereby preventing fluid flow through the fluid flow channel (180), and

an open position, in which the body (162) of the obturator (160) does not sealingly contact the fluid flow seal (140), thereby allowing fluid flow through the fluid flow channel (180),

characterized in that the fluid flow channel (180) comprises at least one proximal opening (372) and at least one distal opening (374) disposed in the body (162) of the obturator (160).

2. The access system (100) of claim 1, wherein trocar seal assembly (120) further comprises a zero seal (124).

3. The access system (100) of claim 1, wherein the distal end of the cannula (130) comprises an angled tip (132).

4. The access system (100) of claim 1, wherein the fluid port (150) is disposed on the trocar seal assembly (120).

5. The access system (100) of claim 1, wherein the fluid flow seal (140) is integrated with a cannula tip (132) disposed at the distal end of the cannula (130).

6. The access system (100) of claim 1, wherein the fluid flow seal (140) is disposed proximal of the distal end of the cannula (130).

7. The access system (100) of claim 1, wherein the fluid flow seal (140) is substantially perpendicular to the longitudinal axis of the access channel (116).

8. The access system (100) of claim 1, wherein the fluid flow seal (140) is not perpendicular to the longitudinal axis of the access channel (116).

9. The access system (100) of claim 1, wherein the obturator (160) further comprises an instrument well (168) open at a proximal end of the obturator (160), extending longitudinally through the body (162) of the obturator (160), terminating at the tip (166) of the obturator (160), and dimensioned to receive a laparoscope therein, wherein at least a portion of the tip (166) of the obturator (160) is transparent.

10. The access system (100) of claim 9, further comprising a laparoscope.

11. The access system (100) of claim 1, wherein the fluid flow channel (180) comprises a space defined by the lumen (134) of the cannula (130) and the body (162) of the obturator (160).

12. The access system (100) of claim 1, wherein the fluid flow channel (180) comprises an instrument well (168) disposed in the body (162) of the obturator (160).

13. The access system (100) of claim 1, wherein in the closed position, the obturator (160) is displaced distally in the access channel (116) compared with the open position.

14. The access system (100) of claim 1, wherein in the closed position, the obturator (160) is displaced proximally in the access channel (116) compared with the open position.

15. The access system (100) of claim 1, wherein in the closed position, the obturator (160) is rotated in the access channel (116) compared with the open position.

16. The access system (100) as claimed in claim 1, 6 or 15, wherein the fluid flow seal (340) comprises a tubular member, disposed in the seal assembly, through which the obturator (160) extends, wherein the tubular member comprises at least one opening that is aligned with the at least one proximal opening when the obturator (160) is in an open position, thereby permitting fluid flow therethrough and wherein the at least one opening in the tubular member is not aligned with the at least one proximal opening when the obturator (160) is in a closed position, thereby preventing fluid flow therethrough.

17. The access system (100) as claimed in Claim 1 or 16, comprising a second additional fluid flow seal.

18. The access system (100) as claimed in Claim 1, wherein a fluid flow seal (340) is disposed at or integrated with the cannula tip (332) and further comprising a second fluid flow seal, comprising a tubular member, disposed in the seal assembly (120), through which the obturator (160) extends, wherein the tubular member comprises at least one opening that is aligned with the at least one proximal opening (372) when the obturator is in an open position, thereby permitting fluid flow there through and wherein the at least one opening in the tubular member is not aligned with the at least one proximal opening (372) when the obturator (160) is in a closed position, thereby preventing fluid flow there through.

Patentansprüche

1. Ein chirurgisches Insufflationszugangsystem (100), das Folgendes beinhaltet:

einen Trokar (110), der Folgendes beinhaltet:

ein proximales Ende (112) und ein distales Ende (114);
eine Trokardichtungsbaugruppe (120), die am proximalen Ende des Trokars (110) angeordnet ist, wobei die Trokardichtungsbaugruppe (120) eine Instrumentendichtung (122) beinhaltet;
eine längliche Kanüle (130), die am distalen Ende (114) des Trokars angeordnet ist, wobei die Kanüle (130) eine röhrenförmige Wand, die ein Lumen (134) definiert, ein offenes proximales Ende, und ein offenes distales Ende beinhaltet;
einen Zugangskanal (116), der eine Längsachse definiert, die sich durch die Trokardichtungsbaugruppe (120) und das Lumen

(134) der Kanüle (130), von dem proximalen Ende (112) des Trokars bis zu dem distalen Ende (114) des Trokars, erstreckt;
eine Fluidöffnung (150), die an dem proximalen Ende (112) des Trokars angeordnet ist; und
eine Fluidflussdichtung (140), die in dem Zugangskanal (116) angeordnet ist;
einen Obturator (160), der Folgendes beinhaltet:

einen länglichen Hauptteil (162), der ein proximales Ende und ein distales Ende beinhaltet;
eine gewebedurchdringende Spitze (166), die an dem distalen Ende angeordnet ist; und
einen Handgriff (164), der an dem proximalen Ende angeordnet ist,

wobei der Obturator (160) gleitfähig in ein proximales Ende des Zugangskanals (116) einführbar ist und die Spitze (166) des Obturators (160) sich aus dem distalen, offenen Ende der Kanüle (130) erstreckt, wenn er vollständig durch sie eingeführt ist; und
einen Fluidflusskanal (180), der in fluider Verbindung mit der Fluidöffnung (150) des Trokars steht und sich bis zu einem distalen Ende des Insufflationszugangssystems (100) erstreckt,
wobei der Obturator (160) in dem Zugangskanal (116) Folgendes aufweist: eine geschlossene Position, in der der Hauptteil (162) des Obturators (160) in dichtendem Kontakt mit der Fluidflussdichtung (140) steht, wodurch der Fluidfluss durch den Fluidflusskanal (180) verhindert wird, und
eine offene Position, in der der Hauptteil (162) des Obturators (160) nicht in dichtendem Kontakt mit der Fluidflussdichtung (140) steht, wodurch der Fluidfluss durch den Fluidflusskanal (180) gestattet wird,
dadurch gekennzeichnet, dass der Fluidflusskanal (180) mindestens eine proximale Öffnung (372) und mindestens eine distale Öffnung (374) beinhaltet, die in dem Hauptteil (162) des Obturators (160) angeordnet sind.

2. Das Zugangssystem (100) gemäß Anspruch 1, wobei die Trokardichtungsbaugruppe (120) ferner eine Nulldichtung (124) beinhaltet.

3. Das Zugangssystem (100) gemäß Anspruch 1, wobei das distale Ende der Kanüle (130) eine angewinkelte Spitze (132) beinhaltet.

4. Das Zugangssystem (100) gemäß Anspruch 1, wobei die Fluidöffnung (150) auf der Trokardichtungsbaugruppe (120) angeordnet ist.

