



(86) Date de dépôt PCT/PCT Filing Date: 2019/07/31

(87) Date publication PCT/PCT Publication Date: 2021/02/04

(45) Date de délivrance/Issue Date: 2024/06/11

(85) Entrée phase nationale/National Entry: 2022/01/26

(86) N° demande PCT/PCT Application No.: US 2019/044348

(87) N° publication PCT/PCT Publication No.: 2021/021159

(51) Cl.Int./Int.Cl. *A61M 1/14* (2006.01),
A61M 1/16 (2006.01), *A61M 1/20* (2006.01),
A61M 1/34 (2006.01), *A61M 31/00* (2006.01)

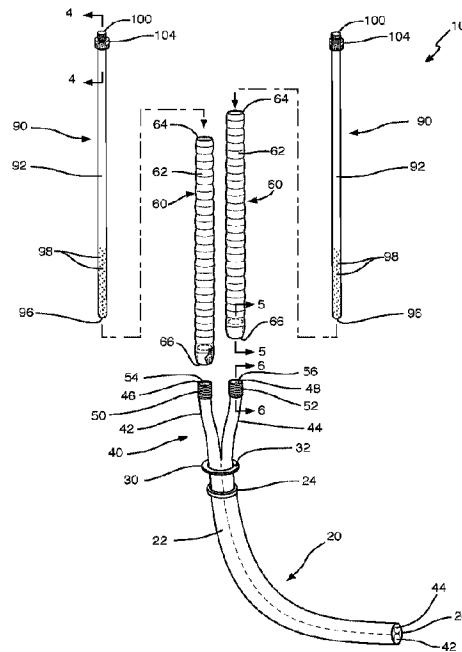
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(54) Titre : ENSEMBLE D'ACCES POUR UNE ADMINISTRATION PAR HEMODIALYSE

(54) Title: ACCESSING ASSEMBLY FOR HEMODIALYSIS ADMINISTRATION



(57) **Abrégé/Abstract:**

An accessing assembly for hemodialysis administration (10), having an intravascular tube assembly (20), a conduit assembly (40), first and second catheter sleeve assemblies (60), and first and second catheter assemblies (90). The intravascular tube assembly (20) has an intravascular tube (22) and a subcutaneous cuff (24). The conduit assembly (40) has first and second conduits (42 and 44) having respective conduit threading (50 and 52). The first and second catheter sleeve assemblies (60) have collapsible sidewalls (62), which define cavities (70) respectively, and couplers (76) are defined within the cavities (70). The first and second catheter assemblies (90) have catheter sidewalls (92) and fasteners (104), respectively. The intravascular tube (22) is implanted within a vascular structure. The catheter sidewalls (92) are positioned inside to respective collapsible sidewalls (62). The collapsible sidewalls (62) are collapsed until respective fasteners (104) are threaded onto respective couplers (76).

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property

Organization

International Bureau

(43) International Publication Date

04 February 2021 (04.02.2021)



(10) International Publication Number

WO 2021/021159 A1

(51) International Patent Classification:

A61M 1/14 (2006.01)

A61M 1/34 (2006.01)

A61M 1/16 (2006.01)

A61M 25/40 (2006.01)

A61M 1/20 (2006.01)

A61M 31/00 (2006.01)

(21) International Application Number:

PCT/US2019/044348

(22) International Filing Date:

31 July 2019 (31.07.2019)

(25) Filing Language:

English

(26) Publication Language:

English

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA,

SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— of inventorship (Rule 4.17(iv))

Published:

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

(54) Title: ACCESSING ASSEMBLY FOR HEMODIALYSIS ADMINISTRATION

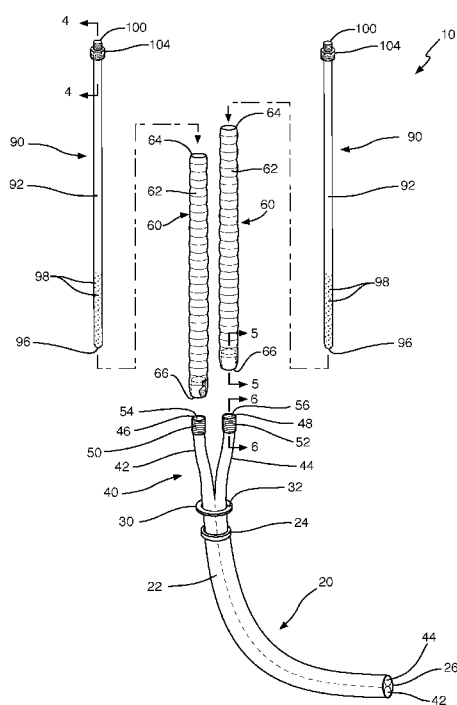


Fig. 1

(57) Abstract: An accessing assembly for hemodialysis administration (10), having an intravascular tube assembly (20), a conduit assembly (40), first and second catheter sleeve assemblies (60), and first and second catheter assemblies (90). The intravascular tube assembly (20) has an intravascular tube (22) and a subcutaneous cuff (24). The conduit assembly (40) has first and second conduits (42 and 44) having respective conduit threading (50 and 52). The first and second catheter sleeve assemblies (60) have collapsible sidewalls (62), which define cavities (70) respectively, and couplers (76) are defined within the cavities (70). The first and second catheter assemblies (90) have catheter sidewalls (92) and fasteners (104), respectively. The intravascular tube (22) is implanted within a vascular structure. The catheter sidewalls (92) are positioned inside to respective collapsible sidewalls (62). The collapsible sidewalls (62) are collapsed until respective fasteners (104) are threaded onto respective couplers (76).



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I. TITLE: ACCESSING ASSEMBLY FOR HEMODIALYSIS ADMINISTRATION

II. FIELD OF THE INVENTION

The present invention relates to medical devices, and more particularly, to accessing assemblies for hemodialysis.

