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[Continued on next page]

(54) Title: SCOPE SECURING AND INDICATING ASSEMBLY

(57) Abstract: A securing assembly for a medical device is provided that includes a housing having a cap at a first end and an opening at a second end spaced by an annular wall, the housing for covering a port on a medical device with the opening at the first end. A stem arrangement is integrally molded with and extending from the housing. The stem arrangement comprises a planar body and a barb strip having a plurality of barbs. A locking tab is integrally molded with and radially extending from the housing. The locking tab comprises a funnel port for one-way passage of the plurality of barbs, such that passage of at least one barb of the plurality of barbs is configured to lock the securing assembly to a medical device.

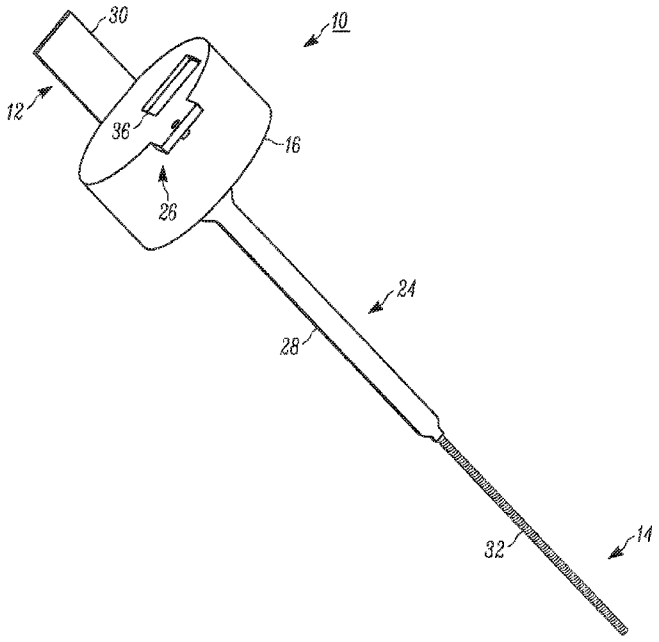

FIG. 1

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SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report (Art. 21(3))*

SCOPE SECURING AND INDICATING ASSEMBLY

CROSS REFERENCES TO RELATED APPLICATIONS

[0001] The following application claims priority under 35 U.S.C. § 119 (e) to co-pending U.S. Provisional Patent Application Serial No. 62/132,583 filed March 13, 2015 entitled *SCOPE SECURING AND INDICATING ASSEMBLY.* The above-identified application is incorporated herein by reference in its entirety for all purposes.

TECHNICAL FIELD

[0002] The present disclosure generally relates to the healthcare field, and more particularly to a scope securing assembly that provides both a positive indication that a medical device has not been used and quality control features that reduce the chances of exposing the patient to infection.

BACKGROUND

[0003] Medical devices such as, endoscopes, colonoscopes, gastric scopes, and the like are intended for use only once with each patient before cleaning. After the device is used, sterilization is required to prevent the spread of bacteria or other infectious diseases. The sterilization of most medical devices typically includes the use of steamers, scrubbers, high-level disinfection procedures and/or autoclaves. Once the medical devices are sterilized, they are typically placed in a sealed pouch until used. This quality control process works well for smaller medical devices, eliminating the likelihood that the same device will be reused with another patient before sterilizing, since the devices or instruments are removed from a seal pouch just prior to use.

[0004] Problems arise however when the medical devices are too large, awkwardly shaped, or have wires/hoses that prevent their placement in a sealed pouch once sterilized. For example, such larger medical devices, such as endoscopes, colonoscopes, gastric scopes, and the like are not easily placed into a sealed pouch.

SUMMARY

[0005] One aspect of the present disclosure comprises a securing assembly for a medical device that includes a housing having a cap at a first end and an opening at a second end spaced by an annular wall, the housing for covering a port on a medical device with the opening at the first end. A stem arrangement is integrally molded with and extends from the housing. The stem arrangement comprises a planar body and a barb strip having a plurality of barbs. A locking tab is integrally molded with and radially extending from the housing. The locking tab comprises a funnel port for one-way passage of the plurality of barbs, such that passage of at least one barb of the plurality of barbs is configured to lock the securing assembly to a medical device.

[0006] Another aspect of the present disclosure comprises a securing assembly for inhibiting use of a medical device to which the securing assembly is attached. The assembly comprises a plastic housing for impeding use of the medical device when installed in overlying relation with a functional member of the medical device. The plastic housing comprises walls bounding a housing interior region and includes an opening for insertion of the functional member of the medical device into the interior region bounded by walls of the plastic housing. The assembly further comprises a flexible elongated plastic stem attached to and extending from the plastic housing. The plastic stem comprises a planar body at a proximal end of the stem nearest the housing and a distally located barb strip having a plurality of barbs. The assembly yet further comprises a plastic locking tab attached to and extending from the housing, the

locking tab having a port for one-way passage of the an end of the barb strip such that passage of the barb strip into the port attaches the securing assembly to the medical device with the plastic housing overlying the functional member of the medical device and the planar body of the plastic stem in contact with an exposed surface of the medical device.

[0007] While another aspect of the present disclosure comprises a method for inhibiting use of a medical device. The method comprises positioning a plastic housing having an interior region bounded by walls of the housing in an overlying position with respect to a functional member of the medical device for impeding use of the medical device with the plastic housing in the overlying position. The method further comprises the step of wrapping a flexible elongated plastic strap connected to the housing around a portion of the medical device and passing a distal end of the elongated plastic strap through an attachment opening of a locking tab coupled to the housing. The method also comprises cinching the plastic housing in place by securing the distal end of the plastic strap to the locking tab with an extent of the elongated plastic strap in contact with a portion of the medical device.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] The foregoing and other features and advantages of the present disclosure will become apparent to one skilled in the art to which the present disclosure relates upon consideration of the following description of the disclosure with reference to the accompanying drawings, wherein like reference numerals, unless otherwise described refer to like parts throughout the drawings and in which:

[0009] FIG. 1 is a front perspective view of a scope securing assembly constructed in accordance with one example embodiment of the present disclosure;

[0010] FIG. 1A is a magnified view of a locking tab receiving a locking strip constructed

in accordance with one example embodiment of the present disclosure;

[0011] FIG. 1B is a magnified view of a locking tab receiving a locking strip constructed in accordance with another example embodiment of the present disclosure;

[0012] FIG. 2 is a rear perspective view of the scope securing assembly illustrated in FIG. 1;

[0013] FIG. 3 is a bottom plan view of the scope securing assembly illustrated in FIG. 1;

[0014] FIG. 4 is a side elevation view of the scope securing assembly illustrated in FIG. 1;

[0015] FIG. 5 is a first assembly view of a scope securing assembly attached to a medical device in accordance with one example embodiment of the present disclosure;

[0016] FIG. 6 is a second assembly view of the scope securing assembly attached to the medical device illustrated in FIG. 5;

[0017] FIG. 7 is a third assembly view of the scope securing assembly attached to the medical device illustrated in FIG. 5;

[0018] FIG. 8 is a fourth assembly view of the scope securing assembly attached to the medical device illustrated in FIG. 5;

[0019] FIG. 9 is a first assembly view of a scope securing assembly attached to a medical device in accordance with another example embodiment of the present disclosure;

[0020] FIG. 10 is a second assembly view of the scope securing assembly attached to the medical device illustrated in FIG. 9;

[0021] FIG. 11 is a perspective view of a scope securing assembly constructed in accordance with one example embodiment of the present disclosure;

[0022] FIG. 12 is another perspective view of the scope securing assembly of FIG. 11;

[0023] FIG. 13 is an assembly view of the scope securing assembly of FIG. 11 being positioned on a medical device;

[0024] FIG. 14 is another assembly view of the scope securing assembly of FIG. 11 being secured or locked onto a medical device;

[0025] FIG. 15 is another assembly view of the scope securing assembly of FIG. 11 being secured or locked onto a medical device;

[0026] FIG. 16 is another assembly view of the scope securing assembly of FIG. 11 being secured or locked onto a medical device; and

[0027] FIG. 17 is another assembly view of the scope securing assembly of FIG. 11 being secured or locked onto a medical device.

[0028] Skilled artisans will appreciate that elements in the figures are illustrated for simplicity and clarity and have not necessarily been drawn to scale. For example, the dimensions of some of the elements in the figures may be exaggerated relative to other elements to help to improve understanding of embodiments of the present disclosure.

[0029] The apparatus and method components have been represented where appropriate by conventional symbols in the drawings, showing only those specific details that are pertinent to understanding the embodiments of the present disclosure so as not to obscure the disclosure with details that will be readily apparent to those of ordinary skill in the art having the benefit of the description herein.

DETAILED DESCRIPTION

[0030] Referring now to the figures generally wherein like numbered features shown therein refer to like elements throughout unless otherwise noted. The present disclosure relates to the healthcare field, and more particularly to a scope securing assembly that

provides both a positive indication that a medical device has not been used and quality control features that reduce the chances of infection.

[0031] FIGS. 1-4 and 11-12 illustrate a scope securing assembly 10 constructed in accordance with one example embodiment of the present disclosure. The scope securing assembly comprises proximal and distal ends 12 and 14, respectively. The assembly 10 includes a housing 16 at the proximal end 12 that in one example embodiment is cylindrical, but could include other geometries without departing from the spirit and scope of the present disclosure. In another example embodiment, the scope securing assembly 10 is formed from molded plastic.

[0032] The housing 16 includes a cap 18 and cylindrical wall 20 forming an annular opening 22 extending toward the distal end 14. Diametrically opposed and integrally molded into the housing 16 is a stem arrangement 24 and locking tab 26. The stem arrangement 24 comprises a planar body 28, dividing a tab or a holding member 30 and barb strip 32. The barb strip 32 includes a plurality of integrally molded and interconnected spherical barbs 34 having a diameter ("d"), as illustrated in FIG. 3. In an alternative example embodiment, the barb strip 32 is a zip-tie arrangement. The holding member can be grasped by a user and pulled to separate the holding member from the housing 16.

[0033] Located within the cap 18 is a window 36 that provides an aperture through the cap and into the annular opening 22. In the illustrated example embodiment, the window 36 is rectangular in shape. It should be appreciated that the window 36 could be constructed of other geometries without departing from the spirit and scope of the present disclosure.

