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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/226,318	04/09/2021	Benjamin E. Merritt	111552.8016.US02	8690

25096 7590 12/19/2023

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EXAMINER	
VU, QUYNH-NHU HOANG	

ART UNIT	PAPER NUMBER
3783	

NOTIFICATION DATE	DELIVERY MODE
12/19/2023	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

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Imperative Care v. Inari Medical
U.S. Patent 11,844,921
Imperative Care Ex. 1002

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APPLICATION NO.	ISSUE DATE	PATENT NO.
17/226,318	19-Dec-2023	11844921

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25096 7590 11/29/2023

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ISSUE NOTIFICATION

The projected patent number and issue date are specified above. The patent will issue electronically. The electronically issued patent is the official patent grant pursuant to 35 U.S.C. § 153. The patent may be accessed on or after the issue date through Patent Center at https://patentcenter.uspto.gov/. The patent will be available in both the public and the private sides of Patent Center. Further assistance in electronically accessing the patent, or about Patent Center, is available by calling the Patent Electronic Business Center at 1-888-217-9197.

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Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 496 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Center (https://patentcenter.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Patents Stakeholder Experience (OPSE), Stakeholder Support Division (SSD) at (571)-272-4200.

INVENTOR(s) (Please see PATENT CENTER site https://patentcenter.uspto.gov for additional inventors):

Benjamin E. Merritt, San Clemente, CA;
John C. Thress, Capistrano Beach, CA;
Paul Lubock, Monarch Beach, CA;

APPLICANT(s) (Please see PATENT CENTER site https://patentcenter.uspto.gov for additional applicants):

Inari Medical, Inc., Irvine, CA;

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Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17/226,318 - Conf# 8690
	Filing Date	April 9, 2021
	First Named Inventor	Benjamin E. Merritt
	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	111552-8016.US02

Change(s) applied to document,
/B.P./
10/24/2023

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	Attorney Docket Number	111552-8016.US02

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	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	111552-8016.US02

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	Examiner Name	Not Yet Assigned
	Attorney Docket Number	111552-8016.US02

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	First Named Inventor	Benjamin E. Merritt
	Art Unit	3783
	Examiner Name	Quynh-Nhu Hoang Vu
	Attorney Docket Number	111552.8016.US02

Change(s) applied to document,
/B.P./
10/24/2023

U.S. PATENTS AND PUBLICATIONS					
Examiner Initial*	Cite No	Patent Number	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
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Examiner Initial*	Cite No	Foreign Document Number[3]	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[5]
	1.	WO2023147353	08-03-2023	Inari Medical, Inc.		

NON-PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

EXAMINER SIGNATURE			
Examiner Signature	/QUYNH-NHU H. VU/	Date Considered	10/13/2023

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[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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Notice of References Cited	Application/Control No. 17/226,318	Applicant(s)/Patent Under Reexamination Merritt et al.	
	Examiner QUYNH-NHU H VU	Art Unit 3783	Page 2 of 2

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*	C	US-10183159-B2	01-2019	Nobles; Anthony	A61M39/22	1/1
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Change(s) applied to document, /B.P./ 10/24/2023

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*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
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*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
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APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/226,318	**11/03/2023 11:51:26 AM Z ET**	**111552.8016.US02**

Title of Invention

HEMOSTASIS VALVES AND METHODS OF USE

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	8690	FILED BY	JiYoung Anderson
PATENT CENTER #	63154062	FILING DATE	04/09/2021
CUSTOMER #	25096	FIRST NAMED INVENTOR	Benjamin E. Merritt
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Matthew Williams

Documents

TOTAL DOCUMENTS: 2

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
2023-11-3 Issue Fee Transmittal - 111552.8016.US02.pdf	2	Issue Fee Payment (PTO-85B)	238 KB
2023-11-03 Comments - 111552.8016US02.pdf	2	Miscellaneous Incoming Letter	90 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
2023-11-3 Issue Fee	F502613E559DB19FF222A3574E0A40FFEC13D7C0EEE62097E

Transmittal - 111552.8016.US02.pdf	3C16E22AE6A0EBC24817062C0759504EDFF88B1710E47EB652D2AF14347A465F23A0A102EFFBEF5
2023-11-03 Comments - 111552.8016US02.pdf	711FBF6BC22E08FA0657474991C7A8FD46E42AC997D63499F4B75F2DD6798B4F20B320BA5D89A34E3C12909EA30533D87DF13B3374C875855E39BE9CFCD9DC32

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Docket No.: 111552.8016.US02
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
Benjamin E. Merritt et al.

Application No.: 17/226,318	Confirmation No.: 8690
Filed: April 9, 2021	Art Unit: 3783
For: HEMOSTASIS VALVES AND METHODS OF USE	Examiner: QUYNH-NHU HOANG VU

COMMENTS ON STATEMENT OF REASONS FOR ALLOWANCE

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

In the Notice of Allowability mailed October 18, 2023, the Examiner allowed claims 52–67 and 69–78. The Applicant acknowledges Examiner's statements of Reasons for Allowance of the above-referenced patent application and agrees that the claimed subject matter is patentable. However, the Applicant takes no position regarding the Reasons for Allowance presented by the Examiner other than the positions the Applicant may have previously taken during prosecution. Therefore, the Examiner's Reasons for Allowance should not be attributed to the Applicant as an indication of the basis for Applicant's belief that the claims are patentable. Furthermore, the Applicant respectfully asserts that there may also be additional reasons for patentability of the claimed subject matter not explicitly stated in this record and the Applicant does not waive its rights to such arguments by not further addressing such reasons herein.

Dated: November 3, 2023 Respectfully submitted,

By /Matthew S. Williams/
Matthew S. Williams
Registration No.: 77,516

Perkins Coie LLP
P.O. Box 1247
Seattle, WA 98111-1247
Phone: (206) 359-3343
Fax: (206) 359-7198

Attorney for Applicant

PART B – FEE(S) TRANSMITTAL

Complete and send this form, together with the applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

By fax, send to: (571) 273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications. **Because electronic patent issuance may occur shortly after issue fee payment, any desired continuing application should preferably be filed prior to payment of this issue fee in order not to jeopardize copendency.**

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

25096
Perkins Coie LLP
P.O. Box 1247
PATENT - SEA
Seattle, WA, 98111-1247
US

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

JiYoung Anderson	(Typed or printed name)
/JiYoung Anderson/	(Signature)
2023-11-03	(Date)

APPLICATION NO	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO	CONFIRMATION NO
17/226,318	Apr 9, 2021	Benjamin E. Merritt	111552.8016.US02	8690

TITLE OF INVENTION: HEMOSTASIS VALVES AND METHODS OF USE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
UTILITY	LARGE	1200	0	0	1200	2024-01-18

EXAMINER	ART UNIT	CLASS-SUBCLASS
VU, QUYNH-NHU HOANG	3783	604-167030

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363)

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1. Perkins Coie LLP
2.
3.

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE	(B) RESIDENCE: (CITY and STATE or COUNTRY)
Inari Medical, Inc.	Irvine, CA

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. Fees Submitted: ☑ Issue Fee ☐ Publication Fee (if required)

4b. Method of Payment (*Please first reapply any previously paid fee shown above*):

☑ Electronic Payment via Patent Center or EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. 50-0665

5. Change of Entity Status (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29. NOTE: Absent a valid Certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

☐ Applicant asserting small entity status. See 37 CFR 1.27. NOTE: If the application was previously under micro entity status, checking this box will be taken as a notification of loss of entitlement to micro entity status.

☐ Applicant changing to regular undiscounted fee status. NOTE: Checking this box will be taken as a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Matthew S. Williams/ Date 2023-11-03

Typed or printed name Matthew S. Williams Registration No. 77,516

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC PAYMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/226,318	**11/03/2023 11:51:26 AM Z ET**	**111552.8016.US02**

Title of Invention

HEMOSTASIS VALVES AND METHODS OF USE

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	8690	FILED BY	JiYoung Anderson
PATENT CENTER #	63154062	AUTHORIZED BY	Matthew Williams
CUSTOMER #	25096	FILING DATE	04/09/2021
CORRESPONDENCE ADDRESS	-	FIRST NAMED INVENTOR	Benjamin E. Merritt

Payment Information

PAYMENT METHOD	PAYMENT TRANSACTION ID	PAYMENT AUTHORIZED BY
CARD / 3369	**E2023A3B51529600**	**JiYoung Anderson**

FEE CODE	DESCRIPTION	ITEM PRICE($)	QUANTITY	ITEM TOTAL($)
1501	UTILITY ISSUE FEE	1200.00	1	1200.00
			TOTAL AMOUNT:	**$1,200.00**

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage

submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

25096 7590 10/18/2023

PERKINS COIE LLP - SEA General
PATENT-SEA
P.O. BOX 1247
SEATTLE, WA 98111-1247

EXAMINER	
VU, QUYNH-NHU HOANG	
ART UNIT	PAPER NUMBER
3783	

DATE MAILED: 10/18/2023

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/226,318	04/09/2021	Benjamin E. Merritt	111552.8016.US02	8690

TITLE OF INVENTION: HEMOSTASIS VALVES AND METHODS OF USE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1200	$0.00	$0.00	$1200	01/18/2024

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 40% the amount of undiscounted fees, and micro entity fees are 20% the amount of undiscounted fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

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CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

25096 7590 10/18/2023
PERKINS COIE LLP - SEA General
PATENT-SEA
P.O. BOX 1247
SEATTLE, WA 98111-1247

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/226,318	04/09/2021	Benjamin E. Merritt	111552.8016.US02	8690

TITLE OF INVENTION: HEMOSTASIS VALVES AND METHODS OF USE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1200	$0.00	$0.00	$1200	01/18/2024

EXAMINER	ART UNIT	CLASS-SUBCLASS
VU, QUYNH-NHU HOANG	3783	604-167030

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/AIA/122 or PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1_____
2_____
3_____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. Fees submitted: ❑Issue Fee ❑Publication Fee (if required)

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

❑ Electronic Payment via Patent Center or EFS-Web ❑ Enclosed check ❑ Non-electronic payment by credit card (Attach form PTO-2038)

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. **Change in Entity Status** (from status indicated above)

❑ Applicant certifying micro entity status. See 37 CFR 1.29
NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

❑ Applicant asserting small entity status. See 37 CFR 1.27
NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

❑ Applicant changing to regular undiscounted fee status.
NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/226,318	04/09/2021	Benjamin E. Merritt	111552.8016.US02	8690

25096 7590 10/18/2023

PERKINS COIE LLP - SEA General
PATENT-SEA
P.O. BOX 1247
SEATTLE, WA 98111-1247

EXAMINER	
VU, QUYNH-NHU HOANG	
ART UNIT	**PAPER NUMBER**
3783	

DATE MAILED: 10/18/2023

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
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Notice of Allowability	**Application No.** 17/226,318	**Applicant(s)** Merritt et al.	
	Examiner QUYNH-NHU H VU	**Art Unit** 3783	**AIA (FITF) Status** Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☑ This communication is responsive to 12/27/22 & Ex's Amendment.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☑ The allowed claim(s) is/are 52-67 and 69-78 . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information , please see **http://www.uspto.gov/patents/init_events/pph/index.jsp** or send an inquiry to **PPHfeedback@uspto.gov.**

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some* c) ☐ None of the:

   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☑ Notice of References Cited (PTO-892)
2. ☑ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.
4. ☑ Interview Summary (PTO-413), Paper No./Mail Date. 20230505.
5. ☑ Examiner's Amendment/Comment
6. ☑ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/QUYNH-NHU H. VU/
Primary Examiner, Art Unit 3783

DETAILED ACTION

Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in an interview with Matthew S. Williams on 05/05/23.

The application has been amended as follows:

56. (Currently amended) The valve of claim 52 wherein, when the actuator is in the first position, the lumen is configured to remain constricted and sealed when a pressure differential exists between (a) a first volume outside the lumen and adjacent to a first end of the elongate member and (b) a second volume outside the ~~central~~ lumen and adjacent to a second end of the elongate member.

67. (Currently amended) A valve, comprising:

an elongate member defining a lumen;

a filament coupled to the elongate member; and

an actuator coupled to the elongate member, wherein the actuator is moveable between

(a) a first position in which the actuator pulls the filament to collapse the elongate member such that the lumen is constricted and sealed and

(b) a second position wherein the lumen is at least partially open;

a biasing member configured to bias the actuator to the first position.

68. (Cancelled)

Allowable Subject Matter

Claims 52-67, 69-78 are allowed.

Reasons for Allowance

The following is an examiner's statement of reasons for allowance:

The closet prior art of record is Hartley (US 2003/0116731), Williams et al. (US 3,438,607) however these references do not disclose the device as claimed or described below.

Prior art Hartley

Regarding claim 52, Hartley discloses a valve 8 comprising: an elongate member 22 defining a lumen 3; an active tensioning mechanism including an actuator 12 coupled to the elongate member via a filament 20 extending at least partially around the elongate member, wherein the actuator is movable between a first position (Figs. 2 & 4), wherein the lumen constricted and sealed; a second position (Figs.1 & 3) wherein the lumen is at least partially open. Harley fails to disclose a biasing member configured to bias the actuator to the first position. **Note**: the spring 29 in Hartley is not configured to bias the actuator to the first position. A ball 28 loaded by the spring 29 to detent or hold in the housing 6.

Regarding claim 61, similar to the analysis as discussed in the claim 52 above, Harley discloses an elongate member 22; a lumen 3; an actuator 12 is movable between a first position (Figs. 2 & 4)), wherein the lumen constricted and sealed; a second position (Figs.1 & 3) wherein the lumen is at least partially open. Harley fails to disclose a biasing member configured to bias the actuator to the first position. **Note**: the spring 29 in Hartley is not configured to bias the actuator to the first position. A ball 28 loaded by the spring 29 to detent or hold in the housing 6.

Regarding claim 67, Hartley discloses a valve 8, comprising: an elongate member 22 defining a lumen 3; a filament 20 coupled to the elongate member 22; and an actuator 12 coupled to the elongate member, wherein the actuator 12 is moveable between (a) a first position (Figs.2 & 4) in which the actuator pulls the filament to collapse the elongate member such that the lumen is constricted and sealed and (b) a second position (Figs.1 & 3) wherein the lumen is at least partially open. Harley fails to disclose a biasing member configured to bias the actuator to the first position. **Note**: the spring 29 in Hartley is not

configured to bias the actuator to the first position. A ball 28 loaded by the spring 29 to detent or hold in the housing 6.

Regarding claim 77, the claim 77 requires two actuators coupled to the elongate member; and each of the actuator coupled to the elongate member via with respective to each of a first filament and a second filament. Meanwhile, the prior art Harley discloses only one actuator.

Prior art Williams et al.

Regarding claims 52, 61 & 67, Williams discloses a valve 30 defining a lumen 31; an active tensioning mechanism including an actuator 16 coupled to the elongate member; the actuator 16 is moveable between a first position (Fig. 5) wherein the lumen is constricted and sealed, and a second position (Fig. 2) wherein the lumen is at least partially open; a biasing/spring member 26 configured to bias the actuator to the first position, Fig. 2.

Williams fails to discloses a filament extending around the elongate member.

Regarding claim 77, the claim 77 requires two actuators coupled to the elongate member; and each of the actuator coupled to the elongate member via with respective to each of a first filament and a second filament. Meanwhile, the prior art Williams discloses only one actuator. Williams fails to disclose first and second filaments as required in the claimed invention.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to QUYNH-NHU HOANG VU whose telephone number is (571)272-3228. The examiner can normally be reached on M-F 7:30 am-4:00 pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhisma Mehta can be reached on 571-272-3383. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Quynh-Nhu H. Vu/
Quynh-Nhu H Vu
Primary Examiner, Art Unit 3783

Examiner-Initiated Interview Summary	**Application No.** 17/226,318	**Applicant(s)** Merritt et al.		
	Examiner QUYNH-NHU H VU	**Art Unit** 3783	**AIA (First Inventor to File) Status** Yes	**Page** 1 of 1

All Participants (applicant, applicants representative, PTO personnel)	**Title**	**Type**
QUYNH-NHU H VU	Examiner	Telephonic
Matthew S. Williams	Attorney of Record	

Date of Interview: 05 May 2023

Issues Discussed:

35 U.S.C. 112

The limitation "the central lumen" lacks antecedent basis. Therefore, it is to be changed to --- the lumen --.
Applicant agreed to change the limitation above.

Proposed Amendment(s)

Both Applicant and Examiner agreed to add the limitation of claim 68 into the independent claim 67 for allowance.

Non-statutory Double Patenting

Examiner requested Applicant filed e-Terminal Disclaimer with regard to the US 11,000,682 to overcome the rejection of Double Patenting.