5

III. DESCRIPTION OF THE RELATED ART

Applicant believes the closest references corresponds to:

- U.S. Patent No. 4762517 issued to McIntyre, et al. on
10 August 9, 1988 for Subcutaneously-implanted drug delivery system for intravenous injections, and the like.
- U.S. Patent No. 4778452 issued to Moden, et al. on October 18, 1988 for Implantable infusion port.
- U.S. Patent No. 5026344 issued to Dijkstra, et al. on June
15 25, 1991 for Implantable injection chamber device.
- U.S. Patent No. 5527278 issued to Ensminger, et al. on June 18, 1996 for Implantable access devices.
- U.S. Patent No. 5628784 issued to Ernst P. Strecker on May 13, 1997 for Endoprosthesis that can be percutaneously
20 implanted in the body of a patient.
- U.S. Patent No. 5848989 issued to Giuseppe Villani on December 15, 1998 for Implantable port with low profile housing for delivery/collection of fluids and implantation method.

- U.S. Patent No. 6053901 issued to Finch Jr., et al. on April 25, 2000 for Subcutaneously implanted cannula and method for arterial access.
- U.S. Patent No. 6398764 issued to Finch Jr., et al. on June 4, 2002 for Subcutaneously implanted cannula and method for arterial access.
- U.S. Patent No. 6582409 issued to Rafael Squitieri on June 24, 2003 for Hemodialysis and vascular access systems.
- Applicant believes that another reference corresponds to U.S. Patent No. 7261705 issued to Edoga, et al. on August 28, 2007 for Implantable dialysis access port.
- U.S. Patent No. 7632263 issued to Denoth, et al. on December 15, 2009 for Connecting device for percutaneously implanted port system.
- U.S. Patent No. 7699821 issued to Piotr Nowak on April 20, 2010 for Multi-functional port.
- U.S. Patent No. 7803143 issued to Tallarida, et al. on September 28, 2010 for Implantable hemodialysis access device.
- U.S. Patent No. 7828781 issued to Edoga, et al. on November 9, 2010 for Implantable dialysis access port.
- U.S. Patent No. 7850666 issued to Schon, et al. on December 14, 2010 for Catheter infusion port.
- U.S. Patent No. 8079990 issued to Powley, et al. on December 20, 2011 for Implantable catheter port.
- U.S. Patent No. 8182453 issued to Kenneth Arden Eliassen on May 22, 2012 for Volume reducing reservoir insert for an infusion port.

- U.S. Patent No. 8262629 issued to Oster, et al. on September 11, 2012 for Catheter port.
- U.S. Patent No. 8337464 issued to Young, et al. on December 25, 2012 for Vascular access ports and related
5 methods.
- U.S. Patent No. 8377014 issued to Jean-Paul Ricol on February 19, 2013 for Implantable site with a casing having multiple perforations.
- U.S. Patent No. 8398577 issued to Daniel R. Burnett on
10 March 19, 2013 for Implantable fluid management device for the removal of excess fluid.
- U.S. Patent No. 8608728 issued to Michels, et al. on December 17, 2013 for Delivery system and method.
- U.S. Patent No. 8708979 issued to Honaryar, et al. on April
15 29, 2014 for Implantable coupling device.
- U.S. Patent No. 8852160 issued to Schweikert, et al. on October 7, 2014 for Venous access port with molded and/or radiopaque indicia.
- U.S. Patent No. 8852217 issued to Woodruff, et al. on
20 October 7, 2014 for Implantable injection port with tissue in-growth promoter.
- U.S. Patent No. 8858514 issued to Pierre Sarradon on October 14, 2014 for Internal device for injection and sampling of a liquid inside a living organism.
- 25 • U.S. Patent No. 8876788 issued to Bradley J. Glenn on November 4, 2014 for Stabilized implantable vascular access port.

- U.S. Patent No. 8882728 issued to Harders, et al. on November 11, 2014 for Implantable Injection Port.
- U.S. Patent No. 8926573 issued to Smith, et al. on January 6, 2015 for Implantable access port.
- 5 • U.S. Patent No. 8932271 issued to Hamatake, et al. on January 13, 2015 for Implantable medical devices including septum-based indicators.
- U.S. Patent No. 8974422 issued to Gill, et al. on March 10, 2015 for Neurological apparatus comprising a percutaneous
10 access device.
- U.S. Patent No. 9033931 issued to Young, et al. on May 19, 2015 for Subcutaneous vascular access ports having attachment features.
- U.S. Patent No. 9174037 issued to Schutz, et al. on
15 November 3, 2015 for Implanted access port.
- U.S. Patent No. 9295809 issued to Kevin W. Sheetz on March 29, 2016 for Fixation and protection of an implanted medical device.
- U.S. Patent No. 9415187 issued to Charles W. Agnew on
20 August 16, 2016 for Dialysis catheter.
- U.S. Patent No. RE44639 issued to Rafael P. Squitieri on December 10, 2013 for Hemodialysis and vascular access system.
- U.S. Application Publication No. 2011/0125129 published
25 to Mark A. Saab on May 26, 2011 for Medical device with adjustable tissue ingrowth cuff.

The prior art, however, fails to teach, disclose or even suggest the limitations of the claimed invention.

Other patents describing the closest subject matter provide for a number of more or less complicated features that fail to solve the problem in an efficient and economical way. None of these patents suggest the novel features of the present invention.

IV. SUMMARY OF THE INVENTION

10

The present invention is an accessing assembly for hemodialysis administration, comprising an intravascular tube assembly, a conduit assembly, first and second catheter sleeve assemblies, and first and second catheter assemblies.

15

The intravascular tube assembly comprises an intravascular tube, a subcutaneous cuff, a tube end and a ring with a hole. The conduit assembly comprises first and second conduits having respective first and second conduit threading. The conduit assembly further comprises first and second ends having respective first and second diaphragms. The first and second conduits are joined within the intravascular tube and extend together therefrom until a bifurcation whereby the first and second conduits separate.