5. Das Zugangssystem (100) gemäß Anspruch 1, wobei die Fluidflussdichtung (140) mit einer Kanülenspitze (132) integriert ist, die an dem distalen Ende der Kanüle (130) angeordnet ist.

6. Das Zugangssystem (100) gemäß Anspruch 1, wobei die Fluidflussdichtung (140) proximal von dem distalen Ende der Kanüle (130) angeordnet ist.

7. Das Zugangssystem (100) gemäß Anspruch 1, wobei die Fluidflussdichtung (140) im Wesentlichen senkrecht zu der Längsachse des Zugangskanals (116) steht.

8. Das Zugangssystem (100) gemäß Anspruch 1, wobei die Fluidflussdichtung (140) nicht senkrecht zu der Längsachse des Zugangskanals (116) steht.

9. Das Zugangssystem (100) gemäß Anspruch 1, wobei der Obturator (160) ferner einen Instrumentenschacht (168) beinhaltet, der an einem proximalen Ende des Obturators (160) offen ist, sich längs durch den Hauptteil (162) des Obturators (160) erstreckt, an der Spitze (166) des Obturators (160) endet und zum Aufnehmen eines Laparoskops darin dimensioniert ist, wobei mindestens ein Anteil der Spitze (166) des Obturators (160) transparent ist.

10. Das Zugangssystem (100) gemäß Anspruch 9, das ferner ein Laparoskop beinhaltet.

11. Das Zugangssystem (100) gemäß Anspruch 1, wobei der Fluidflusskanal (180) einen Raum beinhaltet, der durch das Lumen (134) der Kanüle (130) und den Hauptteil (162) des Obturators (160) definiert ist.

12. Das Zugangssystem (100) gemäß Anspruch 1, wobei der Fluidflusskanal (180) einen Instrumentenschacht (168) beinhaltet, der in dem Hauptteil (162) des Obturators (160) angeordnet ist.

13. Das Zugangssystem (100) gemäß Anspruch 1, wobei der Obturator (160) in der geschlossenen Position im Vergleich mit der offenen Position nach distal in den Zugangskanal (116) verschoben ist.

14. Das Zugangssystem (100) gemäß Anspruch 1, wobei der Obturator (160) in der geschlossenen Position im Vergleich mit der offenen Position nach proximal in den Zugangskanal (116) verschoben ist.

15. Das Zugangssystem (100) gemäß Anspruch 1, wobei der Obturator (160) in der geschlossenen Position im Vergleich mit der offenen Position in dem

Zugangskanal (116) gedreht ist.

16. Das Zugangssystem (100) gemäß Anspruch 1, 6 oder 15, wobei die Fluidflussdichtung (340) ein röhrenförmiges Element beinhaltet, das in der Dichtungsbaugruppe angeordnet ist, durch das sich der Obturator (160) erstreckt, wobei das röhrenförmige Element mindestens eine Öffnung beinhaltet, die mit der mindestens einen proximalen Öffnung ausgerichtet ist, wenn der Obturator (160) sich in einer offenen Position befindet, wodurch der Fluidfluss durch diese erlaubt wird, und wobei die mindestens eine Öffnung in dem röhrenförmigen Element nicht mit der mindestens einen proximalen Öffnung ausgerichtet ist, wenn der Obturator (160) sich in einer geschlossenen Position befindet, wodurch der Fluidfluss durch diese verhindert wird.

17. Das Zugangssystem (100) gemäß Anspruch 1 oder 16, das eine zweite zusätzliche Fluidflussdichtung beinhaltet.

18. Das Zugangssystem (100) gemäß Anspruch 1, wobei eine Fluidflussdichtung (340) an der Kanülenspitze (332) angeordnet oder mit dieser integriert ist, und das ferner eine zweite Fluidflussdichtung beinhaltet, die ein röhrenförmiges Element beinhaltet, das in der Dichtungsbaugruppe (120) angeordnet ist, durch das sich der Obturator (160) erstreckt, wobei das röhrenförmige Element mindestens eine Öffnung beinhaltet, die mit der mindestens einen proximalen Öffnung (372) ausgerichtet ist, wenn der Obturator sich in einer offenen Position befindet, wodurch der Fluidfluss durch diese erlaubt wird, und wobei die mindestens eine Öffnung in dem röhrenförmigen Element nicht mit der mindestens einen proximalen Öffnung (372) ausgerichtet ist, wenn der Obturator (160) sich in einer geschlossenen Position befindet, wodurch der Fluidfluss durch diese verhindert wird.

Revendications

1. Système d'accès chirurgical par insufflation (100) comprenant :

un trocart (110) comprenant :

une extrémité proximale (112) et une extrémité distale (114) ;
un ensemble de joint de trocart (120) disposé à l'extrémité proximale du trocart (110), l'ensemble de joint de trocart (120) comprenant un joint d'instrument (122) ;
une canule allongée (130) disposée à l'extrémité distale (114) du trocart, la canule (130) comprenant une paroi tubulaire définissant un lumen (134), une extrémité proximale ouverte, et une extrémité distale ouverte ;
un canal d'accès (116) définissant un axe longitudinal, s'étendant à travers l'ensemble de joint de trocart (120) et le lumen (134) de la canule (130), de l'extrémité proximale (112) du trocart jusqu'à l'extrémité distale (114) du trocart ;
un orifice de fluide (150) disposé à l'extrémité proximale (112) du trocart ; et
un joint d'écoulement de fluide (140) disposé dans le canal d'accès (116) ;
un obturateur (160) comprenant :

un corps allongé (162) comprenant une extrémité proximale et une extrémité distale ;
une pointe de pénétration tissulaire (166) disposée à l'extrémité distale ; et
une poignée (164) disposée à l'extrémité proximale,

où l'obturateur (160) est inséré d'une manière coulissante dans une extrémité proximale du canal d'accès (116), et la pointe (166) de l'obturateur (160) s'étend hors de l'extrémité distale ouverte de la canule (130) lorsqu'il est complètement inséré dedans ; et
un canal d'écoulement de fluide (180) raccordé d'une manière fluidique à l'orifice de fluide (150) du trocart, et s'étendant jusqu'à une extrémité distale du système d'accès par insufflation (100),
dans lequel l'obturateur (160) dans le canal d'accès (116) a une position fermée, dans laquelle le corps (162) de l'obturateur (160) entre en contact d'étanchéité avec le joint d'écoulement de fluide (140), empêchant ainsi l'écoulement de fluide à travers le canal d'écoulement de fluide (180), et
une position ouverte, dans laquelle le corps (162) de l'obturateur (160) n'entre pas en contact d'étanchéité avec le joint d'écoulement de fluide (140), permettant ainsi au fluide de couler à travers le canal d'écoulement de fluide (180),
caractérisé en ce que le canal d'écoulement de fluide (180) comprend au moins une ouverture proximale (372) et au moins une ouverture distale (374) disposées dans le corps (162) de l'obturateur (160).