/QUYNH-NHU H. VU/ Primary Examiner, Art Unit 3783	

Applicant is reminded that a complete written statement as to the substance of the interview must be made of record in the application file. It is the applicants responsibility to provide the written statement, unless the interview was initiated by the Examiner and the Examiner has indicated that a written summary will be provided. See MPEP 713.04
Please further see:
MPEP 713.04
Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews, paragraph (b)
37 CFR § 1.2 Business to be transacted in writing

Applicant recordation instructions: It is not necessary for applicant to provide a separate record of the substance of interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

Notice of References Cited	Application/Control No. 17/226,318	Applicant(s)/Patent Under Reexamination Merritt et al.	
	Examiner QUYNH-NHU H VU	Art Unit 3783	Page 1 of 2

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-2846179-A	08-1958	CATHERINE MONCKTON MARY	F16K7/04	222/507
*	B	US-3438607-A	04-1969	WILLIAMS NORMAN C	F16K7/063	251/9
*	C	US-3675657-A	07-1972	Gauthier; Oscar	A61B17/132	606/203
*	D	US-4401107-A	08-1983	Haber; Terry M.	A61F2/0036	128/DIG.25
*	E	US-4551862-A	11-1985	Haber; Terry M.	A61F2/0036	600/491
*	F	US-4634421-A	01-1987	Hegemann; Manfred	A61F2/0009	604/277
*	G	US-5484418-A	01-1996	Quiachon; Dinah B.	A61M25/005	604/167.03
*	H	US-20030116731-A1	06-2003	Hartley, David Ernest	F16K7/06	251/297
*	I	US-20080087853-A1	04-2008	Kees; Ulrich	F16K7/065	251/5
*	J	US-7775501-B2	08-2010	Kees; Ulrich	F16K7/065	251/5
*	K	US-20110144592-A1	06-2011	Wong; En Hou Philip	A61M39/0613	604/175
*	L	US-8267897-B2	09-2012	Wells; Dax B.	A61B17/3498	604/167.05
*	M	US-20150305859-A1	10-2015	Eller; Derek	A61F2/2469	623/1.24

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Notice of References Cited	Application/Control No. 17/226,318	Applicant(s)/Patent Under Reexamination Merritt et al.	
	Examiner QUYNH-NHU H VU	Art Unit 3783	Page 2 of 2

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-9980813-B2	10-2015	Eller; Derek	A61F2/2469	623/1.24
*	B	US-10648268-B2	05-2018	Eller; Derek	F16K7/06	1/1
*	C	US-10183159-B2	01-2019	Nobles; Anthony	A61M39/22	1/1
	D					
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FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
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	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/226,318	Merritt et al.
	Examiner	**Art Unit**
	QUYNH-NHU H VU	3783

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS										
☐ Claims renumbered in the same order as presented by applicant						☐ CPA		☐ T.D.		☐ R.1.47
CLAIM		**DATE**								
Final	Original	05/05/2023								
	1	-								
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	3	-								
	4	-								
	5	-								
	6	-								
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Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/226,318	Merritt et al.
	Examiner	**Art Unit**
	QUYNH-NHU H VU	3783

CLAIM		DATE								
Final	Original	05/05/2023								
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12	74	=								
13	75	=								
14	76	=								
25	77	=								
26	78	=								

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/226,318	Merritt et al.
	Examiner	**Art Unit**
	QUYNH-NHU H VU	3783

CPC							
Symbol						**Type**	**Version**
A61M	/	39	/	0613		F	2013-01-01
A61B	/	17	/	3207		A	2013-01-01
A61M	/	2039	/	0673		A	2013-01-01
A61M	/	2039	/	062		A	2013-01-01

CPC Combination Sets								
Symbol						**Type**	**Set**	**Ranking**	**Version**
	/		/						

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	26	
/QUYNH-NHU H. VU/ Primary Examiner, Art Unit 3783	05 May 2023	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	52, 61, 67 & 77	1

U.S. Patent and Trademark Office — Part of Paper No.: 20230505

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/226,318	Merritt et al.
	Examiner	Art Unit
	QUYNH-NHU H VU	3783

INTERNATIONAL CLASSIFICATION					
CLAIMED					
A61M	/	39	/	06	
	/		/		

NON-CLAIMED					
	/		/		

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS

CROSS REFERENCES(S)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					

NONE (Assistant Examiner)	(Date)	Total Claims Allowed: 26	
/QUYNH-NHU H. VU/ Primary Examiner, Art Unit 3783 (Primary Examiner)	05 May 2023 (Date)	O.G. Print Claim(s) 52, 61, 67 & 77	O.G. Print Figure 1

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/226,318	Merritt et al.
	Examiner	**Art Unit**
	QUYNH-NHU H VU	3783

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
	1		11		21		31		41		51	15	61	24	71
	2		12		22		32		42	1	52	16	62	10	72
	3		13		23		33		43	2	53	17	63	11	73
	4		14		24		34		44	3	54	18	64	12	74
	5		15		25		35		45	4	55	19	65	13	75
	6		16		26		36		46	5	56	20	66	14	76
	7		17		27		37		47	6	57	21	67	25	77
	8		18		28		38		48	7	58		68	26	78
	9		19		29		39		49	8	59	22	69		
	10		20		30		40		50	9	60	23	70		

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	26	
/QUYNH-NHU H. VU/ Primary Examiner, Art Unit 3783	05 May 2023	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	52, 61, 67 & 77	1

U.S. Patent and Trademark Office Part of Paper No.: 20230505

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/226,318	Merritt et al.
	Examiner	Art Unit
	QUYNH-NHU H VU	3783

CPC - Searched*		
Symbol	**Date**	**Examiner**
A61M2039/0673 OR A61M39/0613 OR A61M2039/062 OR A61M2039/0626	05/05/2023	QNV
F16K7/06 OR F16K7/04 OR F16K7/08 OR F16K7/02	05/05/2023	QNV

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	**Date**	**Examiner**
PE2E, Inventor, IDS, forward/backward searches	05/05/2023	QNV

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**
	all the above	05/05/2023	QNV

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17/226,318 - Conf# 8690
	Filing Date	April 9, 2021
	First Named Inventor	Benjamin E. Merritt
	Art Unit	3783
	Examiner Name	Quynh-Nhu Hoang Vu
	Attorney Docket Number	111552.8016.US02

U.S. PATENTS AND PUBLICATIONS

Examiner Initial*	Cite No	Patent Number	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1.	20230233311	07-27-2023	Merritt et al.	
	2.	20070233043	10-04-2007	Dayton et al.	
	3.	8343167	01-01-2023	Henson	
	4.	8568465	10-29-2013	Freudenthal et al.	
	5.	20230241302	08-03-2023	Merritt et al.	
	6.	20230240705	08-03-2023	Rosenbluth et al.	
	7.	20230240706	08-03-2023	Rosenbluth et al.	
	8.	10183159	01-22-2019	Nobles et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initial*	Cite No	Foreign Document Number[3]	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[5]
	1.	WO2023147353	08-03-2023	Inari Medical, Inc.		

NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

EXAMINER SIGNATURE

Examiner Signature	/QUYNH-NHU H. VU/	Date Considered	10/13/2023

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /Q.N.V./

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17/226,318 - Conf# 8690
	Filing Date	April 9, 2021
	First Named Inventor	Benjamin E. Merritt
	Art Unit	3783
	Examiner Name	Quynh-Nhu Hoang Vu
	Attorney Docket Number	111552.8016.US02

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (2).

☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

It is submitted that the Information Disclosure Statement is in compliance with 37 C.F.R. § 1.98 and the Examiner is respectfully requested to consider the listed references. This Information Disclosure Statement is not to be construed as a representation that: (i) a search has been made; (ii) additional information that may be material to the examination of this application does not exist; (iii) the information, protocols, results and the like reported by third parties are accurate or enabling; or (iv) the cited information is, or is considered to be, material to patentability. In addition, Applicant does not admit that any enclosed item of information constitutes prior art to the subject invention and specifically reserves the right to demonstrate that any such reference is not prior art.

COPIES OF REFERENCES

In accordance with 37 C.F.R. § 1.98(a)(2)(ii), Applicant has not submitted copies of U.S. patents and U.S. patent applications. Applicant submits herewith copies of foreign patents and non-patent literature in accordance with 37 C.F.R. § 1.98(a)(2).

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Matthew S. Williams/	Date (YYYY-MM-DD)	2023-08-14
Name/Print	Matthew S. Williams	Registration Number	77,516

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Bibliographic Data

Application No: 17/226,318

Foreign Priority claimed: ○ Yes ◉ No

35 USC 119 (a-d) conditions met: ☐ Yes ☑ No ☐ Met After Allowance

Verified and Acknowledged: /QUYNH-NHU H. VU/ Examiner's Signature | Initials

Title: HEMOSTASIS VALVES AND METHODS OF USE

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
04/09/2021	604	3783	111552-8016.US02
RULE			

APPLICANTS

Inari Medical, Inc., Irvine, CA,

INVENTORS

Benjamin E. Merritt, San Clemente, CA, UNITED STATES

John C. Thress, Capistrano Beach, CA, UNITED STATES

Paul Lubock, Monarch Beach, CA, UNITED STATES

CONTINUING DATA

This application is a CON of 16117519 08/30/2018 PAT 11000682

16117519 has PRO of 62554931 09/06/2017

FOREIGN APPLICATIONS

IF REQUIRED, FOREIGN LICENSE GRANTED**

04/14/2021

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17/226,318 - Conf# 8690
	Filing Date	April 9, 2021
	First Named Inventor	Benjamin E. Merritt
	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	111552-8016.US02

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Examiner Initial*	Cite No	Foreign Document Number[3]	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[5]
	1.	WO2006124307	11-23-2006	KERBEROS PROXIMAL SOLUTIONS, INC.		

NON-PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

EXAMINER SIGNATURE			
Examiner Signature	/QUYNH-NHU H. VU/	Date Considered	05/05/2023

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (2).

☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

It is submitted that the Information Disclosure Statement is in compliance with 37 C.F.R. § 1.98 and the Examiner is respectfully requested to consider the listed references. This Information Disclosure Statement is not to be construed as a representation that: (i) a search has been made; (ii) additional information that may be material to the examination of this application does not exist; (iii) the information, protocols, results and the like reported by third parties are accurate or enabling; or (iv) the cited information is, or is considered to be, material to patentability. In addition, Applicant does not admit that any enclosed item of information constitutes prior art to the subject invention and specifically reserves the right to demonstrate that any such reference is not prior art.

COPIES OF REFERENCES

In accordance with 37 C.F.R. § 1.98(a)(2)(ii), Applicant has not submitted copies of U.S. patents and U.S. patent applications. Applicant submits herewith copies of foreign patents and non-patent literature in accordance with 37 C.F.R. § 1.98(a)(2).

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	First Named Inventor	Benjamin E. Merritt
	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	111552-8016.US02

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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
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CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (2).

☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

It is submitted that the Information Disclosure Statement is in compliance with 37 C.F.R. § 1.98 and the Examiner is respectfully requested to consider the listed references. This Information Disclosure Statement is not to be construed as a representation that: (i) a search has been made; (ii) additional information that may be material to the examination of this application does not exist; (iii) the information, protocols, results and the like reported by third parties are accurate or enabling; or (iv) the cited information is, or is considered to be, material to patentability. In addition, Applicant does not admit that any enclosed item of information constitutes prior art to the subject invention and specifically reserves the right to demonstrate that any such reference is not prior art.

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SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Matthew S. Williams/	Date (YYYY-MM-DD)	2022-04-22
Name/Print	Matthew S. Williams	Registration Number	77,516

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PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	1	16/117519 and (pliable) and (reinforcement) and (tensioning adj mechanism)	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	ON	ON	2020/06/10 09:36 AM
L2	1	("20150305859").PN.	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	OFF	OFF	2020/06/10 10:53 AM
L3	2	("4551862").PN.	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	OFF	OFF	2020/06/10 11:14 AM
L4	6	(("5360417") or ("20040039412") or ("20170112513")).PN.	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	OFF	OFF	2020/06/10 11:15 AM
L5	6	(("6824553") or ("7905877") or ("2013184703")).PN.	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	OFF	OFF	2020/06/10 11:16 AM
L6	1	("20120310166").PN.	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	OFF	OFF	2020/06/10 11:28 AM
L7	2	16/117519 and pressure	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	ON	ON	2020/06/10 11:33 AM
L8	237	("10004531"|"10045790"|"10335186"|"10342571"|"10349960"|"20110319917"|"20130184703"|"20180193043"|"20190150959"|"20190231373"|"5490859"|"6824553"|"7094249"|"7905877"|"20030116731"|"20040039412"|"20060247500"|"20080300466"|"20090281525"|"20110144592"|"20120310166"|"20150305859"|"20170058623"|"20170112513"|"2846179"|"4523738"|"4551862"|"4978341"|"5360417"|"10098651"|"20010004699"|"20010041909"|"20010051810"|"20020111648"|"20020120277"|"20020147458"|"20020156457"|"20030114875"|"20030125663"|"20030135230"|"20030153973"|"20040073243"|"20050038468"|"20050119668"|"20050283186"|"20060047286"|"20060100662"|"20060253145"|"20060282111"|"20070112374"|"20070118165"|	(US-PGPUB; USPAT)	OR	ON	ON	2020/06/10 01:13 PM

		"20070161963"|"20070179513"|"20070191866"|"20070198028"|"20070208361"|"20070208367"|"20070213753"|"20070255252"|"20080015541"|"20080157017"|"20080167678"|"20080228209"|"20080234722"|"20080269798"|"20090018566"|"20090054918"|"20090062841"|"20090160112"|"20090163846"|"20090182362"|"20090292307"|"20100087850"|"20100114113"|"20100121312"|"20100204712"|"20100249815"|"20100318178"|"20110054405"|"20110060212"|"20110152993"|"20110190806"|"20110213290"|"20110213403"|"20110224707"|"20110251629"|"20110264133"|"20120089216"|"20120101480"|"20120101510"|"20120143239"|"20120165919"|"20120179181"|"20120232655"|"20120271231"|"20140005713"|"20140025048"|"20150018860"|"20150133990"|"20150196744"|"20150238207"|"20150265299"|"20150305756"|"20150352325"|"20150360001"|"20150374391"|"20160113666"|"20160143721"|"20160262790"|"20160277276"|"20170105745"|"20170112514"|"20170189041"|"20170265878"|"20170325839"|"20180092652"|"20180125512"|"20180256178"|"20180296240"|"20180344339"|"20180361116"|"3088363"|"3435826"|"3923065"|"4030503"|"4393872"|"4650466"|"4873978"|"4883458"|"4890611"|"5011488"|"5059178"|"5102415"|"5129910"|"5192286"|"5192290"|"5370653"|"5476450"|"5591137"|"5746758"|"5749858"|"5766191"|"578					

		2817"|"5827304"|"5868708"|"5873866"|"5873882"|"5876414"|"5882329"|"5972019"|"5974938"|"5993483"|"6066149"|"6221006"|"6228060"|"6238412"|"6254571"|"6258115"|"6306163"|"6350271"|"6364895"|"6368339"|"6383205"|"6413235"|"6423032"|"6440148"|"6454741"|"6454775"|"6458103"|"6458139"|"6511492"|"6514273"|"6530935"|"6530939"|"6544279"|"6551342"|"6589263"|"6596011"|"6602271"|"6605074"|"6605102"|"6623460"|"6635070"|"6645222"|"6660013"|"6663650"|"6685722"|"6692504"|"6699260"|"6755847"|"6767353"|"6800080"|"6939361"|"6960222"|"7004954"|"7036707"|"7041084"|"7052500"|"7056328"|"7069835"|"7179273"|"7220269"|"7232432"|"7244243"|"7285126"|"7306618"|"7320698"|"7323002"|"7331980"|"7534234"|"7578830"|"7621870"|"7674247"|"7691121"|"7695458"|"7763010"|"7766934"|"7905896"|"7938809"|"7938820"|"7967790"|"7976511"|"7993302"|"7993363"|"8043313"|"8052640"|"8066757"|"8070791"|"8075510"|"8088140"|"8100935"|"8109962"|"8118829"|"8197493"|"8246641"|"8261648"|"8267897").PN.					
L9	63	("8298257"|"8317748"|"8337450"|"8357178"|"8361104"|"8409215"|"8486105"|"8491539"|"8512352"|"8535334"|"8545526"|"8568432"|"8574262"|"8579915"|"8585713"|"8696622"|"8771289"|"8777893"|"8784434"|"8784441"|"8795305"|"8795345"|"8801748"|"8814927"|"8820207"|"882	(US-PGPUB; USPAT)	OR	ON	ON	2020/06/10 01:13 PM

		6791"|"8828044"|"8833224"|"8845621"|"8852205"|"8852226"|"8932319"|"8939991"|"8945143"|"8945172"|"8968330"|"8992504"|"9005172"|"9101382"|"9149609"|"9161766"|"9204887"|"9259237"|"9283066"|"9408620"|"9439664"|"9439751"|"9456834"|"9463036"|"9526864"|"9526865"|"9566424"|"9579116"|"9616213"|"9636206"|"9700332"|"9717519"|"9744024"|"9757137"|"9844386"|"9844387"|"9999493"|"RE43902").PN.					
L10	1	"16117519"	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	ON	ON	2020/06/10 01:37 PM
L11	3268	(A61B17/3207).CPC. and (@ad<"20170906")	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	ON	ON	2020/06/10 02:05 PM
L12	4894	(A61M39/06 OR A61M2039/062 OR A61M2039/0673 OR A61M39/0613).CPC. and (@ad<"20170906")	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	ON	ON	2020/06/10 02:11 PM
L13	3470	L12 and (seal or valve)	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	ON	ON	2020/06/10 02:11 PM
L14	2235	L12 and (seal)	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	ON	ON	2020/06/10 02:11 PM
L15	270	L12 and (seal) and (reinforc$5)	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	ON	ON	2020/06/10 02:11 PM
L16	2795	L12 and (valve)	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	ON	ON	2020/06/10 02:43 PM
L17	0	L12 and (hemostic adj valve)	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	ON	ON	2020/06/10 02:43 PM
L18	411	L12 and (hemostatic adj valve)	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	ON	ON	2020/06/10 02:43 PM
L19	1	("7172580").PN.	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	OFF	OFF	2020/06/10 02:52 PM
L22	115	("20010042927" | "20020026207" | "20020156432" | "20030195541" | "20040059297" | "20040106942" | "20040111060" | "20040162531" | "20040215209" | "20040230161" | "20040260244" | "20050033342" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2020/06/10 05:51 PM

		"20050065543" | "20050070943" | "20050077688" | "20050077689" | "20050107816" | "20050131349" | "20050251191" | "20050288622" | "20050288634" | "20060211992" | "20060217665" | "20060229654" | "20060229655" | "20070088277" | "20070185453" | "20070255218" | "20080249475" | "20090082735" | "3712298" | "3845766" | "4265694" | "4924923" | "4929235" | "5104382" | "5114407" | "5127626" | "5141498" | "5174613" | "5180373" | "5197955" | "5203773" | "5209737" | "5256147" | "5261891" | "5267965" | "5269763" | "5295993" | "5304143" | "5308336" | "5314417" | "5318585" | "5330437" | "5338305" | "5342315" | "5342382" | "5356421" | "5385553" | "5387197" | "5399167" | "5405328" | "5441041" | "5462532" | "5467762" | "5474539" | "5476475" | "5486190" | "5522833" | "5534009" | "5569160" | "5569292" | "5584850" | "5609604" | "5618297" | "5626598" | "5658236" | "5662615" | "5669885" | "5685854" | "5690663" | "5690664" | "5709671" | "5752938" | "5776112" | "5782812" | "5792113" | "5803919" | "5807338" | "5817061" | "5851216" | "5860996" | "5865807" | "5879332" | "5895377" | "5904699" | "5906595" | "5916232" | "5947930" | "5980493" | "5989224" | "5997510" | "6004326" | "6197041" | "6319266" | "6497716" | "6551282" | "6685630" | "6702787" | "7169130" |				