[0034] The locking tab 26 is integrally molded and radially extends outward from the surface of the cap 18. The locking tab 26 comprises a funnel port 38 defining a throughpassage for passage of the barbs 34 on the barb strip 32. The throughpassage of the

funnel port 38 has a tapered inner wall constructed such that the barbs 34 can enter a relatively wider part of the throughpassage from a rear side 40 out a relatively narrower part of the throughpassageway on the top side 42 of the locking tab 26 in the direction of arrow A, as illustrated in FIG. 14. The funnel port 38 includes an opening that is smaller than the diameter of the barbs 34. The funnel port 38 also includes a diverging funnel, allowing the passage of the barbs 34 in a single direction. This construction of the funnel port 38 is such that once the barbs 34 pass through the port, the barb strip 32 cannot be removed or unlocked from the locking tab 26 without cutting and destroying the barb strip for reuse.

[0035] FIG. 1A is a magnified view of a locking tab 26 receiving a locking strip 32 constructed in accordance with one example embodiment of the present disclosure. Integrally molded into the locking tab 26 is a funnel port 38 that is generally circular having first and second openings, 38A and 38B, respectively. Wherein the second opening 38B has a diameter smaller than the first opening 38A and that is smaller than the diameter of each generally circular barb 32A-32NN on the barbed strip 32. The second opening 38B and funnel port 38 is relatively elastic and flexes outwardly as circular barbs 32A-32NN are pushed through the second opening of the funnel port. The second opening 38B relaxes to substantially its original diameter upon passage of each barb 32A-32NN of the barbed strip 32, allowing passage of the strip in a single direction as indicated by the arrow in FIG. 1A.

[0036] The FIG. 1B is a magnified view of a locking tab 26 receiving a locking strip 32 constructed in accordance with another example embodiment of the present disclosure. In this illustrated example embodiment, the barbed strip 32 defines a series of flexible tabs 32A-32NN that engage a flexible wall or tang 33 of a port or opening 35. The tabs 32A-32NN include an inclined plane (not shown) on one side only for contacting the tang and allowing passage of the strip 32 in a single direction as indicated by the arrow in FIG. 1B.

[0037] Illustrated in FIGS. 5-8 and 14-15 is a scope securing assembly 10 horizontally connected to a medical device 60 in accordance with one example embodiment of the present disclosure. The medical device 60 can be an endoscope, colonoscope, gastric scope, and the like. The scope securing assembly 10 that provides a positive indication that a medical device has not been used and quality control features that reduces the chances of infection. This is because of the construction of the scope securing assembly 10 described above is such that once the securing assembly is installed on the medical device 60, the device cannot be used until the assembly is removed. In addition, the design of the securing assembly 10 is such that it can only be installed one time, since either the locking tab 26 and/or barb strip 32 will be cut and destroyed upon removal. Thus, a securing assembly 10 connected to a medical device reassures that the device is both sterile and has not been used on another patient.

[0038] In an alternative example embodiment, the holding member 30 is removably connected to the housing 16. That is, once the securing assembly 10 is attached to the medical device 60, the holding member 30 can be peeled away from the housing 16 to allow the stem arrangement 24 to be released and the assembly to be removed from the device. As illustrated in FIG. 2, the holding member 30 is molded into the cap, but includes a relief indentation or line of weakness 31 along both sides of the member in the areas secured to the housing 16. The line of weakness 31 would allow the holding member 30 to be peeled away because of the housing 16 and holding member 30 are constructed of pliable plastic. Such removable peeling would be similar to protective seals on milk and drink containers.

[0039] While yet in another example embodiment, the assembly 10 is used to prevent re-use of the medical device once the device is no longer sterile. For example, a green colored assembly 10 is attached to the device 60 when it is available for use, the green color

signifies a sterile instrument. Once the medical device 60 is used or no longer sterile, a red colored assembly 10 is attached to the device, signifying a non-sterile instrument and preventing further use until the assembly is removed for cleaning.

[0040] Returning again to FIGS. 5-8 and 14-15, the assembly 10 and in particular, housing 16 is installed on the medical device 60 such that the annular opening 22 covers a portion of the device, preventing the device from being used on a patient. For example, the housing's annular opening 22 is designed to securely cover and prevent from being used without removal of the assembly 10 various features, such as, a light guide connector, video processor connector, dial, or gas/suction/water connectors (collectively "ports 62"), as illustrated in FIGS. 5-10 and 14-17. Stated another way, when a device 60 port 62 is covered or locked by the securing assembly 10, the medical device cannot be used.

[0041] As the port 62 of the medical device 60 is covered by the housing 16, as illustrated in FIG. 5, the barb strip 32 is bent or extended around the device as further illustrated in FIGS. 6-8 and 17. The planar surface 28 is flat to allow for bending and adjustment of the assembly 10 as it extends around devices 60 of varying size as illustrated in FIGS. 14 and 15. The barb strip 32 continues around the device 60 and passes through the locking tab 26 port 38 from the bottom side 40 to the top side 42 until the stem arrangement 24 is snug, locking the assembly 10 in place over the device port as illustrated in FIGS. 14 and 15. When the assembly 10 is locked on the device 60, the device cannot be used for its intended purpose until the stem arrangement 24 is broken or cut. Thus, the assembly 10 provides a secure indicator to medical personnel that the medical device 60 is sterile and not been previously used.

[0042] In another example embodiment, the assembly 10 is vertically connected or locked to a medical device 60 as illustrated in FIGS. 16 and 17. In this embodiment, the stem

arrangement 24 passes through an opening 64 in the device, locking it in the manner described above. In yet another example embodiment, the assembly from proximal 12 to distal ends 14 is approximately 30cm long and the housing 16 is approximately 5cm in diameter. It should be appreciated however that other sizes and dimensions are intended to be within the spirit and scope of the present disclosure.

[0043] As illustrated in FIG. 15, the window 36 provides an opening for viewing the port and dials/connectors located therein. The window 36 additionally provides an opening or clearance for various structures on, or sizes and shapes of, the medical device 60. In the illustrated example embodiment, the window is sized such that the port is exposed to sufficient air and/or light to allow for drying and to prevent microbial growth on the device 60.

[0044] In the foregoing specification, specific embodiments have been described. However, one of ordinary skill in the art appreciates that various modifications and changes can be made without departing from the scope of the disclosure as set forth in the claims below. Accordingly, the specification and figures are to be regarded in an illustrative rather than a restrictive sense, and all such modifications are intended to be included within the scope of present teachings.

[0045] The benefits, advantages, solutions to problems, and any element(s) that may cause any benefit, advantage, or solution to occur or become more pronounced are not to be construed as a critical, required, or essential features or elements of any or all the claims. The disclosure is defined solely by the appended claims including any amendments made during the pendency of this application and all equivalents of those claims as issued.

[0046] Moreover in this document, relational terms such as first and second, top and bottom, and the like may be used solely to distinguish one entity or action from another entity

or action without necessarily requiring or implying any actual such relationship or order between such entities or actions. The terms "comprises," "comprising," "has", "having," "includes", "including," "contains", "containing" or any other variation thereof, are intended to cover a non-exclusive inclusion, such that a process, method, article, or apparatus that comprises, has, includes, contains a list of elements does not include only those elements but may include other elements not expressly listed or inherent to such process, method, article, or apparatus. An element proceeded by "comprises ...a", "has ...a", "includes ...a", "contains ...a" does not, without more constraints, preclude the existence of additional identical elements in the process, method, article, or apparatus that comprises, has, includes, contains the element. The terms "a" and "an" are defined as one or more unless explicitly stated otherwise herein. The terms "substantially", "essentially", "approximately", "about" or any other version thereof, are defined as being close to as understood by one of ordinary skill in the art. In one non-limiting embodiment the terms are defined to be within for example 10%, in another possible embodiment within 5%, in another possible embodiment within 1%, and in another possible embodiment within 0.5%. The term "coupled" as used herein is defined as connected or in contact either temporarily or permanently, although not necessarily directly and not necessarily mechanically. A device or structure that is "configured" in a certain way is configured in at least that way, but may also be configured in ways that are not listed.

[0047] To the extent that the materials for any of the foregoing embodiments or components thereof are not specified, it is to be appreciated that suitable materials would be known by one of ordinary skill in the art for the intended purposes.

[0048] The Abstract of the Disclosure is provided to allow the reader to quickly ascertain the nature of the technical disclosure. It is submitted with the understanding that it

will not be used to interpret or limit the scope or meaning of the claims. In addition, in the foregoing Detailed Description, it can be seen that various features are grouped together in various embodiments for the purpose of streamlining the disclosure. This method of disclosure is not to be interpreted as reflecting an intention that the claimed embodiments require more features than are expressly recited in each claim. Rather, as the following claims reflect, inventive subject matter lies in less than all features of a single disclosed embodiment. Thus the following claims are hereby incorporated into the Detailed Description, with each claim standing on its own as a separately claimed subject matter.

CLAIMS

What is claimed is:

1. A securing assembly for a medical device comprising:

a housing having a cap at a first end and an opening at a second end spaced by an annular wall, the housing for covering a port on a medical device with the opening at the first end;

a stem arrangement integrally molded with and extending from said housing, the stem arrangement comprising a planar body and a barb strip having a plurality of barbs;

a locking tab integrally molded with and radially extending from said housing, the locking tab comprising a funnel port for one-way passage of said plurality of barbs, such that passage of at least one barb of the plurality of barbs is configured to lock the securing assembly to a medical device.

2. The securing assembly of claim 1 further comprising a window providing an opening in said cap to prevent microbial accumulation on the medical device.

3. The securing assembly of claim 1 further comprising a holding member molded with said housing and coupled to the locking tab and further comprising a line of weakness molded into one of the housing and the holding member for selectively separating the locking tab and holding member from said housing.

4. The securing assembly of claim wherein at least a portion of said assembly is coated to have one color if it is acceptable to use the medical device and is coated with a different color if use of the medical device is unacceptable.