2. Système d'accès (100) selon la revendication 1, dans lequel l'ensemble de joint de trocart (120) comprend en outre un joint zéro (124).

3. Système d'accès (100) selon la revendication 1, dans lequel l'extrémité distale de la canule (130) comprend une pointe à angle (132).

4. Système d'accès (100) selon la revendication 1, dans lequel l'orifice de fluide (150) est disposé sur l'ensemble de joint de trocart (120).

5. Système d'accès (100) selon la revendication 1, dans lequel le joint d'étanchéité de fluide (140) est intégré à une pointe de canule (132) disposée à l'extrémité distale de la canule (130).

6. Système d'accès (100) selon la revendication 1, dans lequel le joint d'écoulement de fluide (140) est disposé proximal de l'extrémité distale de la canule (130).

7. Système d'accès (100) selon la revendication 1, dans lequel le joint d'écoulement de fluide (140) est sensiblement perpendiculaire à l'axe longitudinal du canal d'accès (116).

8. Système d'accès (100) selon la revendication 1, dans lequel le joint d'écoulement de fluide (140) n'est pas perpendiculaire à l'axe longitudinal du canal d'accès (116).

9. Système d'accès (100) selon la revendication 1, dans lequel l'obturateur (160) comprend en outre un creux pour instrument (168) ouvert à une extrémité proximale de l'obturateur (160), s'étendant longitudinalement à travers le corps (162) de l'obturateur (160), se terminant à la pointe (166) de l'obturateur (160), et dimensionné pour recevoir un laparoscope dedans, où au moins une partie de la pointe (166) de l'obturateur (160) est transparente.

10. Système d'accès (100) selon la revendication 9, comprenant en outre un laparoscope.

11. Système d'accès (100) selon la revendication 1, dans lequel le canal d'écoulement de fluide (180) comprend un espace défini par le lumen (134) de la canule (130) et le corps (162) de l'obturateur (160).

12. Système d'accès (100) selon la revendication 1, dans lequel le canal d'écoulement de fluide (180) comprend un creux pour instrument (168) disposé dans le corps (162) de l'obturateur (160).

13. Système d'accès (100) selon la revendication 1, dans lequel dans la position fermée, l'obturateur (160) est déplacé d'une manière distale dans le canal d'accès (116) en comparaison de la position ouverte.

14. Système d'accès (100) selon la revendication 1, dans lequel dans la position fermée, l'obturateur (160) est déplacé d'une manière proximale dans le canal d'accès (116) en comparaison de la position ouverte.

15. Système d'accès (100) selon la revendication 1, dans lequel dans la position fermée, l'obturateur (160) est tourné dans le canal d'accès (116) en comparaison de la position ouverte.

16. Système d'accès (100) selon la revendication 1, 6 ou 15, dans lequel le joint d'écoulement de fluide (340) comprend un élément tubulaire, disposé dans l'ensemble de joint, à travers lequel l'obturateur (160) s'étend, où l'élément tubulaire comprend au moins une ouverture qui est alignée avec la au moins une ouverture proximale lorsque l'obturateur (160) est dans une position ouverte, permettant ainsi l'écoulement de fluide à travers celle-ci et où la au moins une ouverture dans l'élément tubulaire n'est pas alignée avec la au moins une ouverture proximale lorsque l'obturateur (160) est dans une position fermée, empêchant ainsi l'écoulement de fluide à travers celle-ci.

17. Système d'accès (100) selon la revendication 1 ou 16, comprenant un deuxième joint d'écoulement de fluide supplémentaire.

18. Système d'accès (100) selon la revendication 1, dans lequel un joint d'écoulement de fluide (340) est disposé au niveau de ou intégré à la pointe de la canule (332) et comprenant en outre un deuxième joint d'écoulement de fluide, comprenant un élément tubulaire, disposé dans l'ensemble de joint (120), à travers lequel l'obturateur (160) s'étend, où l'élément tubulaire comprend au moins une ouverture qui est alignée avec la au moins une ouverture proximale (372) lorsque l'obturateur est dans une position ouverte, permettant ainsi l'écoulement de fluide à travers celle-ci et où la au moins une ouverture dans l'élément tubulaire n'est pas alignée avec la au moins une ouverture proximale (372) lorsque l'obturateur (160) est dans une position fermée, empêchant ainsi l'écoulement de fluide à travers celle-ci.

