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(54) **TRANSPORT AND ANALYSIS DEVICE FOR USE IN A BOREHOLE**

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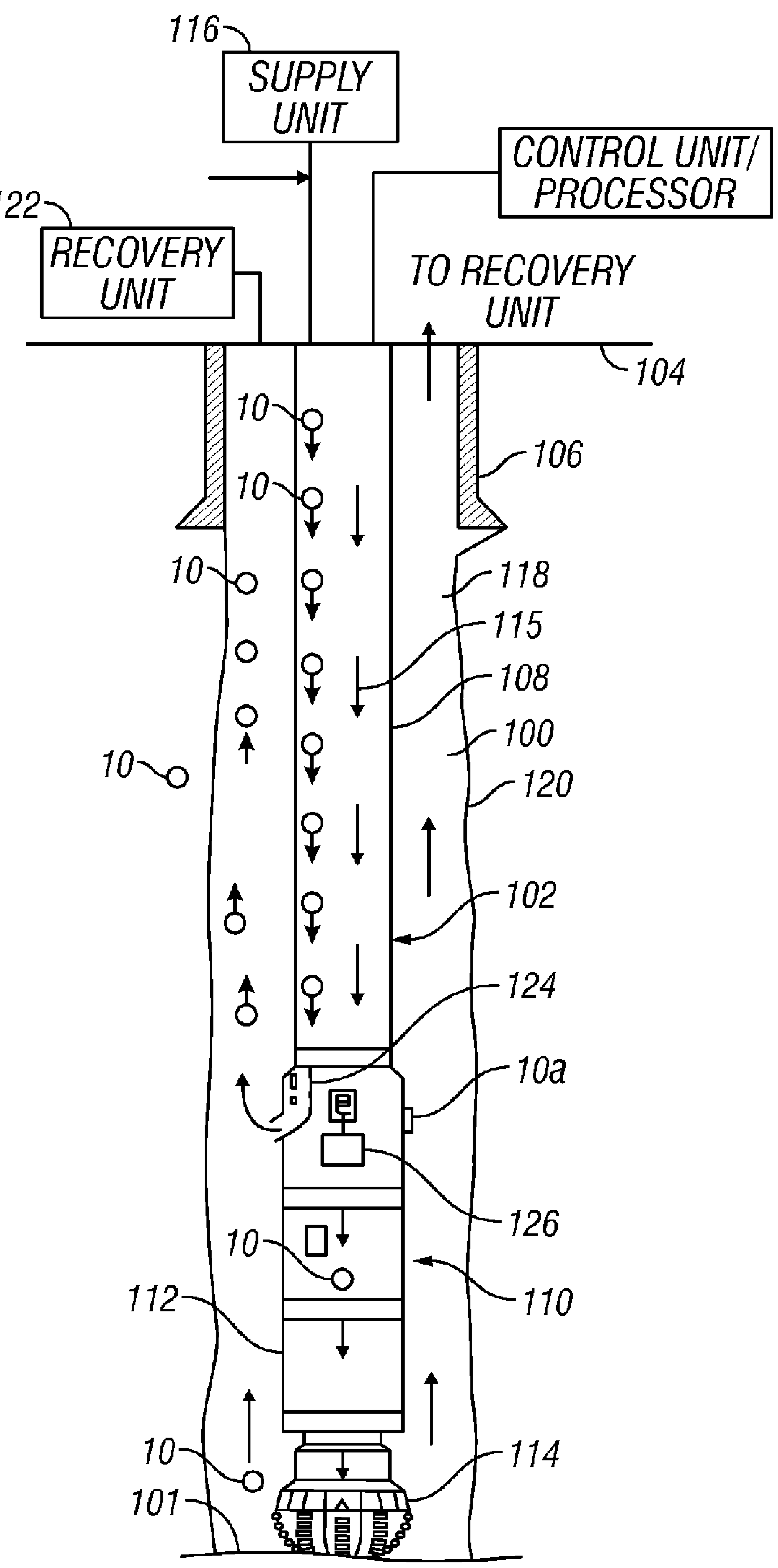
(57) **ABSTRACT**

A fluid conveyable device having an interior space receives a payload that may be transported along at least a section of a borehole. The device includes a access control member for conveying the payload between the interior and the exterior of the fluid conveyable device.