20

The first and second catheter sleeve assemblies comprise first and second collapsible sidewalls, first and second ends, and first and second joining ends respectively. The first and second

collapsible sidewalls define respective first and second cavities and first and second couplers are defined within the first and second cavities respectively, extending from the first and second joining ends respectively. The first and second couplers comprise
5 respective first and second external threads and respective first and second internal threads.

The first and second catheter assemblies comprise first and second catheter sidewalls respectively, which comprise respective
10 first and second inlet/outlet ends and respective first and second internal ends. The first and second catheter assemblies further comprise respective first and second fasteners having respective first and second fastener internal threading. The first and second catheter assemblies further comprise respective first and
15 second catheter external threading. The first and second catheter sidewalls comprise a plurality of holes extending from first and second internal ends respectively.

The intravascular tube is implanted within a vascular structure.
20 The ring is surgically fixed onto a patient through the hole. The first and second couplers are positioned onto respective first and second conduits, whereby respective first and second internal threads are threaded onto respective first and second conduit threading. The first and second catheter sidewalls are positioned
25 inside to respective first and second collapsible sidewalls. The first and second collapsible sidewalls are collapsed until respective first and second fasteners are threaded onto respective first and second external threads of first and second couplers.

The first and second catheter sidewalls extend inside of respective first and second conduits and both extend from the tube end a predetermined length, whereby the plurality of holes are exposed from the intravascular tube.

5

It is therefore one of the main objects of the present invention to provide an accessing assembly for hemodialysis administration.

10 It is another object of this invention to provide an accessing assembly for hemodialysis administration, which has a single intravascular tube.

15 It is another object of this invention to provide an accessing assembly having a catheter sleeve assembly, which has collapsible sidewalls.

It is another object of this invention to provide an accessing assembly that can be also used for infusion of chemotherapy, long-term antibiotic therapy or any other long treatment.

20

It is another object of this invention to provide an accessing assembly, which is of a durable and reliable construction.

25 It is yet another object of this invention to provide such a device that is inexpensive to manufacture and maintain while retaining its effectiveness.

Further objects of the invention will be brought out in the following part of the specification, wherein detailed description is for the purpose of fully disclosing the invention without placing limitations thereon.

5

V. BRIEF DESCRIPTION OF THE DRAWINGS

With the above and other related objects in view, the invention consists in the details of construction and combination of parts as will be more fully understood from the following description, when read in conjunction with the accompanying drawings in which:

Figure 1 is a first isometric view of the present invention.

15

Figure 2 is a second isometric view of the present invention with a first catheter assembly positioned inside a first catheter sleeve assembly that is coupled to a first conduit.

Figure 3 is a third isometric view of the present invention with the first catheter sleeve assembly collapsed and the first catheter assembly extending through the first conduit, and a second catheter assembly positioned inside a second catheter sleeve assembly that is coupled to a second conduit.

25

Figure 4 is a cut view of a section of the first catheter assembly taken along the lines 4 – 4 as seen in figure 1.

Figure 5 is a cut view of a section of the second catheter sleeve assembly taken along the lines 5 – 5 as seen in figure 1.

Figure 6 is a cut view of a section of the second conduit taken
5 along the lines 6 – 6 as seen in figure 1.

Figure 7 is a cut view taken along the lines 7 – 7 as seen in figure 3.

10 **VI. DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

Referring now to the drawings, the present invention is an accessing assembly for hemodialysis administration, and is
15 generally referred to with numeral **10**. It can be observed that it basically includes intravascular tube assembly **20**, conduit assembly **40**, first and second catheter sleeve assemblies **60**, and first and second catheter assemblies **90**.

20 As seen in figures 1 and 2, intravascular tube assembly **20** comprises intravascular tube **22**, subcutaneous cuff **24**, tube end **26**, and ring **30** with hole **32**.

Intravascular tube **22** is implanted within a vascular structure of
25 a patient, not seen, wherein intravascular tube **22** is a vascular access device for the passage of large quantities of fluids including blood through an extra-corporeal circuit during a hemodialysis procedure of the patient. Subcutaneous cuff **24** is

made of a porous material that allows an ingrowth of tissue to adhere subcutaneous cuff **24** in the subcutaneous tissue of the patient, not seen. In a preferred embodiment, ring **30** is surgically fixed onto skin of a patient with sutures through hole
5 **32**. This secures intravascular tube assembly **20** to the body of the patient.

Conduit assembly **40** comprises first conduit **42** having conduit threading **50**, and second conduit **44** having conduit threading
10 **52**. Conduit assembly **40** further comprises first end **46** having diaphragm **54**, and second end **48** having diaphragm **56**.

First and second conduits **42** and **44** are positioned within intravascular tube **22** to allow access of first and second catheter
15 assemblies **90** into the vascular structure. In a preferred embodiment, first and second catheter assemblies **90** are disposable after each use.

First and second conduits **42** and **44** are joined within
20 intravascular tube **22** and extend together therefrom until a bifurcation, whereby first conduit **42** and second conduit **44** separate. In addition, first and second conduits **42** and **44** protrude from the patient's body, whereby they extend from ring **30**. Diaphragms **54** and **56** keep respective first and second ends
25 **46** and **48** relatively closed when respective catheter assemblies **90** are removed from respective conduits **42** and **44**.

First and second sleeve assemblies **60** each comprise collapsible sidewall **62** having end **64** and joining end **66**. First and second catheter assemblies **90** each comprise sidewall **92** with inlet/outlet end **100**. Sidewalls **92** each comprise respective
5 internal ends **96**, and a plurality of holes **98** extending therefrom that do not reach inlet/outlet ends **100**. Plurality of holes **98** are small perforations which allow fluids, medications, and/or blood to be delivered or returned to a patient during the hemodialysis procedure. Inlet/outlet ends **100** serve as inlet or outlet ports for
10 the fluids, medications, and/or blood to travel through during the hemodialysis procedure. When first inlet/outlet end **100** acts as an inlet port, second inlet/outlet end **100** acts as an outlet port, and vice versa.