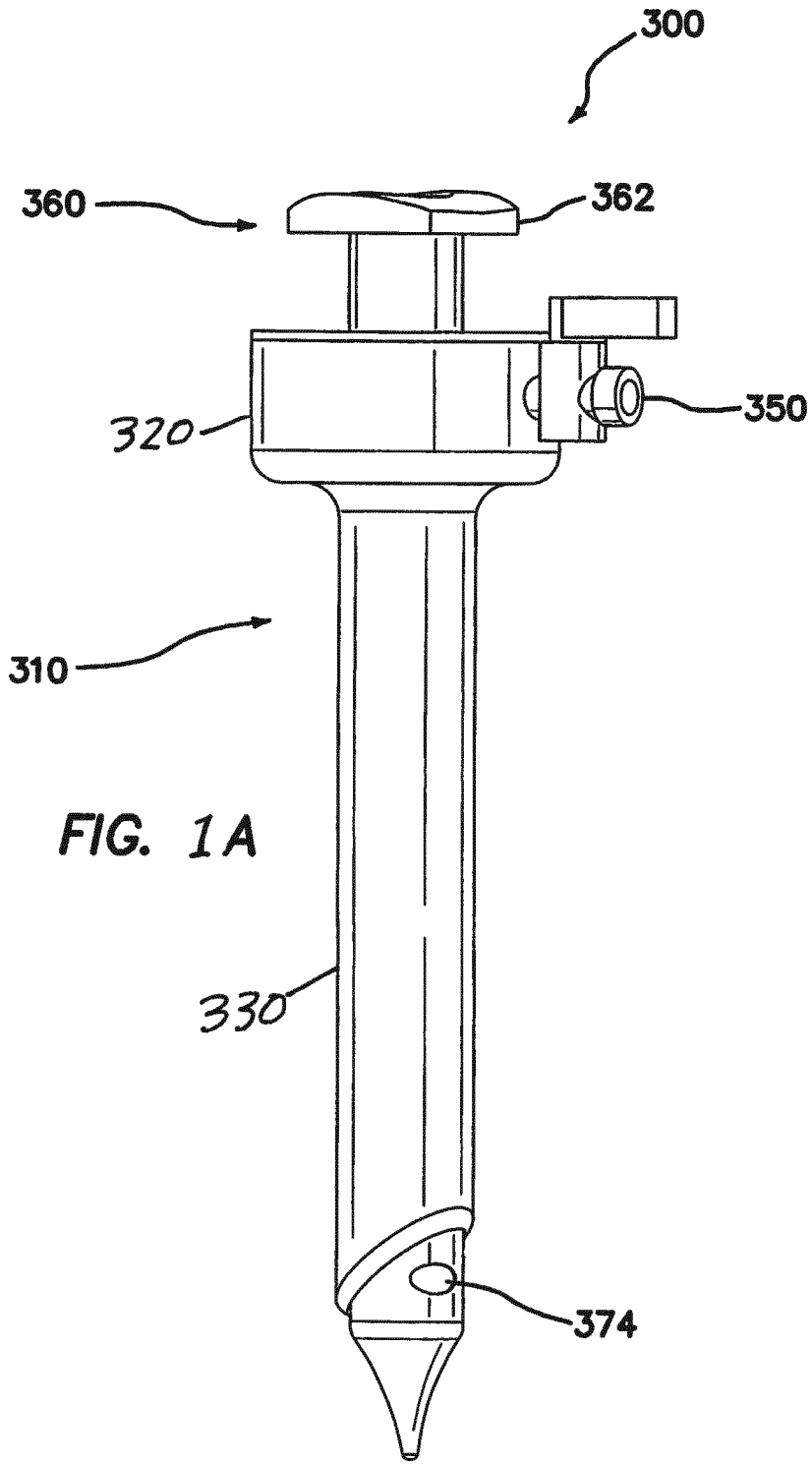

FIG. 1A

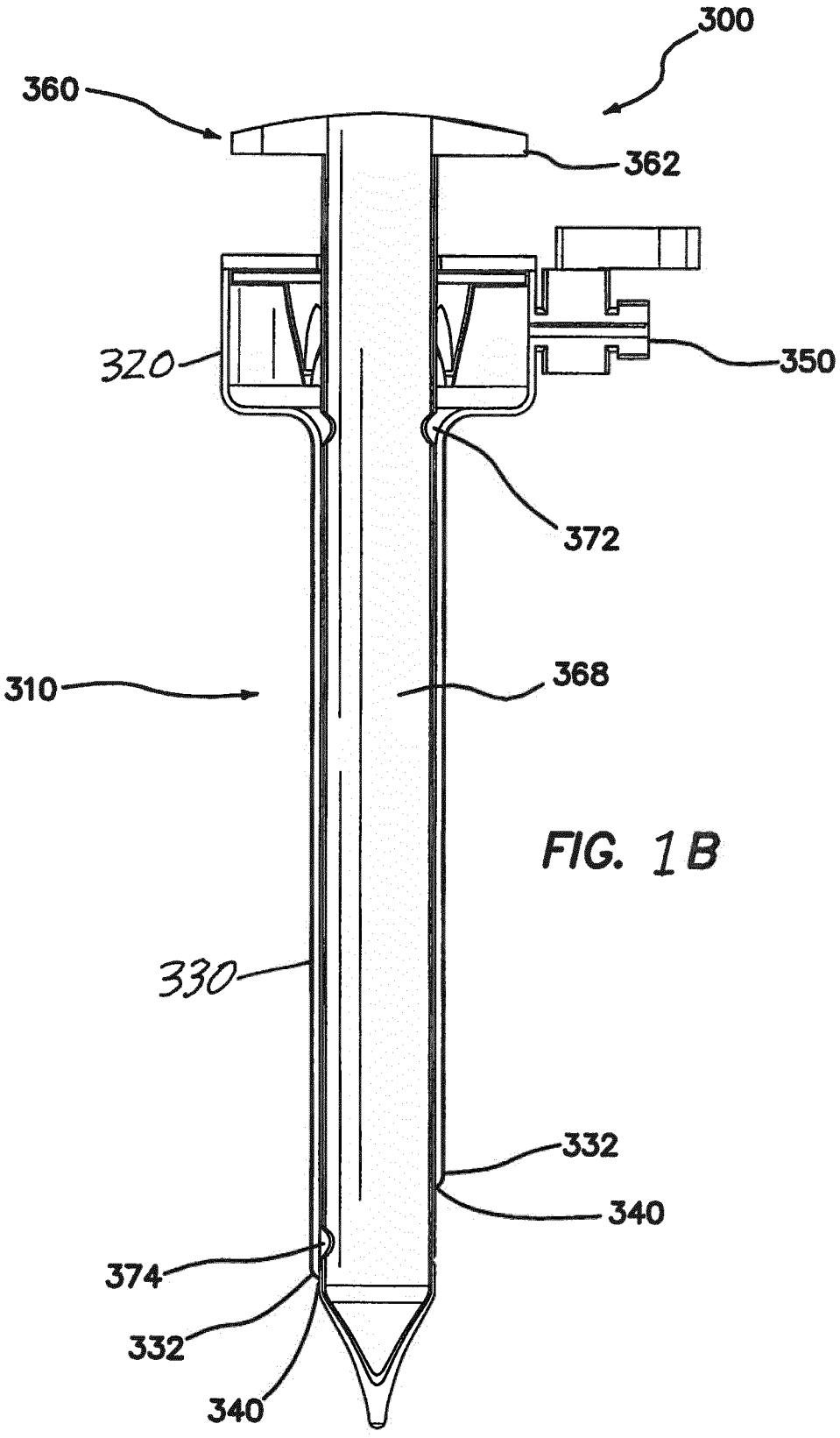

FIG. 1B

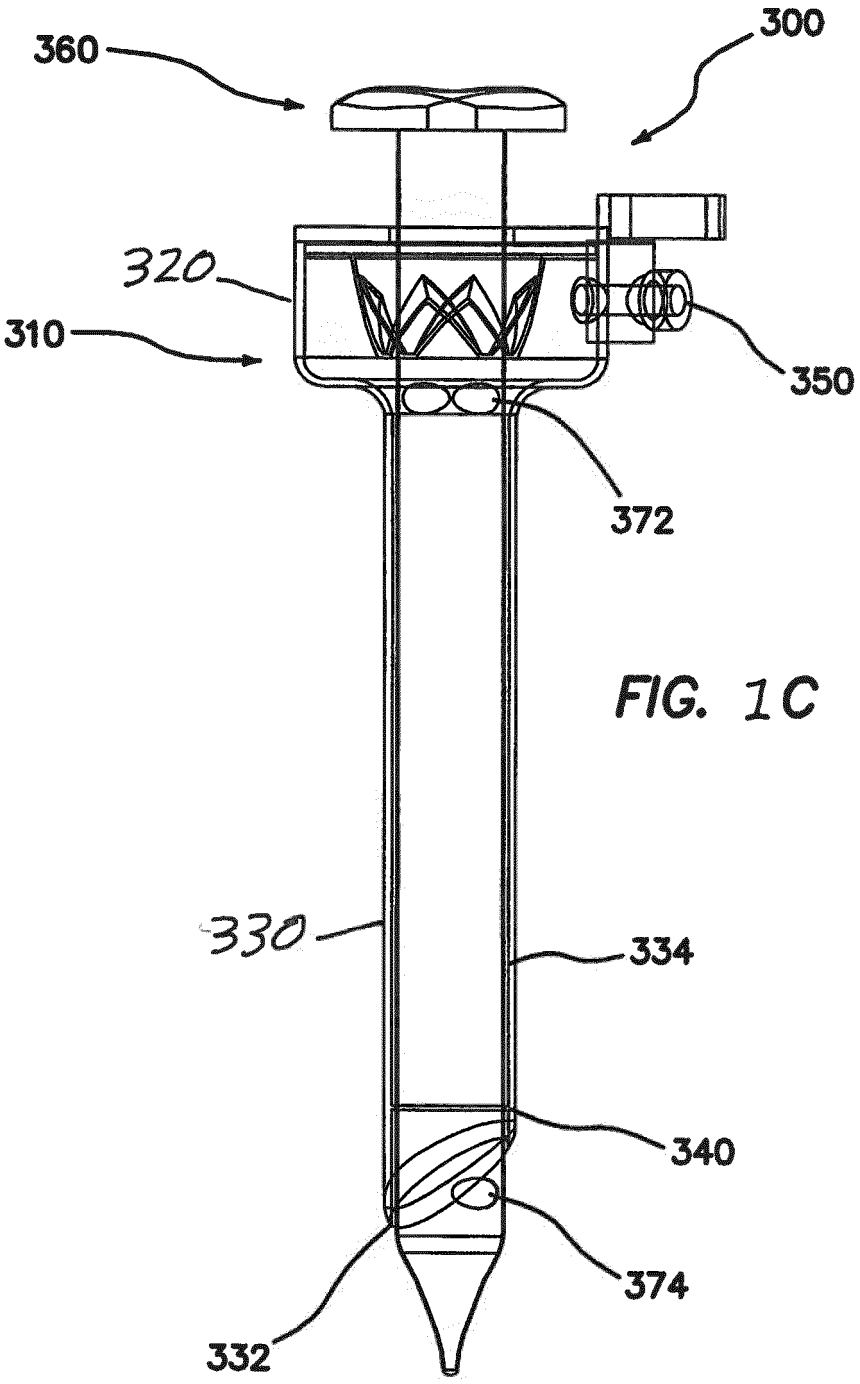

FIG. 1C

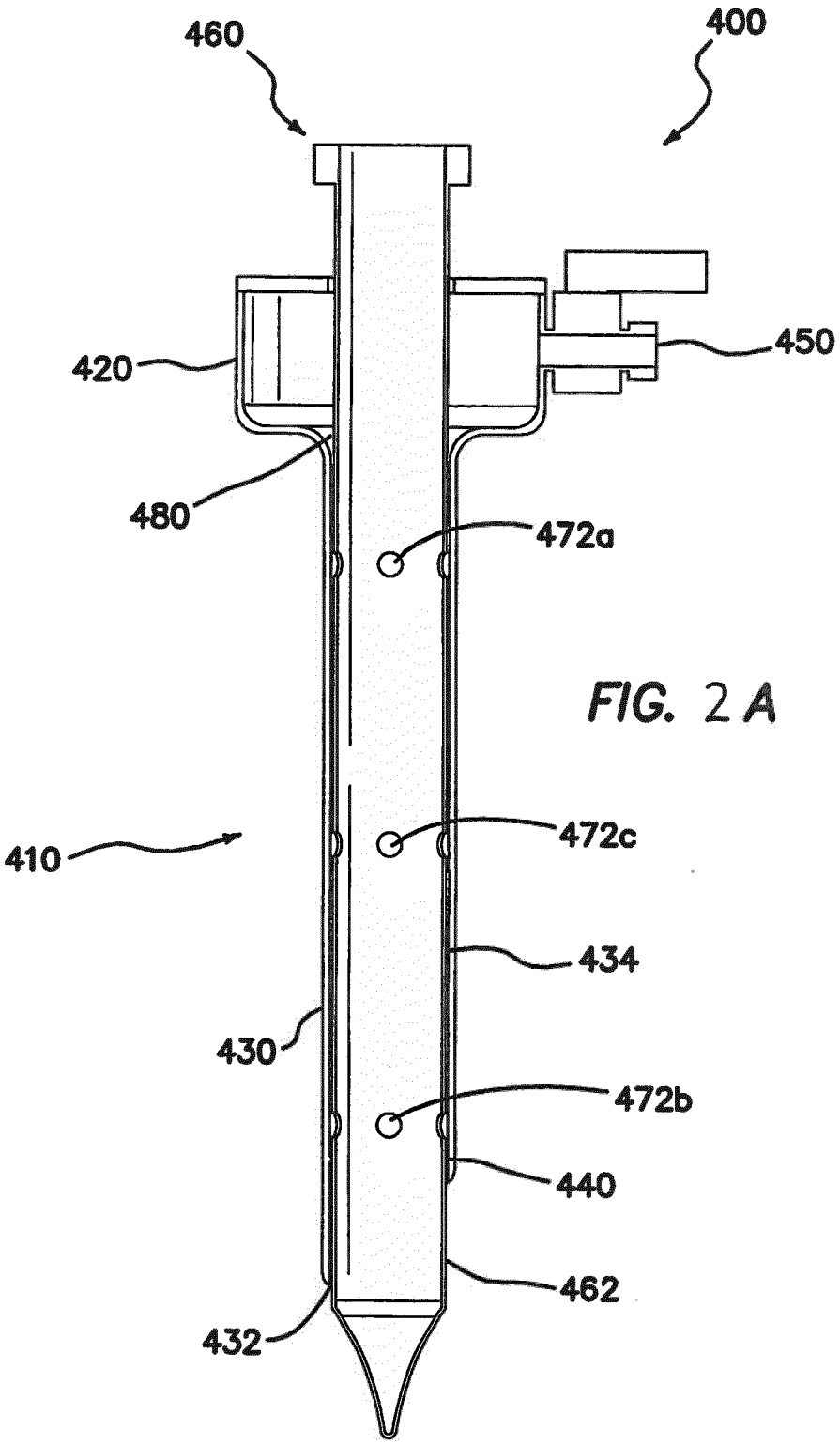

FIG. 2A

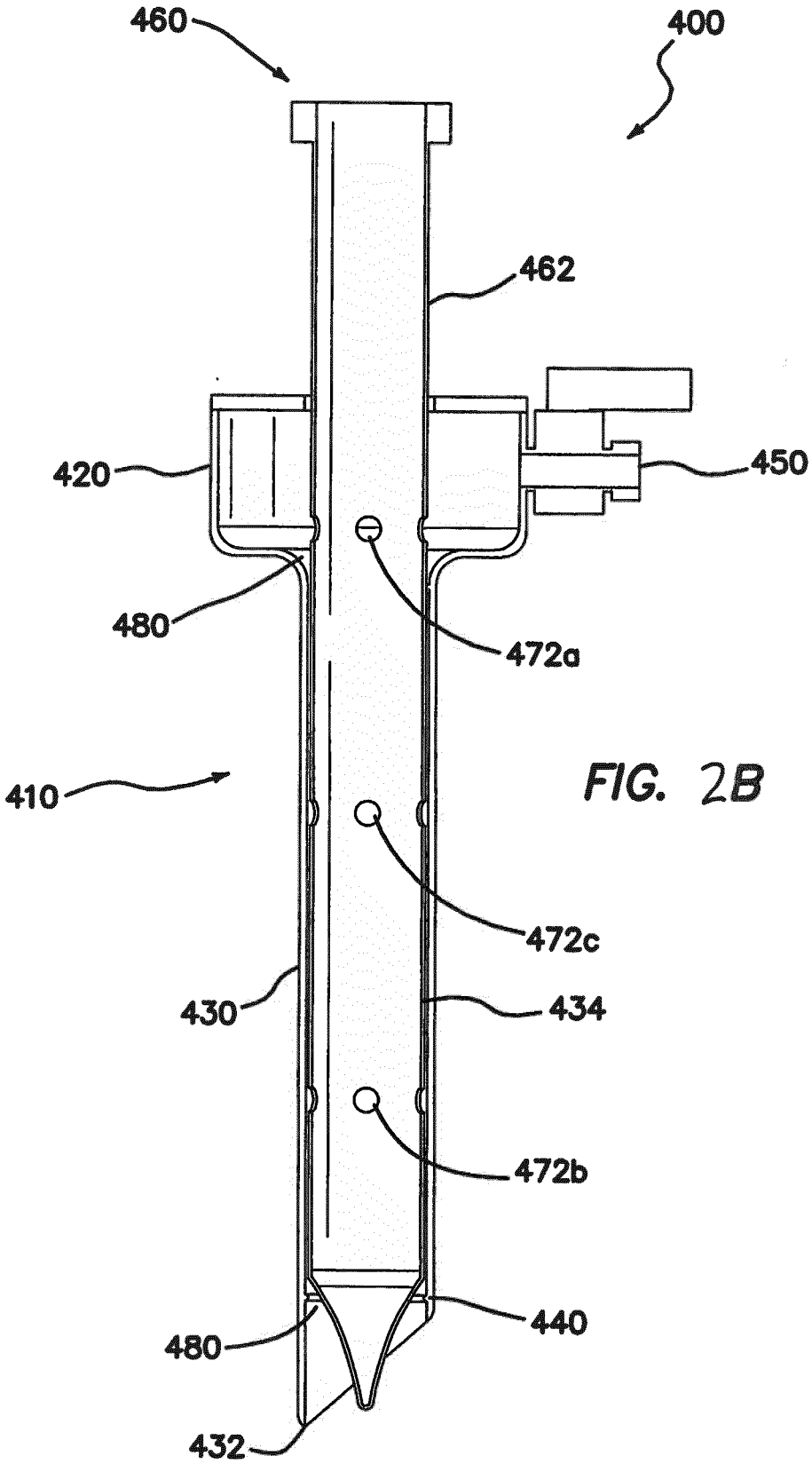