		"7390317" | "7731694").PN. OR ("8137318").URPN.					
L23	255	("0729423" | "3086797" | "3197173" | "3438607" | "3920215" | "3977400" | "4149535" | "4231400" | "4243034" | "4324239" | "4378013" | "4473369" | "4496348" | "4634421" | "4723550" | "4786028" | "4839471" | "4960259" | "4978341" | "5009643").PN. OR ("5127626").URPN.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2020/06/10 05:57 PM
L24	2	("20120138832").PN.	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	OFF	OFF	2020/06/10 06:00 PM
L25	2	16/117519 and (pressure with different)	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	ON	ON	2020/06/10 06:25 PM
L26	1	16/117519 and (vacuum adj pressure)	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	ON	ON	2020/06/10 06:27 PM
L27	2	16/117519 and (vacuum)	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	ON	ON	2020/06/10 06:27 PM
L28	1	16/117519 and (filament)	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	ON	ON	2020/06/10 07:46 PM
L29	1	("20150305859").PN.	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	OFF	OFF	2020/06/10 07:57 PM
L30	2	16/117519 and vacuum	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	ON	ON	2020/06/11 10:02 AM
L31	1	("20120310166").PN.	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	OFF	OFF	2020/06/11 10:54 AM
L32	1	("7172580").PN.	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	OFF	OFF	2020/06/11 10:59 AM
L33	14	(compliant adj polymer) with (silicon adj rubber)	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	ON	ON	2020/06/11 11:13 AM
L34	57	(compliant adj polymer) with (silicone adj rubber)	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	ON	ON	2020/06/11 11:14 AM
L35	57	L34 not L33	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	ON	ON	2020/06/11 11:14 AM
L36	179	((benjamin near Merritt) or (John near Thress) or (Paul near Lubock)).in. and valve	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	ON	ON	2020/06/11 02:17 PM
L37	2	L36 and (reinforcement) and (filament)	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	ON	ON	2020/06/11 02:18 PM
L38	4	L36 and (reinforcement) and (tension$4)	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	ON	ON	2020/06/11 02:18 PM
L39	1	16/117519 and uniform	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	ON	ON	2020/11/19 01:13 PM
L40	1	("20180193043").PN.	(US-PGPUB; USPAT;	OR	OFF	OFF	2020/11/19

			FPRS; EPO; JPO)				01:16 PM
L41	1114	(hemostatic adj valve) and (filament or thread or string) and (bias or spring)	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	ON	ON	2020/11/19 04:38 PM
L42	943	L41 and (@ad<"20170906")	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	ON	ON	2020/11/19 04:38 PM
L43	1305	((pinch adj valve) or (hemestatic with seal)) and (filament or thread or string) and (bias or spring) and (@ad<"20170906")	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	ON	ON	2020/11/19 04:59 PM
L44	1304	L43 not L42	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	ON	ON	2020/11/19 05:00 PM
L45	4	("3830462" | "7168444").PN. OR ("7775501").URPN.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2020/11/19 05:12 PM
L46	37	("10098651"|"10238406"|"20010051810"|"20020156457"|"20030116731"|"20040039412"|"20040199202"|"20050283186"|"20060247500"|"20080262528"|"20080300466"|"20090281525"|"20110144592"|"20120059356"|"20130092012"|"20140276403"|"20150133990"|"20150305859"|"20170037548"|"20170058623"|"20170233908"|"20180105963"|"20180296240"|"20180344339"|"20180361116"|"20190046219"|"20190070401"|"2846179"|"3892161"|"4034642"|"4287808"|"4523738"|"4551862"|"4978341"|"5360417"|"8715314"|"9844387").PN.	(US-PGPUB; USPAT)	OR	ON	ON	2020/11/19 06:55 PM
L52	2	("20190046219").PN.	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	OFF	OFF	2021/02/05 10:36 AM
L53	3	(("20140371779") or ("20180064454")).PN.	(US-PGPUB; USPAT; FPRS; EPO; JPO)	OR	OFF	OFF	2021/02/05 10:38 AM
L54	2	("11000682").pn.	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/05/22 06:33 PM
L55	333	("2846179" | "3088363" | "3197173" | "3435826"	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/05/22 06:34 PM

		| "3892161" | "3923065" | "4030503" | "4034642" | "4287808" | "4393872" | "4523738" | "4551862" | "4650466" | "4873978" | "4883458" | "4890611" | "4960259" | "4978341" | "5011488" | "5059178" | "5102415" | "5127626" | "5129910" | "5192286" | "5192290" | "5360417" | "5370653" | "5476450" | "5490859" | "5591137" | "5746758" | "5749858" | "5766191" | "5782817" | "5827229" | "5827304" | "5868708" | "5873866" | "5873882" | "5876414" | "5882329" | "5911710" | "5972019" | "5974938" | "5989233" | "5993483" | "6066149" | "6221006" | "6228060" | "6238412" | "6254571" | "6258115" | "6306163" | "6350271" | "6364895" | "6368339" | "6383205" | "6413235" | "6423032" | "6440148" | "6454741" | "6454775" | "6458103" | "6458139" | "6511492" | "6514273" | "6530935" | "6530939" | "6544279" | "6551342" | "6589263" | "6596011" | "6602271" | "6605074" | "6605102" | "6623460" | "6635070" | "6645222" | "6660013" | "6663650" | "6685722" | "6692504" | "6699260" | "6755847" | "6767353" | "6800080" | "6824553" | "6939361" | "6960222" | "7004954" | "7036707" | "7041084" | "7052500" | "7056328" | "7069835" | "7094249" | "7179273" | "7220269" | "7232432" | "7244243" | "7285126" | "7306618" | "7320698" | "7323002" | "7331980" | "7534234" | "7578830" | "7621870" | "7674247" | "7691121" | "7695458" | "7763010" | "7766934" | "7775501" | "7905877" | "7905896" | "7938809" | "7938820" | "7967790" | "7976511"					

		| "7993302" | "7993363" | "8043313" | "8052640" | "8066757" | "8070791" | "8075510" | "8088140" | "8100935" | "8109962" | "8118829" | "8197493" | "8246641" | "8261648" | "8267897" | "8298257" | "8317748" | "8337450" | "RE43902" | "8357178" | "8361104" | "8409215" | "8486105" | "8491539" | "8512352" | "8535334" | "8545526" | "8568432" | "8574262" | "8579915" | "8585713" | "8696622" | "8715314" | "8771289" | "8777893" | "8784434" | "8784441" | "8795305" | "8795345" | "8801748" | "8814927" | "8820207" | "8826791" | "8828044" | "8833224" | "8845621" | "8852205" | "8852226" | "8932319" | "8939991" | "8945143" | "8945172" | "8968330" | "8992504" | "9005172" | "9101382" | "9149609" | "9161766" | "9204887" | "9259237" | "9283066" | "9408620" | "9439664" | "9439751" | "9456834" | "9463036" | "9526864" | "9526865" | "9566424" | "9579116" | "9616213" | "9636206" | "9700332" | "9717519" | "9744024" | "9757137" | "9844386" | "9844387" | "9999493" | "10004531" | "10045790" | "10098651" | "10238406" | "10335186" | "10342571" | "10349960" | "20010004699" | "20010041909" | "20010051810" | "20020111648" | "20020120277" | "20020147458" | "20020156457" | "20030114875" | "20030116731" | "20030125663" | "20030135230" |					

		"20030153973" | "20040039412" | "20040073243" | "20040199202" | "20050038468" | "20050119668" | "20050283186" | "20060047286" | "20060100662" | "20060247500" | "20060253145" | "20060282111" | "20070038225" | "20070112374" | "20070118165" | "20070161963" | "20070179513" | "20070191866" | "20070198028" | "20070208361" | "20070208367" | "20070213753" | "20070255252" | "20080015541" | "20080088055" | "20080157017" | "20080167678" | "20080228209" | "20080234722" | "20080262528" | "20080269798" | "20080300466" | "20090018566" | "20090054918" | "20090062841" | "20090160112" | "20090163846" | "20090182362" | "20090281525" | "20090292307" | "20100087850" | "20100114113" | "20100121312" | "20100204712" | "20100249815" | "20100318178" | "20110054405" | "20110060212" | "20110144592" | "20110152993" | "20110190806" | "20110213290" | "20110213403" | "20110224707" | "20110245807" | "20110251629" | "20110264133" | "20110319917" |				

		"20120059356" | "20120089216" | "20120101480" | "20120101510" | "20120138832" | "20120143239" | "20120165919" | "20120179181" | "20120232655" | "20120271231" | "20120310166" | "20130092012" | "20130184703" | "20140005713" | "20140025048" | "20140276403" | "20140371779" | "20150018860" | "20150133990" | "20150196744" | "20150238207" | "20150265299" | "20150305756" | "20150305859" | "20150352325" | "20150360001" | "20150374391" | "20160113666" | "20160143721" | "20160262790" | "20160277276" | "20170037548" | "20170058623" | "20170105745" | "20170112513" | "20170112514" | "20170189041" | "20170233908" | "20170265878" | "20170325839" | "20180064454" | "20180092652" | "20180105963" | "20180125512" | "20180193043" | "20180256178" | "20180296240" | "20180344339" | "20180361116" | "20190000492" | "20190046219" | "20190070401" | "20190150959" | "20190231373").pn. AND (PGPB | USPT | USOC).dbnm.					
L56	3	16/117519 AND	(US-PGPUB; USPAT;	OR	ON	ON	2022/05/22

		(constricting ADJ mechanism)	FPRS; EPO; JPO)				07:06 PM
L57	21	("1100682").pn.	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/08/05 04:00 PM
L58	2	("11000682").pn.	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/08/05 04:01 PM
L59	0	("201403717779").pn.	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/08/05 05:26 PM
L60	1	("20140371779").pn.	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/08/05 05:26 PM
L61	333	("2846179" | "3088363" | "3197173" | "3435826" | "3892161" | "3923065" | "4030503" | "4034642" | "4287808" | "4393872" | "4523738" | "4551862" | "4650466" | "4873978" | "4883458" | "4890611" | "4960259" | "4978341" | "5011488" | "5059178" | "5102415" | "5127626" | "5129910" | "5192286" | "5192290" | "5360417" | "5370653" | "5476450" | "5490859" | "5591137" | "5746758" | "5749858" | "5766191" | "5782817" | "5827229" | "5827304" | "5868708" | "5873866" | "5873882" | "5876414" | "5882329" | "5911710" | "5972019" | "5974938" | "5989233" | "5993483" | "6066149" | "6221006" | "6228060" | "6238412" | "6254571" | "6258115" | "6306163" | "6350271" | "6364895" | "6368339" | "6383205" | "6413235" | "6423032" | "6440148"	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/08/05 05:28 PM

		| "6454741" | "6454775" | "6458103" | "6458139" | "6511492" | "6514273" | "6530935" | "6530939" | "6544279" | "6551342" | "6589263" | "6596011" | "6602271" | "6605074" | "6605102" | "6623460" | "6635070" | "6645222" | "6660013" | "6663650" | "6685722" | "6692504" | "6699260" | "6755847" | "6767353" | "6800080" | "6824553" | "6939361" | "6960222" | "7004954" | "7036707" | "7041084" | "7052500" | "7056328" | "7069835" | "7094249" | "7179273" | "7220269" | "7232432" | "7244243" | "7285126" | "7306618" | "7320698" | "7323002" | "7331980" | "7534234" | "7578830" | "7621870" | "7674247" | "7691121" | "7695458" | "7763010" | "7766934" | "7775501" | "7905877" | "7905896" | "7938809" | "7938820" | "7967790" | "7976511" | "7993302" | "7993363" | "8043313" | "8052640" | "8066757" | "8070791" | "8075510" | "8088140" | "8100935" | "8109962" | "8118829" | "8197493" | "8246641" | "8261648" | "8267897" | "8298257" | "8317748" | "8337450" | "RE43902" | "8357178" | "8361104" | "8409215" | "8486105" | "8491539" | "8512352" | "8535334" | "8545526" | "8568432" | "8574262" | "8579915" | "8585713" | "8696622" | "8715314" | "8771289" | "8777893" | "8784434" | "8784441" | "8795305" | "8795345" | "8801748" | "8814927" | "8820207" | "8826791" | "8828044" | "8833224" | "8845621" | "8852205" | "8852226" | "8932319" | "8939991" | "8945143" | "8945172" | "8968330" | "8992504" | "9005172" |					

		"9101382" | "9149609" | "9161766" | "9204887" | "9259237" | "9283066" | "9408620" | "9439664" | "9439751" | "9456834" | "9463036" | "9526864" | "9526865" | "9566424" | "9579116" | "9616213" | "9636206" | "9700332" | "9717519" | "9744024" | "9757137" | "9844386" | "9844387" | "9999493" | "10004531" | "10045790" | "10098651" | "10238406" | "10335186" | "10342571" | "10349960" | "20010004699" | "20010041909" | "20010051810" | "20020111648" | "20020120277" | "20020147458" | "20020156457" | "20030114875" | "20030116731" | "20030125663" | "20030135230" | "20030153973" | "20040039412" | "20040073243" | "20040199202" | "20050038468" | "20050119668" | "20050283186" | "20060047286" | "20060100662" | "20060247500" | "20060253145" | "20060282111" | "20070038225" | "20070112374" | "20070118165" | "20070161963" | "20070179513" | "20070191866" | "20070198028" | "20070208361" | "20070208367" | "20070213753" | "20070255252" | "20080015541" | "20080088055" | "20080157017" | "20080167678" | "20080228209" |				

		"20080234722" | "20080262528" | "20080269798" | "20080300466" | "20090018566" | "20090054918" | "20090062841" | "20090160112" | "20090163846" | "20090182362" | "20090281525" | "20090292307" | "20100087850" | "20100114113" | "20100121312" | "20100204712" | "20100249815" | "20100318178" | "20110054405" | "20110060212" | "20110144592" | "20110152993" | "20110190806" | "20110213290" | "20110213403" | "20110224707" | "20110245807" | "20110251629" | "20110264133" | "20110319917" | "20120059356" | "20120089216" | "20120101480" | "20120101510" | "20120138832" | "20120143239" | "20120165919" | "20120179181" | "20120232655" | "20120271231" | "20120310166" | "20130092012" | "20130184703" | "20140005713" | "20140025048" | "20140276403" | "20140371779" | "20150018860" | "20150133990" | "20150196744" | "20150238207" | "20150265299" | "20150305756" | "20150305859" | "20150352325" | "20150360001" | "20150374391" | "20160113666" |				

		"20160143721" | "20160262790" | "20160277276" | "20170037548" | "20170058623" | "20170105745" | "20170112513" | "20170112514" | "20170189041" | "20170233908" | "20170265878" | "20170325839" | "20180064454" | "20180092652" | "20180105963" | "20180125512" | "20180193043" | "20180256178" | "20180296240" | "20180344339" | "20180361116" | "20190000492" | "20190046219" | "20190070401" | "20190150959" | "20190231373").pn. AND (PGPB | USPT | USOC).dbnm.					
L62	105	("1170208" | "1741526" | "2217718" | "2269401" | "3675657" | "4118805" | "4256094" | "4399809" | "4401107").pn. OR ("4551862").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/08/05 05:29 PM
L63	19	("2003/0116731").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/08/05 05:43 PM
L64	1	17/705189	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/08/08 11:02 AM
L65	1	("20110144592").pn.	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/08/08 01:12 PM
L66	12	"7775501"	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO);	OR	ON	ON	2022/08/08 01:22 PM

			FPRS; EPO; JPO)				
L67	5183	((A61M2039/062 OR A61M2039/0673 OR A61M39/0613).cpc.) AND (@ad<"20170906")	(US-PGPUB; USPAT; FIT (AP, AT, AU, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/08/08 01:55 PM
L68	4288	L67 AND (valve OR seal)	(US-PGPUB; USPAT; FIT (AP, AT, AU, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/08/08 01:55 PM
L69	1185	L68 AND (string OR thread OR filament)	(US-PGPUB; USPAT; FIT (AP, AT, AU, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/08/08 01:55 PM
L70	474	L69 AND (button OR actuator)	(US-PGPUB; USPAT; FIT (AP, AT, AU, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/08/08 01:56 PM
L72	2	10/309485	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/08/08 02:04 PM
L73	1594	((F16K7/02 OR F16K7/08 OR F16K7/04).cpc.) AND (@ad<"20170906")	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/08/08 02:05 PM
L74	362	L73 AND (button OR actuator)	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/08/08 02:05 PM
L75	24	("3383131" | "4094492" | "4540411" | "4570898" | "5112324" | "5211370" | "5582165" | "5814026" | "6270053" | "6450989" | "6475135" | "7914492" | "7981086" | "8079973" | "8132783" | "8900168" | "20040015177" | "20050131344" | "20070118021" | "20070161956" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/08/08 02:08 PM

		"20110022063" | "20140012235" | "20140330309").pn. OR ("10183159").urpn. AND (PGPB | USPT | USOC).dbnm.					
L76	250	("20010004699" OR "20010041909" OR "20010051810" OR "20020022858" OR "20020026211" OR "20020032455" OR "20020095161" OR "20020095171" OR "20020111648" OR "20020120277" OR "20020147458" OR "20020156457" OR "20030083693" OR "20030100919" OR "20030114875" OR "20030116731" OR "20030125663" OR "20030135230" OR "20030135258" OR "20030153873" OR "20030153973" OR "20030168068" OR "20030176884" OR "20030191516" OR "20030208224" OR "20040039412" OR "20040068288" OR "20040073243" OR "20040098033" OR "20040133232" OR "20040138692" OR "20040167567" OR "20040199201" OR "20040199202" OR "20050033172" OR "20050038468" OR "20050055047" OR "20050085826" OR "20050085849" OR "20050119668" OR "20050177132" OR "20050187570" OR "20050283165" OR "20050283166" OR "20050283186" OR "20060020286" OR "20060042786" OR "20060047286" OR "20060089533" OR "20060100662" OR "20060155305" OR	(US-PGPUB; USPAT)	OR	ON	ON	2022/08/08 02:18 PM