15 As seen in figure 3, first and second catheter assemblies **90** are positioned inside first and second catheter sleeve assemblies **60**, whereby respective catheter sidewalls **92** are positioned inside respective collapsible sidewalls **62**. Collapsible sidewalls **62** collapse in order for fasteners **104** to couple onto respective
20 couplers **76** as seen in figure 7. Collapsible sidewalls **62** are made of an appropriate material to allow collapsible sidewalls **62** to collapse.

In the illustrated embodiment, first catheter sidewall **92** passes
25 through conduit **42** and extends from tube end **26** a predetermined length, whereby first plurality of holes **98** are exposed from intravascular tube **22** to enter the vascular structure, not seen. Although not illustrated, it is noted that in

use, second catheter sidewall **92** passes through respective conduit **44** to also extend from tube end **26** a predetermined length, and second plurality of holes **98** are also exposed from intravascular tube **22** to enter the vascular structure.

5

Catheter assemblies **90** are made of a biologically inert polymeric silicone substance, commonly used for temporary implants in tissue. In a preferred embodiment, catheter assemblies **90** may be made of a flexible and inert silicone elastomer. Such a flexible and inert silicone elastomer as an example it under trademark SILASTIC®. Catheter assemblies **90** may comprise markings that allow a technician to know when to stop to flush with heparin, which is a blood thinner.

10

15 As seen in figure 4, catheter assembly **90** comprises fastener **104**, which has fastener internal threading **106**. Fastener internal threading **106** is inside fastener **104** to thread fastener **104** to external threads **72** of coupler **76** as seen in figure 7. Catheter assembly **90** further comprises catheter external
20 threading **102**. Catheter external threading **102** extends from fastener **104** to inlet/outlet end **100**, to couple an external tubing for connection with the hemodialysis machine, not seen.

25

As seen in figure 5, collapsible sidewall **62** of catheter sleeve assembly **60** defines cavity **70**. Coupler **76** is defined within cavity **70** extending from joining end **66**. Couplers **76** comprise coupler end **68**, external threads **72**, external face **73**, internal threads **74** and internal face **75**. External threads **72** are

positioned on external face **73** close to coupler end **68**, and internal threads **74** are positioned on internal face **75** close to joining end **66**.

- 5 As seen in figure 6, conduit assembly **40** comprises conduit **44** having end **48** and conduit threading **52**. Conduit threading **52** receives respective internal threads **74** of couplers **76**, as seen in figure 7.
- 10 As seen in figure 7, first catheter sidewall **92** passes through conduit **42**. First collapsible sidewall **62** collapses until first fastener **104** couples onto first coupler **76**, whereby first fastener internal threading **106** is threaded onto first external threads **72**. First coupler **76** couples onto respective conduit **42**, whereby
- 15 respective internal threads **74** are threaded onto conduit threading **50**. It is noted that when second catheter sidewall **92** passes through conduit **44**, second collapsible sidewall **62** also collapses until second fastener **104** couples onto second coupler **76**, whereby second fastener internal threading **106** is threaded
- 20 onto second external threads **72**. Second coupler **76** couples onto respective conduit **44**, whereby respective internal threads **74** are threaded onto conduit threading **52**.

In other embodiments, present invention **10** provides an

25 accessing assembly that may be also used for infusion of chemotherapy, long-term antibiotic therapy, delivery of fluids, and/or any other treatments.

The foregoing description conveys the best understanding of the objectives and advantages of the present invention. Different embodiments may be made of the inventive concept of this invention. It is to be understood that all matter disclosed herein
5 is to be interpreted merely as illustrative, and not in a limiting sense.

VII. INDUSTRIAL APPLICABILITY

10 It is evident that an invention such as the accessing assembly for hemodialysis administration claimed in the present application is quite desirable because it has a single intravascular tube, a catheter sleeve assembly, which has collapsible sidewalls. The present invention is quite desirable because it can be also used
15 for infusion of chemotherapy, long-term antibiotic therapy or any other long treatment. The present accessing assembly is of a durable and reliable construction, inexpensive to manufacture and maintain while retaining its effectiveness.

20

25

What is claimed is:

1. An accessing assembly for hemodialysis administration, comprising:
 - A) an intravascular tube assembly comprising an intravascular tube, a subcutaneous cuff, a tube end and a ring with a hole;
 - B) a conduit assembly comprising first and second conduits having respective first and second conduit threading;
 - C) first and second catheter sleeve assemblies comprise first and second collapsible sidewalls, first and second ends, and first and second joining ends respectively, said first and second collapsible sidewalls define respective first and second cavities; and
 - D) first and second catheter assemblies.
2. The accessing assembly for hemodialysis administration set forth in claim 1, further characterized in that said conduit assembly further comprises first and second ends having respective first and second diaphragms.
3. The accessing assembly for hemodialysis administration set forth in claim 1 or claim 2, further characterized in that said first and second conduits are joined within said intravascular tube and extend together therefrom until a bifurcation whereby said first and second conduits separate.
4. The accessing assembly for hemodialysis administration set forth in any one of claims 1 to 3, further characterized in that first and second couplers are defined within said first and second

cavities, extending from said first and second joining ends respectively.

5. The accessing assembly for hemodialysis administration set forth in claim 4, further characterized in that said first and second couplers comprise respective first and second external threads and respective first and second internal threads.

6. The accessing assembly for hemodialysis administration set forth in any one of claims 1 to 5, further characterized in that said first and second catheter assemblies comprise first and second catheter sidewalls respectively.

7. The accessing assembly for hemodialysis administration set forth in claim 6, further characterized in that said first and second catheter sidewalls comprise respective first and second inlet/outlet ends and respective first and second internal ends.