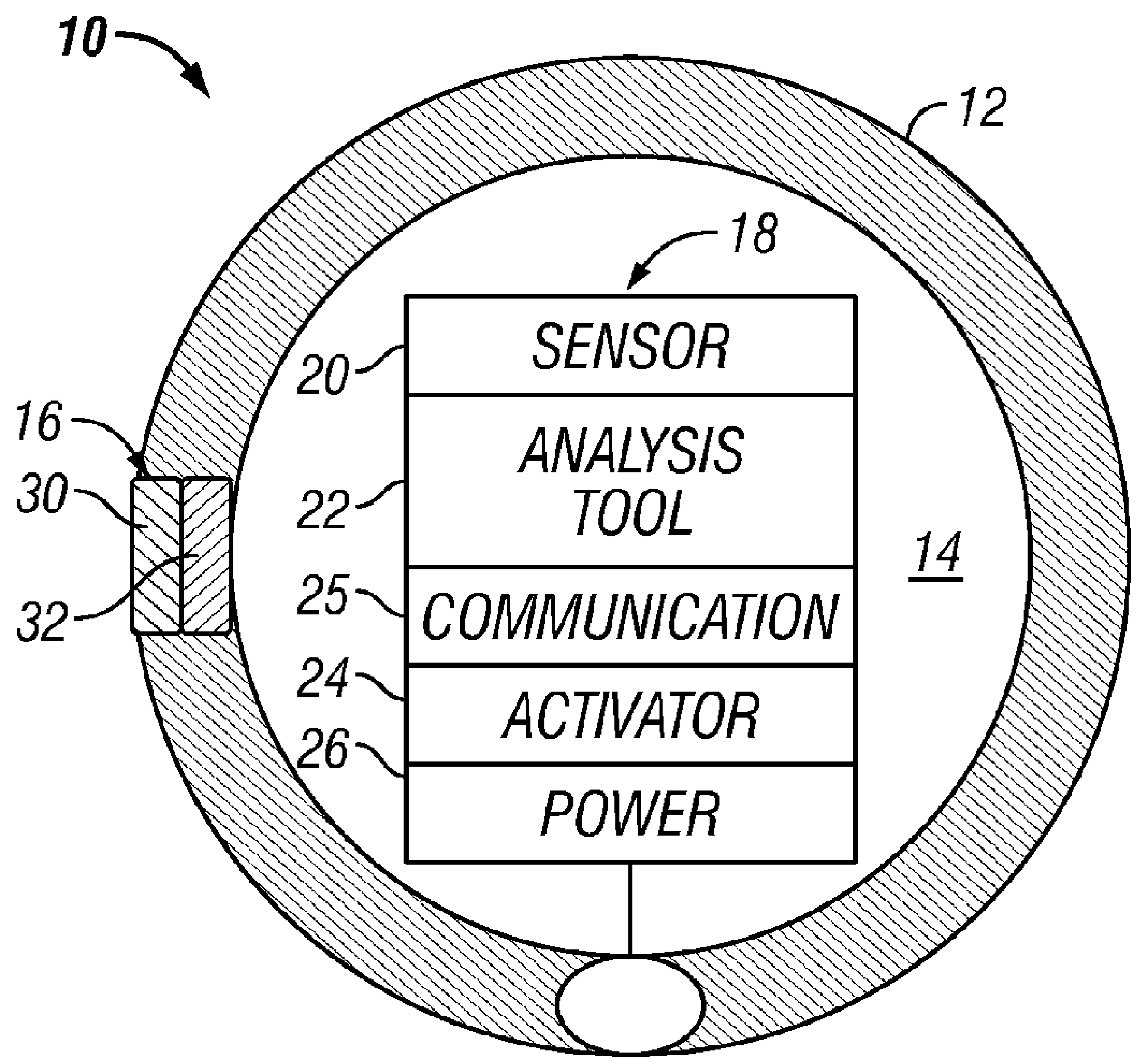



FIG. 1

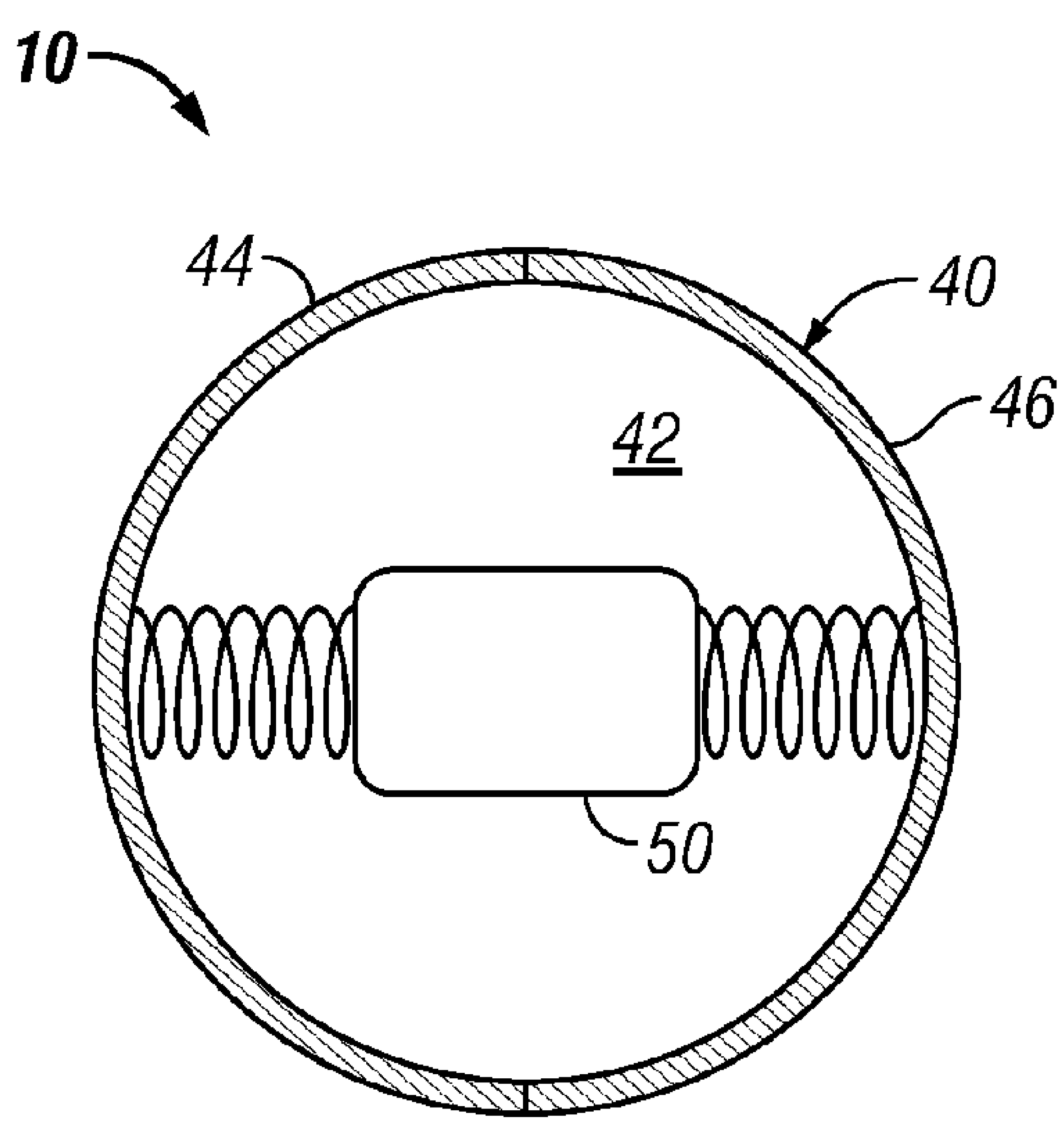



FIG. 2A

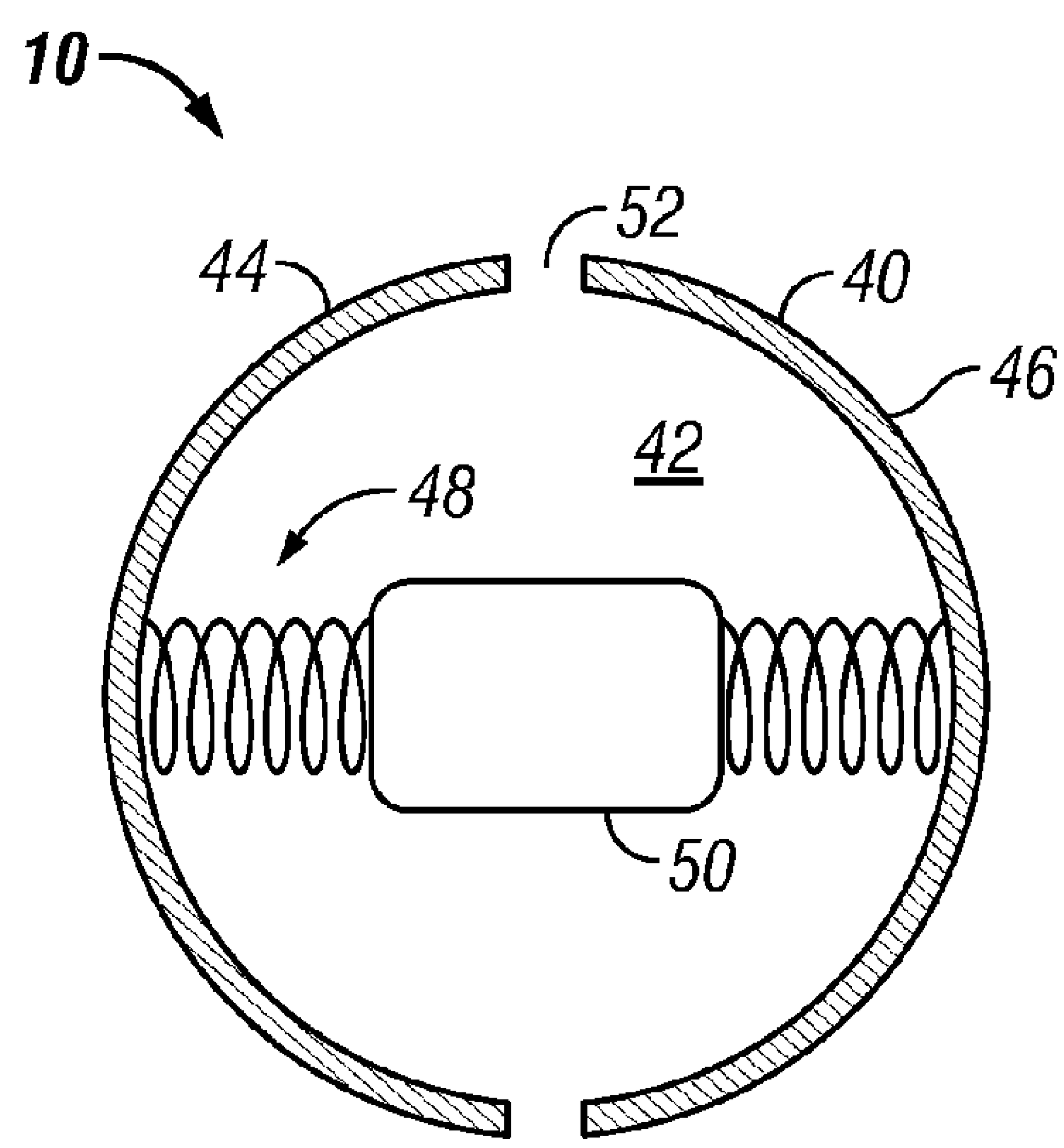



FIG. 2B

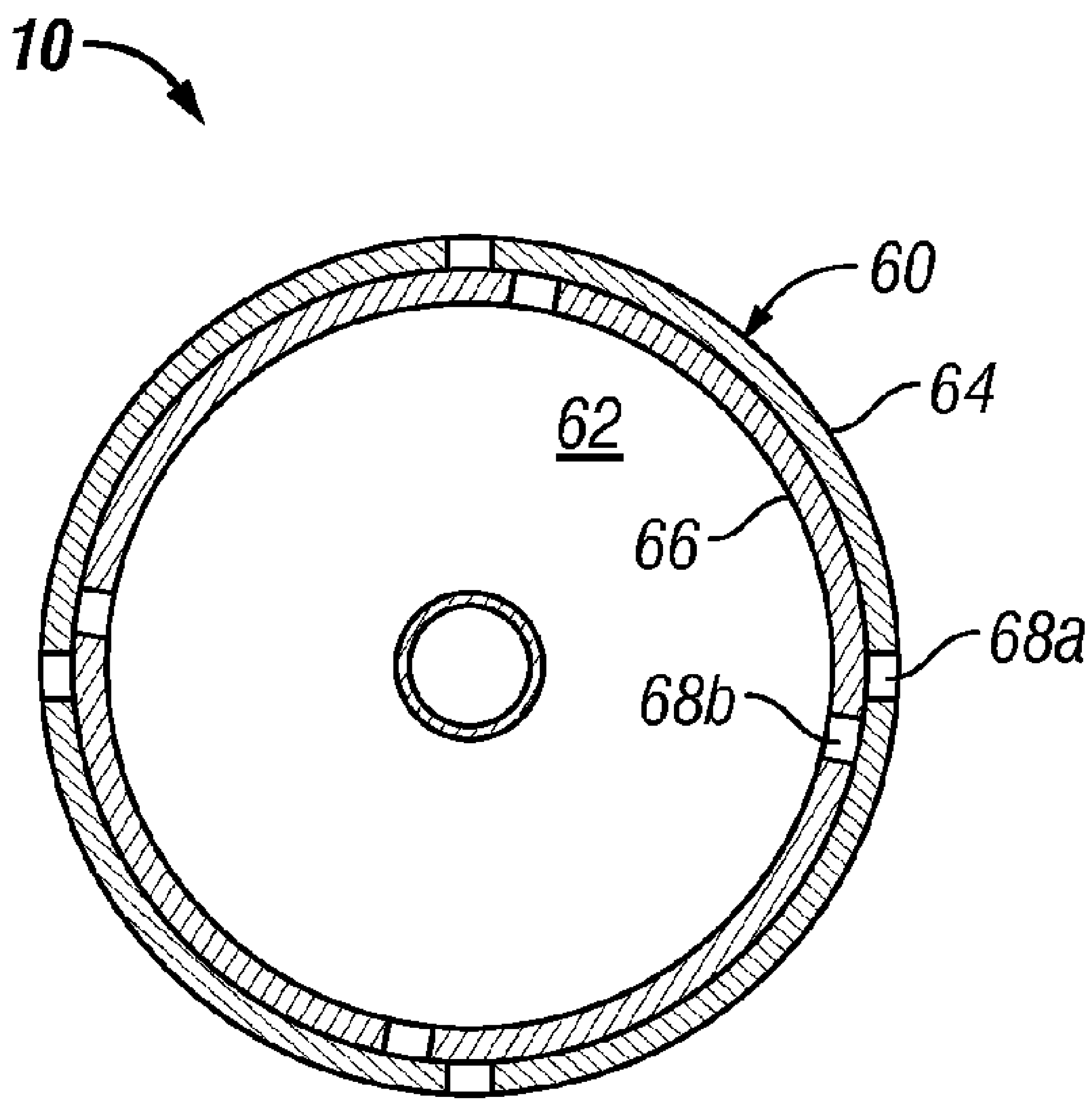



FIG. 3A

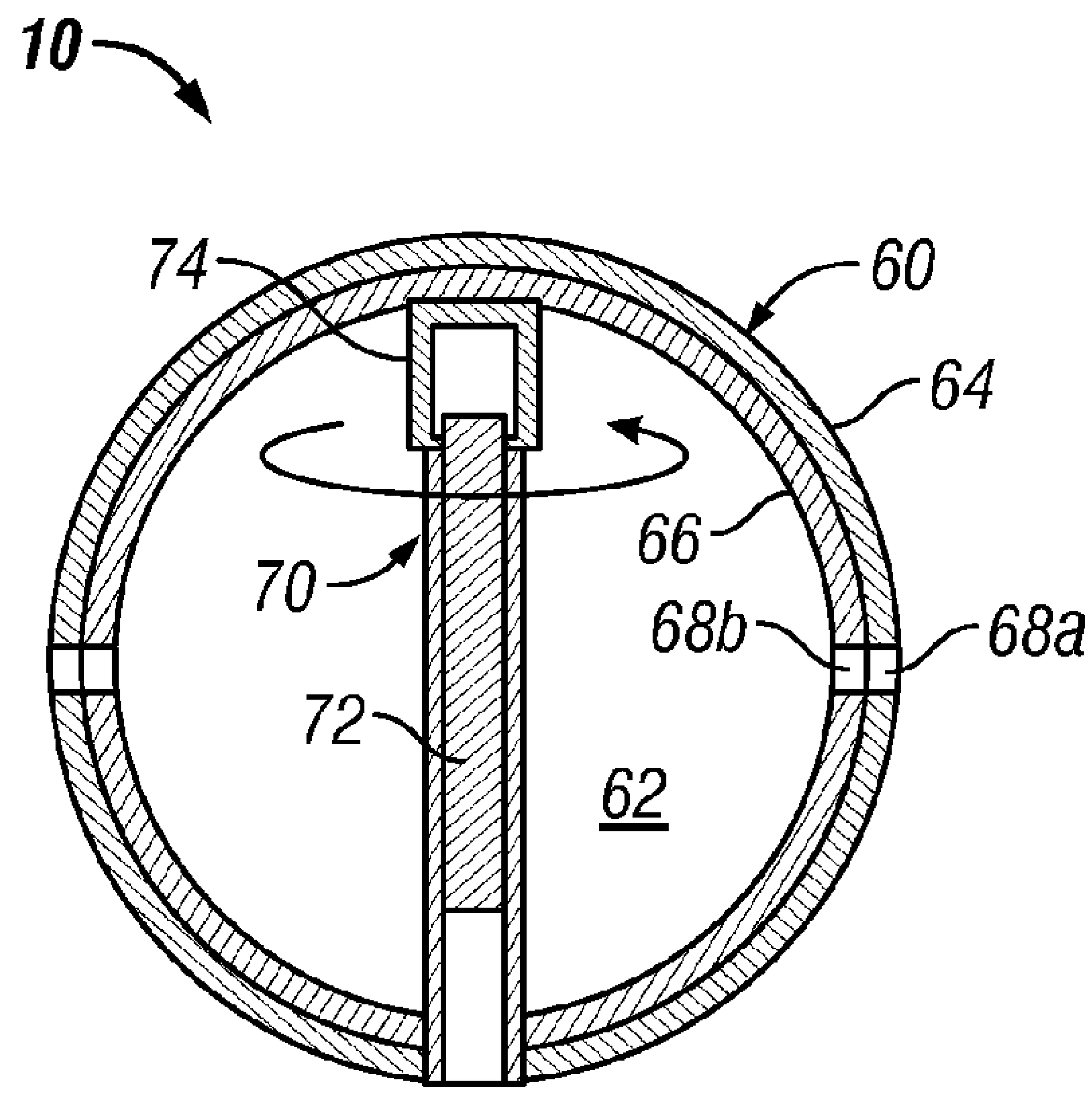



FIG. 3B

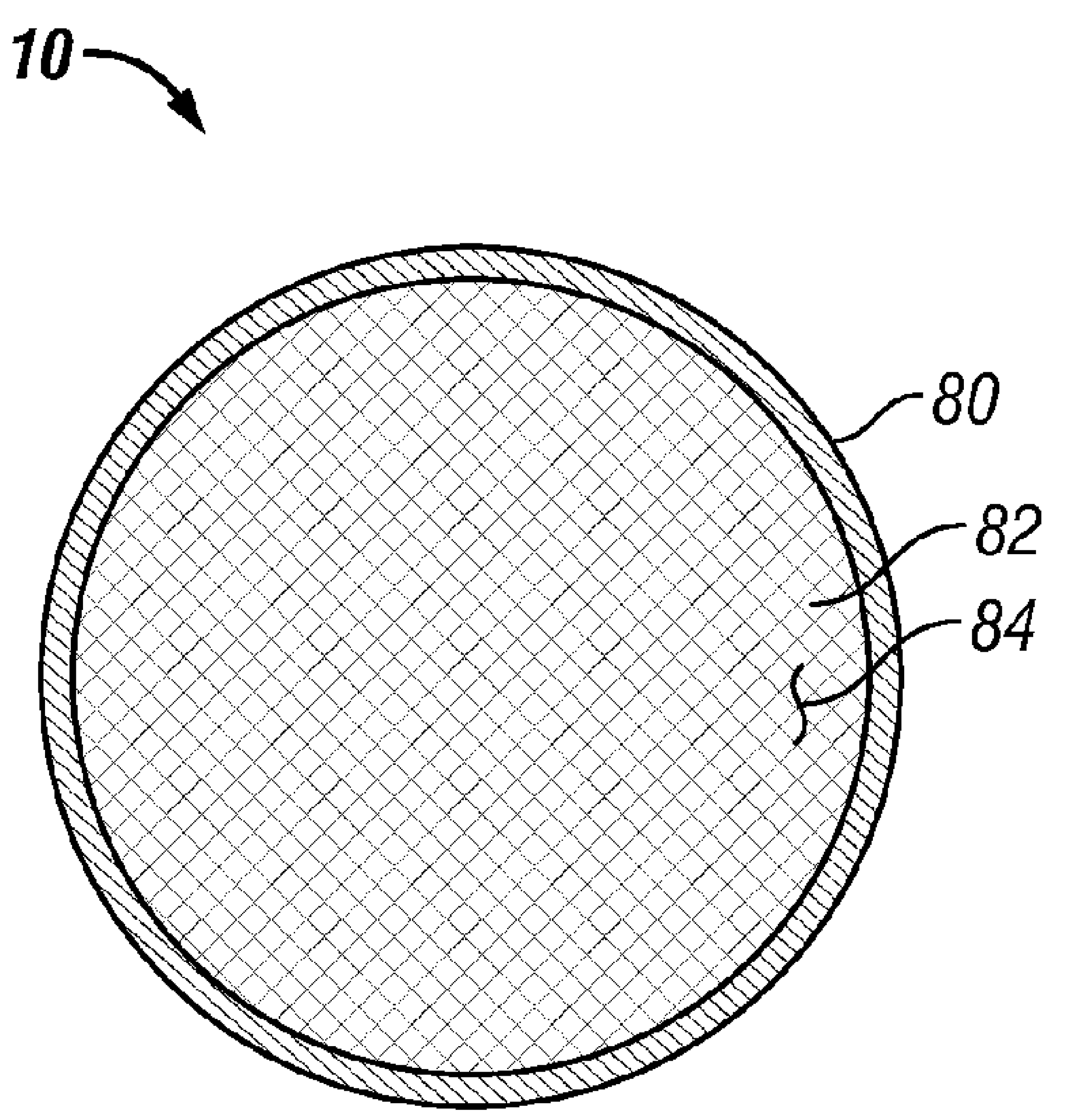



FIG. 4A

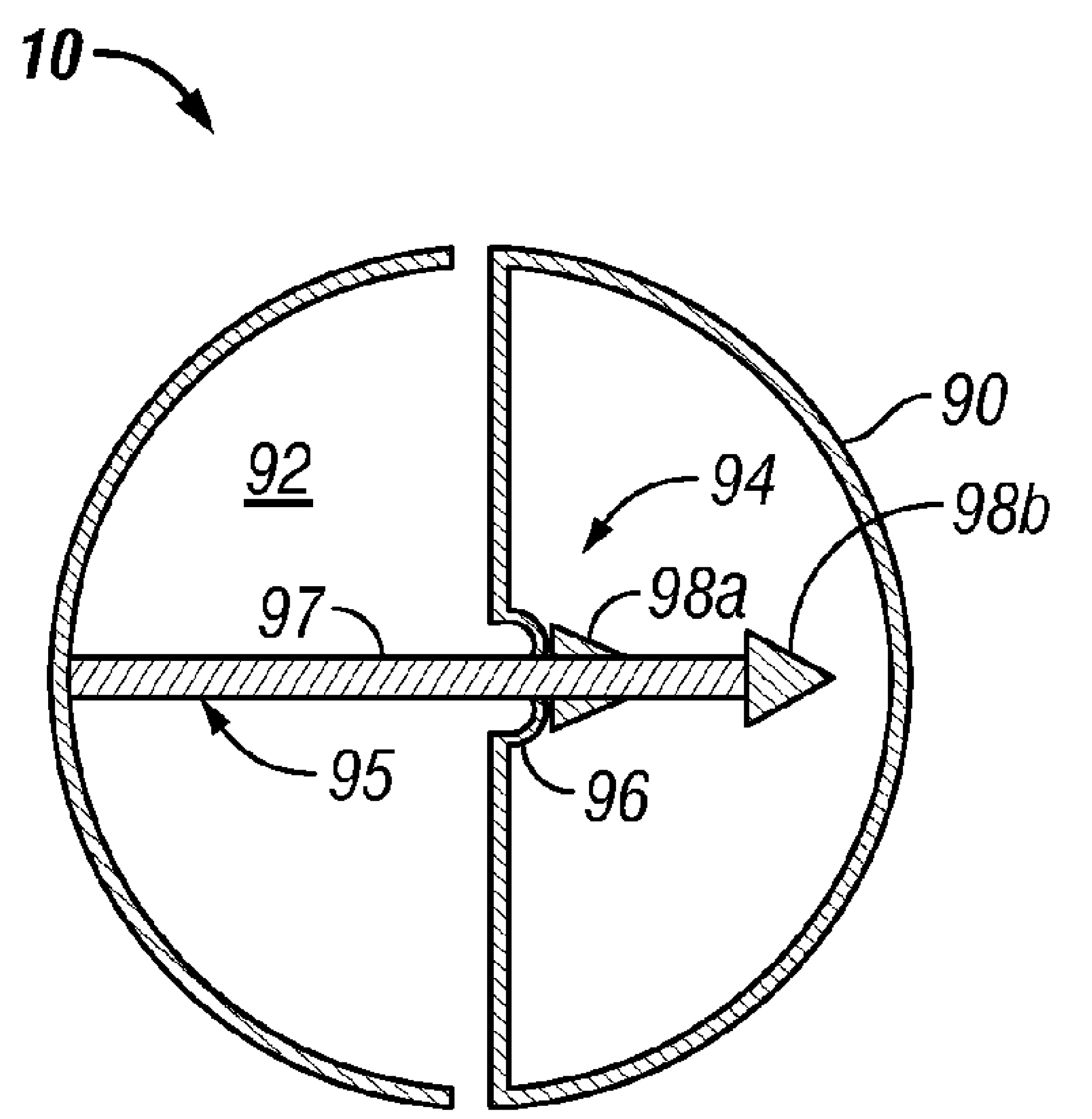



FIG. 4B

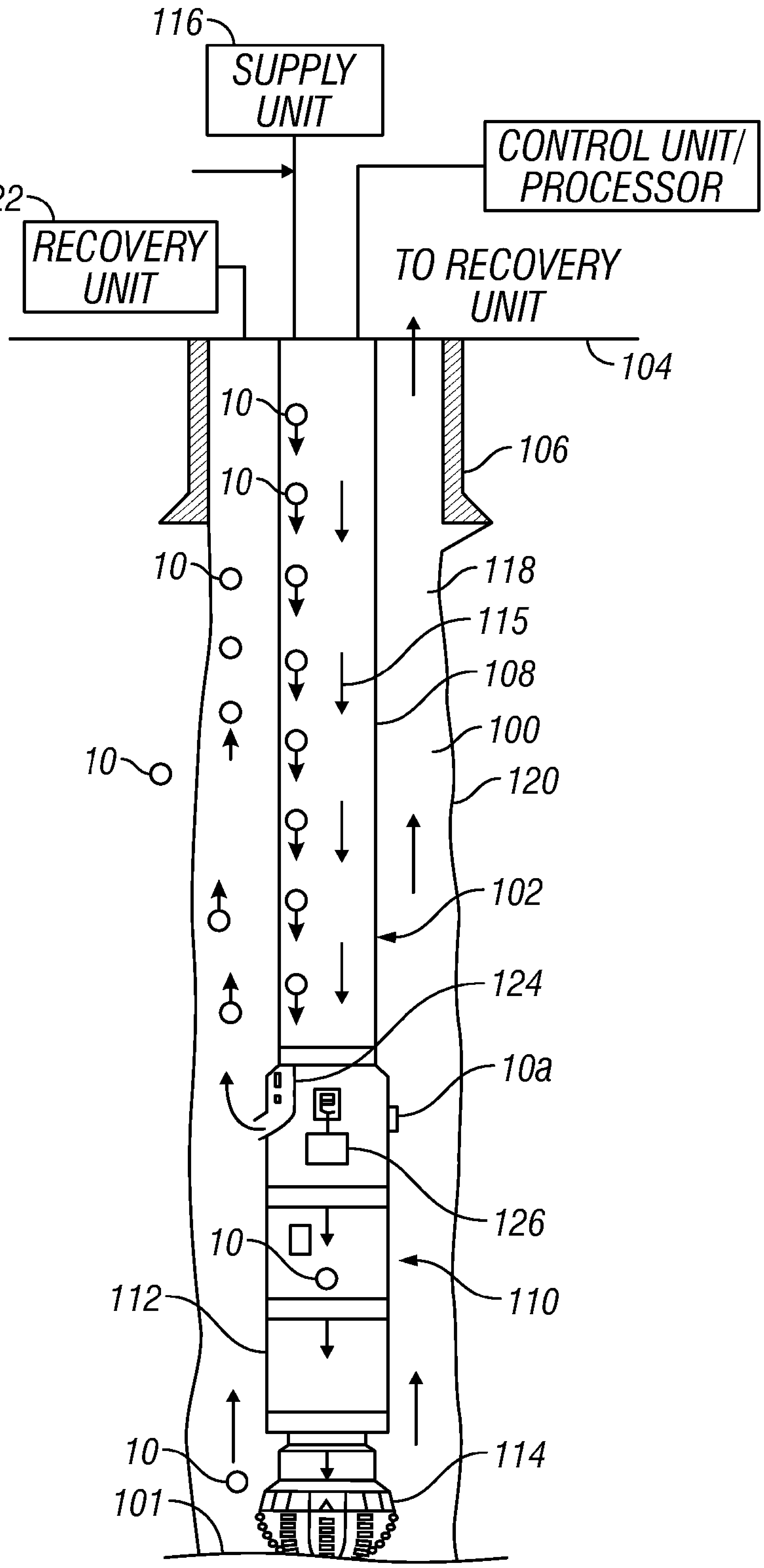

116
SUPPLY UNIT
CONTROL UNIT/ PROCESSOR
122
RECOVERY UNIT
TO RECOVERY UNIT
104
10
10
106
10
118
115
108
100
10
120
102
124
10a
126
10
110
112
10
114
101

FIG. 5

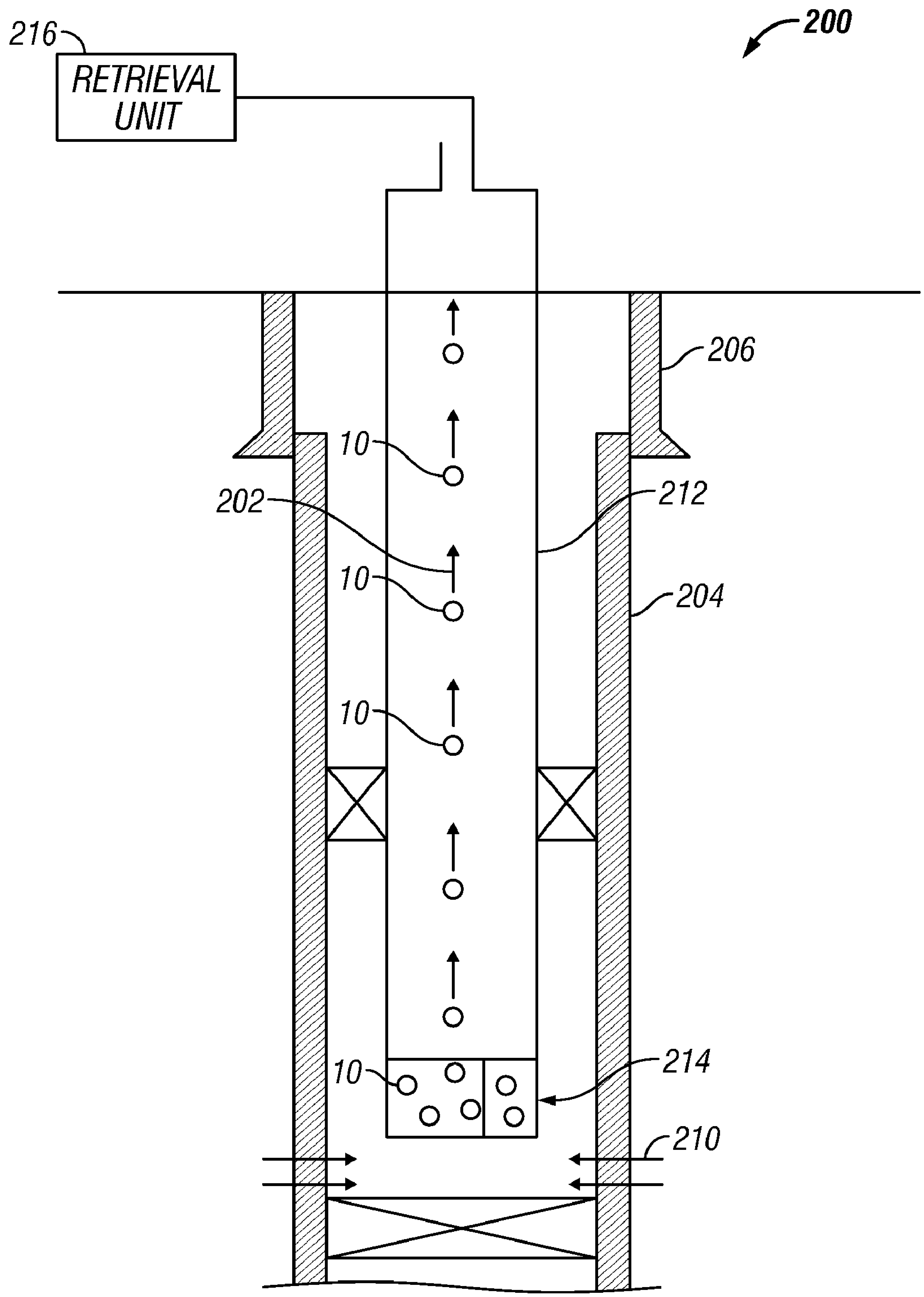



FIG. 6