		"20060173525" OR "20060195137" OR "20060200221" OR "20060224177" OR "20060229645" OR "20060247500" OR "20060253145" OR "20060276874" OR "20060282111" OR "20060293696" OR "20070038225" OR "20070112374" OR "20070118165" OR "20070149996" OR "20070161963" OR "20070179513" OR "20070191866" OR "20070198028" OR "20070208361" OR "20070208367" OR "20070213753" OR "20070213765" OR "20070255252" OR "20070288054" OR "20080015541" OR "20080088055" OR "20080157017" OR "20080167678" OR "20080183136" OR "20080228209" OR "20080234722" OR "20080262528" OR "20080269798" OR "20080300466" OR "20090018566" OR "20090054918" OR "20090062841" OR "20090069828" OR "20090076417" OR "20090160112" OR "20090163846" OR "20090182362" OR "20090281525" OR "20090292307" OR "20090299393" OR "20100030256" OR "20100042136" OR "20100087844" OR "20100087850" OR "20100114113" OR "20100121312" OR "20100137846" OR "20100190156" OR "20100204712" OR "20100249815" OR "20100268264" OR "20100318178" OR "20110034987" OR					

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		"20140031856" OR "20140046133" OR "20140046243" OR "20140121672" OR "20140155830" OR "20140155908" OR "20140155980" OR "20140180397" OR "20140188143" OR "20140236219" OR "20140243882" OR "20140257253" OR "20140276403" OR "20140318354" OR "20140324091" OR "20140330286" OR "20140336691" OR "20140343593" OR "20140364896" OR "20140371779" OR "20150005781" OR "20150005792" OR "20150018859" OR "20150018860" OR "20150018929" OR "20150025555" OR "20150032144" OR "20150059908" OR "20150088190" OR "20150127035" OR "20150133990" OR "20150150672" OR "20150164523" OR "20150164666" OR "20150190155" OR "20150190156" OR "20150196380" OR "20150196744" OR "20150209058" OR "20150209165" OR "20150238207" OR "20150250578" OR "20150265299" OR "20150305756" OR "20150305859" OR "20150352325" OR "20150360001" OR "20150374391" OR "20160008014" OR "20160022293" OR "20160058540" OR "20160074627" OR "20160106448" OR "20160106449" OR "20160113663" OR "20160113664" OR "20160113665" OR "20160113666" OR					

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L77	32	("20170348014" OR "20180042624" OR "20180042626" OR "20180064453" OR "20180064454" OR "20180070968" OR "20180092652" OR "20180105963" OR "20180125512" OR "20180193043" OR "20180236205" OR "20180256178" OR "20180296240" OR "20180344339" OR "20180361116" OR "20190000492" OR "20190046219" OR "20190070401" OR "20190117244" OR "20190133622" OR "20190133623" OR "20190133624" OR "20190133625" OR "20190133626" OR "20190133627" OR "20190150959" OR "20190231373" OR "20190321071" OR "20190336148" OR "20200046368" OR "20210113224" OR "20210186541").pn.	(US-PGPUB; USPAT)	OR	ON	ON	2022/08/08 02:18 PM

L78	1263	((Benjamin NEAR Merritt) OR (John NEAR Thress) OR (Paul NEAR Lubock)).in.	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/08/08 02:19 PM
L79	110	L78 AND (valve AND filament)	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/08/08 02:19 PM
L81	5	("10309485").pn.	(US-PGPUB; USPAT; FIT (AP, AT, AU, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/08/11 12:16 PM
L82	2	("11000682").pn.	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/08/11 12:17 PM
L83	25	("1840967" | "1977504" | "2434835" | "2846179" | "3329396" | "3572627" | "3897039" | "3994472" | "4007904" | "4095805" | "4310139" | "4372026" | "4447037" | "4449719" | "4452421" | "4458876" | "5116017" | "5273108" | "7845648" | "20140174754").pn. OR ("10648268").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/08/11 12:48 PM
L84	1	17/705189	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/08/11 01:58 PM
L85	0	17/865266 AND (slide OR slidable OR slidably)	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/08/30 09:42 AM
L86	0	17/865266	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO);	OR	ON	ON	2022/08/30 09:43 AM

			FPRS; EPO; JPO)				
L87	2	("11000682").pn.	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/08/30 10:02 AM
L88	2	17/705189	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/11/07 10:32 AM
L89	6	("2016100252").pn.	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/11/07 10:49 AM
L90	3	("20160100252").pn.	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/11/07 10:50 AM
L91	7	"20160100252"	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/11/07 10:51 AM
L92	28	"2016100252"	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/11/07 10:51 AM
L93	52	(Pattok NEAR Greg).in.	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/11/07 10:52 AM
L94	92	"2012009675"	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/11/07 10:54 AM
L95	1524	("10004531"|"10010335"|"10016266"|"10028759"|"10045790"|"10098651"|"10130385"|"10226263"|"10238406"|"1027	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO);	OR	ON	ON	2022/11/07 10:56 AM

		1864"|"10327883"|"103 35186"|"10342571"|"10 349960"|"10383644"|"1 0524811"|"10588655"|" 10695159"|"10709471"| "10799331"|"10912577" |"11000682"|"11058445 "|"11058451"|"1114757 1"|"11154314"|"200100 04699"|"20010041909"| "20010051810"|"20020 022858"|"20020022859 "|"20020026211"|"2002 0032455"|"2002004945 2"|"20020095161"|"200 20095171"|"200201116 48"|"20020120277"|"20 020147458"|"20020151 918"|"20020156457"|"2 0020161392"|"2002016 9474"|"20020173819"|" 20020188276"|"200300 83693"|"20030100919"| "20030114875"|"20030 116731"|"20030125663 "|"20030135230"|"2003 0135258"|"2003015387 3"|"20030153973"|"200 30168068"|"200301768 84"|"20030191516"|"20 030208224"|"20030216 774"|"20040039412"|"2 0040068288"|"2004007 3243"|"20040098033"|" 20040122359"|"200401 33232"|"20040138525"| "20040138692"|"20040 167567"|"20040199201 "|"20040199202"|"2004 0260344"|"2004026727 2"|"20050033172"|"200 50038468"|"200500550 47"|"20050085769"|"20 050085826"|"20050085 846"|"20050085849"|"2 0050119668"|"2005017 7132"|"20050187570"|" 20050283165"|"200502 83166"|"20050283186"| "20060020286"|"20060 042786"|"20060047286 "|"20060074401"|"2006 0089533"|"2006010066 2"|"20060155305"|"200 60173525"|"200601951 37"|"20060200221"|"20 060224177"|"20060229 645"|"20060247500"|"2	FPRS; EPO; JPO)				

		0060253145"|"2006027 6874"|"20060282111"|" 20060293696"|"200700 38225"|"20070093744"| "20070112374"|"20070 118165"|"20070149996 "|"20070161963"|"2007 0179513"|"2007019186 6"|"20070198028"|"200 70208361"|"200702083 67"|"20070213753"|"20 070213765"|"20070255 252"|"20070288054"|"2 0080015541"|"2008008 8055"|"20080157017"|" 20080167678"|"200801 83136"|"20080228209"| "20080234722"|"20080 262528"|"20080269798 "|"20080300466"|"2009 0018566"|"2009005491 8"|"20090062841"|"200 90069828"|"200900764 17"|"20090160112"|"20 090163846"|"20090182 362"|"20090192495"|"2 0090281525"|"2009029 2307"|"20090299393"|" 20100016837"|"201000 30256"|"20100042136"| "20100087844"|"20100 087850"|"20100114113 "|"20100121312"|"2010 0137846"|"2010019015 6"|"20100204712"|"201 00249815"|"201002682 64"|"20100318178"|"20 110034987"|"20110054 405"|"20110060212"|"2 0110118817"|"2011012 5181"|"20110144592"|" 20110152823"|"201101 52993"|"20110160742"| "20110160763"|"20110 190806"|"20110196414 "|"20110213290"|"2011 0213403"|"2011022470 7"|"20110245807"|"201 10251629"|"201102641 33"|"20110265681"|"20 110288529"|"20110288 572"|"20110319917"|"2 0120059309"|"2012005 9356"|"20120083824"|" 20120083868"|"201200 89216"|"20120101480"| "20120101510"|"20120 138832"|"20120143239					

		"|"20120165919"|"2012 0179181"|"2012019727 7"|"20120232655"|"201 20271105"|"201202712 31"|"20120277788"|"20 120310166"|"20130030 460"|"20130046332"|"2 0130066348"|"2013009 2012"|"20130096571"|" 20130102996"|"201301 16708"|"20130116721"| "20130126559"|"20130 144326"|"20130165871 "|"20130184703"|"2013 0197454"|"2013019756 7"|"20130226196"|"201 30289608"|"201303175 89"|"20130345739"|"20 140005712"|"20140005 713"|"20140005715"|"2 0140005717"|"2014002 5048"|"20140031856"|" 20140046133"|"201400 46243"|"20140121672"| "20140155830"|"20140 155908"|"20140155980 "|"20140180397"|"2014 0188143"|"2014023621 9"|"20140243882"|"201 40257253"|"201402764 03"|"20140303658"|"20 140318354"|"20140324 091"|"20140330286"|"2 0140336691"|"2014034 3593"|"20140364896"|" 20140371779"|"201500 05781"|"20150005792"| "20150018859"|"20150 018860"|"20150018929 "|"20150025555"|"2015 0032144"|"2015005990 8"|"20150088190"|"201 50127035"|"201501339 90"|"20150150672"|"20 150164523"|"20150164 666"|"20150190155"|"2 0150190156"|"2015019 6380"|"20150196744"|" 20150209058"|"201502 09165"|"20150238207"| "20150250578"|"20150 265299"|"20150305756 "|"20150305859"|"2015 0352325"|"2015036000 1"|"20150374391"|"201 60008014"|"201600222 93"|"20160058540"|"20 160074627"|"20160106					

		448"|"20160106449"|"2 0160113663"|"2016011 3664"|"20160113665"|" 20160113666"|"201601 43721"|"20160151605"| "20160206344"|"20160 228134"|"20160262790 "|"20160287276"|"2016 0367285"|"2017001456 0"|"20170037548"|"201 70042571"|"201700499 42"|"20170058623"|"20 170079672"|"20170086 864"|"20170100142"|"2 0170105743"|"2017010 5745"|"20170112513"|" 20170112514"|"201701 89041"|"20170233908"| "20170265878"|"20170 303939"|"20170303942 "|"20170303947"|"2017 0303948"|"2017032583 9"|"20170348014"|"201 80042624"|"201800426 26"|"20180064453"|"20 180064454"|"20180070 968"|"20180092652"|"2 0180105963"|"2018012 5512"|"20180193043"|" 20180236205"|"201802 56178"|"20180296240"| "20180344339"|"20180 361116"|"20190000492 "|"20190046219"|"2019 0070401"|"2019011724 4"|"20190133622"|"201 90133623"|"201901336 24"|"20190133625"|"20 190133626"|"20190133 627"|"20190150959"|"2 0190231373"|"2019032 1071"|"20190336148"|" 20200046368"|"202001 13412"|"20210113224"| "20210186541"|"20210 290925"|"20210330344 "|"20210378694"|"2022 0000505"|"2022000050 6"|"20220000507"|"202 20015798"|"202200228 98"|"20220039815"|"20 220125451"|"20220160 381"|"20220160382"|"2 0220160383"|"2022021 1992"|"20220240959"|" 2846179"|"2955592"|"3 088363"|"3197173"|"34 35826"|"3515137"|"389					

		2161"|"3923065"|"4030 503"|"4034642"|"42223 80"|"4243040"|"428780 8"|"4324262"|"4393872" |"4469100"|"4523738"|" 4551862"|"4604094"|"4 643184"|"4646736"|"46 50466"|"4776337"|"479 0812"|"4863440"|"4870 953"|"4883458"|"48860 62"|"4890611"|"489857 5"|"4946440"|"4960259" |"4978341"|"5059178"|" 5100423"|"5127626"|"5 129910"|"5135484"|"51 54724"|"5192274"|"519 2286"|"5192290"|"5329 923"|"5360417"|"53643 45"|"5376101"|"538388 7"|"5389100"|"5419774" |"5443443"|"5456667"|" 5476450"|"5490859"|"5 496365"|"5527326"|"55 49626"|"5591137"|"566 2703"|"5746758"|"5749 858"|"5769816"|"57828 17"|"5800457"|"582722 9"|"5846251"|"5860938" |"5873866"|"5873882"|" 5876414"|"5895406"|"5 911710"|"5911733"|"59 11754"|"5941869"|"594 7985"|"5954737"|"5971 938"|"5972019"|"59749 38"|"5989233"|"599348 3"|"6030397"|"6066158" |"6068645"|"6126635"|" 6142987"|"6146396"|"6 146403"|"6152946"|"61 56055"|"6159230"|"616 5196"|"6168579"|"6179 859"|"6221006"|"62280 60"|"6238412"|"624507 8"|"6245089"|"6254571" |"6258115"|"6264663"|" 6306163"|"6322572"|"6 350271"|"6361545"|"63 64895"|"6368339"|"638 3205"|"6402771"|"6413 235"|"6423032"|"64321 22"|"6458103"|"647523 6"|"6485502"|"6508782" |"6511492"|"6514273"|" 6530923"|"6530935"|"6 544276"|"6544278"|"65 44279"|"6551342"|"656 9181"|"6575995"|"6589 263"|"6596011"|"66022					

		71"|"6605074"|"660510 2"|"6610077"|"6620148" |"6620179"|"6620182"|" 6623460"|"6635068"|"6 645222"|"6660013"|"66 60014"|"6663650"|"669 2504"|"6699260"|"6702 830"|"6755847"|"67673 53"|"6790204"|"680008 0"|"6824545"|"6824550" |"6824553"|"6830561"|" 6846029"|"6902540"|"6 939361"|"6942682"|"69 45977"|"6960222"|"700 4954"|"7036707"|"7041 084"|"7052500"|"70563 28"|"7063707"|"706983 5"|"7094249"|"7179273" |"7232432"|"7244243"|" 7285126"|"7300458"|"7 306618"|"7320698"|"73 23002"|"7331980"|"753 4234"|"7578830"|"7621 870"|"7674247"|"76911 21"|"7695458"|"776301 0"|"7766934"|"7775501" |"7780696"|"7905877"|" 7905896"|"7938809"|"7 938820"|"7967790"|"79 76511"|"7993302"|"799 3363"|"8043313"|"8052 640"|"8057496"|"80667 57"|"8070769"|"807079 1"|"8075510"|"8088140" |"8092486"|"8100935"|" 8109962"|"8118829"|"8 197493"|"8246641"|"82 61648"|"8267897"|"829 8257"|"8317748"|"8337 450"|"8357178"|"83611 04"|"8409215"|"848610 5"|"8491539"|"8512352" |"8535334"|"8545526"|" 8568432"|"8574262"|"8 579915"|"8585713"|"86 08754"|"8657867"|"869 6622"|"8715314"|"8721 714"|"8771289"|"87778 93"|"8784441"|"878444 2"|"8795305"|"8795345" |"8801748"|"8814927"|" 8820207"|"8826791"|"8 828044"|"8833224"|"88 45621"|"8852226"|"893 9991"|"8945143"|"8945 172"|"8956384"|"89925 04"|"9005172"|"902840 1"|"9101382"|"9125683"					

		|"9126016"|"9149609"|"9155552"|"9161766"|"9173668"|"9186487"|"9204887"|"9259237"|"9283066"|"9351747"|"9358037"|"9439664"|"9439751"|"9456834"|"9463035"|"9463036"|"9526864"|"9526865"|"9566424"|"9579116"|"9616213"|"9636206"|"9643035"|"9700332"|"9717514"|"9717519"|"9744024"|"9757137"|"9844386"|"9844387"|"9848975"|"9849014"|"9962178"|"9999493"|"RE43902").PN.				
L96	435	L95 AND (valve OR seal)	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/11/07 11:10 AM
L97	1	17/865266	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/11/07 11:53 AM
L98	5994	((A61M2039/0673 OR A61M39/0613 OR A61M2039/062 OR A61M2039/0626).cpc.) AND (@ad<"20170906")	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/11/07 11:55 AM
L99	5031	L98 AND (valve OR seal OR elastic)	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/11/07 11:55 AM
L100	596	L99 AND (collapse OR collapsible)	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/11/07 11:56 AM
L101	1464	L99 AND (bias OR spring)	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/11/07 11:56 AM
L102	295	L100 NOT L101	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA,	OR	ON	ON	2022/11/07 01:48 PM

			CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)				
L103	2	("11000682").pn.	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/11/07 02:18 PM
L104	4	("5376101").pn.	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/11/07 02:42 PM
L105	4	"2019246240"	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/11/07 02:55 PM
L106	10	"110652645"	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/11/07 02:56 PM
L107	9	("5011488," "5800457").pn.	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/11/07 02:57 PM
L108	28	"2011213403"	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/11/07 03:02 PM
L109	4	("2017086864").pn.	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/11/07 03:07 PM
L110	18	"2017086864"	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/11/07 03:08 PM
L111	26	"2017086864," "2013226196"	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA,	OR	ON	ON	2022/11/07 03:11 PM

			CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)				
L112	7	"20170086864," "20130226196"	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/11/07 03:11 PM
L113	2	"20140371779"	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/11/07 03:16 PM
L114	3958	(hemostasis ADJ valve) AND spring AND (@ad<"20170906")	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/11/07 03:32 PM
L115	3684	L114 NOT L101 NOT L100	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/11/07 03:34 PM
L116	2516	L114 AND (filament OR thread OR string)	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/11/08 10:09 AM
L117	134	L116 NOT L115	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/11/08 10:10 AM
L118	250	("20010004699" OR "20010041909" OR "20010051810" OR "20020022858" OR "20020026211" OR "20020032455" OR "20020095161" OR "20020095171" OR "20020111648" OR "20020120277" OR "20020147458" OR "20020156457" OR "20030083693" OR "20030100919" OR "20030114875" OR	(US-PGPUB; USPAT)	OR	ON	ON	2022/11/28 11:33 AM