8. The accessing assembly for hemodialysis administration set forth in any one of claims 1 to 7, further characterized in that said first and second catheter assemblies further comprise respective first and second fasteners.

9. The accessing assembly for hemodialysis administration set forth in any one of claims 1 to 7, further characterized in that said first and second catheter assemblies further comprise respective first and second fastener internal threading and respective first and second catheter external threading.

10. The accessing assembly for hemodialysis administration set forth in claim 6, further characterized in that said first and

second catheter sidewalls comprise a plurality of holes extending from said first and second internal ends respectively.

11. The accessing assembly for hemodialysis administration set forth in any one of claims 1 to 10, further characterized in that said intravascular tube is implanted within a vascular structure.

12. The accessing assembly for hemodialysis administration set forth in any one of claims 1 to 11, further characterized in that said ring is surgically fixed onto a patient through said hole.

13. The accessing assembly for hemodialysis administration set forth in claim 5, further characterized in that said first and second couplers are positioned onto respective said first and second conduits, whereby respective said first and second internal threads are threaded onto respective said first and second conduit threading.

14. The accessing assembly for hemodialysis administration set forth in claim 6, further characterized in that said first and second catheter sidewalls are positioned inside with respect to said first and second collapsible sidewalls.

15. The accessing assembly for hemodialysis administration set forth in claim 8, further characterized in that said first and second collapsible sidewalls are collapsed until respective said first and second fasteners are threaded onto respective said first and second external threads of said first and second couplers.

16. The accessing assembly for hemodialysis administration set forth in claim 10, further characterized in that said first and second catheter sidewalls extend inside of respective first and

second conduits and both extend from said tube end a predetermined length, whereby said plurality of holes are exposed from said intravascular tube.