# TRANSPORT AND ANALYSIS DEVICE FOR USE IN A BOREHOLE

## CROSS-REFERENCE TO RELATED APPLICATIONS

**[0001]** This application claims priority from U.S. Provisional Application Ser. No. 61/323,197, filed Apr. 12, 2010, the disclosure of which is incorporated herein by reference in its entirety.

## FIELD OF THE DISCLOSURE

**[0002]** 1. Field of the Disclosure

**[0003]** This disclosure is directed to devices and methods for transporting materials or devices in a borehole.

**[0004]** 2. Background of the Disclosure

**[0005]** Hydrocarbons, such as oil and gas, may reside in subsurface formations. Hydrocarbon-bearing formations are usually referred to as the producing zones or oil and gas reservoirs or "reservoirs." To obtain hydrocarbons from such formations, wellbores or boreholes are drilled from a surface location or "well site" on land or offshore into one or more such reservoirs. A wellbore is usually formed by drilling a borehole of a desired diameter or size by a drill bit conveyed from a rig at the well site. The drill string includes a hollow tubing attached to a drilling assembly at its bottom end. The drilling assembly includes the drill bit for drilling the wellbore. The tubing usually made by joining relatively small sections of rigid metallic pipe or a continuous tubing. During drilling of a wellbore, drilling fluid is supplied from the surface through the drilling tubing. The drilling fluid passes through the drilling assembly, and discharges at the drill bit bottom. The drilling fluid discharged at the drill bit bottom returns to the surface via an annulus between the drill string and the wellbore.

**[0006]** During this drilling activity, or during subsequent activities, it may be desirable to sample one or more fluids and/or other materials in the wellbore and/or the formation. It may also be desirable to deliver a payload, e.g., a material or device, to a selected location in the borehole. The present disclosure addresses the need for such sampling.