		"20030116731" OR "20030125663" OR "20030135230" OR "20030135258" OR "20030153873" OR "20030153973" OR "20030168068" OR "20030176884" OR "20030191516" OR "20030208224" OR "20040039412" OR "20040068288" OR "20040073243" OR "20040098033" OR "20040133232" OR "20040138692" OR "20040167567" OR "20040199201" OR "20040199202" OR "20050033172" OR "20050038468" OR "20050055047" OR "20050085826" OR "20050085849" OR "20050119668" OR "20050177132" OR "20050187570" OR "20050283165" OR "20050283166" OR "20050283186" OR "20060020286" OR "20060042786" OR "20060047286" OR "20060089533" OR "20060100662" OR "20060155305" OR "20060173525" OR "20060195137" OR "20060200221" OR "20060224177" OR "20060229645" OR "20060247500" OR "20060253145" OR "20060276874" OR "20060282111" OR "20060293696" OR "20070038225" OR "20070112374" OR "20070118165" OR "20070149996" OR "20070161963" OR "20070179513" OR "20070191866" OR "20070198028" OR "20070208361" OR "20070208367" OR "20070213753" OR "20070213765" OR					

		"20070255252" OR "20070288054" OR "20080015541" OR "20080088055" OR "20080157017" OR "20080167678" OR "20080183136" OR "20080228209" OR "20080234722" OR "20080262528" OR "20080269798" OR "20080300466" OR "20090018566" OR "20090054918" OR "20090062841" OR "20090069828" OR "20090076417" OR "20090160112" OR "20090163846" OR "20090182362" OR "20090281525" OR "20090292307" OR "20090299393" OR "20100030256" OR "20100042136" OR "20100087844" OR "20100087850" OR "20100114113" OR "20100121312" OR "20100137846" OR "20100190156" OR "20100204712" OR "20100249815" OR "20100268264" OR "20100318178" OR "20110034987" OR "20110054405" OR "20110060212" OR "20110118817" OR "20110125181" OR "20110144592" OR "20110152823" OR "20110152993" OR "20110160742" OR "20110160763" OR "20110190806" OR "20110196414" OR "20110213290" OR "20110213403" OR "20110224707" OR "20110245807" OR "20110251629" OR "20110264133" OR "20110265681" OR "20110288529" OR "20110288572" OR "20110319917" OR "20120059309" OR					

		"20120059356" OR "20120083824" OR "20120083868" OR "20120089216" OR "20120101480" OR "20120101510" OR "20120138832" OR "20120143239" OR "20120165919" OR "20120179181" OR "20120197277" OR "20120232655" OR "20120271105" OR "20120271231" OR "20120277788" OR "20120310166" OR "20130030460" OR "20130046332" OR "20130066348" OR "20130092012" OR "20130096571" OR "20130102996" OR "20130116721" OR "20130144326" OR "20130165871" OR "20130184703" OR "20130197567" OR "20130226196" OR "20130289608" OR "20130317589" OR "20130345739" OR "20140005712" OR "20140005713" OR "20140005715" OR "20140005717" OR "20140025048" OR "20140031856" OR "20140046133" OR "20140046243" OR "20140121672" OR "20140155830" OR "20140155908" OR "20140155980" OR "20140180397" OR "20140188143" OR "20140236219" OR "20140243882" OR "20140257253" OR "20140276403" OR "20140318354" OR "20140324091" OR "20140330286" OR "20140336691" OR "20140343593" OR "20140364896" OR "20140371779" OR "20150005781" OR "20150005792" OR					

		"20150018859" OR "20150018860" OR "20150018929" OR "20150025555" OR "20150032144" OR "20150059908" OR "20150088190" OR "20150127035" OR "20150133990" OR "20150150672" OR "20150164523" OR "20150164666" OR "20150190155" OR "20150190156" OR "20150196380" OR "20150196744" OR "20150209058" OR "20150209165" OR "20150238207" OR "20150250578" OR "20150265299" OR "20150305756" OR "20150305859" OR "20150352325" OR "20150360001" OR "20150374391" OR "20160008014" OR "20160022293" OR "20160058540" OR "20160074627" OR "20160106448" OR "20160106449" OR "20160113663" OR "20160113664" OR "20160113665" OR "20160113666" OR "20160143721" OR "20160206344" OR "20160228134" OR "20160262790" OR "20160287276" OR "20160367285" OR "20170014560" OR "20170037548" OR "20170042571" OR "20170058623" OR "20170079672" OR "20170086864" OR "20170100142" OR "20170105743" OR "20170105745" OR "20170112513" OR "20170112514" OR "20170189041" OR "20170233908" OR "20170265878" OR "20170303939" OR "20170303942" OR					

		"20170303947" OR "20170303948" OR "20170325839").pn.					
L119	32	("20170348014" OR "20180042624" OR "20180042626" OR "20180064453" OR "20180064454" OR "20180070968" OR "20180092652" OR "20180105963" OR "20180125512" OR "20180193043" OR "20180236205" OR "20180256178" OR "20180296240" OR "20180344339" OR "20180361116" OR "20190000492" OR "20190046219" OR "20190070401" OR "20190117244" OR "20190133622" OR "20190133623" OR "20190133624" OR "20190133625" OR "20190133626" OR "20190133627" OR "20190150959" OR "20190231373" OR "20190321071" OR "20190336148" OR "20200046368" OR "20210113224" OR "20210186541").pn.	(US-PGPUB; USPAT)	OR	ON	ON	2022/11/28 11:33 AM
L120	250	L118	(US-PGPUB; USPAT)	OR	ON	ON	2022/11/28 11:34 AM
L121	12894	(hemostasis OR twist) ADJ valve	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/11/28 02:19 PM
L122	1158	L121 AND filament AND (biasing OR spring) AND (@ad<"20170906")	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2022/11/28 02:19 PM
L123	21	("11259821" OR "11439799" OR "11457936" OR "11529158" OR "20060217664" OR "20080234715" OR "20110034986" OR	(US-PGPUB; USPAT)	OR	ON	ON	2022/12/16 10:23 AM

		"20170252057" OR "20170340867" OR "20190239910" OR "20190336142" OR "20210315598" OR "20220346800" OR "20220346801" OR "20220346813" OR "20220346814" OR "20220347455" OR "20220362512" OR "3675657" OR "6451036" OR "9216277" OR "9980813").pn.					
L124	11	("4960259" | "5127906" | "5514109" | "5871474" | "5895376" | "6221057" | "6276661" | "7597688" | "20010021828" | "20040172008" | "20110282301").pn. OR ("9216277").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/12/16 10:24 AM
L125	26	("20180184912," "20160262774," "20120172918," "20050054995," "5421824," "20210236148," "5158533," "202300446775," "20140188127," "20140074144," "8535283," "8753322," "8808259").pn.	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2023/04/10 09:40 AM
L126	43	("20220142638," "20220151647," "20220152355," "565364," "5908435," "4611594," "9827084," "202101376177," "11013523," "11406801," "11554005," "11559382," "6818006," "9078682," "20140052161," "20180042623").pn.	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2023/04/10 09:44 AM
L127	38	("20180184912," "20160262774," "20120172918," "20050054995," "5421824," "20210236148,"	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2023/04/10 10:00 AM

		"5158533," "20230046775," "20140188127," "20140074144," "8535283," "8753322," "8808259," "20230062809," "20010031981," "20040102807," "6059814").pn.					
L128	333	("2846179" | "3088363" | "3197173" | "3435826" | "3892161" | "3923065" | "4030503" | "4034642" | "4287808" | "4393872" | "4523738" | "4551862" | "4650466" | "4873978" | "4883458" | "4890611" | "4960259" | "4978341" | "5011488" | "5059178" | "5102415" | "5127626" | "5129910" | "5192286" | "5192290" | "5360417" | "5370653" | "5476450" | "5490859" | "5591137" | "5746758" | "5749858" | "5766191" | "5782817" | "5827229" | "5827304" | "5868708" | "5873866" | "5873882" | "5876414" | "5882329" | "5911710" | "5972019" | "5974938" | "5989233" | "5993483" | "6066149" | "6221006" | "6228060" | "6238412" | "6254571" | "6258115" | "6306163" | "6350271" | "6364895" | "6368339" | "6383205" | "6413235" | "6423032" | "6440148" | "6454741" | "6454775" | "6458103" | "6458139" | "6511492" | "6514273" | "6530935" | "6530939" | "6544279" | "6551342" | "6589263" | "6596011" | "6602271" | "6605074" | "6605102" | "6623460" | "6635070" | "6645222" | "6660013" | "6663650" | "6685722" | "6692504" | "6699260" | "6755847" | "6767353" | "6800080" | "6824553" | "6939361" | "6960222" | "7004954" | "7036707" | "7041084" | "7052500" | "7056328"	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/05/05 07:52 AM

		| "7069835" | "7094249" | "7179273" | "7220269" | "7232432" | "7244243" | "7285126" | "7306618" | "7320698" | "7323002" | "7331980" | "7534234" | "7578830" | "7621870" | "7674247" | "7691121" | "7695458" | "7763010" | "7766934" | "7775501" | "7905877" | "7905896" | "7938809" | "7938820" | "7967790" | "7976511" | "7993302" | "7993363" | "8043313" | "8052640" | "8066757" | "8070791" | "8075510" | "8088140" | "8100935" | "8109962" | "8118829" | "8197493" | "8246641" | "8261648" | "8267897" | "8298257" | "8317748" | "8337450" | "RE43902" | "8357178" | "8361104" | "8409215" | "8486105" | "8491539" | "8512352" | "8535334" | "8545526" | "8568432" | "8574262" | "8579915" | "8585713" | "8696622" | "8715314" | "8771289" | "8777893" | "8784434" | "8784441" | "8795305" | "8795345" | "8801748" | "8814927" | "8820207" | "8826791" | "8828044" | "8833224" | "8845621" | "8852205" | "8852226" | "8932319" | "8939991" | "8945143" | "8945172" | "8968330" | "8992504" | "9005172" | "9101382" | "9149609" | "9161766" | "9204887" | "9259237" | "9283066" | "9408620" | "9439664" | "9439751" | "9456834" | "9463036" | "9526864" | "9526865" | "9566424" | "9579116" | "9616213" | "9636206" | "9700332" | "9717519" | "9744024" | "9757137" | "9844386" | "9844387" | "9999493" | "10004531" | "10045790" | "10098651" | "10238406" | "10335186" |				

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L129	28	((benjamin NEAR Merritt) OR (John NEAR Thress) OR (Paul NEAR Lubock)).in. AND (hemostasis ADJ valve)	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2023/05/05 08:09 AM
L130	250	("11406801" OR "11554005" OR "11559382" OR "20010031981" OR "20040102807" OR "20050054995" OR "20120172918" OR "20140052161" OR "20140074144" OR "20140188127" OR "20160262774" OR "20180042623" OR "20180184912" OR "20210236148" OR "20230046775" OR "20230062809" OR "20230070120" OR "5158533" OR "5421824" OR "6059814" OR "6818006" OR "8535283" OR "8753322" OR "8808259" OR "9078682" OR "10478535" OR "11013523" OR "11259821" OR "11433218" OR "11439799" OR "11457936" OR "11529158" OR "20010049486" OR "20040127936" OR "20050085769" OR "20060217664" OR "20070010787" OR "20080234715" OR "20100217276" OR "20110034986" OR	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/05 08:16 AM

		"20110196309" OR "20130035628" OR "20130281788" OR "20140257363" OR "20140296868" OR "20140303658" OR "20150173782" OR "20160220741" OR "20170049942" OR "20170056032" OR "20170196576" OR "20170252057" OR "20170319221" OR "20170340867" OR "20180104404" OR "20180256177" OR "20190239910" OR "20190336142" OR "20210022843" OR "20210137667" OR "20210315598" OR "20220125451" OR "20220142638" OR "20220151647" OR "20220152355" OR "20220160381" OR "20220160382" OR "20220160383" OR "20220211400" OR "20220211992" OR "20220240959" OR "20220346800" OR "20220346801" OR "20220346813" OR "20220346814" OR "20220347455" OR "20220362512" OR "3675657" OR "4611594" OR "5158564" OR "5197485" OR "5653684" OR "5908435" OR "6451036" OR "6564828" OR "6719717" OR "6960189" OR "7004931" OR "7223253" OR "8057497" OR "9216277" OR "9827084" OR "9980813" OR "20010004699" OR "20010041909" OR "20010051810" OR "20020022858" OR "20020026211" OR					

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L131	125	("20130197567" OR "20130226196" OR "20130289608" OR "20130317589" OR "20130345739" OR "20140005712" OR "20140005713" OR "20140005715" OR "20140005717" OR "20140025048" OR "20140031856" OR "20140046133" OR "20140046243" OR "20140121672" OR "20140155830" OR "20140155908" OR "20140155980" OR "20140180397" OR "20140188143" OR "20140236219" OR "20140243882" OR	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/05 08:16 AM

		"20140257253" OR "20140276403" OR "20140318354" OR "20140324091" OR "20140330286" OR "20140336691" OR "20140343593" OR "20140364896" OR "20140371779" OR "20150005781" OR "20150005792" OR "20150018859" OR "20150018860" OR "20150018929" OR "20150025555" OR "20150032144" OR "20150059908" OR "20150088190" OR "20150127035" OR "20150133990" OR "20150150672" OR "20150164523" OR "20150164666" OR "20150190155" OR "20150190156" OR "20150196380" OR "20150196744" OR "20150209058" OR "20150209165" OR "20150238207" OR "20150250578" OR "20150265299" OR "20150305756" OR "20150305859" OR "20150352325" OR "20150360001" OR "20150374391" OR "20160008014" OR "20160022293" OR "20160058540" OR "20160074627" OR "20160106448" OR "20160106449" OR "20160113663" OR "20160113664" OR "20160113665" OR "20160113666" OR "20160143721" OR "20160206344" OR "20160228134" OR "20160262790" OR "20160287276" OR "20160367285" OR "20170014560" OR "20170037548" OR "20170042571" OR "20170058623" OR "20170079672" OR					

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L132	5	"17226318"	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2023/05/05 08:56 AM
L133	4	"20030116731"	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO);	OR	ON	ON	2023/05/05 08:57 AM

			FPRS; EPO; JPO)				
L134	3198	((F16K7/06 OR F16K7/04 OR F16K7/08 OR F16K7/02).cpc.) AND (@ad<"20170906")	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2023/05/05 08:59 AM
L135	886	L134 AND (valve OR seal OR constrict$4) AND (spring OR bias OR biasing)	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2023/05/05 09:00 AM
L136	24	("3383131" | "4094492" | "4540411" | "4570898" | "5112324" | "5211370" | "5582165" | "5814026" | "6270053" | "6450989" | "6475135" | "7914492" | "7981086" | "8079973" | "8132783" | "8900168" | "20040015177" | "20050131344" | "20070118021" | "20070161956" | "20110022063" | "20140012235" | "20140330309").pn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/05/05 09:06 AM
L137	2	10/309485	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2023/05/05 09:31 AM
L138	2	("20090254041," "8057436").pn.	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2023/05/05 11:16 AM
L139	1	("20080312600").pn.	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2023/05/05 11:18 AM
L140	2	"17216246"	(US-PGPUB; USPAT; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)	OR	ON	ON	2023/05/05 12:15 PM
L141	27	("2846179," "3675657,"	(US-PGPUB; USPAT;	OR	ON	ON	2023/05/05

		"8267897").pn.	FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO)				06:24 PM

PE2E SEARCH - Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
N47	1423	(A61B17/3207).CPC.	(US-PGPUB; USPAT)	OR	ON	ON	2020/11/24 03:05 PM
N48	1681	(A61M39/06 OR A61M2039/062 OR A61M2039/0673 OR A61M39/0613).CPC.	(US-PGPUB; USPAT)	OR	ON	ON	2020/11/24 03:05 PM
N49	0	("l1" or N47) and ((hemostatic adj valve) and reinforcement and filament and biasing).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2020/11/24 03:06 PM
N50	2	(N47 or N48) and ((hemostatic adj valve) and reinforcement and filament and biasing).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2020/11/24 03:06 PM
N51	2	((hemostatic adj valve) and reinforcement and filament and biasing).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2020/11/24 03:06 PM
N52	2	(A61M39/06 OR A61M2039/062 OR A61M2039/0673 OR A61M39/0613).CPC. AND ((constricting ADJ mechanism) AND filament AND spring).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2022/11/08 10:25 AM
N53	3	((hemostasis ADJ valve) AND (constricting ADJ mechanism) AND filament AND spring).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2022/11/08 10:26 AM
N54	3	((valve) AND (constricting ADJ mechanism) AND (filament) AND (biasing OR spring)).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2022/11/28 03:12 PM
N55	5	N48 AND (active ADJ tensioning ADJ mechanism)	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/05 10:13 PM
N56	91	(filament AND actuator AND biasing).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/05 10:14 PM
N57	15	(filament AND actuator	(US-PGPUB; USPAT)	OR	ON	ON	2023/05/05

		AND biasing AND valve).clm.					10:14 PM

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17/226,318 - Conf# 8690
	Filing Date	April 9, 2021
	First Named Inventor	Benjamin E. Merritt
	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	111552-8016.US02

U.S. PATENTS AND PUBLICATIONS

Examiner Initial*	Cite No	Patent Number	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1.	11648028	05-16-2023	Rosenbluth et al.	
	2.	5030201	07-09-1991	Palestrant	
	3.	11642209	05-09-2023	Merritt et al.	
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	21.	9168043	10-27-2015	van der Burg et al.	
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	26.	8784469	07-22-2014	Kassab	
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	28.	20160192912	07-07-2016	Kassab et al.	
	29.	20140324091	10-30-2014	Rosenbluth et al.	
	30.	20150018859	01-15-2015	Quick et al.	
	31.	20150196744	07-16-2015	Aboytes	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /Q.N.V./

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17/226,318 - Conf# 8690
	Filing Date	April 9, 2021
	First Named Inventor	Benjamin E. Merritt
	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	111552-8016.US02

U.S. PATENTS AND PUBLICATIONS

Examiner Initial*	Cite No	Patent Number	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	32.	20160367285	12-22-2016	Sos	
	33.	20130144326	06-06-2013	Brady et al.	
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	35.	20140180397	06-26-2014	Gerberding et al.	
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	42.	20170021130	01-26-2017	Dye	
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	46.	9581942	02-28-2017	Shippert	
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	48.	20100106081	04-29-2010	Brandeis	
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	50.	20050004534	01-06-2005	Lockwood et al.	
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	61.				
	62.				