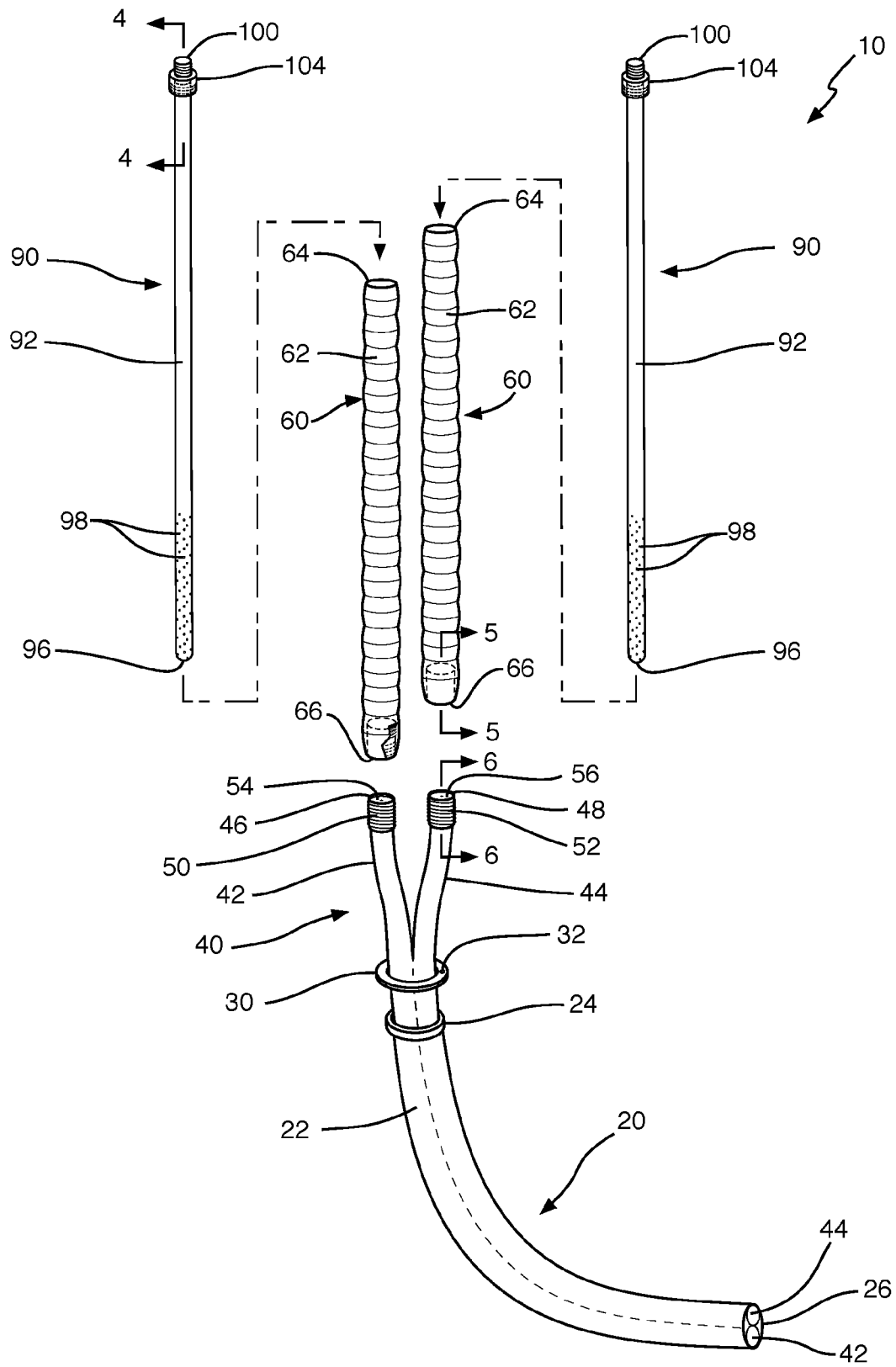


Fig. 1

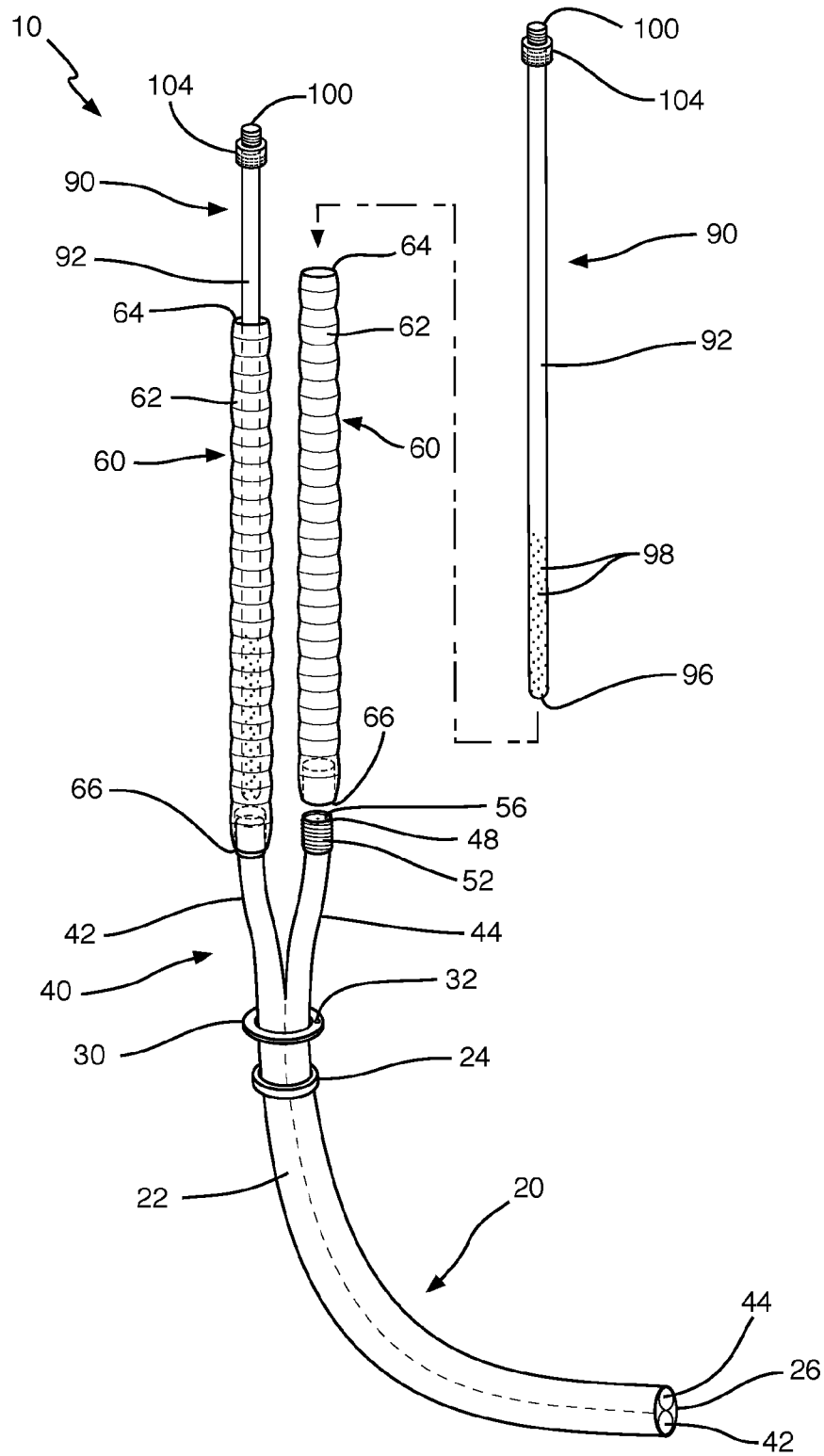


Fig. 2