FIG. 2B

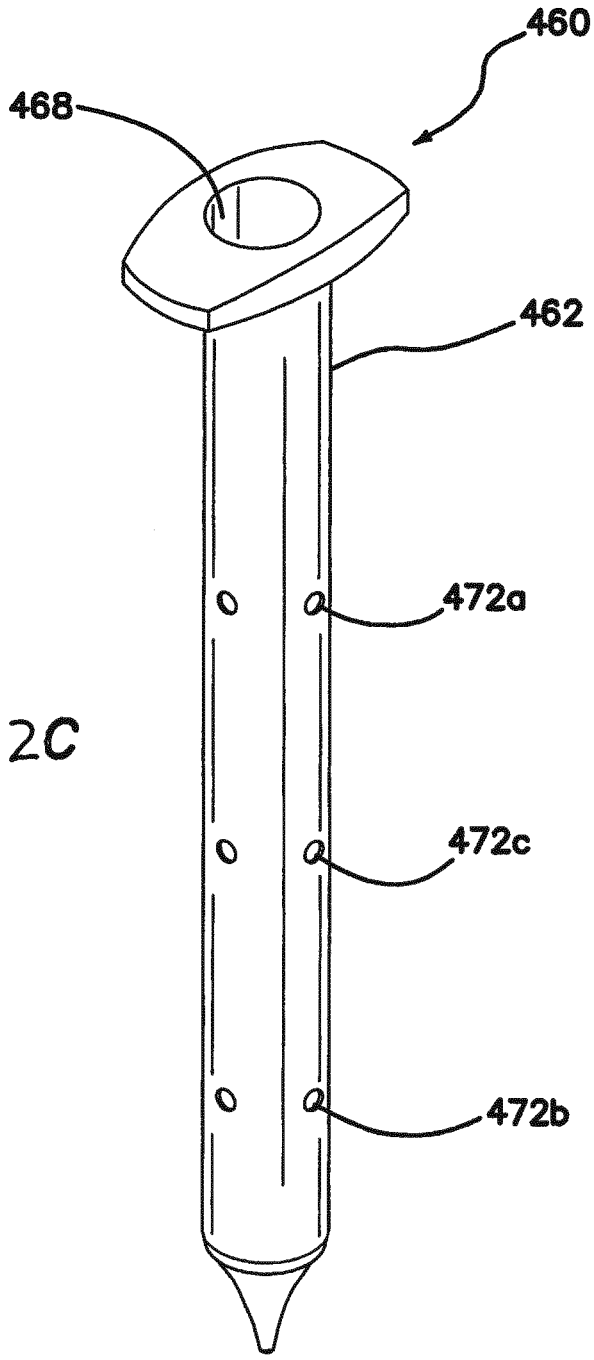

FIG. 2C

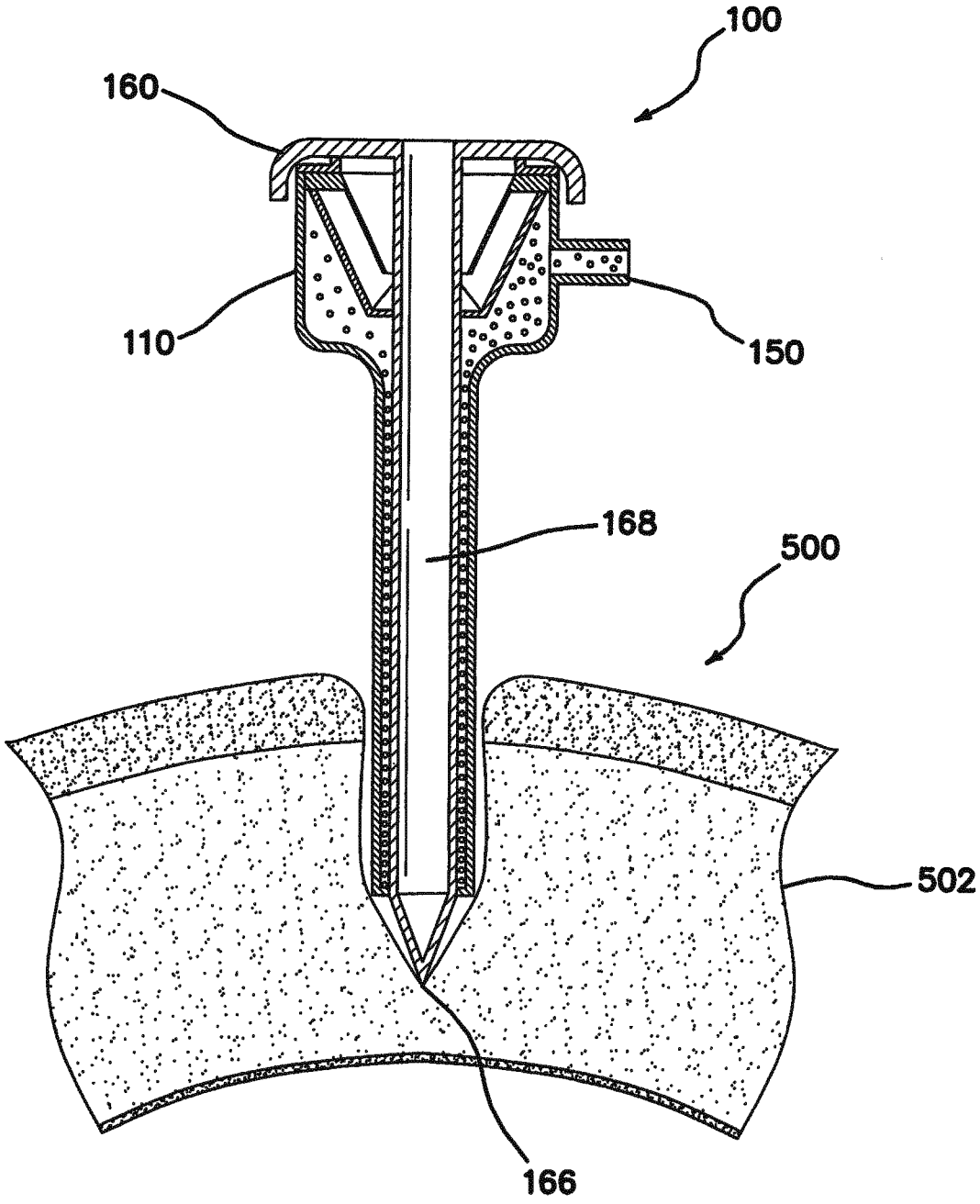

FIG. 3A

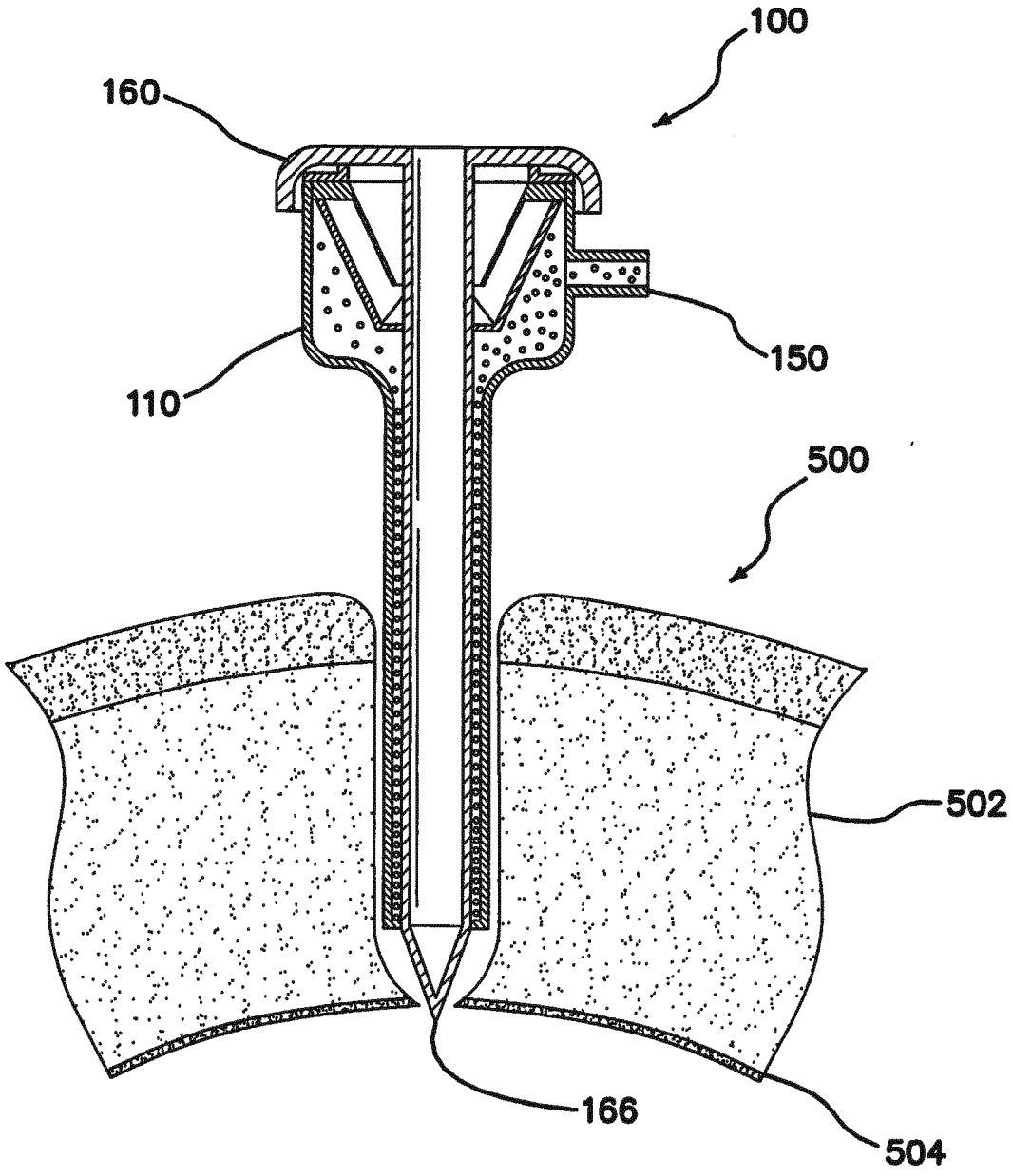

FIG. 3B

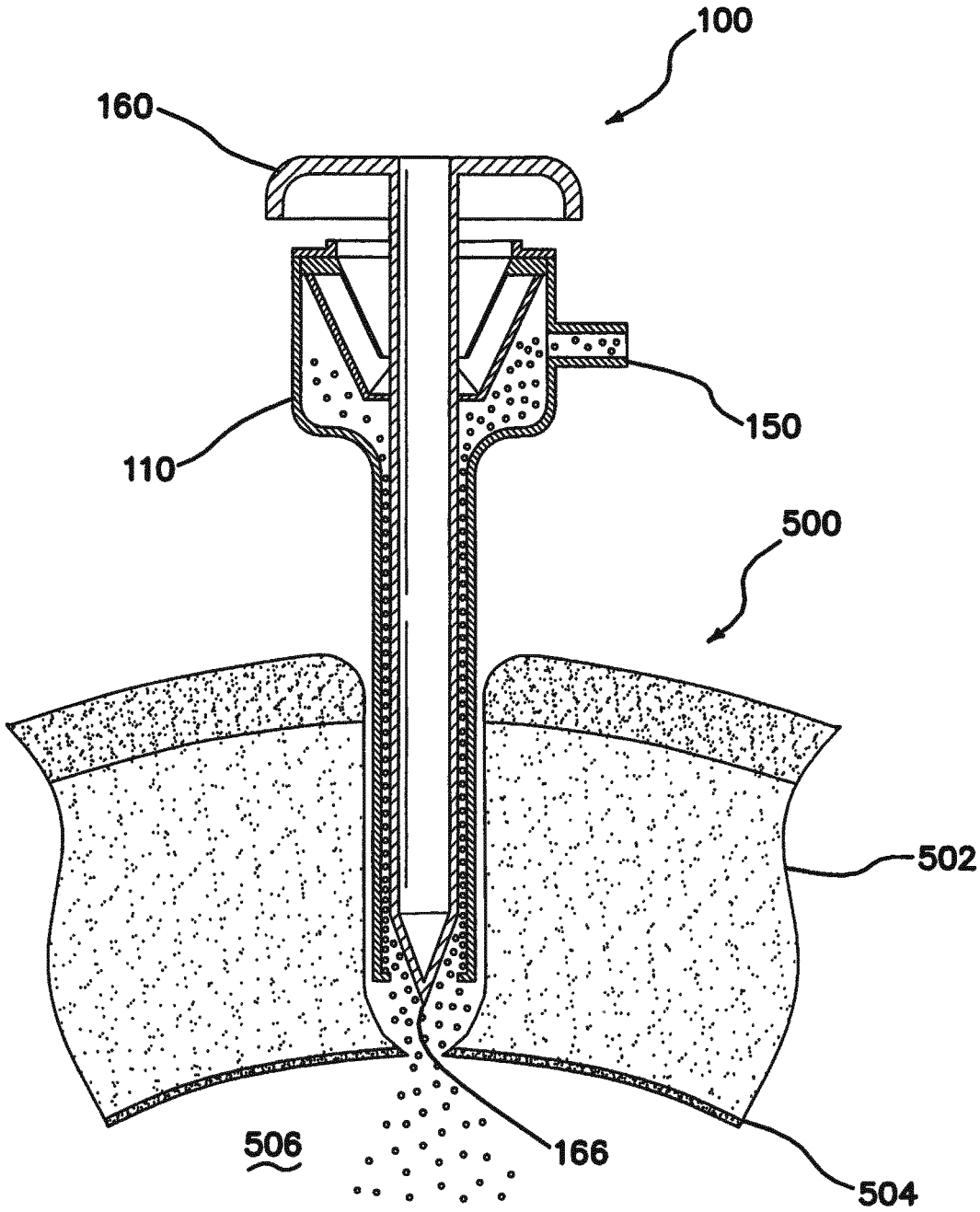