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /Q.N.V./

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	1.	WO2016014955	01-28-2016	OSTEOMEDIX, INC.		
	2.	EP2942624	11-11-2015	Kim, Hong		
	3.	WO2006029270	03-16-2006	SMITH & NEPHEW, INC.		
	4.	WO2023137341	07-20-2023	Inari Medical, Inc.		
	5.	WO2015179329	11-26-2015	WALK VASCULAR, LLC		
	6.					

NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
		International Search Report and Written Opinion for International App. No. PCT/US23/60502; Date of Filing: January 11, 2023, Applicant: Inari Medical, Inc., Date of Mailing: May 25, 2023, 9 pages.	
		International Search Report and Written Opinion for International App. No. PCT/US23/61256; Date of Filing: January 25, 2023, Applicant: Inari Medical, Inc., Date of Mailing: June 7, 2023, 8 pages.	
		Gross et al., "Dump the pump: manual aspiration thrombectomy (MAT) with a syringe is technically effective, expeditious, and cost-efficient," J NeuroIntervent Surg, 2018, 4 pages.	

EXAMINER SIGNATURE

Examiner Signature	/QUYNH-NHU H. VU/	Date Considered	10/13/2023

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	111552-8016.US02

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (2).

☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

It is submitted that the Information Disclosure Statement is in compliance with 37 C.F.R. § 1.98 and the Examiner is respectfully requested to consider the listed references. This Information Disclosure Statement is not to be construed as a representation that: (i) a search has been made; (ii) additional information that may be material to the examination of this application does not exist; (iii) the information, protocols, results and the like reported by third parties are accurate or enabling; or (iv) the cited information is, or is considered to be, material to patentability. In addition, Applicant does not admit that any enclosed item of information constitutes prior art to the subject invention and specifically reserves the right to demonstrate that any such reference is not prior art.

COPIES OF REFERENCES

In accordance with 37 C.F.R. § 1.98(a)(2)(ii), Applicant has not submitted copies of U.S. patents and U.S. patent applications. Applicant submits herewith copies of foreign patents and non-patent literature in accordance with 37 C.F.R. § 1.98(a)(2).

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Matthew S. Williams/	Date (YYYY-MM-DD)	2023-07-25
Name/Print	Matthew S. Williams	Registration Number	77,516

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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	Filing Date	April 9, 2021
	First Named Inventor	Benjamin E. Merritt
	Art Unit	3783
	Examiner Name	Quynh-Nhu Hoang Vu
	Attorney Docket Number	111552.8016.US02

U.S. PATENTS AND PUBLICATIONS

Examiner Initial*	Cite No	Patent Number	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
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	30.	9532792	01-03-2017	Galdonik et al.	
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	33.	10926060	02-23-2021	Stern et al.	
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	41.	11305094	04-19-2022	Carrison et al.	
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	44.	11383064	07-12-2022	Carrison et al.	
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	47.	11395903	07-26-2022	Carrison et al.	
	48.	20200046940	02-13-2020	Carrison et al.	
	49.	20210138194	05-13-2021	Carrison et al.	
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	51.	5639276	06-17-1997	Weinstock et al.	
	52.	7481805	01-27-2009	Magnusson	
	53.	9241669	01-26-2016	Pugh et al.	
	54.	10384034	08-20-2019	Carrison et al.	
	55.	9265512	02-23-2016	Carrison et al.	
	56.				

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	1.	CN106178227	12-07-2016	Shanghai Microport Medical Group Co., Ltd.		
	2.	WO2023154612	08-17-2023	Inari Medical, Inc.		
	3.	WO2018065092	04-12-2018	PRINZESSIN VON ISENBURG, Sarah		
	4.	EP3013404	04-15-2020	NorMedix Inc.		
	5.	EP3583972	12-25-2019	Covidien LP		
	6.	EP3589348	01-08-2020	Covidien LP		
	7.	EP4137070	02-22-2023	ROUTE 92 MEDICAL INC.		
	8.	EP3620204	03-11-2020	ROUTE 92 MEDICAL INC.		
	9.					
	10.					

NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
		International Search Report and Written Opinion for International App. No. PCT/US23/60927; Date of Filing: January 19, 2023, Applicant: Inari Medical, Inc., Date of Mailing: July 20, 2023, 12 pages.	

EXAMINER SIGNATURE

Examiner Signature	/QUYNH-NHU H. VU/	Date Considered	10/13/2023

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☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

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Signature	/Matthew S. Williams/	Date (YYYY-MM-DD)	2023-09-18
Name/Print	Matthew S. Williams	Registration Number	77,516

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	1.	20220125451	04-28-2022	Hauser	
	2.	20220160382	05-26-2022	Hauser	
	3.	20140303658	10-09-2014	Bonnette et al.	
	4.	20050085769	04-21-2005	MacMahon et al.	
	5.	20220160383	05-26-2022	Hauser	
	6.	20220160381	05-26-2022	Hauser	
	7.	20170049942	02-23-2017	Conlan et al.	
	8.	20220240959	08-04-2022	Quick	
	9.	20220211992	07-07-2022	Merritt et al.	
	10.	6564828	05-20-2003	Ishida	
	11.	5197485	03-30-1993	Grooters	
	12.	20130035628	02-07-2013	Garrison et al.	
	13.	8057497	11-15-2011	Raju et al.	
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	28.	10478535	11-19-2019	Ogle	
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	30.	7004931	02-28-2006	Hogendijk	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /Q.N.V./

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17/226,318 - Conf# 8690
	Filing Date	April 9, 2021
	First Named Inventor	Benjamin E. Merritt
	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	111552-8016.US02

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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /Q.N.V./

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	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	111552-8016.US02

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FOREIGN PATENT DOCUMENTS						
Examiner Initial*	Cite No	Foreign Document Number[3]	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[5]
	1.	JPH07323090A	12-12-1995	Heisei		
	2.	WO2022103848	05-19-2022	Inari Medical, Inc.		
	3.	WO2022109021	05-27-2022	Inari Medical, Inc.		
	4.	WO2022109034	05-27-2022	Inari Medical, Inc.		
	5.					
	6.					

NON-PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1.		
	2.		
	3.		
	4.		

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /Q.N.V./

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	Examiner Name	Not Yet Assigned
	Attorney Docket Number	111552-8016.US02

	5.		
	6.		

EXAMINER SIGNATURE			
Examiner Signature	/QUYNH-NHU H. VU/	Date Considered	05/05/2023

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document.
[4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (2).

☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

It is submitted that the Information Disclosure Statement is in compliance with 37 C.F.R. § 1.98 and the Examiner is respectfully requested to consider the listed references. This Information Disclosure Statement is not to be construed as a representation that: (i) a search has been made; (ii) additional information that may be material to the examination of this application does not exist; (iii) the information, protocols, results and the like reported by third parties are accurate or enabling; or (iv) the cited information is, or is considered to be, material to patentability. In addition, Applicant does not admit that any

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /Q.N.V./

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

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	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	111552-8016.US02

enclosed item of information constitutes prior art to the subject invention and specifically reserves the right to demonstrate that any such reference is not prior art.

COPIES OF REFERENCES

In accordance with 37 C.F.R. § 1.98(a)(2)(ii), Applicant has not submitted copies of U.S. patents and U.S. patent applications. Applicant submits herewith copies of foreign patents and non-patent literature in accordance with 37 C.F.R. § 1.98(a)(2).

Those documents which are marked with a double asterisk (**) next to the Cite No. in the attached form PTO/SB/08 are not supplied because they were previously cited by or submitted to the Office in prior application number **16/117,519** and filed on **August 30, 2018** and relied upon in this application for an earlier filing date under 35 U.S.C. § 120.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Matthew S. Williams/	Date (YYYY-MM-DD)	2022-12-27
Name/Print	Matthew S. Williams	Registration Number	77,516

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /Q.N.V./

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17/226,318 - Conf# 8690
	Filing Date	April 9, 2021
	First Named Inventor	Benjamin E. Merritt
	Art Unit	3783
	Examiner Name	Quynh-Nhu Hoang Vu
	Attorney Docket Number	111552.8016.US02

U.S. PATENTS AND PUBLICATIONS

Examiner Initial*	Cite No	Patent Number	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1.	20190366036	12-05-2019	Jalgaonkar et al.	
	2.	20110071503	03-24-2011	TAKAGI et al.	
	3.	20120109109	05-03-2012	KAJII	
	4.	20180250498	09-06-2018	Stern et al.	
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	11.	20130150793	06-13-2013	Beissel et al.	
	12.	20230270991	08-31-2023	Merritt et al.	
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	17.	20170143359	05-25-2017	Nguyen et al.	
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	19.	20170281204	10-05-2017	Garrison et al.	
	20.	8021351	09-20-2011	Boldenow et al.	
	21.	1101890	06-30-1914	TUNSTEAD	
	22.	10953195	03-23-2021	Jalgaonkar et al.	
	23.	20210205577	07-08-2021	Jalgaonkar et al.	
	24.	3416531	12-17-1968	EDWARDS	
	25.	4981478	01-01-1991	Evard et al.	
	26.	7815608	10-19-2010	Schafersman et al.	
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	Examiner Name	Quynh-Nhu Hoang Vu
	Attorney Docket Number	111552.8016.US02

U.S. PATENTS AND PUBLICATIONS

Examiner Initial*	Cite No	Patent Number	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	32.	11596768	03-07-2023	Stern et al.	
	33.	10926060	02-23-2021	Stern et al.	
	34.	11224450	01-18-2022	Chou et al.	
	35.	11065019	07-20-2021	Chou et al.	
	36.	11576691	02-14-2023	Chou et al.	
	37.	2022033888	02-03-2022	Schnall-Levin et al.	
	38.	20220370761	11-24-2022	Chou et al.	
	39.	20230059721	02-23-2023	Chou et al.	
	40.	20230122587	04-20-2023	Chou et al.	
	41.	11305094	04-19-2022	Carrison et al.	
	42.	10485952	11-26-2019	Carrison et al.	
	43.	10456555	10-29-2019	Carrison et al.	
	44.	11383064	07-12-2022	Carrison et al.	
	45.	11185664	11-30-2021	Carrison et al.	
	46.	11224721	01-18-2022	Carrison et al.	
	47.	11395903	07-26-2022	Carrison et al.	
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	50.	7122034	10-17-2006	Belhe et al.	
	51.	5639276	06-17-1997	Weinstock et al.	
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	53.	9241669	01-26-2016	Pugh et al.	
	54.	10384034	08-20-2019	Carrison et al.	
	55.	9265512	02-23-2016	Carrison et al.	
	56.				

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	1.	CN106178227	12-07-2016	Shanghai Microport Medical Group Co., Ltd.		
	2.	WO2023154612	08-17-2023	Inari Medical, Inc.		
	3.	WO2018065092	04-12-2018	PRINZESSIN VON ISENBURG, Sarah		
	4.	EP3013404	04-15-2020	NorMedix Inc.		
	5.	EP3583972	12-25-2019	Covidien LP		
	6.	EP3589348	01-08-2020	Covidien LP		
	7.	EP4137070	02-22-2023	ROUTE 92 MEDICAL INC.		
	8.	EP3620204	03-11-2020	ROUTE 92 MEDICAL INC.		
	9.					
	10.					

NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
		International Search Report and Written Opinion for International App. No. PCT/US23/60927; Date of Filing: January 19, 2023, Applicant: Inari Medical, Inc., Date of Mailing: July 20, 2023, 12 pages.	

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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CERTIFICATION STATEMENT

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	Examiner Name	Quynh-Nhu Hoang Vu
	Attorney Docket Number	111552.8016.US02

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☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

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SIGNATURE

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Signature	/Matthew S. Williams/	Date (YYYY-MM-DD)	2023-09-18
Name/Print	Matthew S. Williams	Registration Number	77,516

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To: BENJAMIN D. CASHDOLLAR
PERKINS COIE LLP
P.O. BOX 1247
SEATTLE, WA 98111-1247

RECEIVED
PATENT DOCKETING

JUL 25 2023

PERKINS COIE LLP

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Date of mailing *(day/month/year)*	JUL 20 2023
Applicant's or agent's file reference 111552-8033WO00	FOR FURTHER ACTION See paragraphs 1 and 4 below
International application No. PCT/US 23/60927	International filing date *(day/month/year)* 19 January 2023 (19.01.2023)
Applicant INARI MEDICAL, INC.	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

   How? Directly to the International Bureau preferably through ePCT, or on paper to:
   The International Bureau of WIPO, 34, chemin des Colombettes, 1211 Geneva 20, Switzerland

   For more detailed instructions, see the *PCT Applicant's Guide*, International Phase, paragraphs 9.004 – 9.011.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to any protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:
   ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with any request to forward the texts of both the protest and the decision thereon to the designated Offices.
   ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   The applicant may **submit comments on an informal basis on the written opinion of the International Searching Authority** to the International Bureau. These comments will be made available to the public after international publication. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established.

   Shortly after the expiration of **18 months from the priority date, the international application will be published** by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau before the completion of the technical preparations for international publication (Rules 90*bis*.1 and 90*bis*.3).

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for **entry into the national phase** before those designated Offices. In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months. For details about the applicable time limits, Office by Office, see www.wipo.int/pct/en/texts/time_limits.html and the *PCT Applicant's Guide*, National Chapters.

   Within 22 months from the priority date, the applicant may request that a supplementary international search be carried out by a different International Searching Authority that offers this service (Rule 45*bis*.1). The procedure for requesting supplementary international search is described in the *PCT Applicant's Guide*, International Phase, paragraphs 8.006-8.032.

Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-8300	Authorized officer Kari Rodriquez Telephone No. PCT Helpdesk: 571-272-4300

Form PCT/ISA/220 (revised January 2020)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference		FOR FURTHER ACTION
111552-8033WO00		see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/US 23/60827	19 January 2023 (19.01.2023)	08 February 2022 (08.02.2022)
Applicant INARI MEDICAL, INC.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 4 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

   a. With regard to the language, the international search was carried out on the basis of:

   ☒ the international application in the language in which it was filed.

   ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

   b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).

   c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (see Box No. II).

3. ☒ **Unity of invention is lacking** (see Box No. III).

4. With regard to the **title**,

   ☒ the text is approved as submitted by the applicant.

   ☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

   ☒ the text is approved as submitted by the applicant.

   ☐ the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

   a. the figure of the drawings to be published with the abstract is Figure No. 2A

   ☒ as suggested by the applicant.

   ☐ as selected by this Authority, because the applicant failed to suggest a figure.

   ☐ as selected by this Authority, because this figure better characterizes the invention.

   b. ☐ none of the figures is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 23/60927

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be searched, the appropriate additional search fees must be paid.

Group I: Claims 1-13 directed to a cap assembly for a catheter.

Group II: Claims 14-38 directed to a vascular access system and associated methods of use.

-*-Continued in extra sheet-*-

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-13

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 23/60827

A. CLASSIFICATION OF SUBJECT MATTER

IPC - INV. A61M 25/18, A61M 39/10 (2023.01)
ADD.

CPC - INV. A61M 25/0097, A61M 39/1011
ADD.

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)
See Search History document

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
See Search History document

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
See Search History document

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 106178227 A (Shanghai Microport Medical Group Co., Ltd.); 7 December 2016 (07.12.2016); entire document, especially	1-2, 5, 7-11
X -- Y	US 5,391,152 A (PATTERSON); 21 February 1995 (21.02.1995); entire document, especially Abstract, Figs. 7-9; col. 4, ln 42-46; col. 5, ln 24-55.	1, 3-4, 6, 12 13
Y	US 2021/0404464 A1 (S.P.M. Flow Control, Inc.); 30 December 2021 (30.12.2021); entire document, especially Abstract, para. [0008], [0071], [0074].	13
A	US 5,971,958 A (ZHANG); 26 October 1999 (26.10.1999); entire document.	1-13
A	US 3,860,006 A (PATEL); 14 January 1975 (14.01.1975); entire document.	1-13
A	US 2013/0150793 A1 (BEISSEL et al.); 13 June 2013 (13.06.2013); entire document.	1-13

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

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"D" document cited by the applicant in the international application
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"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
12 April 2023 (12.04.2023)	JUL 20 2023
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-8300	Authorized officer Kari Rodriquez Telephone No. PCT Helpdesk: 571-272-4300

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 23/60827

-*-Box No. III - Lack of unity-*-

The inventions listed as Groups I-II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

SPECIAL TECHNICAL FEATURES

The invention of Group I includes the special technical features of [a first cap including a locking member], wherein [the locking member] includes an end portion and [a tab] positioned proximate the end portion; and [a second cap including a locking feature], wherein the locking feature includes a slot extending at least partially through [the second cap], in [the locked position], [the locking feature is configured to receive the locking member] through the slot [such that the tab engages a portion of the second cap] to inhibit movement of the [first cap] relative to [the second cap], not required in Group II.

The invention of Group II includes the special technical features of a vascular access system, comprising: a valve having a proximal end and a distal end; a catheter defining a lumen and coupled to the distal end of the valve, the catheter defining a longitudinal axis of the vascular access system; a dilator configured to extend at least partially through the valve and the lumen; wherein [the cap assembly] includes (i) [a] valve [cap] connected to the proximal end of the valve and [including a coupling feature], and (ii) [a] dilator [cap] coupled to the dilator and [including a] coupling tab insertable into the coupling feature], wherein [in the locked configuration, the coupling feature is configured to receive the coupling tab such that the coupling tab engages a portion of the] valve [cap] to inhibit movement of the dilator relative to the valve along the longitudinal axis, not required in Group I.