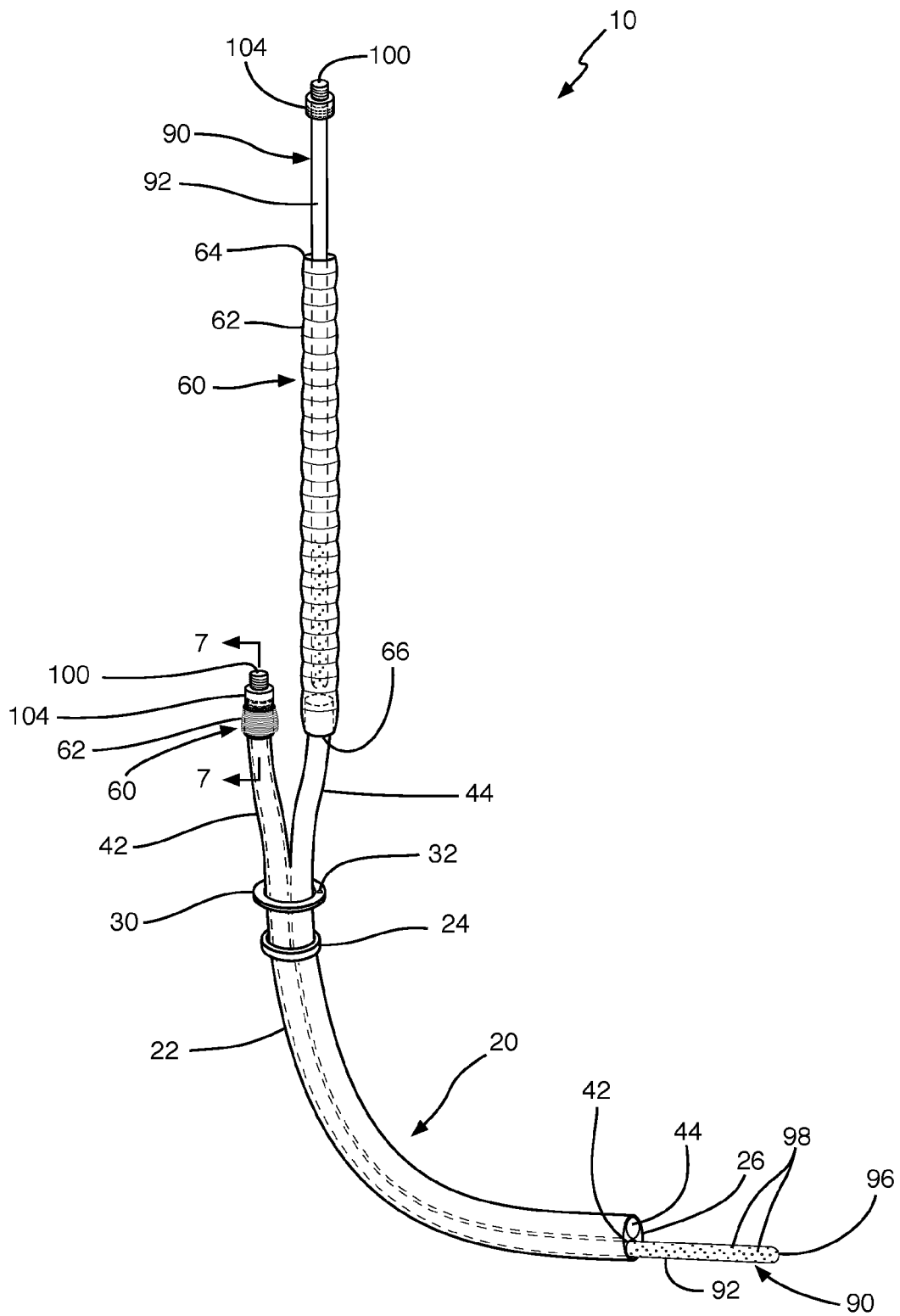


Fig. 3

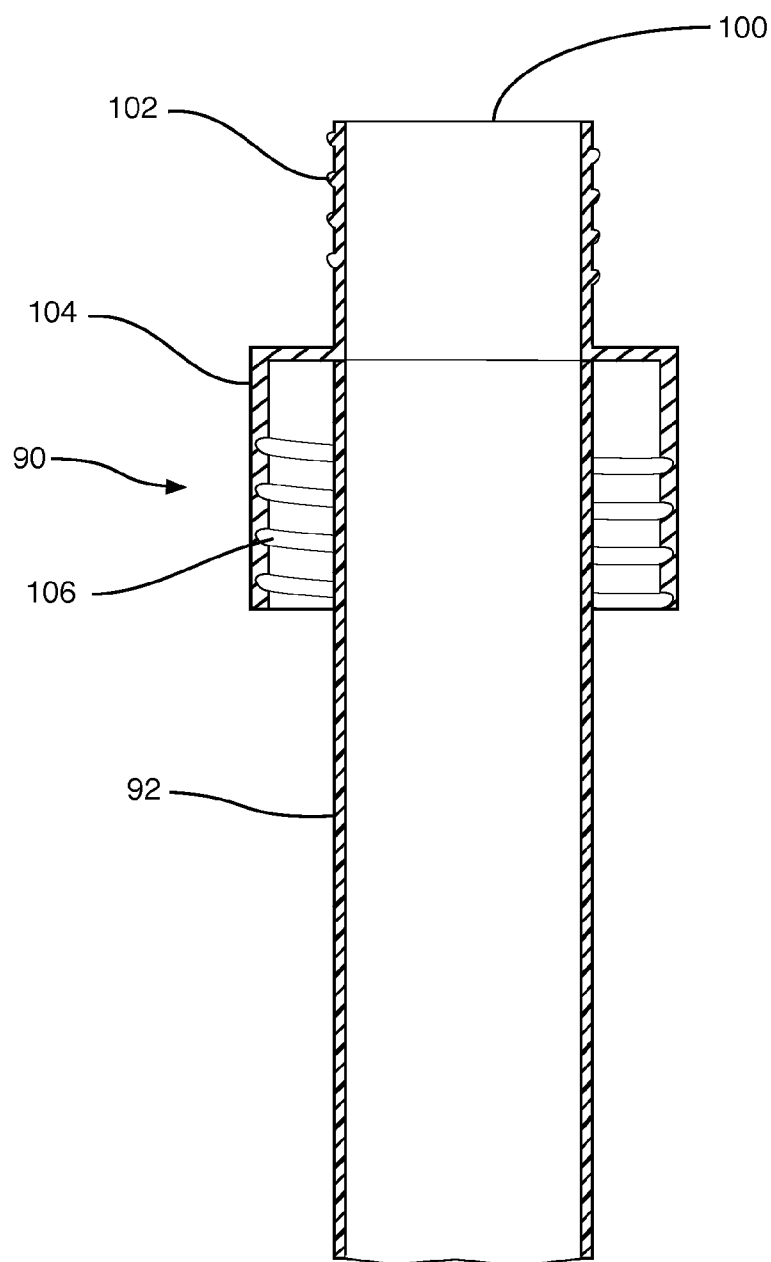


Fig. 4

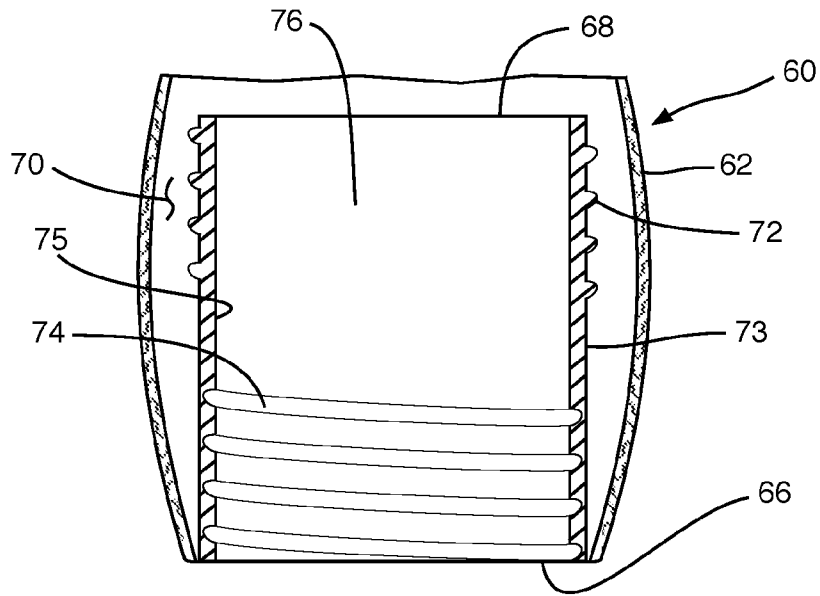