5. A securing assembly for inhibiting use of a medical device to which the securing assembly is attached comprising:

a plastic housing for impeding use of the medical device when installed in overlying relation with a functional member of the medical device, said plastic housing comprising walls bounding a housing interior region and including an opening for insertion of the functional member of the medical device into the interior region bounded by walls of the plastic housing;

a flexible elongated plastic stem attached to and extending from said plastic housing, the plastic stem comprising a planar body at a proximal end of said stem nearest the housing and a distally located barb strip having a plurality of barbs; and

a plastic locking tab attached to and extending from said housing, the locking tab comprising a port for one-way passage of said an end of the barb strip such that passage of the barb strip into the port attaches the securing assembly to the medical device with the plastic housing overlying the functional member of the medical device and the planar body of said plastic stem in contact with an exposed surface of the medical device.

6. The securing assembly of claim 5 wherein the plastic housing includes an annular body that bounds the interior region.

7. The securing assembly of claim 5 additionally comprising a transparent window supported by the plastic housing to allow light to enter the interior region bounded by the plastic housing.

8. The securing assembly of claim 5 wherein an exterior of said securing assembly has a visual appearance indicating the medical device to which the securing assembly is attached should not

be used.

9. The securing assembly of claim 8 wherein the visual appearance is a color of an exterior of the securing assembly.

10. The securing assembly of claim 5 wherein the plastic stem and locking tab are integrally molded with the plastic housing and wherein an attachment of at least one of said flexible elongated plastic stem or said plastic locking tab includes a line of weakness to allow manual separation of the plastic stem or the locking tab from said housing.

11. The securing assembly of claim 5 wherein the port comprises a funnel port comprising a relatively wider entrance opening on an entrance side of the locking tab that narrows to a relatively narrow exit opening on an exit side of the locking tab to impede withdrawl of the barbed strip.

12. The securing assembly of claim 11 wherein the funnel port is generally circular, having first and second openings, wherein the second opening has a diameter smaller than the first opening and smaller than the diameter of each generally circular barb on said barbed strip, and further wherein the second opening is relatively elastic and flexes outwardly as circular barbs are pushed through the second opening of the funnel port, the second opening relaxing to substantially its original diameter upon passage of each barb of the barbed strip.

13. The securing assembly of claim 5 wherein the barbed strip defines a series of flexible tabs that engage a flexible wall of the port.

14. A method for inhibiting use of a medical device, the method comprising:

positioning a plastic housing having an interior region bounded by walls of the housing in an overlying position with respect to a functional member of the medical device for impeding use of the medical device with the plastic housing in said overlying position,

wrapping a flexible elongated plastic strap connected to the housing around a portion of the medical device,

passing a distal end of the elongated plastic strap through an attachment opening of a locking tab coupled to said housing, and

cinching the plastic housing in place by securing the distal end of the plastic strap to the locking tab with an extent of the elongated plastic strap in contact with a portion of the medical device.

15. The method of claim 14 wherein the step of cinching the plastic housing comprises passing a barbed end of the strap through a funnel shaped attachment opening of the locking tab.

16. The method of claim 14 wherein an engagement between the plastic housing and the strap includes a region of weakness and additionally comprising separating one end of strap from the plastic housing by breaking the connection between housing and strap in the region of weakness.

17. The method of claim 16 wherein the region of weakness is molded into a connection between the housing and the strap.

18. The securing assembly of claim 1 wherein the funnel port comprising a relatively wider entrance opening on an entrance side of the locking tab that narrows to a relatively narrow exit opening on an exit side of the locking tab to impede withdrawl of the barbed strip.

19. The securing assembly of claim 1 wherein the funnel port is generally circular, having first and second openings, wherein the second opening has a diameter smaller than the first opening and smaller than the diameter of each generally circular barb on said barbed strip, and further wherein the second opening is relatively elastic and flexes outwardly as circular barbs are pushed through the second opening of the funnel port, the second opening relaxing to substantially its original diameter upon passage of each barb of the barbed strip.

20. The securing assembly of claim 1 wherein the barbed strip defines a series of flexible tabs that engage a flexible wall of the port.