COMMON TECHNICAL FEATURES

The inventions of Groups I-II share the technical features of a cap assembly, the cap assembly including first cap including a locking member, wherein the locking member includes a tab, and a second cap including a locking feature, wherein the cap assembly is movable between a locked configuration and an unlocked configuration, wherein in the locked configuration, the locking feature is configured to receive the locking member such that the tab engages a portion of the second cap to inhibit movement, and the first cap is configured to rotate relative to the second cap to move the tab out of engagement with the second cap to move the first cap from the locked position to an unlocked position. The common technical features are known in prior art as shown in US 5,391,152 A to Patterson (hereinafter 'Patterson'). Therefore, Groups I-II lack unity since the shared technical features do not represent a contribution over:

Patterson teaches a cap assembly (hubs of catheter assembly complementary and rotatably engageable, Abstract, Figs. 7-9), the cap assembly including:
a first cap (hub 25, Fig. 7, col. 5, in 24-29) including a locking member (locking member defined by first tab 29, Fig. 7, col. 5, in 29-34), wherein the locking member includes a tab (pin 100 axially disposed on distal end of first tab 29, Fig. 7, col. 5, in 29-31), and
a second cap (hub 35, Fig. 7-9, col. 5, in 24-29) including a locking feature (locking element of hub 35 including first projection 150 and first slot 105, Fig. 7-9, col. 5, in. 31-34),
wherein the cap assembly is movable between a locked configuration and an unlocked configuration (dilator hub 25 and introducer hub 35 are releasably interlocked, col. 5, in 24-29),
wherein in the locked configuration, the locking feature is configured to receive the locking member (mechanically interlocked by inserting tab 29 with pin 100 into enlarged open end of slot 105, col. 5, in 45-49) such that the tab engages a portion of the second cap to inhibit movement (once tab 29 with pin 100 us engaged with slot 105, axial disengagement is precluded by projection 150, col. 5, in 50-55), and
wherein the first cap is configured to rotate relative to the second cap to move the tab out of engagement with the second cap to move the first cap from the locked position to an unlocked position (dilator hub 25 and introducer hub 35 are releasably interlocked to provide resistance to rotational disengagement, col. 5, in 24-29; resistance posed by interfering portions of slot 105 inhibits accidental rotational disengagement [in the opposite circumferential direction], col. 5, in 53-55, col. 4, in 42-46; unlocked position, Fig. 7; implicitly, hubs 25 and 35 can be intentionally rotated in the opposite circumferential direction to overcome the resistance posed and to release the interlock).

As the common features were known in the art at the time of the invention, they cannot be considered special technical features that would otherwise unify the groups.

Therefore, Groups I-II lack unity under PCT Rule 13 because they do not share a same or corresponding special technical feature.

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To: BENJAMIN D. CASHDOLLAR
PERKINS COIE LLP
P.O. BOX 1247
SEATTLE, WA 98111-1247

RECEIVED
PATENT DOCKETING
JUL 25 2023
PERKINS COIE LLP

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	JUL 20 2023
Applicant's or agent's file reference 111552-8033WO00	FOR FURTHER ACTION See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US 23/60927	19 January 2023 (19.01.2023)	08 February 2022 (08.02.2022)

International Patent Classification (IPC) or both national classification and IPC
IPC - INV. A61M 25/18, A61M 39/10 (2023.01)
ADD.
CPC - INV. A61M 25/0097, A61M 39/1011
ADD.

Applicant INARI MEDICAL, INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA/US	Date of completion of this opinion	Authorized officer
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-8300	12 April 2023 (12.04.2023)	Kari Rodriquez PCT Help Desk Telephone No. 571-272-4300

Form PCT/ISA/237 (cover sheet) (revised July 2022)

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 23/60927

Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed.

   ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(b)).

3. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:

   a. ☐ forming part of the international application as filed.

   b. ☐ furnished subsequent to the international filing date for the purposes of international search (Rule 13ter.1(a)),

      ☐ accompanied by a statement to the effect that the sequence listing does not go beyond the disclosure in the international application as filed.

4. ☐ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, this opinion has been established to the extent that a meaningful opinion could be formed without a WIPO Standard ST.26 compliant sequence listing.

5. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 23/60927

Box No. IV Lack of unity of invention

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees the applicant has, within the applicable time limit:

☐ paid additional fees.

☐ paid additional fees under protest and, where applicable, the protest fee.

☐ paid additional fees under protest but the applicable protest fee was not paid.

☒ not paid additional fees.

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is

☐ complied with.

☒ not complied with for the following reasons:

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be searched, the appropriate additional search fees must be paid.

Group I: Claims 1-13 directed to a cap assembly for a catheter.

Group II: Claims 14-36 directed to a vascular access system and associated methods of use.

The inventions listed as Groups I-II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

SPECIAL TECHNICAL FEATURES

The invention of Group I includes the special technical features of [a first cap including a locking member], wherein [the locking member] includes an end portion and [a tab] positioned proximate the end portion; and [a second cap including a locking feature], wherein the locking feature includes a slot extending at least partially through [the second cap], in [the locked position], [the locking feature is configured to receive the locking member] through the slot [such that the tab engages a portion of the second cap] to inhibit movement of the [first cap] relative to [the second cap], not required in Group II.

The invention of Group II includes the special technical features of a vascular access system, comprising: a valve having a proximal end and a distal end; a catheter defining a lumen and coupled to the distal end of the valve, the catheter defining a longitudinal axis of the vascular access system; a dilator configured to extend at least partially through the valve and the lumen; wherein [the cap assembly] includes (i) [a] valve [cap] connected to the proximal end of the valve and [including a coupling feature], and (ii) [a] dilator [cap] coupled to the dilator and [including a] coupling tab insertable into the coupling feature], wherein [in the locked configuration, the coupling feature is configured to receive the coupling tab such that the coupling tab engages a portion of the] valve [cap] to inhibit movement of the dilator relative to the valve along the longitudinal axis, not required in Group I.

-*-Continued in Supplemental Box-*-

4. Consequently, this opinion has been established in respect of the following parts of the international application:

☐ all parts.

☒ the parts relating to claims Nos. 1-13

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 23/60927

Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	13	YES
	Claims	1-12	NO
Inventive step (IS)	Claims	None	YES
	Claims	1-13	NO
Industrial applicability (IA)	Claims	1-13	YES
	Claims	None	NO

2. Citations and explanations:

Claims 1-2, 5, and 7-11 lack novelty under PCT Article 33(2) as being anticipated by CN 106178227 A to Shanghai Microport Medical Group Co., Ltd. (hereinafter 'Shanghai').

Regarding claim 1, Shanghai teaches a cap assembly for a catheter (device that locks and unlocks catheter sheaths and dilators, Abstract, Fig. 4; Note: all Citations to Shanghai are to the translation of Shanghai), the cap assembly comprising:
a first cap (dilator seat 1, Fig. 4, pg. 11) including a locking member (claw buckle 9, Fig. 4, pg. 12), wherein the locking member includes an end portion (distal end portion of arm of claw buckle 9, Fig. 4) and a tab positioned proximate the end portion (distal tab extending from a distal end of the arm of claw buckle 9, Fig. 4); and
a second cap (sheath seat 5, Fig. 4, pg. 11) including a locking feature (recess in seat 5 for receiving claw buckle 9, Fig. 4, pg. 12), wherein the locking feature includes a slot extending at least partially through the second cap (Fig. 4), and wherein----
the first cap is configured to be secured to the second cap in a locked position (push claw buckle 9 into sheath seat 5 to achieve locking, pg. 11), in the locked position, the locking feature is configured to receive the locking member through the slot such that the tab engages a portion of the second cap to inhibit movement of the first cap relative to the second cap (claw buckle 9 and inverted buckle 10 snap to achieve locking, Fig. 6, pg. 11), and
the first cap is configured to rotate relative to the second cap to move the tab out of engagement with the second cap to move the first cap from the locked position to an unlocked position (during the separation process, turn dilator seat 1 clockwise or counterclockwise so that it is separated from the sheath seat 5 until the claw buckle 9 is detached from the inverted buckle 10, Fig. 9, pg. 12).

Regarding claim 2, Shanghai teaches the cap assembly of claim 1 wherein the first cap includes an upper surface (upper surface of dilator seat 1, Fig. 4), and wherein the locking member extends from the upper surface in a direction generally perpendicular to the upper surface (Fig. 4), and wherein the end portion of the locking member is opposite the upper surface (Fig. 4).

Regarding claim 5, Shanghai teaches the cap assembly of claim 1 wherein the locking member is flexible (claw buckle 9 can move axially and elastically deform radially inward, Fig. 4, pg. 12), and wherein the second cap is configured to bend the locking member when the first cap moves between the unlocked position and the locked position (buckle 10 of sheath seat 5 to deform the claw buckle 9, Figs. 4, 9, 6, pg. 11).

Regarding claim 7, Shanghai teaches the cap assembly of claim 1 wherein the locking feature includes an angled insertion surface (angled upper surface of buckle 10, Fig. 4) positioned to engage and deflect the locking member when the first cap moves from the unlocked position toward the locked position (Fig. 4; claw buckle 9 can move axially and elastically deform radially inward, pg. 11; intended use, the angled upper surface of buckle 10 can elastically deform the buckle 9 inward for locking).

Regarding claim 8, Shanghai teaches the cap assembly of claim 7 wherein the cap assembly includes a longitudinal axis (Fig. 4), and where the insertion surface is angled to bend the locking member inward toward the longitudinal axis (Fig. 4, pg. 11).

Regarding claim 9, Shanghai teaches the cap assembly of claim 1 wherein the locking feature includes a radial removal surface (lower angled surface of buckle 10, Fig. 4), and wherein the radial removal surface is angled to deflect the tab inward when the first cap is rotated relative to the second cap (Fig. 4; claw buckle 9 can move axially and elastically deform radially inward, pg. 11; claw 9 is detached from the inverted buckle 10 for separation, pg. 12; intended use, the angled lower surface of buckle 10 can elastically deform the buckle 9 inward for unlocking).

Regarding claim 10, Shanghai teaches the cap assembly of claim 1 wherein the locking feature includes an axial removal surface positioned proximate the slot (lower angled surface of buckle 10 proximate to the recess in sheath seat 5, Fig. 4) and angled to move the first cap away from the second cap when the first cap is rotated relative to the second cap (Fig. 4; claw buckle 9 can move axially and elastically deform radially inward, pg. 11; claw 9 is detached from the inverted buckle 10 for separation, pg. 12; intended use, the angled lower surface of buckle 10 can elastically deform the buckle 9 inward for unlocking).

-*-Continued in Supplemental Box-*-

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 23/60927

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of:
-*-Box No. IV.3 - Lack of unity-*-

COMMON TECHNICAL FEATURES

The inventions of Groups I-II share the technical features of a cap assembly, the cap assembly including first cap including a locking member, wherein the locking member includes a tab, and a second cap including a locking feature, wherein the cap assembly is movable between a locked configuration and an unlocked configuration, wherein in the locked configuration, the locking feature is configured to receive the locking member such that the tab engages a portion of the second cap to inhibit movement, and the first cap is configured to rotate relative to the second cap to move the tab out of engagement with the second cap to move the first cap from the locked position to an unlocked position. The common technical features are known in prior art as shown in US 5,391,152 A to Patterson (hereinafter 'Patterson'). Therefore, Groups I-II lack unity since the shared technical features do not represent a contribution over:

Patterson teaches a cap assembly (hubs of catheter assembly complementary and rotatably engageable, Abstract, Figs. 7-9), the cap assembly including:
a first cap (hub 25, Fig. 7, col. 5, ln 24-29) including a locking member (locking member defined by first tab 29, Fig. 7, col. 5, ln 29-34), wherein the locking member includes a tab (pin 100 axially disposed on distal end of first tab 29, Fig. 7, col. 5, ln 29-31), and
a second cap (hub 35, Fig. 7-9, col. 5, ln 24-29) including a locking feature (locking element of hub 35 including first projection 150 and first slot 105, Fig. 7-9, col. 5, ln. 31-34),
wherein the cap assembly is movable between a locked configuration and an unlocked configuration (dilator hub 25 and introducer hub 35 are releasably interlocked, col. 5, ln 24-29),
wherein in the locked configuration, the locking feature is configured to receive the locking member (mechanically interlocked by inserting tab 29 with pin 100 into enlarged open end of slot 105, col. 5, ln 45-49) such that the tab engages a portion of the second cap to inhibit movement (once tab 29 with pin 100 us engaged with slot 105, axial disengagement is precluded by projection 150, col. 5, ln 50-55), and
wherein the first cap is configured to rotate relative to the second cap to move the tab out of engagement with the second cap to move the first cap from the locked position to an unlocked position (dilator hub 25 and introducer hub 35 are releasably interlocked to provide resistance to rotational disengagement, col. 5, ln 24-29; resistance posed by interfering portions of slot 105 inhibits accidental rotational disengagement [in the opposite circumferential direction], col. 5, ln 53-55, col. 4, ln 42-46; unlocked position, Fig. 7; implicitly, hubs 25 and 35 can be intentionally rotated in the opposite circumferential direction to overcome the resistance posed and to release the interlock).

As the common features were known in the art at the time of the invention, they cannot be considered special technical features that would otherwise unify the groups.

Therefore, Groups I-II lack unity under PCT Rule 13 because they do not share a same or corresponding special technical feature.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 23/60927

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of:
-*-Box No. V.2 - Citations and explanations-*-

Regarding claim 11, Shanghai teaches the cap assembly of claim 1 wherein:
the first cap includes an upper surface (upper surface as dilator seat 1, Fig. 4), and the locking member extends from the upper surface in a direction perpendicular to the upper surface (Fig. 4);
the locking member is flexible (claw buckle 9 can move axially and elastically deform radially inward, Fig. 4, pg. 12) and configured to deflect when the first cap moves between the unlocked position and the locked position (buckle 10 of sheath seat 5 to deform the claw buckle 9, Figs. 4, 9, 6, pg. 11);
the tab defines a retaining surface (recess defined between distal tab of claw buckle and arm of claw buckle, Fig. 4) positioned to contact at least a portion of the second cap in the locked position (positioned to contact lower angled surface of buckle 10 in locked position, Fig. 6); and
the locking feature includes--
a locking surface positioned to at least partially contact the retaining surface of the tab in the locked position (projection of buckle to contact recess of claw buckle in locked position, Fig. 6),
an insertion surface (angled upper surface of buckle 10, Fig. 4) positioned to be at least partially aligned with the locking member (Fig. 4) and angled to deflect the locking member inward when the first cap moves from the unlocked position toward the locked position (Fig. 4; claw buckle 9 can move axially and elastically deform radially inward, pg. 11; intended use, the angled upper surface of buckle 10 can elastically deform the buckle 9 inward for locking),
a radial removal surface positioned proximate the tab of the locking member in the locked position (upper angled surface of claw buckle 9, Fig. 6), wherein the radial removal surface is angled to move the tab radially inward when the first cap moves from the locked position toward the unlocked position (Fig. 4; claw buckle 9 can move axially and elastically deform radially inward, pg. 11; claw 9 is detached from the inverted buckle 10 for separation, pg. 12; intended use, the angled surface of the claw together with the buckle 10 may cause the claw 9 to move inward during unlocking), and
an axial removal surface positioned proximate the slot (lower angled surface of buckle 10 proximate to the recess in sheath seat 5, Fig. 4) and angled to move the first cap longitudinally away from the second cap when the first cap moves from the locked positioned toward the unlocked position (Fig. 4; claw buckle 9 can move axially and elastically deform radially inward, pg. 11; claw 9 is detached from the inverted buckle 10 for separation, pg. 12; intended use, the angled lower surface of buckle 10 together with the angled surface of the claw can elastically deform the buckle 9 inward for unlocking).

Claims 1, 3-4, 6, and 12 lack novelty under PCT Article 33(2) as being anticipated by US 5,391,152 A to Patterson.

Regarding claim 1, Patterson teaches a cap assembly for a catheter (hubs of catheter assembly complementary and rotatably engageable, Abstract, Figs. 7-9), the cap assembly comprising:
a first cap (hub 25, Fig. 7, col. 5, ln 24-29) including a locking member (locking member defined by first tab 29, Fig. 7, col. 5, ln 29-34), wherein the locking member includes an end portion (distal end of first tab 29, Fig. 7) and a tab positioned proximate the end portion (pins 100 axially disposed on distal end of first tab 29, Fig. 7, col. 5, ln 29-31); and
a second cap (hub 35, Fig. 7-9, col. 5, ln 24-29) including a locking feature (locking element of hub 35 including first projection 150 and first slot 105, Fig. 7-9, col. 5, ln. 31-34) wherein the locking feature includes a slot extending at least partially through the second cap (slot 105, Fig. 7-9), and wherein---
the first cap is configured to be secured to the second cap in a locked position (hub 25 and hub 35 may be mechanically interlocked, col. 5, ln 45-49), in the locked position, the locking feature is configured to receive the locking member through the slot (mechanically interlocked by inserting tab 29 with pin 100 into enlarged open end of slot 105, col. 5, ln 45-49) such that the tab engages a portion of the second cap (projection 150 of hub 35 is complimentary with pin 100, col. 5, ln 30-34) to inhibit movement of the first cap relative to the second cap (once tab 29 with pin 100 as engaged with slot 105, axial disengagement is precluded by projection 150, col. 5, ln 50-55), and
the first cap is configured to rotate relative to the second cap to move the tab out of engagement with the second cap to move the first cap from the locked position to an unlocked position (dilator hub 25 and introducer hub 35 are releasably interlocked to provide resistance to rotational disengagement, col. 5, ln 24-29; resistance posed by interfering portions of slot 105 inhibits accidental rotational disengagement [in the opposite circumferential direction], col. 5, ln 53-55, col. 4, ln 42-46; unlocked position, Fig. 7; implicitly, hubs 25 and 35 can be intentionally rotated in the opposite circumferential direction to overcome the resistance posed and to release the interlock).

Regarding claim 3, Patterson teaches the cap assembly of claim 1 wherein the tab extends perpendicularly from the locking member (pin 100 extends perpendicularly from distal end of tab 29, Fig. 7).