Fig. 5

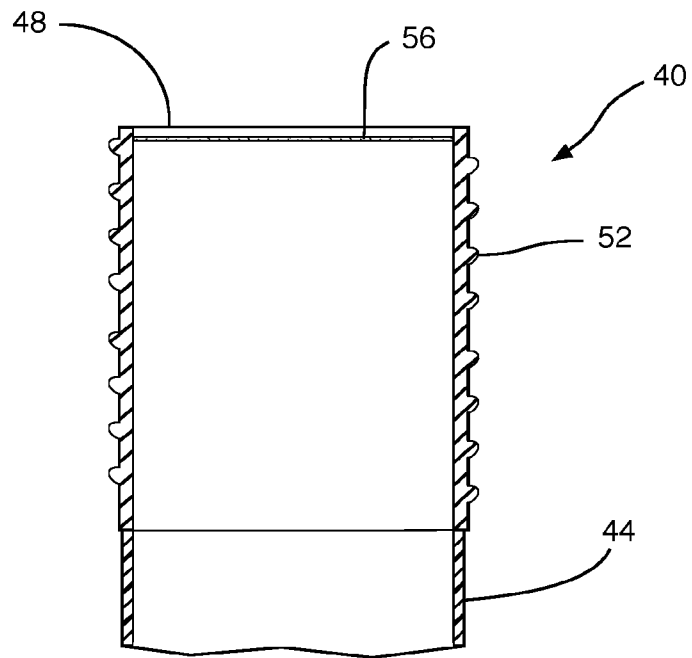


Fig. 6

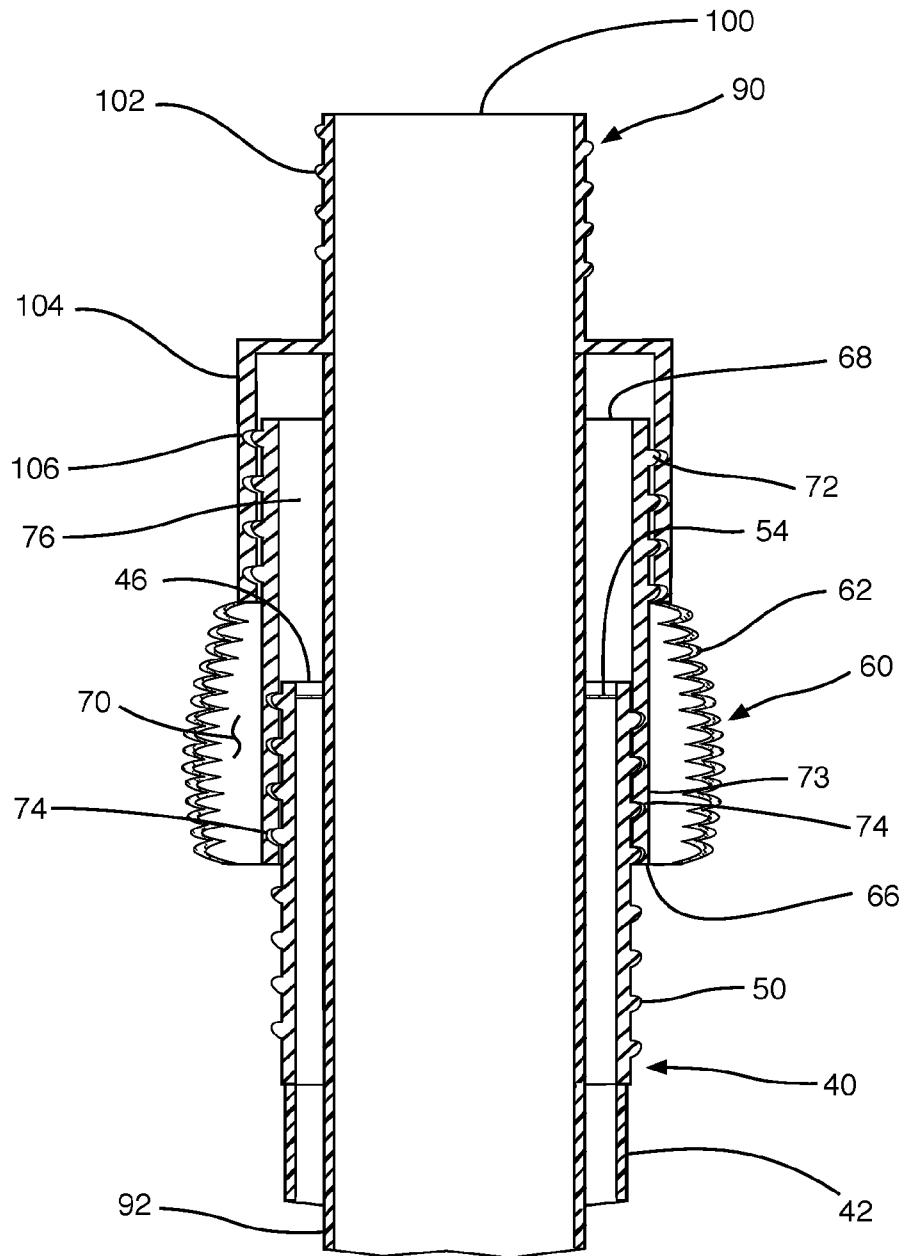


Fig. 7