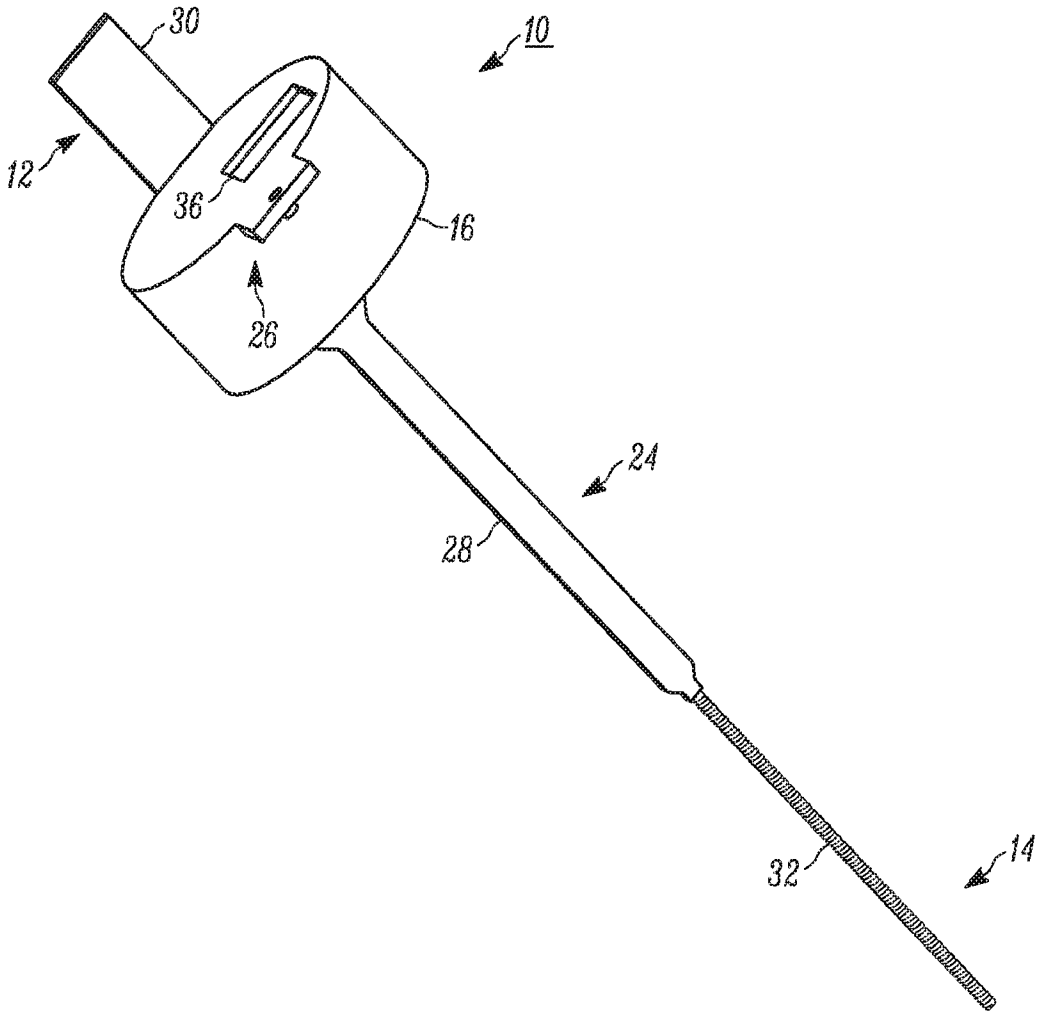

FIG. 1

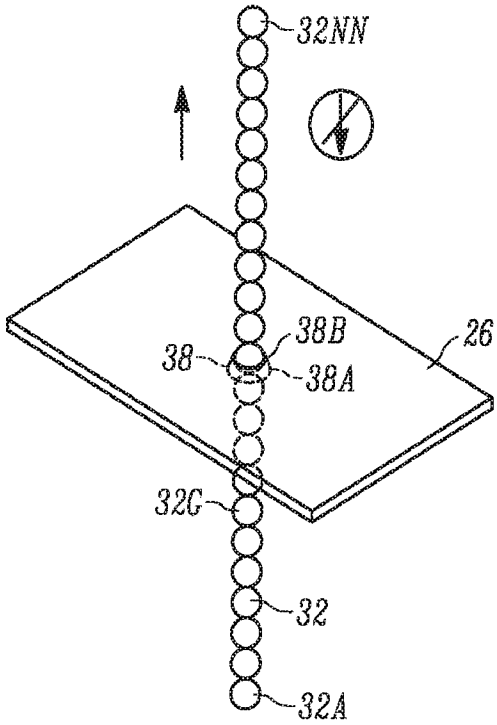

FIG. 1A

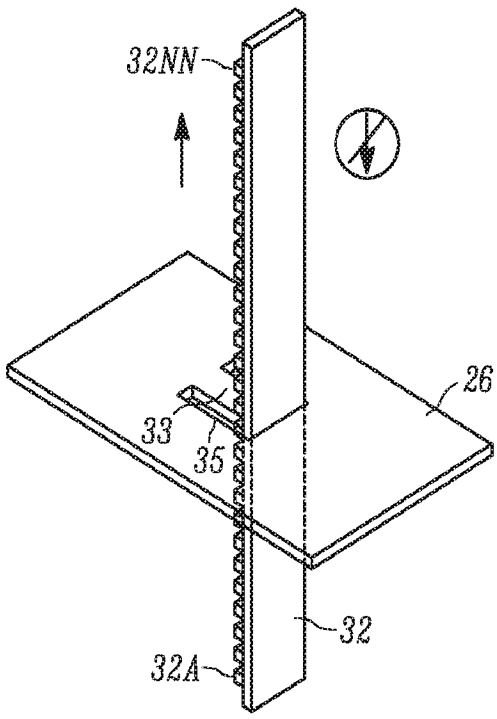

FIG. 1B

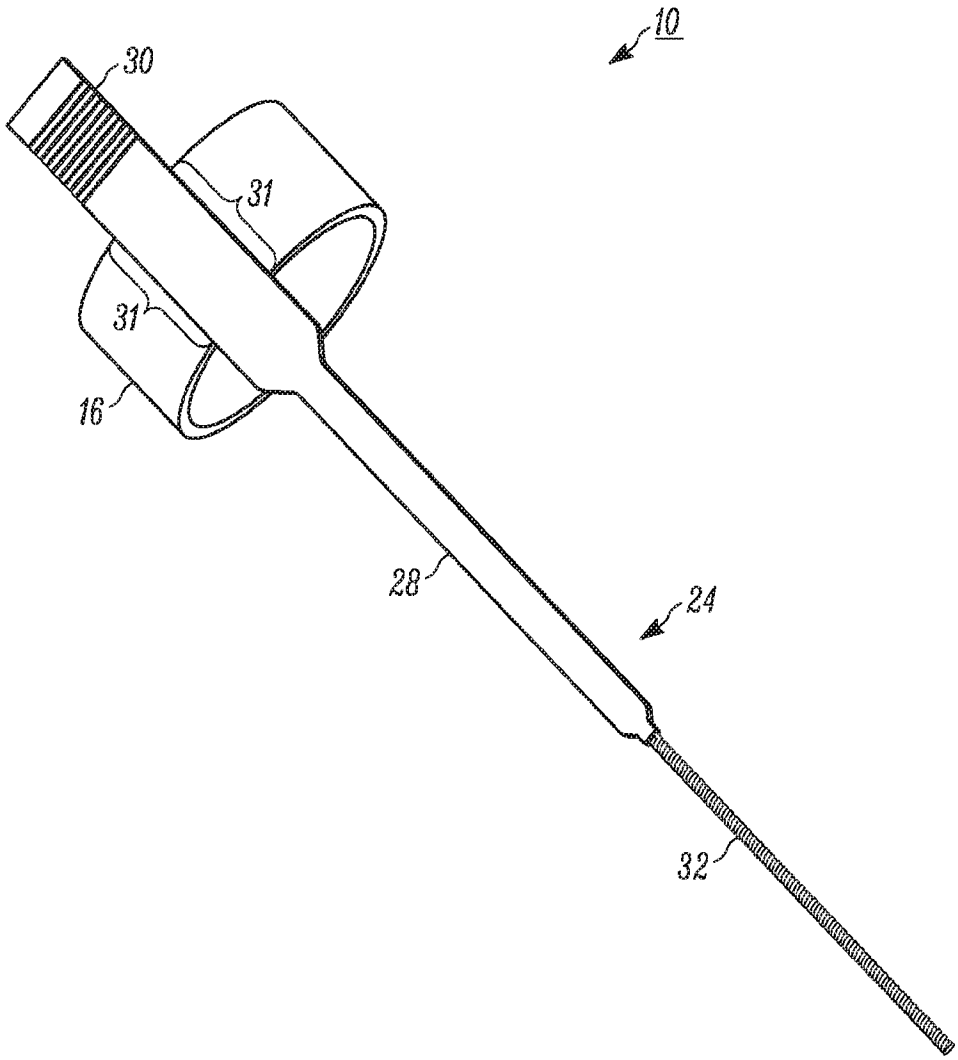

FIG. 2

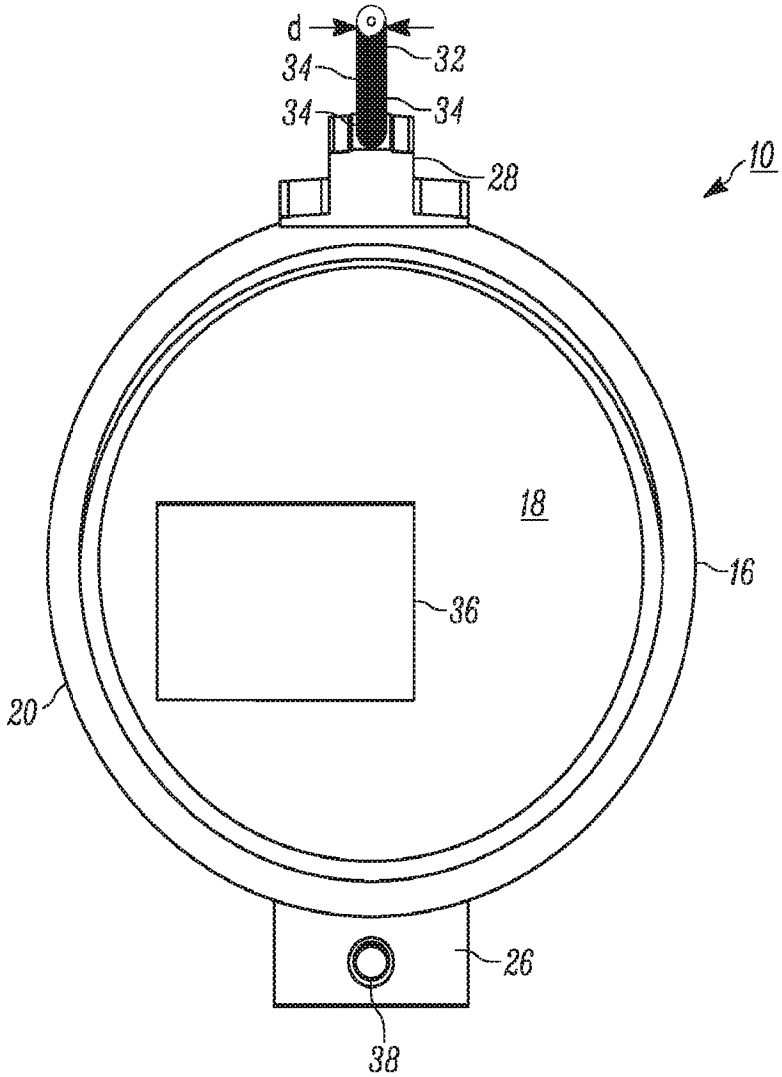

FIG. 3

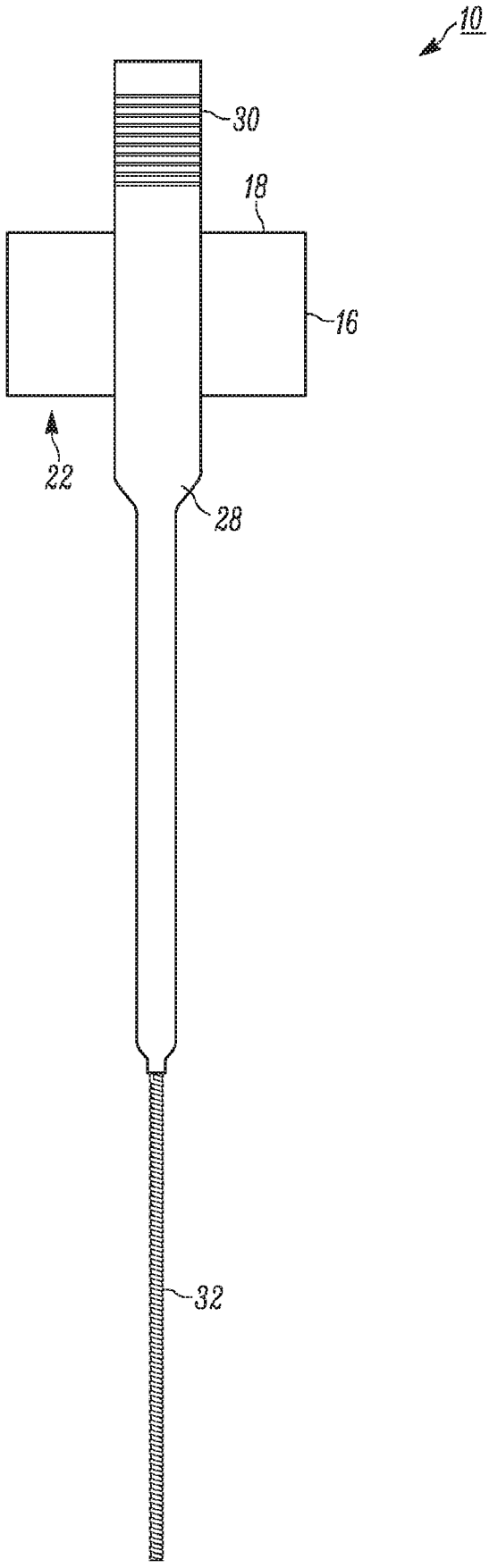

FIG. 4

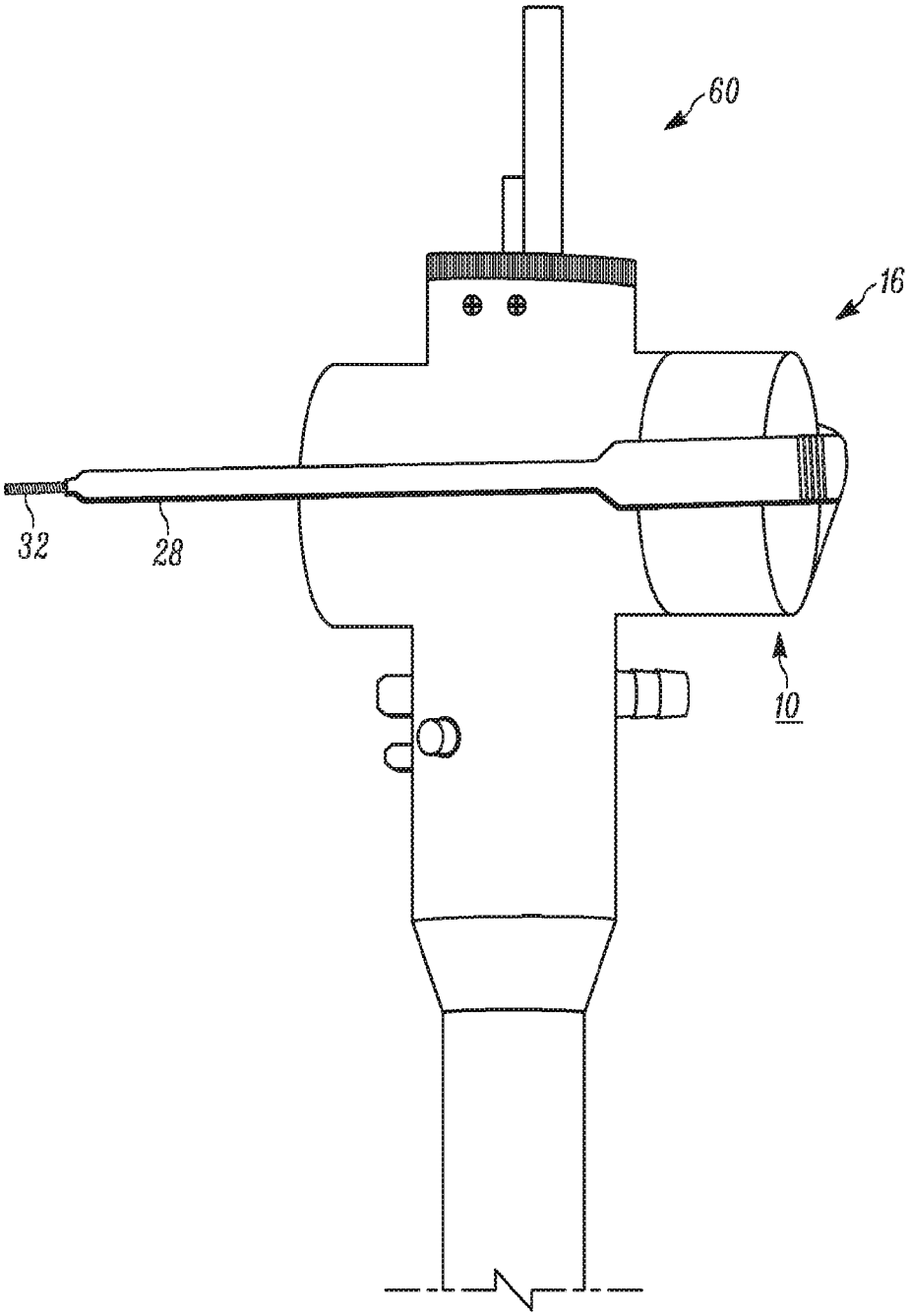

FIG. 5

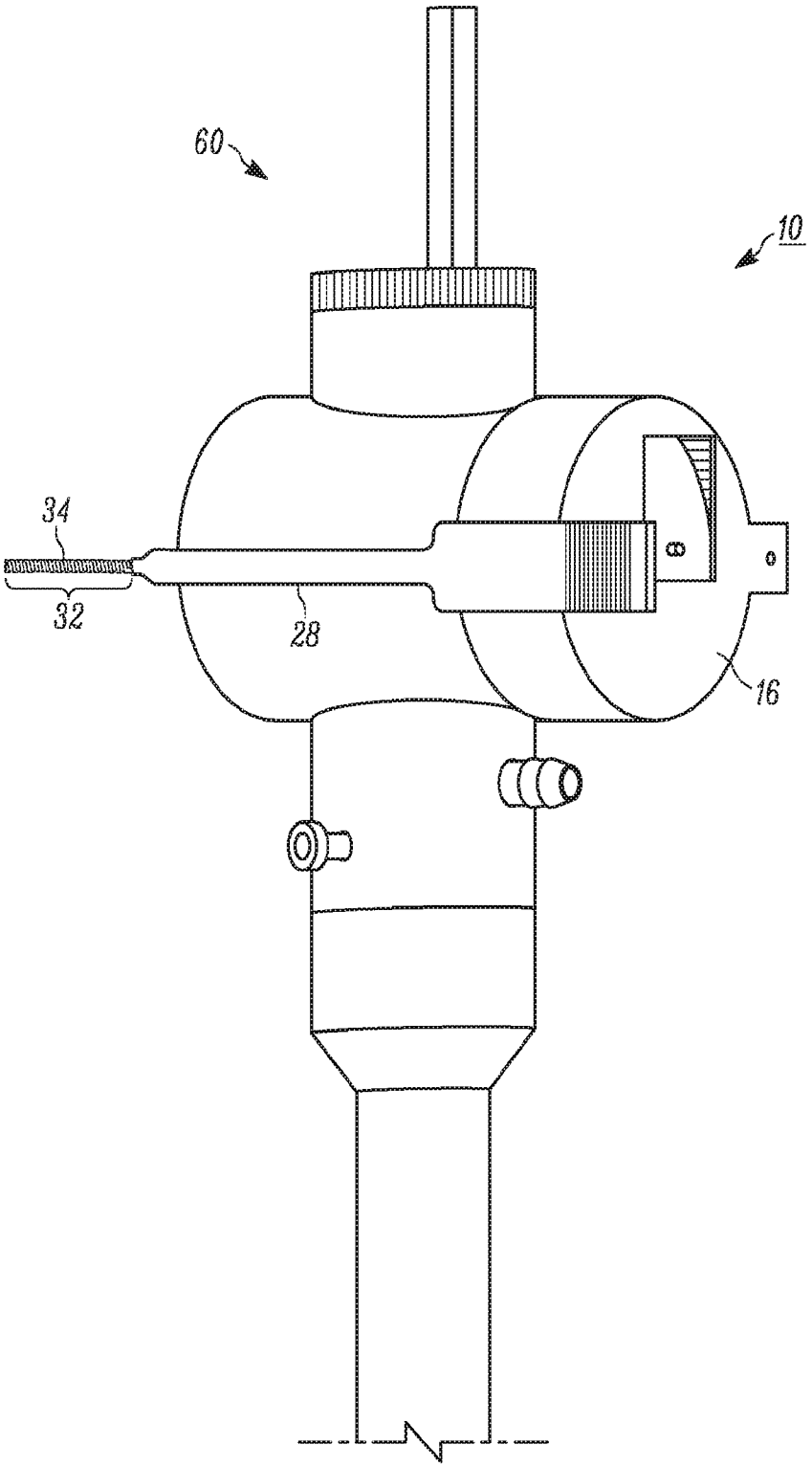

FIG. 6

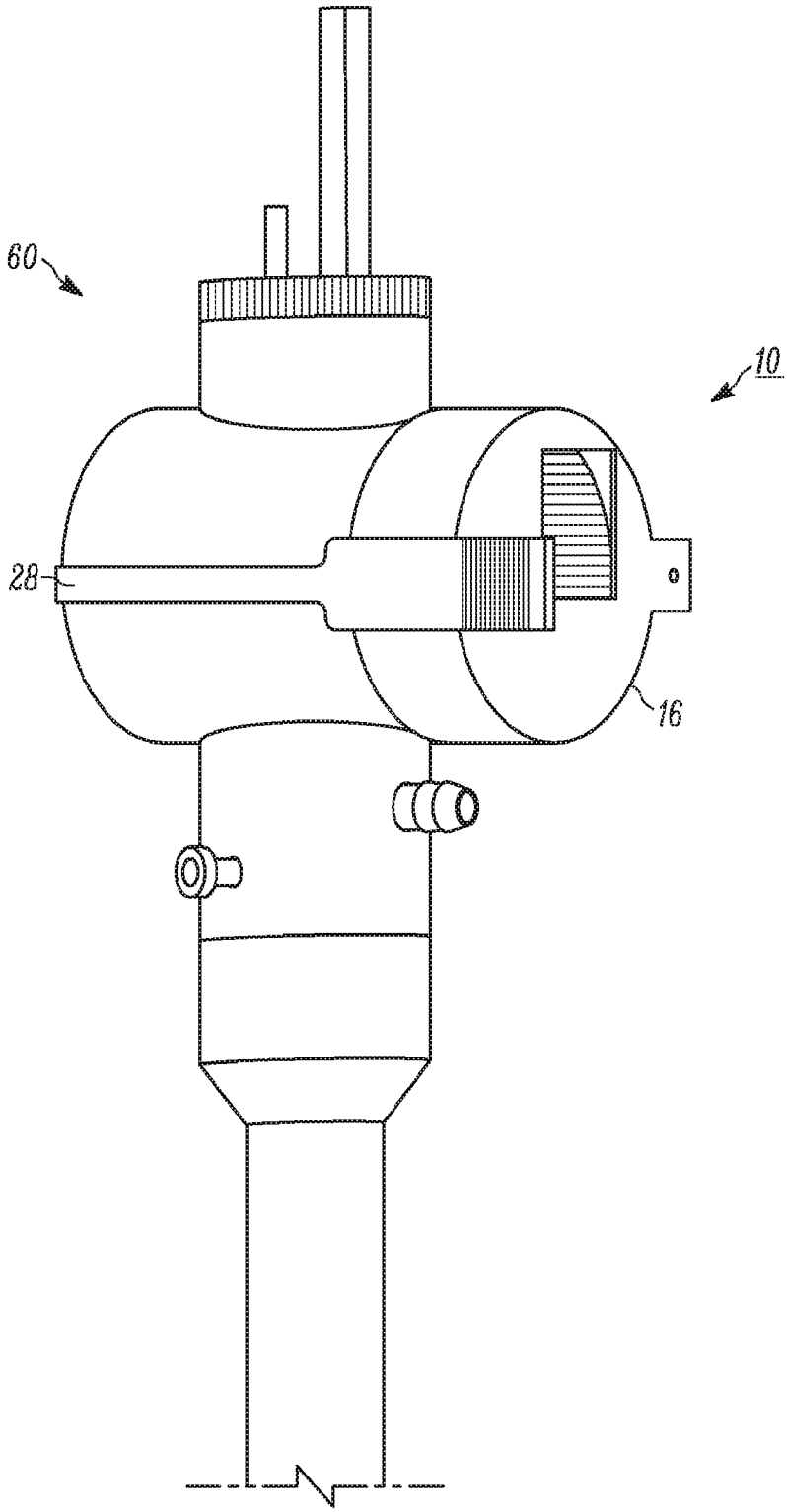

FIG. 7

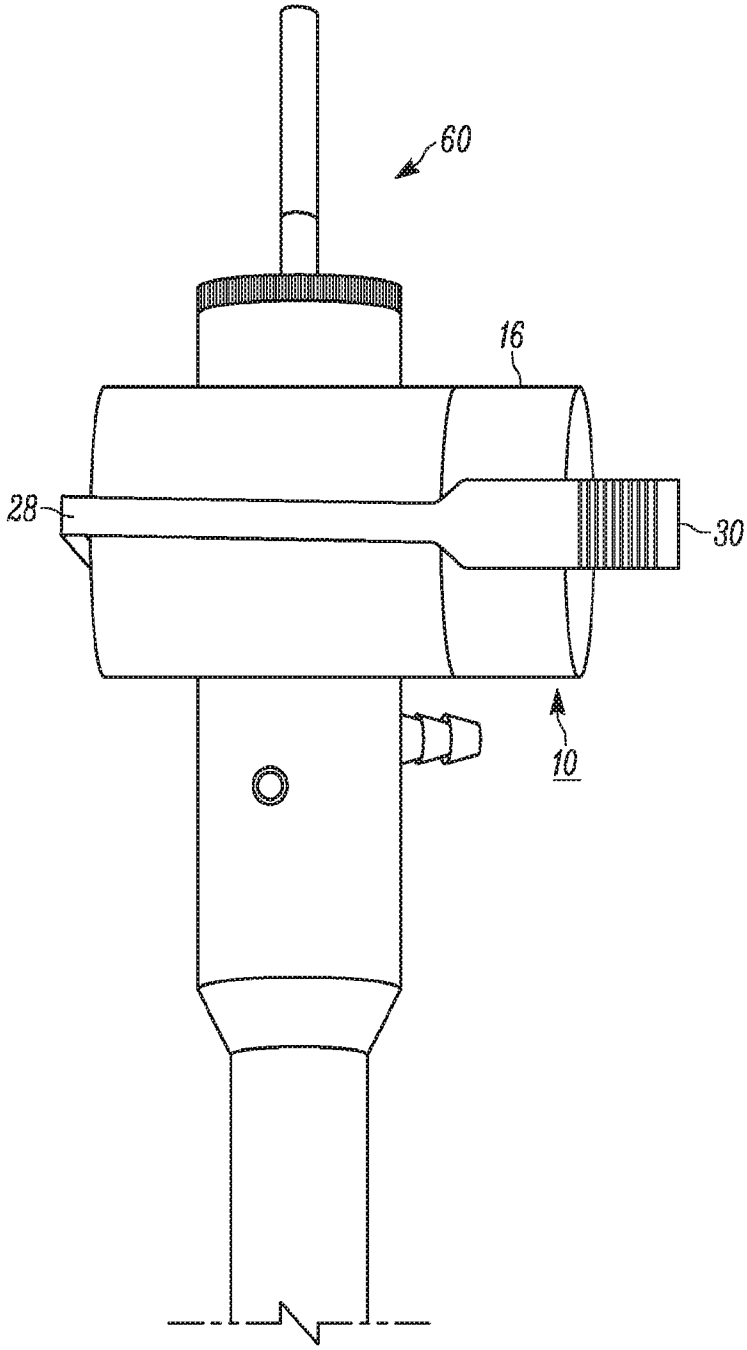

FIG. 8

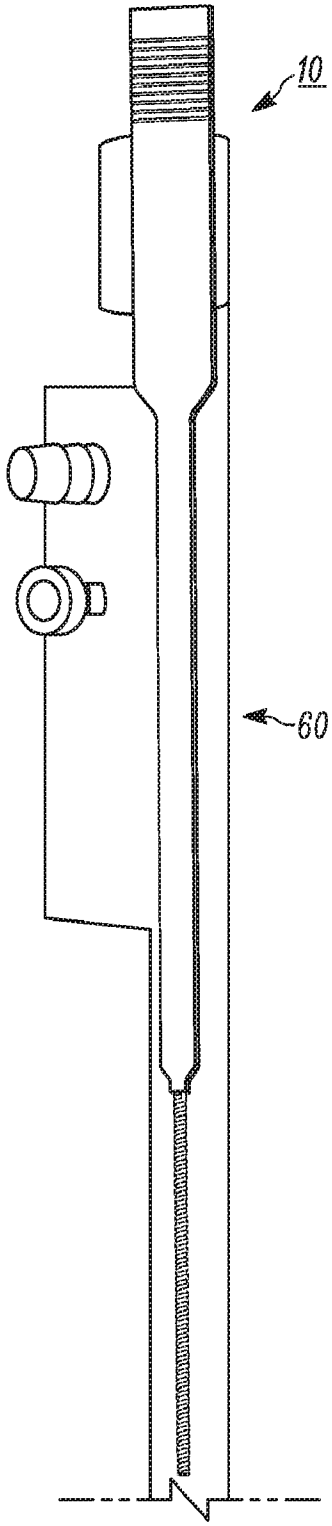

FIG. 9

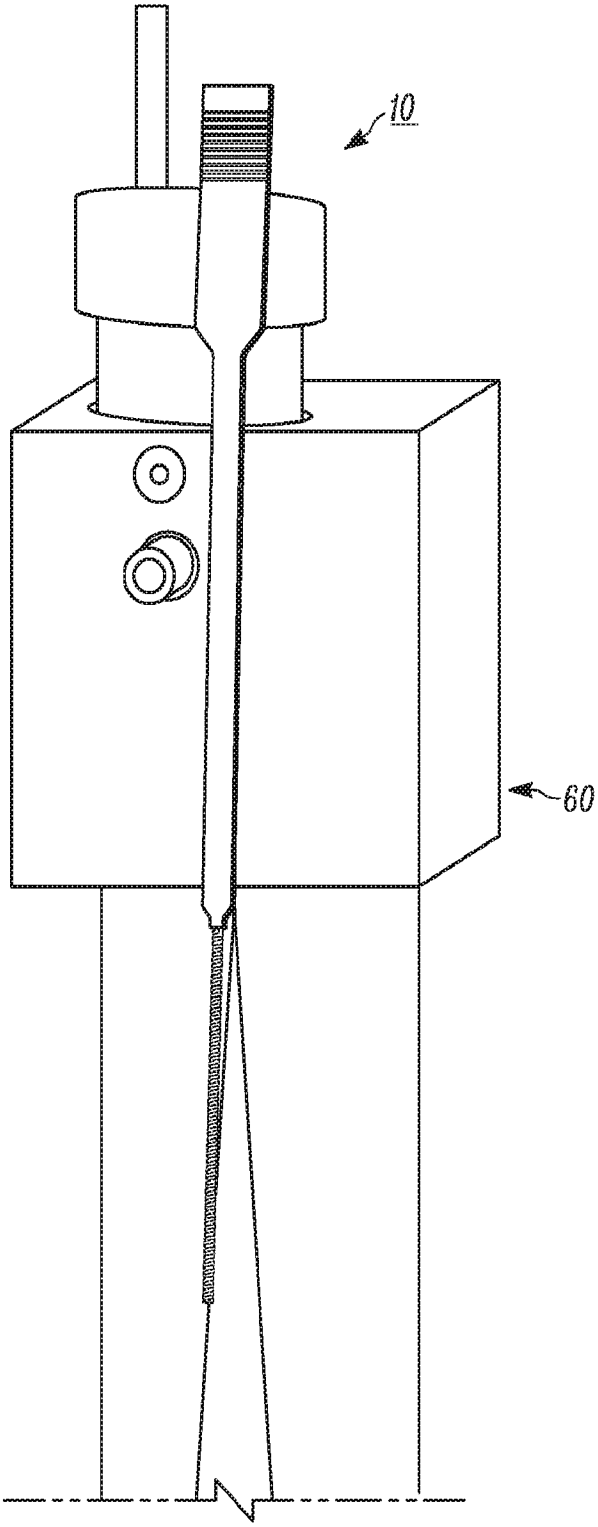

FIG. 10

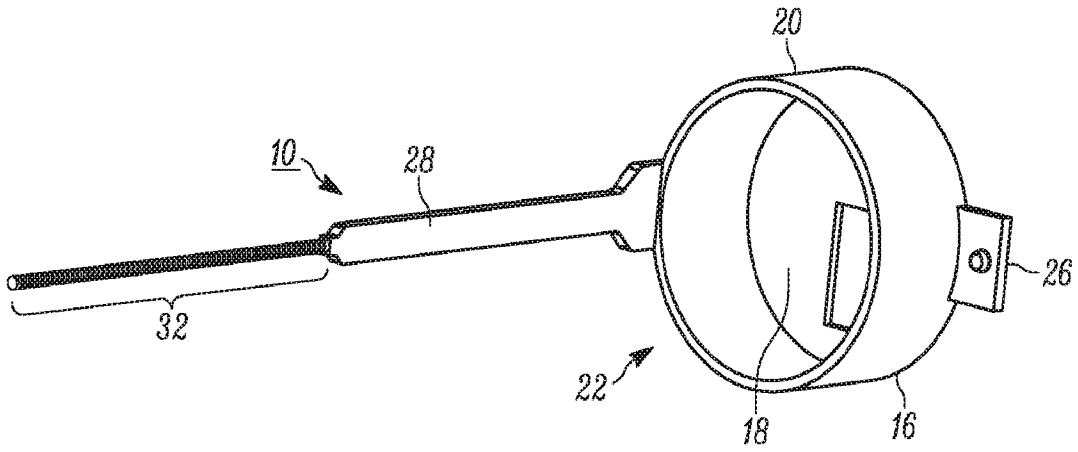

FIG. 11

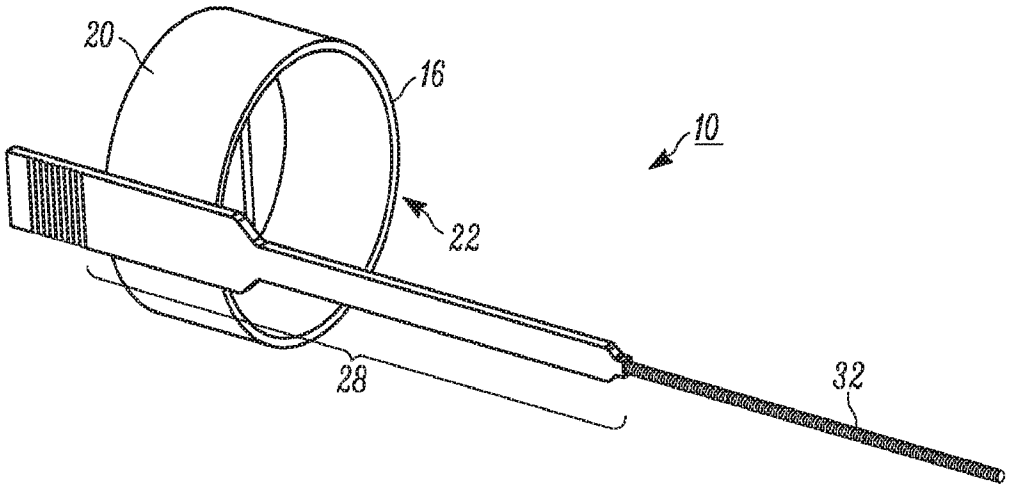