## SUMMARY OF THE DISCLOSURE

**[0007]** In aspects, the present disclosure provides a method for transporting a material in a borehole. The method may include activating a fluid conveyable device in a wellbore to convey a payload between an interior and an exterior of the fluid conveyable device.

**[0008]** In aspects, the present disclosure also provides an apparatus for transporting a material in a wellbore. The apparatus may include a fluid conveyable device having an interior space for receiving the payload and a access control member for conveying the payload between the interior and the exterior of the fluid conveyable device.

**[0009]** Examples of the more important features of the disclosure have been summarized in order that the detailed description thereof that follows may be better understood and in order that the contributions they represent to the art may be appreciated. There are, of course, additional features of the disclosure that will be described hereinafter and which will form the subject of the claims appended hereto.

## BRIEF DESCRIPTION OF THE FIGURES

**[0010]** For detailed understanding of the present disclosure, reference should be made to the following detailed description of the disclosure, taken in conjunction with the accompanying drawing:

**[0011]** FIG. **1** illustrates a transport device made in accordance with one embodiment of the present disclosure;

**[0012]** FIGS. **2**A-B schematically illustrate a transport device that uses a biasing activator in accordance with one embodiment of the present disclosure;

**[0013]** FIGS. **3**A-B schematically illustrate a transport device that uses a piston-based activator in accordance with one embodiment of the present disclosure;

**[0014]** FIG. **4**A schematically illustrates a transport device that uses a permeable membrane in accordance with one embodiment of the present disclosure;

**[0015]** FIG. **4**B schematically illustrates a transport device that uses a shape memory material in the activating mechanism in accordance with one embodiment of the present disclosure;

**[0016]** FIG. **5** illustrates transport devices made in accordance with one embodiment of the present disclosure used during drilling; and

**[0017]** FIG. **6** illustrates transport devices made in accordance with one embodiment of the present disclosure used during post-drilling activities.

## DETAILED DESCRIPTION OF THE DISCLOSURE

**[0018]** The present disclosure relates to methods and devices for sampling a downhole material and/or delivering a material or device to a downhole location. The material may be an engineered fluid introduced from the surface, such as a drilling fluid, or a naturally occurring fluid such as a hydrocarbon. The material may also include solids. The transport device may be formed as a capsule, receptacle or other such enclosure that selectively obtains a sample of a downhole fluid or other material and return that sample to the surface. The transport device may be an autonomous or semi-autonomous device that is adapted to be moved by a fluid flowing along the wellbore. Illustrative devices according to the present disclosure may be of relatively small size; e.g., a nanometers to a few centimeters in outer dimensions. As will be described in greater detail, exemplary devices may be configured to initiate the sampling activity based on a particular activation criteria (e.g., pressure, temperature, time, depth, fluid composition, etc.). When activated, the device captures a predetermined amount of a fluid and/or other material, the payload, and then seals the sample within the device. In certain embodiments, the transport device may include one or more sensors to measure ambient wellbore conditions, fluid composition, depth, temperature, pressure, etc. The transport device may flow to the surface where it is recovered and the retrieved sample may be analyzed.

**[0019]** Referring now to FIG. **1**, there is shown one embodiment of a transport device **10** made in accordance with the present disclosure. The device may include a receptacle or shell **12** that includes an interior space **14** for receiving a sample of a downhole material or delivering a material or device in the wellbore. For simplicity, the sampled material or delivered material/device will be collectively referred to as a payload. The terms enclosure, receptacle, shell and capsule may be used interchangeably herein and do not imply any functionality beyond a structure configured to store a payload. The shell **12** may be formed of a material such as metals or composites that exhibit sufficient material properties (e.g., toughness, compressive strength, etc.) to withstand the abrasions, pressures and dynamic stresses associated with the harsh wellbore environment. Additionally, the material should be sufficiently chemically inert relative to the corrosive wellbore environment. Moreover, the shell **12** should be sufficiently strong (e.g., tensile strength) to withstand the pressure applied by the material inside the shell **12** as that material expands. The sample may include a fluid (e.g., a liquid or gas), a solid, or semi-solid, or combinations thereof. As noted previously, the fluid may be a fluid introduced from the surface and/or an in situ fluid. The shell **12** may be configured as a free-standing device that can traverse a wellbore without being fixed or otherwise connected to a conveyance device or carrier such as a tubing, wireline, slickline, or drill string. The enclosure (e.g., shell or capsule) need not be configured to traverse the wellbore in both directions (e.g., uphole and downhole) independently. For example, the enclosure may be conveyed to a downhole location and then released to independently return to the surface. For instance, in certain embodiments, the shell **12** may be tethered to a rigid or non-rigid conveyance member. Illustrative conveyance members include, but are not limited to, wires, optical fibers, umbilicals, capillary tubes, etc. In certain embodiments, the conveyance member may have a size small enough to fit in a bore of a tubular or an annulus between two tubulars. Moreover, the weight of the conveyance member may be selected such that the conveyance member and the transport device **10** may flow with a fluid; e.g., the conveyance member may be neutrally buoyant. Alternatively, the enclosure may be released to independently traverse the wellbore to a downhole location and then retrieved by a carrier. The term “fluid conveyable,” therefore, in one aspect, means traversing at least a portion of the wellbore without substantial assistance of a moving carrier, which may be a rigid or non-rigid carrier. The fluid may be the prime mover that transports the enclosure and/or the media through which the enclosure floats or sinks. The term “carrier-free,” in one aspect, means substantially unconnected to a rigid or non-rigid carrier for the purposes of travelling through a wellbore. Additionally, the shell **12** may be shaped to flow with or pass through wellbore fluids. While a spherical shape is shown, other shapes, both symmetric and asymmetric, may be used. The chamber **14** may be configured to be fluid-tight, e.g., liquid tight or gas-tight.

**[0020]** An access control member **16** allows selective communication between the interior space **14** and the wellbore environment. As will be described in further detail below, numerous devices and methodologies may be used to control communication with the interior space **14**. In embodiments, the transport device **10** may include an instrument package **18** in the interior space **14**. In one embodiment, the instrument package **18** may include one or more sensors **20**, an analysis tool **22**, an activator **24**, a communication device **25**, and a power supply **26**. Additionally, some embodiments may include one more sensors **28** for measuring a parameter of interest external to the device **10**. The sensors **20**, **28** may provide estimates of any number of parameters related to the interior space **14** and the materials therein or the conditions outside of the device **10**. The data generated by any component of the instrument package **18** may be stored as either material characteristics change or in solid state memory. The communication device **25** may provide unidirectional or bi-direction communication between the device **10** and the surface and/or subsurface equipment. The power supply **26** may be a power storage device, a downhole power generator, a chargeable induction type of device, or other suitable device for storing, receiving, and/or generating power. While a number of components have been shown for the instrument package **18**, it should b understood than less than all may be used for any given application. In embodiments, the device **10** may also include propulsion or steering devices that direct the device **10** to a desired location.

**[0021]** In certain embodiments, the analysis tool **22** may be configured to estimate one or more parameters relating to the sample. The analysis may include sensors for estimating any number of desired parameters of the sampled material. Illustrative sensors include, but are not limited to, optical sensors, molecularly impregnated polymers, etc. These sensors may provide information as to fluid composition (e.g., the presence of emulsifiers, surfactants, or fluid loss materials), quantification of trace amounts of gases such as H2S, or trace amounts of metals, such as mercury, nickel or vanadium in either crude oil or formation brines, etc. In one embodiment, the analysis tool **22** may include an information processor, a data storage medium, processor memory. Data storage medium may be any standard computer data storage device, hard disk, removable RAM, EPROMs, EAROMs, flash memories, etc. Data storage medium stores a program that when executed causes information processor to execute the disclosed method. Information processor may be any form of computer or mathematical processing hardware.