FIG. 3C

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP 1733707 A1 **[0007]**
- US 2005007851 A1 **[0007]**
- WO 03020140 A **[0007]**

专利名称(译)	填充访问系统		
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申请(专利权)人(译)	应用医疗资源CORPORATION		
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[标]发明人	ALBRECHT JEREMY J JOHNSON GARY M BRUSTAD JOHN R		
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其他公开文献	EP2231233A1 EP2231233A4		
外部链接	Espacenet		

摘要(译)

系统，装置和方法允许在将套管插入体腔之前使体腔绝缘。 进入系统的一些实施例包括封闭器（160），套管针（110）和流体流动通道（180）。 进入系统具有闭合配置和开放配置，在闭合配置中，进入系统的远端与流体流动通道流体隔离，在开放配置中，进入系统的远端与流体流动通道流体连接，从而 允许流体（例如绝缘气体）流入体腔。

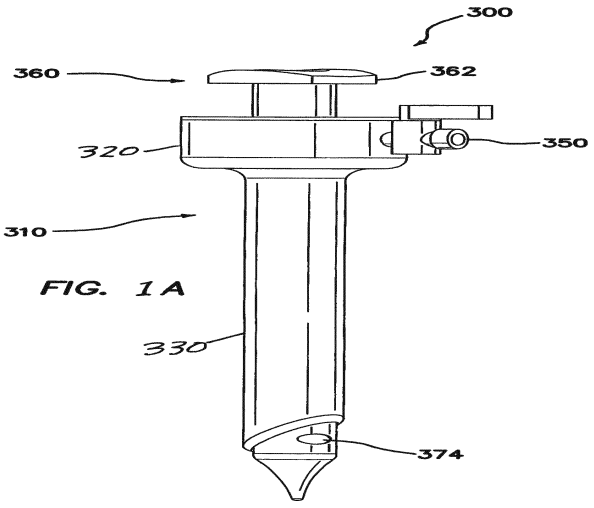

FIG. 1A