FIG. 12

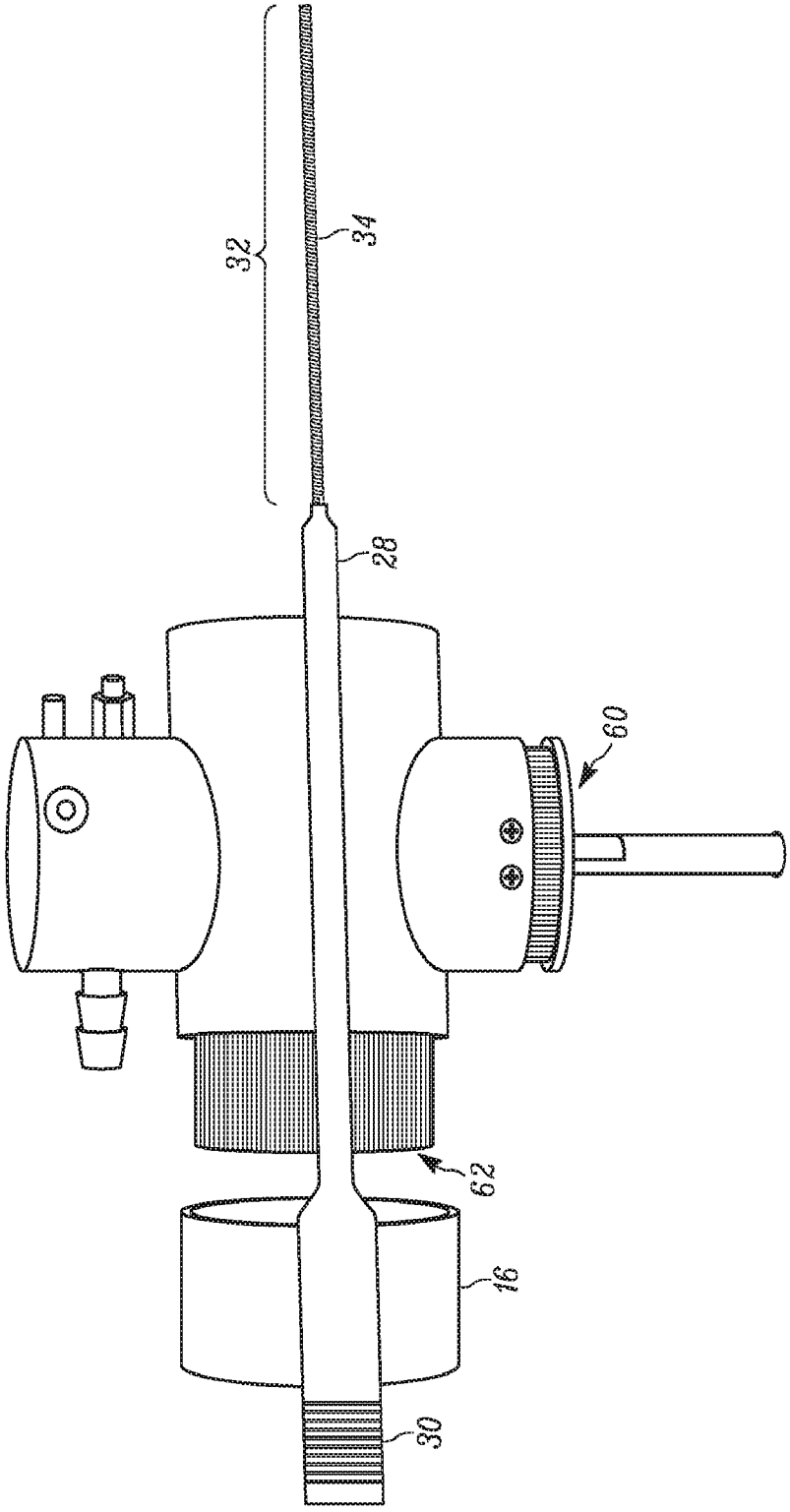

FIG. 13

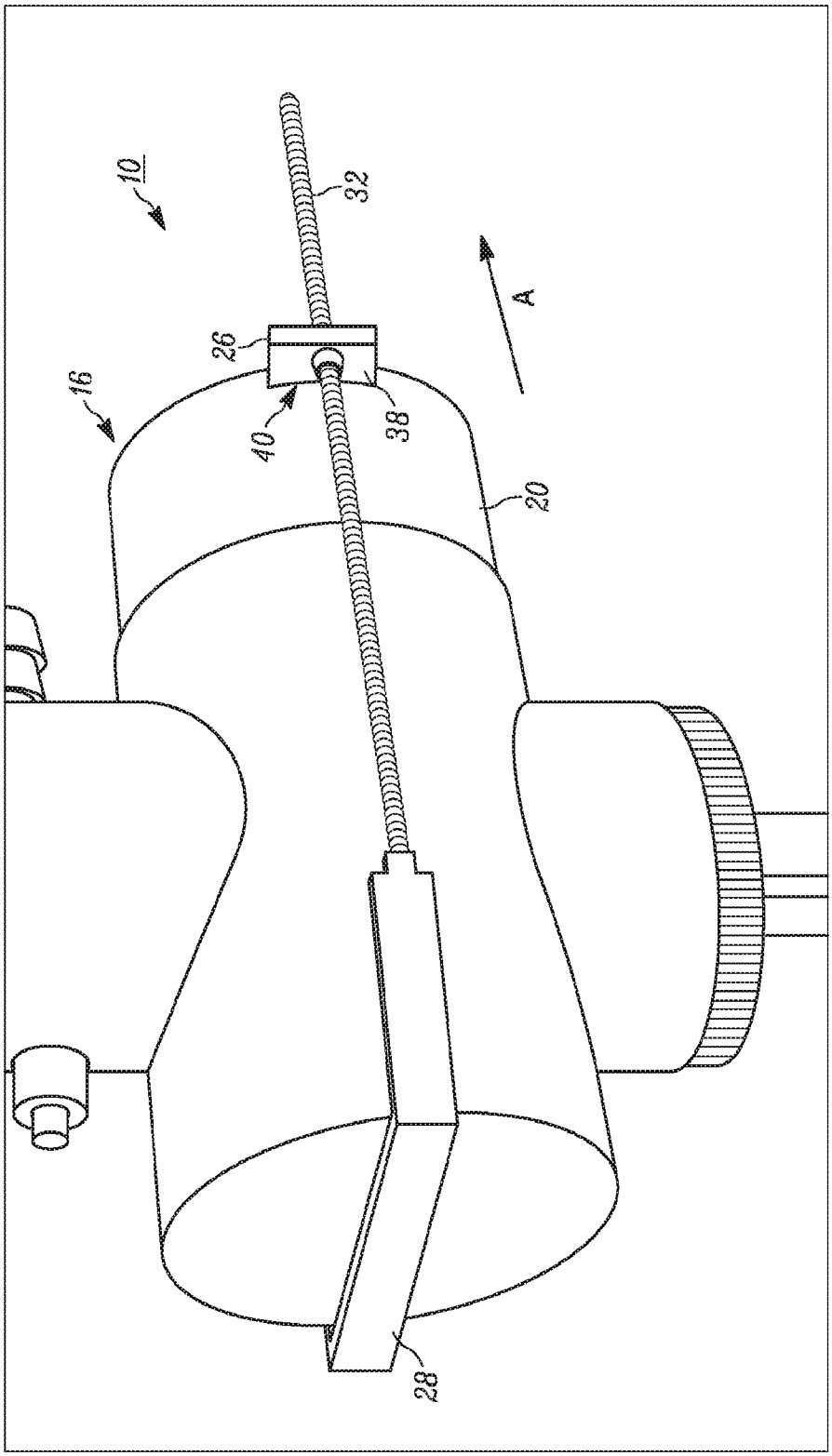

FIG. 14

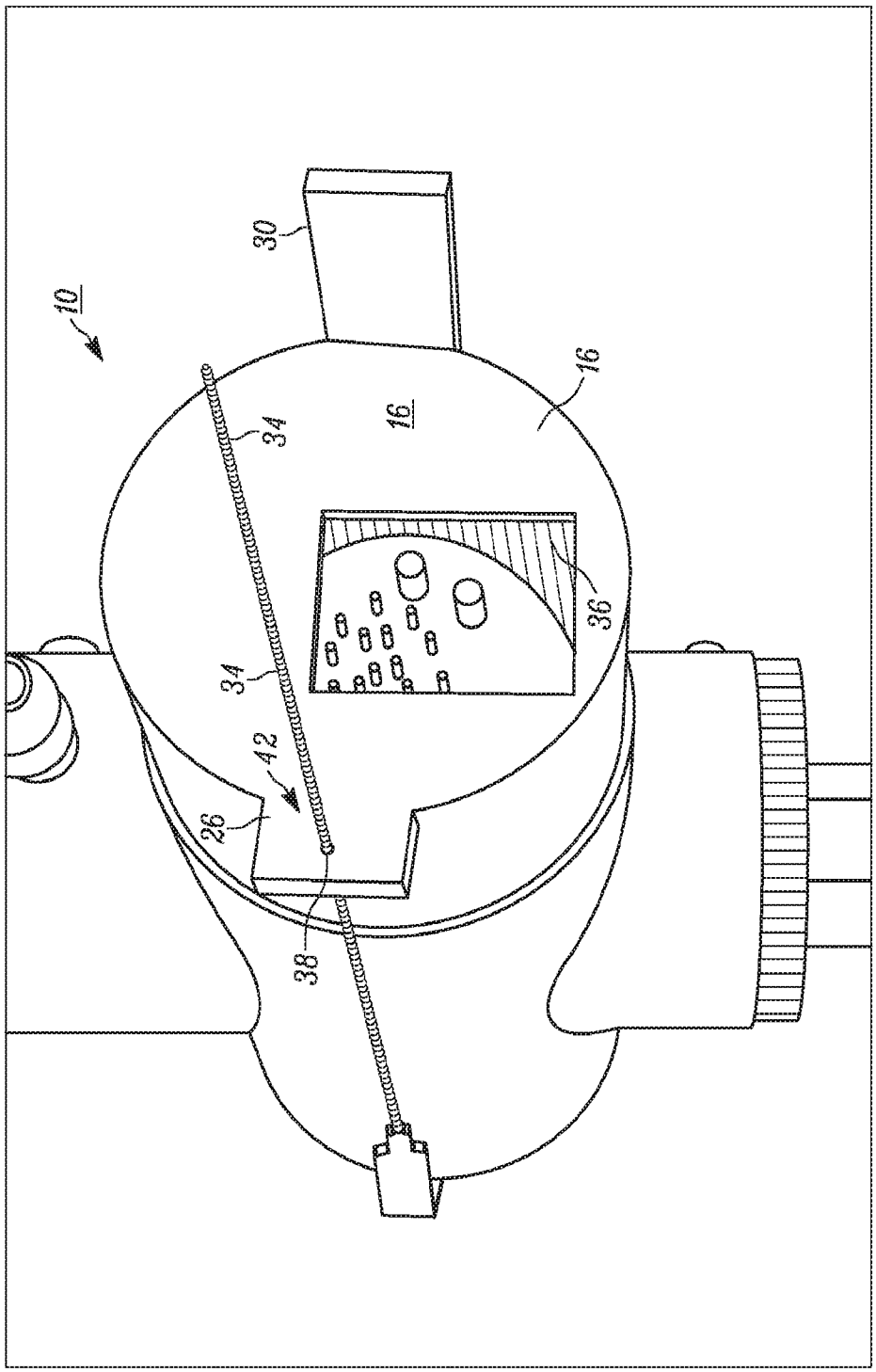

FIG. 15

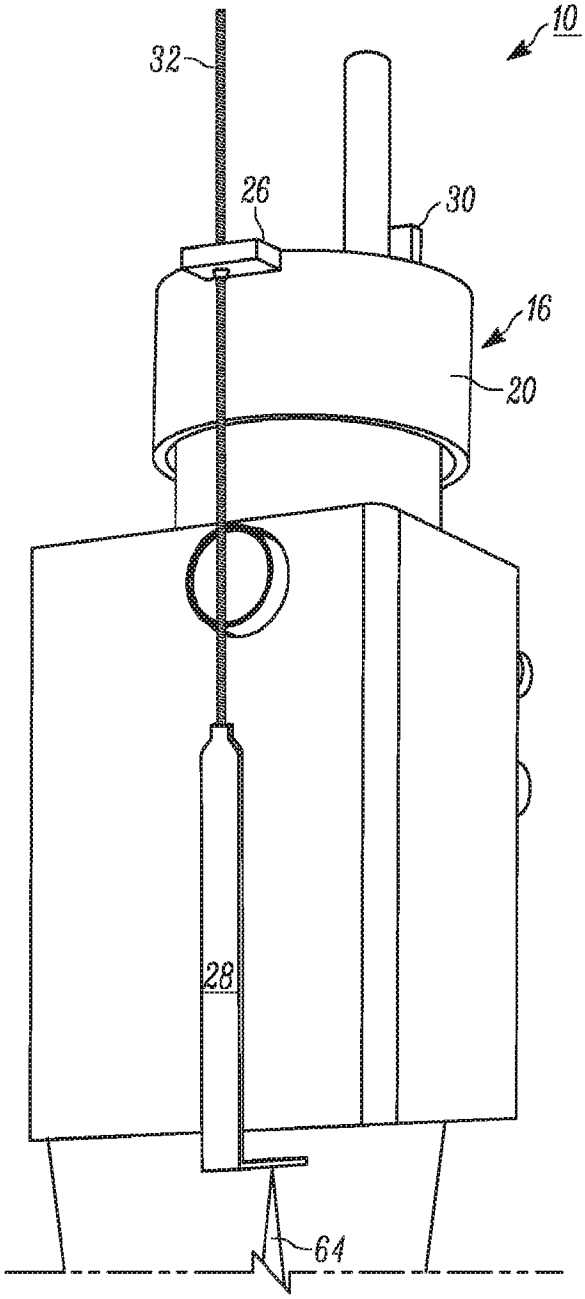

FIG. 16

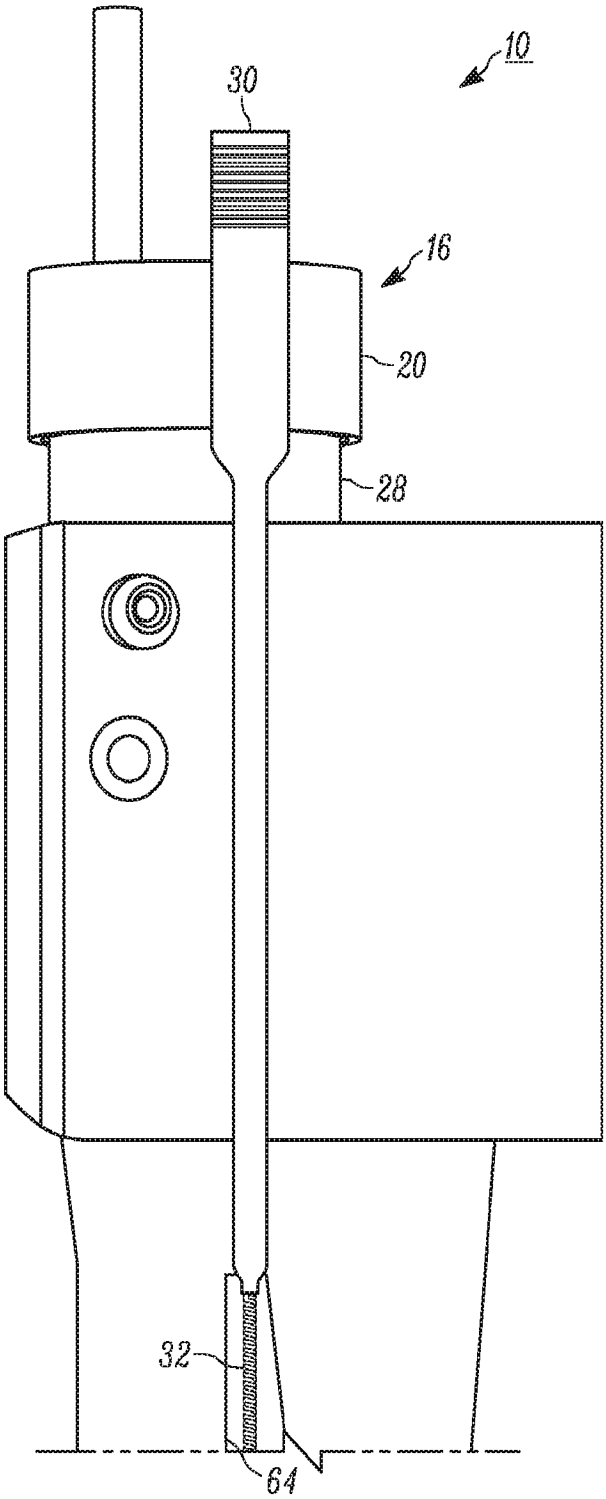

FIG. 17

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US16/22123

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - B65D 41/32; B65D 17/28; B65D 50/00; A61B 19/02 (2016.01)
CPC - B65D 41/32; B65D 03/1027, A61B 1/00137; A61B 1/0014
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC: F16L 3/233; B65D 17/28, 41/32, 41/52, 50/00, 55/16, 63/10, 81/02; G02B 23/16; A61B 19/02, 50/30 (2016.01)