**[0022]** In the FIG. **1** embodiment, the access control member **16** may include a valve element **30** that allows selective payload delivery between the exterior of the device **10** and the interior space **14**. In some embodiments, the valve element **30** may be directly responsive to an environmental stimulus. For instance, the valve element **30** may be configured to permit flow into the chamber **14** only after a predetermined pressure differential exists between the chamber **14** and the exterior of the device. Thus, such a device may be considered to be pressure activated. In another embodiment, the valve element **30** may include a heat meltable plug element **32** that melts at a pre-determined temperature. Once melted, valve element **30** may admit fluid into the chamber **14**. The valve element **30** may in embodiments be a uni-directional valve that only allows fluid to enter but not leave the chamber **14**. Thus, such a device may be considered to be temperature activated. In certain embodiments, the plug element **32** may dissolve or disintegrate when exposed to a selected stimulus (e.g., a chemical, EM energy, etc.).

**[0023]** In other arrangements, the valve element **30** may be responsive to an activation signal. For example, the activator **24** may include a timer that is programmed with a pre-determined time delay. Once the time delay has expired, the activator **24** may transmit a signal (e.g., an electrical signal) to the access control member **16**. In response to the signal, the access control member **16** may open to allow fluid flow into the chamber **14**. Such a device may be considered to be time activated. In other embodiments, the activator **24** may receive data from the sensor **28** relating to a selected parameter or parameters (e.g., pressure, temperature, fluid composition, etc.). The activator **24** may transmit the activation signal to the valve element **30** upon detecting a specified value or values for the selected parameter(s). In still other embodiments, the valve element **30** may be activated by an external signal from the surface and/or a downhole location. For instance, the valve element **30** may be a solenoid-type valve activated by an electromagnetic signal.

**[0024]** It should be appreciated that the transport devices according to the present disclosure may be susceptible to numerous embodiments. Some non-limiting embodiments are described in connection with FIGS. **2-5** below.

**[0025]** Referring now to FIGS. **2**A and B, there is shown an embodiment of transport device **10** made in accordance with the present disclosure that includes a shell **40** that defines an interior space **42** for receiving a sample of a downhole material. The shell **40** may be formed of any material previously discussed. The shell **40** includes a first section **44** and a second section **46** that separate to communication between the interior space **42** and the wellbore environment. Numerous devices may be used to open and close the sections **44**, **46**. In the embodiment shown, a biasing member **48** may be used to separate the sections **44**, **46**. For example, the biasing member **48** may be configured to apply a biasing force that tends to at least partially open the sections **44**, **46**. The biasing member **48** may be a spring, compressed gas, or other device configured to apply a displacing force. As shown in FIG. **2**B, a suitable actuator **50** may be used to release this biasing force to open the sections **44**, **46** to form a gap or opening **52** through which surrounding fluid may enter the interior space **42**. It should be appreciated that the sections **44**, **46** need not completely separate. For example, the sections **44**, **46** may be coupled by a hinge (not shown). This embodiment may include an instrument package, such as instrument package **18** (FIG. **1**), in the interior space **42** as previously discussed.

**[0026]** It should be appreciated that embodiments, such as the FIG. **1** embodiment, may be used as a delivery device. That is, one or more materials or devices may be formed as a payload within the space **42**. The shell **40** may be opened at a selected location in the wellbore to deliver the payload. The payload may be a material (e.g., a chemical agent or additive) or a device configured to perform a downhole task.

**[0027]** It should be understood that the type of actuator used may depend, in part, on the size of the transport device. For instance, transport devices that may be in the centimeter range for size may use biasing elements as discussed above. For transport devices in the millimeter, micrometer and nanometer scale, micro-machined devices, elastomers, molecularly impregnated polymers, piezoelectric elements, magnetostrictive elements, shape memory alloys, magnetic elements, or other suitable devices may be used to selective admit fluid into the interior of the transport device. In certain embodiments, semi-conductor type processes may be used to form miniature sensors that may be incorporated into the shell. Also, in embodiments, batch type manufacturing processes may be used to embed nano-sensors in the device **10**. In still further embodiments, the device **10** may use a porous/permeable material that is at least partially filled with a displaceable material. For example, the porous material may be a sponge-like material that includes a meltable material such as wax, or some other dissolvable material. In response to a given stimulus (e.g., pressure or temperature), the porous/permeable material releases the meltable material. The released material may function as an activator to initiate sampling, may perform some analysis (e.g., by interacting with a sampled material), and/or some other function.

**[0028]** Referring now to FIGS. **3**A and B, there is shown an embodiment of transport device **10** made in accordance with the present disclosure that includes a shell **60** that defines an interior space **62** for receiving a sample of a downhole material. The shell **60** may be formed of any material previously discussed. The shell **60** includes a exterior shell section **64** and an interior shell section **66** that can rotate relative to one another. Each section **64**, **66** includes ports or openings **68***a, b*, respectively. In the sealed position (FIG. **3**A), the ports **68***a, b* are misaligned. In the sealed position (FIG. **3**B), the ports **68***a,b* are aligned. Numerous devices may be used rotate the sections **64** and **66** relative to one another. In one embodiment, an actuator **70** for generating such rotation may include a piston **72** fixed to the exterior shell section **64** and a cylinder **74** fixed to the interior shell section **68**. The piston **72** and cylinder **74** may have mating threads formed to cause the cylinder **74** to rotate as the piston **73** translates axially. The piston may be actuated by pressure in a chamber **76**. In one arrangement, the piston may be displaced from an initial position by a predetermined wellbore pressure in the chamber **76**. A biasing member (not shown) may resist movement of the piston until the predetermined wellbore pressure is present and may further urge the piston **72** back to the initial position after the predetermined pressure is no longer present. In other embodiments a motor may be used to generate rotational power for rotating the shells **64**, **66**.

**[0029]** Referring now to FIG. **4**A, there is shown yet another embodiment of transport device **10** made in accordance with the present disclosure. The device may include a selectively permeable shell **80** that includes an interior space **82** for receiving a sample of a downhole material. The shell **80** may be formed partially or wholly of a membrane or material configured to allow only one or more selected material, e.g., solids, liquids, gases, or mixtures thereof, to flow into the interior space **82**. In embodiments, the transport device **10** may include a permeable material in the interior space **82**. The material that passes through the shell **80** may be stored in the pores or interior spaces of the permeable material **84**. In some embodiments, an instrument package, e.g., package **18** (FIG. **1**), may be positioned in the interior space **82**.

**[0030]** It should be understood that while a number of features have been described for the transport device **10**, not all need to be present in any particular embodiment. For example, as shown in the FIG. **4**A embodiment, a transport device **10** may only include a space for receiving a sample. Additionally, while the Figures depict the transport device **10** as spherical. Other shapes, such as "egg" shapes, colloids, tubulars, cubes, may also be used.

**[0031]** Referring now to FIG. **4**B, there is shown an exemplary embodiment of transport device **10** that uses a shape memory material. The device **10** may include a selectively permeable shell **90** that includes an interior space **92** for receiving a sample of a downhole material or a payload from the surface. The shell **90** may be formed in any manner previously described. In embodiments, the device **10** may include an activator **94** having a pin **95** that co-acts with a catch **96**. A shank **97** of the pin **95** includes a first head **98**A and a second head **98**B. The catch **96** may be a clamp-type device that is at least partially formed of a "smart material," e.g., shape memory alloy, that is responsive to an applied stimulus such as heat or electromagnetic signal. To open the device **10**, an applied activation signal causes the shape memory material of the catch **96** opens to a diameter that allows passage of the first head **98**A. The catch **96** may thereafter shrink or may engage the second head **98**B. After the sampling or delivery of the payload, external pressure and/or an internal biasing force may be used to close the device. At that time, the catch **96** may be reactivated to allow the first head **98**A to translate through the catch **96** to close the device.

**[0032]** In embodiments, the buoyancy of the device **10** may be controlled. For example, the device **10** may be formed to be neutrally buoyant, positively buoyant, or negatively buoyant. In some embodiments, the buoyancy may be adjustable or variable. For instance, when introduced into the well, the device **10** may be negatively buoyant to assist in sinking into the wellbore. Thereafter, the device **10** may become neutrally buoyant or positively buoyant to assist in rising to the surface. In one arrangement, ballast (not shown) may be affixed to the interior or exterior of the device **10**. This ballast may be released from the device **10** at a selected time or may be calibrated to dissolve or otherwise disengage from the device **10**.

**[0033]** Referring now to FIG. **5**, the transport devices **10** are shown deployed during drilling of a wellbore **100**. The wellbore **100** is drilled by a drill string **102** from a surface location **104**. A casing **106** is placed at an upper section of the wellbore **100** to prevent collapsing of the wellbore **100**. The drilling string **102** includes a tubing **108**, which may be a drill pipe made from joining smaller sections of rigid pipe or a coiled tubing, and a drilling assembly **110** attached to the bottom end **112** of the tubing **108**. The drilling assembly **110** carries a drill bit **114**, which is rotated to disintegrate the rock formation. Any suitable drilling assembly may be utilized for the purpose of this disclosure. To drill the wellbore **100**, drilling fluid **115** from a source **116** is supplied under pressure to the tubing **108**. This drilling fluid **115** exits at the drill bit **114** and returns to the surface via an annulus **118** between the tubing **108** and a wellbore wall **120**.

**[0034]** In one illustrative embodiment, the transport devices **10** may be programmed, calibrated or otherwise configured to activate upon the detection of a given condition or event, e.g., pressure, temperature, time, activation signal, etc. Next, one or more transport devices **10** are released into the tubing **108** using the source **116** or other suitable equipment. The transport devices **10** travel with the fluid **114** down to the drilling assembly **110**. At predetermined times or conditions, the transport devices **10** self-actuate and sample a surrounding fluid. As noted previously, a coded signal may also be transmitted to activate the transport devices **10**. The fluid may be captured in the transport device **10**. In certain embodiments, the fluid can also be analyzed and the results of the analysis may be stored as material characteristics change, in a solid state memory, or other suitable data storage device. The sampling may occur in the tubing **108** and/or in the annulus **118**. The transport devices **10** return to the surface **104** and may be recovered at a suitable recovery unit **122**. The payload, i.e., the material samples and/or information, contained in the returning transport devices **10** may be retrieved, interpreted and used as appropriate.

**[0035]** In an illustrative embodiment for payload delivery, the transport devices **10** may be programmed, calibrated or otherwise configured to activate upon the detection of a given condition or event, e.g., pressure, temperature, time, activation signal, etc. Next, a material and/or device is inserted into one or more transport devices **10** that are released into the tubing **108** using the source **116** or other suitable equipment. The transport devices **10** travel with the fluid **114** down to the drilling assembly **110**. At predetermined times or conditions, the transport devices **10** self-actuate and deliver the payload.

**[0036]** In one variant, the drilling assembly **110** may include a bypass **124** that directs the transport devices **10** into the annulus **118** and thereby avoids passage through the drill bit **114**. The bypass **124** may be a passage or opening that allows selective fluid flow from the bore of the tubing **108** to the annulus **118**. For example, a physical device such as a filter or an electromagnetic field may be used to pull the transport devices **10** from the fluid flowing to the drill bit **114** and urge them to exit via the bypass **124** into the annulus **118**.

**[0037]** In another variant, the transport devices **10** may be configured to be actuated by a downhole signal rather than being self-actuated. For example, the drilling assembly **110** may include an activator **126** that transmits an activation signal that activates the transport devices **10**. For example, the activator **126** may generate a magnetic field, an electrical signal, thermal energy, an acoustical signal or other data-encoded signal that may be received and understood by the transport devices **10**. In response to the activation signal, the transport devices **10** may acquire a sample, may stop a sampling activity, or perform some other function.

**[0038]** In still other variants, transport devices **10** may be embedded in the wellbore wall **120** or deeper in the formation itself and may be programmed to be activated at a predetermined time or by the occurrence of a specified event. The device **10** may be positioned anywhere along the wellbore **100**, including at a wellbore bottom **101**. In one embodiment, the transport devices **10** may be designed to be deposited on the borehole wall during the drilling process.

**[0039]** In yet other variant, a transport device **10**A may be connected to the drill tubing **108** and conveyed into the wellbore **100**. The transport device **10**A may be released into the wellbore **100** at a desired time or location and thereafter return to the surface via the returning fluid. Thus, in embodiments, the transport device **10**A may be fluid conveyable for only a section of the wellbore and carrier conveyable for the another section of the wellbore.

**[0040]** In still another drilling application, the drilling may be performed with reverse flow. During reverse flow drilling, at least a portion of the wellbore annulus is used for conveying fluid into the wellbore and at least a portion of the tubing is used to convey fluid out of the wellbore. In such embodiments, the transport device may be released into the wellbore annulus at the surface.

**[0041]** Embodiments of the present disclosure may also be used during post-drilling activities. FIG. **6** is a schematic illustration of a production well **200** wherein transport devices **10** are released into the produced fluid or formation fluid **202**, which carries these devices to the surface. FIG. **6** shows a well **204** that has a well casing **206** installed therein. Formation fluid **202** flows into the well **204** through perforations **210**. The fluid **208** enters the wellbore and flows to the surface via a production tubing **212**. For simplicity and ease of understanding, FIG. **6** does not show the various production devices, such as flow control screens, valves and submersible pumps, etc. A plurality of transport devices **10** are conveyed into the well **204** or stored and/or in a suitable container at a selected location **214** in the well **204**. The devices **10** are selectively released into the flow of the produced fluid **208**. The devices **10** are retrieved by a retrieval unit **216** and analyzed.

**[0042]** The retrieval/recovery units **122**, **216** may use physical devices such as filters or screens to retrieve the devices **10** from the returning fluid. Non physical devices such a magnetic field may also be used to retrieve the devices **10**. Additionally, in certain embodiments, the units **122**, **216** may include interrogation devices that may establish a uni-directional or bi-directional communication link with the devices **10** at or near the surface.

**[0043]** From the above, it should be appreciated that what has been described includes, in part, a method for transporting a material in a borehole. The method may include activating a fluid conveyable device in a wellbore to convey a payload between an interior and an exterior of the fluid conveyable device.

**[0044]** From the above, it should be appreciated that what has been described includes, in part, an apparatus for transporting a material in a wellbore. The apparatus may include a fluid conveyable device having an interior space for receiving the payload and a access control member for conveying the payload between the interior and the exterior of the fluid conveyable device.

**[0045]** While the foregoing disclosure is directed to the preferred embodiments of the disclosure, various modifications will be apparent to those skilled in the art. It is intended that all variations within the scope of the appended claims be embraced by the foregoing disclosure.

We claim:

**1**. A method for transporting a payload in a borehole, comprising:

activating a fluid conveyable device in a wellbore to convey a payload between an interior and an exterior of the fluid conveyable device.

**2**. The method of claim **1**, wherein the activation is in response to an estimated parameter.

**3**. The method of claim **2**, wherein the estimated parameter is at least one of: (i) a pressure, (ii) a temperature, (iii) a duration of time; and (iv) a chemical parameter.

**4**. The method of claim **1**, wherein the activation is in response to a received signal.

**5**. The method of claim **1**, further comprising conveying the fluid conveyable device into the wellbore using a flowing fluid.

**6**. The method of claim **5**, wherein the fluid is a drilling fluid circulated in the wellbore.

**7**. The method of claim **1**, further comprising estimating downhole a parameter of interest relating to the collected downhole material.

**8**. The method of claim **1**, further comprising retrieving the fluid conveyable device from the wellbore using a flowing fluid.

**9**. The method of claim **1**, wherein the payload is conveyed from the interior to the exterior of the fluid conveyable device.

**10**. The method of claim **1**, wherein the payload is conveyed from the exterior to the interior of the fluid conveyable device.

**11**. An apparatus for transporting a payload in a wellbore, comprising:

a fluid conveyable device having an interior space for receiving the payload, and a access control member for conveying the payload between the interior and the exterior of the fluid conveyable device.

**12**. The apparatus of claim **11**, further comprising an activator configured to control flow of the down hole material into the device.

**13**. The apparatus of claim **12**, wherein the activator controls flow in response to at least one of an estimated: (i) pressure, (ii) temperature, and (iii) duration of time.

**14**. The apparatus of claim **12**, wherein the activator is responsive to an encoded signal.

**15**. The apparatus of claim **11**, wherein an outer dimension of the device is no greater than a millimeter.

**16**. The apparatus of claim **11**, wherein the interior space is sealed.

**17**. The apparatus of claim **11**, wherein the device includes at least one of: (i) a sensor configured to estimate a selected parameter of interest, and (ii) an analysis tool configured to estimate a parameter of interest relating to the downhole material in the device.

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