CPC: F16L 3/2336; B65D 17/28, 41/32, 55/16, 63/10, 81/053, 2101/0038; G08B 13/2434; G02B 23/16; F41G 1/383; A61B 1/00142

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC: 248/74.3; 215/201; 340/572.9; 42/129; 359/511; 220/375; 600/121

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PatSeer (US, EP, WO, JP, DE, GB, CN, FR, KR, ES, AU, IN, CA, INPADOC Data); Google; Google Scholar; EBSCO; Search Terms: cap, cover, lid, strap, tie, strip, tape, stem, band, wrap, secure, lock, indicate, flag, identify, mark, tag, label, integral, unitary, one-piece, mold, ratchet, barb, teeth, tooth, bead, pawl, plastic, window, transparent, medical device, pipe, protect, color

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X -- Y	US 6,227,399 B1 (ANGUS, M. et al) 08 May 2001 (08.05.2001) figures 1, 5; column 1, lines 5-10; column 2, lines 1-10, 30-35, 55-60; column 3, lines 10-15, 30-40	1, 3, 5, 6, 10 ---------- 2, 4, 7-9, 11-20
Y	US 6,117,163 A (BIERMAN, S.) 12 September 2000 (12.09.2000) figures 2-4; column 4, lines 25-30; column 5, lines 1-15, 40-50	11-13, 15, 18-20
Y	US 2008/0004605 A1 (BERNDT, M.) 03 January 2008 (03.01.2008) figure 1; paragraphs [0002], [0019], [0020]	4, 8, 9
Y	US 2,691,992 A (PHILLIPS, S.) 19 October 1954 (19.10.1954) figure 1; column 3, lines 50-60	2
Y	US 6,578,418 B2 (DILLON, R.) 17 June 2002 (17.06.2002) figure 2; column 4, lines 1-10	7
Y	US 2004/0188302 A1 (ROGERS, J.) 30 September 2004 (30.09.2004); paragraph [0042]	14-17
A	US 5,397,012 A (TISON, M. et al) 14 March 1995 (14.03.1995) entire document	1-20
A	US 5,012,941 A (ABRAMS, R. et al) 07 May 1991 (07.05.1991) entire document	1-20
A	US 7,488,286 B2 (JAMES, M. et al) 10 February 2009 (10.02.2009) entire document	1-20

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:
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"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
11 May 2016 (11.05.2016)	03 JUN 2016
Name and mailing address of the ISA/ Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-8300	Authorized officer Shane Thomas PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (January 2015)