Regarding claim 4, Patterson teaches the cap assembly of claim 1 wherein the tab defines a retaining surface (pin 100 defines recess between pin 100 and tab 29, Fig. 7) positioned to contact at least a portion of the second cap when the first cap is coupled to the second cap (receive projection 150, Fig. 7, col. 5, ln 31-34).

Regarding claim 6, Patterson teaches the cap assembly of claim 1 wherein the locking feature includes a locking surface (projection 150, Fig. 7, col. 5, ln 31-34) positioned to at least partially contact the tab of the locking member when the first cap is coupled to the second cap (projection 150 of hub 35 is complimentary with pin 100, col. 5, ln 30-34; once tab 29 with pin 100 are engaged with slot 105, axial disengagement is precluded by projection 150, col. 5, ln 50-55).

Regarding claim 12, Patterson teaches the cap assembly of claim 1 wherein the locking member is a first locking member (Fig. 7), wherein the locking feature is a first locking feature (Fig. 7-9), wherein the first cap includes one or more second locking members (second tab 29, Fig. 7), wherein the second cap includes one or more second locking features (second projection 150 and second slot 105, Fig. 7-9), and wherein individual ones of the second locking members are configured to receive and secure corresponding ones of the second locking members in the locked position (mechanically interlocked by inserting tab 29 with pin 100 into enlarged open end of slot 105, col. 5, ln 45-49) such that the tab engages a portion of the second cap (projection 150 of hub 35 is complimentary with pin 100, col. 5, ln 30-34).

-*-Continued in next Supplemental Box-*-

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 23/60927

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of:
-*-Supplemental Box - Box No. V.2 - Citations and explanations-*-

Claim 13 lacks an inventive step under PCT Article 33(3) as being obvious over Patterson in view of US 2021/0404464 A1 to S.P.M Flow Control, Inc. (hereinafter 'Flow').

Regarding claim 13, Patterson teaches the cap assembly of claim 1. While Patterson teaches dilator hub 25 and introducer hub 35 are releasably interlocked to provide resistance to rotational disengagement, Patterson fails to teach wherein the locking feature is configured to be rotationally agnostic such that rotation of the first cap relative to the second cap in a first direction and a second direction opposite the first direction moves the tab out of engagement with the second cap to move the first cap from the locked position to an unlocked position.

Flow teaches a system (Abstract) wherein a locking feature is configured to be rotationally agnostic (moving from a first position to a second position in either a clockwise direction or a counterclockwise direction, para. [0071]) such that rotation of a first element relative to a second element in a first direction and a second direction opposite to the the first direction moves a tab out of engagement with the second cap to move the first cap from the locked position to an unlocked position (plug 198 can be rotated within port 186 in a clockwise direction or a counterclockwise direction from the locked position to the unlocked position, para. [0074]; unlocked position wherein the at least one key is aligned with the keyhole, Abstract, locked position where a sidewall of the keyway blocks the key from backing out, para. [0008]). It would have been obvious to one of ordinary skill in the art that the assembly of Patterson could have been modified as claimed in view of Flow to allow for quick detachment of the locking elements of Patterson.

Claims 1-13 have industrial applicability as defined by PCT Article 33(4) because the subject matter can be made or used by industry.

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APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/226,318	**09/18/2023 07:46:54 PM ET**	**111552.8016.US02**

Title of Invention

HEMOSTASIS VALVES AND METHODS OF USE

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	8690	FILED BY	JiYoung Anderson
PATENT CENTER #	62818936	FILING DATE	04/09/2021
CUSTOMER #	25096	FIRST NAMED INVENTOR	Benjamin E. Merritt
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Matthew Williams

Documents

TOTAL DOCUMENTS: 10

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
2023-9-18 IDS SB08 - 111552-8016US2.pdf	4	Information Disclosure Statement (IDS) Form (SB08)	146 KB
Warning: This is not a USPTO supplied IDS fillable form. Data in the form cannot be automatically loaded to other USPTO systems.			
FOR_CN106178227.pdf	14	Foreign Reference	6121 KB
FOR-WO2018065092.pdf	50	Foreign Reference	2030 KB
FOR-EP3013404.pdf	15	Foreign Reference	591 KB
FOR_WO2023154612.pdf	42	Foreign Reference	8876 KB

FOR-EP3583972.pdf	21	Foreign Reference	1735 KB
FOR-EP3589348 - Counterpart WO2018160810.pdf	44	Foreign Reference	2164 KB
FOR-EP4137070.pdf	51	Foreign Reference	3226 KB
FOR-EP3620204.pdf	50	Foreign Reference	3291 KB
NPL_ISR_WO_PCTUS20236 0927_JUL_20_2023_12page s.pdf	12	Non Patent Literature	6286 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
2023-9-18 IDS SB08 - 111552-8016US2.pdf	B63B0B9D21413D7232D775EC3F4E5DB3D2CDB71A56FE3BB7 3545F3DD2924E6F051EF1C813CCAB3CBD77349EE1BDDF244 947E70E41C8E3AD310E84C607A54CADE
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FOR-WO2018065092.pdf	8CD5C10DCA882A13C195ED6238D679A0D5AEC67FB86BA6D7 5814A5943F1911EE33A68A315B57F447D2CA9698FA33332063 CE1BB690E501F57728B93546A20BAD
FOR-EP3013404.pdf	3D90324030CFADDE2E69B16548429204EED8FD4CB29E457F0 532D25D701134341C5E14FD142B0E42FBE19C633688FAC8C5 684757CE7C5BDF2AAA1DC4AAF01E4F
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FOR-EP3583972.pdf	1BCADA91406B3C917BB9CA44C5E41E850921CC779D2790C820A8D3F5730A239DFE5AB4A8A8412B60BFAC80E3ED5A3C2A9F47BF7ADE74D0BD6052AB153471DDAD
FOR-EP3589348 - Counterpart WO2018160810.pdf	5494011818D2C61C69D8661EAE176A54A8D2D22DE923F718FEAE2C688C0893E19C7F61304AD3589D55C2AA6C52E01FD2385F346D5A7523F37569A5AA54BBEDE2
FOR-EP4137070.pdf	05C4C9A6AF9A250D312393DAF39AABE109571DE37245F17B65A86187121D449DC3060876A4DDD7C5E2023068B0EDE11F9EA19C9777D641BBE064B96725B094AA
FOR-EP3620204.pdf	3BFC88107F2D2CC39249A1082F73A511741CFF801B44AAC797CAC8ED804966306DDC2052ED2BA49AEF1280DFC3B31D0DE301B802ECD3EC774353D8A04CE3EE09
NPL_ISR_WO_PCTUS2023609 27_JUL_20_2023_12pages.pdf	C3544C8CC4356AE50734DAA84C2B65A4258997E9E0E90E459CCDABC6A995E67A4123E7F292B4D4D91AA981B64CDE4549814DAB408B3E39575FF8CDA130EC4870

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17/226,318 - Conf# 8690
	Filing Date	April 9, 2021
	First Named Inventor	Benjamin E. Merritt
	Art Unit	3783
	Examiner Name	Quynh-Nhu Hoang Vu
	Attorney Docket Number	111552.8016.US02

U.S. PATENTS AND PUBLICATIONS					
Examiner Initial*	Cite No	Patent Number	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1.	20230233311	07-27-2023	Merritt et al.	
	2.	20070233043	10-04-2007	Dayton et al.	
	3.	8343167	01-01-2023	Henson	
	4.	8568465	10-29-2013	Freudenthal et al.	
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	6.	20230240705	08-03-2023	Rosenbluth et al.	
	7.	20230240706	08-03-2023	Rosenbluth et al.	
	8.	10183159	01-22-2019	Nobles et al.	

FOREIGN PATENT DOCUMENTS						
Examiner Initial*	Cite No	Foreign Document Number[3]	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[5]
	1.	WO2023147353	08-03-2023	Inari Medical, Inc.		

NON-PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

EXAMINER SIGNATURE			
Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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	Application Number	17/226,318 - Conf# 8690
	Filing Date	April 9, 2021
	First Named Inventor	Benjamin E. Merritt
	Art Unit	3783
	Examiner Name	Quynh-Nhu Hoang Vu
	Attorney Docket Number	111552.8016.US02

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (2).

☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

It is submitted that the Information Disclosure Statement is in compliance with 37 C.F.R. § 1.98 and the Examiner is respectfully requested to consider the listed references. This Information Disclosure Statement is not to be construed as a representation that: (i) a search has been made; (ii) additional information that may be material to the examination of this application does not exist; (iii) the information, protocols, results and the like reported by third parties are accurate or enabling; or (iv) the cited information is, or is considered to be, material to patentability. In addition, Applicant does not admit that any enclosed item of information constitutes prior art to the subject invention and specifically reserves the right to demonstrate that any such reference is not prior art.

COPIES OF REFERENCES

In accordance with 37 C.F.R. § 1.98(a)(2)(ii), Applicant has not submitted copies of U.S. patents and U.S. patent applications. Applicant submits herewith copies of foreign patents and non-patent literature in accordance with 37 C.F.R. § 1.98(a)(2).

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Matthew S. Williams/	Date (YYYY-MM-DD)	2023-08-14
Name/Print	Matthew S. Williams	Registration Number	77,516

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/226,318	**08/14/2023 01:59:11 PM ET**	**111552.8016.US02**

Title of Invention

HEMOSTASIS VALVES AND METHODS OF USE

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	8690	FILED BY	Michelle Burge
PATENT CENTER #	62610994	FILING DATE	04/09/2021
CUSTOMER #	25096	FIRST NAMED INVENTOR	Benjamin E. Merritt
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Matthew Williams

Documents

TOTAL DOCUMENTS: 2

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
2023-08-14_IDS_1115528016US02.pdf	2	Information Disclosure Statement (IDS) Form (SB08)	94 KB
Warning: This is not a USPTO supplied IDS fillable form. Data in the form cannot be automatically loaded to other USPTO systems.			
FOR_WO2023147353.pdf	52	Foreign Reference	9750 KB

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DOCUMENT	MESSAGE DIGEST(SHA-512)

2023-08-14_IDS_1115528016US02.pdf	7CC1EB9C52528156C9F6A3B4A8F5297AE721EF2A5D3DE9B05E45339F6F778FD08D1BB9177D4EB4E083869AFB088EE8A7A90551B6642C5A9BAB23BA0ADC4CC332
FOR_WO2023147353.pdf	2CC7C4D5B0BBA1A54C89D86E4BC19205FF677083731A17309491CCDE176E9025E965E950CA691C1FB89EC4F109CA5DBADB483EBDC07C840B3851DC3200BAC144

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17/226,318 - Conf# 8690
	Filing Date	April 9, 2021
	First Named Inventor	Benjamin E. Merritt
	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	111552-8016.US02

U.S. PATENTS AND PUBLICATIONS

Examiner Initial*	Cite No	Patent Number	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
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	2.	5030201	07-09-1991	Palestrant	
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	4.	6540722	04-01-2003	Boyle et al.	
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	29.	20140324091	10-30-2014	Rosenbluth et al.	
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	31.	20150196744	07-16-2015	Aboytes	

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
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	Filing Date	April 9, 2021
	First Named Inventor	Benjamin E. Merritt
	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	111552-8016.US02

U.S. PATENTS AND PUBLICATIONS

Examiner Initial*	Cite No	Patent Number	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
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	33.	20130144326	06-06-2013	Brady et al.	
	34.	20140005715	01-02-2014	Castella et al.	
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	61.				
	62.				

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17/226,318 - Conf# 8690
	Filing Date	April 9, 2021
	First Named Inventor	Benjamin E. Merritt
	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	111552-8016.US02

FOREIGN PATENT DOCUMENTS						
Examiner Initial*	Cite No	Foreign Document Number[3]	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[5]
	1.	WO2016014955	01-28-2016	OSTEOMEDIX, INC.		
	2.	EP2942624	11-11-2015	Kim, Hong		
	3.	WO2006029270	03-16-2006	SMITH & NEPHEW, INC.		
	4.	WO2023137341	07-20-2023	Inari Medical, Inc.		
	5.	WO2015179329	11-26-2015	WALK VASCULAR, LLC		
	6.					

NON-PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
		International Search Report and Written Opinion for International App. No. PCT/US23/60502; Date of Filing: January 11, 2023, Applicant: Inari Medical, Inc., Date of Mailing: May 25, 2023, 9 pages.	
		International Search Report and Written Opinion for International App. No. PCT/US23/61256; Date of Filing: January 25, 2023, Applicant: Inari Medical, Inc., Date of Mailing: June 7, 2023, 8 pages.	
		Gross et al., "Dump the pump: manual aspiration thrombectomy (MAT) with a syringe is technically effective, expeditious, and cost-efficient," J NeuroIntervent Surg, 2018, 4 pages.	

EXAMINER SIGNATURE			
Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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CERTIFICATION STATEMENT

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☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (2).

☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

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COPIES OF REFERENCES

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SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Matthew S. Williams/	Date (YYYY-MM-DD)	2023-07-25
Name/Print	Matthew S. Williams	Registration Number	77,516

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Alexandria, VA 22313 - 1450
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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/226,318	**07/25/2023 05:46:57 PM ET**	**111552-8016.US02**

Title of Invention

HEMOSTASIS VALVES AND METHODS OF USE

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	8690	FILED BY	JiYoung Anderson
PATENT CENTER #	62503034	FILING DATE	04/09/2021
CUSTOMER #	25096	FIRST NAMED INVENTOR	Benjamin E. Merritt
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Matthew Williams

Documents

TOTAL DOCUMENTS: 9

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
2023-7-25 IDS SB08 - 111552.8016US2.PDF	4	Information Disclosure Statement (IDS) Form (SB08)	140 KB
Warning: This is not a USPTO supplied IDS fillable form. Data in the form cannot be automatically loaded to other USPTO systems.			
NPL-Gross-Dump the Pump.PDF	4	Non Patent Literature	870 KB
FOR_WO2006029270.PDF	33	Foreign Reference	1157 KB
FOR_EP2942624.PDF	24	Foreign Reference	1188 KB
NPL_ISR_PCT_2023-61256-	8	Non Patent Literature	1063 KB

June-7-2023-8-pages.PDF			
FOR_WO2016014955.PDF	63	Foreign Reference	2325 KB
FOR_WO2015179329.PDF	56	Foreign Reference	2433 KB
NPL_ISR_WO_PCTUS2023060502_May_25_2023_9pages.PDF	9	Non Patent Literature	3976 KB
FOR_WO2023137341.PDF	75	Foreign Reference	3594 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
2023-7-25 IDS SB08 - 111552.8016US2.PDF	B620E0B7B9C42C6A4D37C9F014264685DB7BF994B3780482387B80C5D1CCF7D461B7D09D83FE3A1101A2344059F5C0C32D9575E8C1F9D5520EA92FD616070F0B
NPL-Gross-Dump the Pump.PDF	D44985D30C015BE8DA101967568EDF70598C9DCC517B882F1524CC5F8D5C8C53620135568E11D3A8E76C94DABDD42BADC78DE5603483BF94B00DA3679A300F1D
FOR_WO2006029270.PDF	9F9FCC67AFD589CE61E4B384802B8F1B3B2118E927157C959323391A302F028ADA8961E7CC81A93CDF03C5DD57AD1D8FB16AE710689466AD8D1ED27132ACD968
FOR_EP2942624.PDF	76F180E3DB96728ABCFFD31B77A2404E0AC8EA38F6420ED879A30A22CD22FA1628FB338AD6869D29C985D62AFB79F292882F89866AD893AB9B9EB39BC5CE38DF
NPL_ISR_PCT_2023-61256-June-7-2023-8-pages.PDF	E29F558402CAA5ECA7B480DBF767FC910107364FF8EB3919C86E39BC20664311EDA23D81B18626667115B85F0FF8707387E626478C646A16AA39EB2CD5DE7AAA
FOR_WO2016014955.PDF	DE12ACD76BAE4B0E156B6F9D382CAEBE3E6243ED877F035256811EF33F0A9463A0204B3777321B5207E9E06058DD462E99

	A3EA229302CDF42B2A63C4E5792EF2
FOR_WO2015179329.PDF	0E04DA60C0BE3A128E3276DF1BDEF6C12334A947AC4DC54D020969CCB8A4D895FA3EDE2B9B7081B0D8A6254206F95745BA6DCB402B89F84BA2B8082BF2D4C263
NPL_ISR_WO_PCTUS2023060502_May_25_2023_9pages.PDF	D531F14961694901D7333C4BAA563CF184EF439838AFD5147B2BDDC50612BF18C97B659466792D95F507F17FF02F9D7F5C1806B1068BFC456412E490186AEEF2
FOR_WO2023137341.PDF	0EED4348CDC2BC929DF5488A6BB3299B1CF492244B5F17616256350DF062C9C554456D996FCC48B4DE6BB3EEAC7495B02274727C8C04E2B6D5366DA5E9C17349

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Doc Code: DIST.E.FILE **Document Description: Electronic Terminal Disclaimer - Filed**	PTO/SB/26 U.S. Patent and Trademark Office Department of Commerce

Electronic Petition Request	**TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT**
Application Number	17226318
Filing Date	09-Apr-2021
First Named Inventor	Benjamin Merritt
Attorney Docket Number	111552-8016.US02
Title of Invention	HEMOSTASIS VALVES AND METHODS OF USE

☒ Filing of terminal disclaimer does not obviate requirement for response under 37 CFR 1.111 to outstanding Office Action

☒ This electronic Terminal Disclaimer is not being used for a Joint Research Agreement.

Owner	Percent Interest
Inari Medical, Inc.	100%

The owner(s) with percent interest listed above in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of prior patent number(s)

11000682

as the term of said prior patent is presently shortened by any terminal disclaimer. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the prior patent are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the prior patent, "as the term of said prior patent is presently shortened by any terminal disclaimer," in the event that said prior patent later:
- expires for failure to pay a maintenance fee;
- is held unenforceable;
- is found invalid by a court of competent jurisdiction;
- is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
- has all claims canceled by a reexamination certificate;
- is reissued; or
- is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

◉ Terminal disclaimer fee under 37 CFR 1.20(d) is included with Electronic Terminal Disclaimer request.

○ I certify, in accordance with 37 CFR 1.4(d)(4), that the terminal disclaimer fee under 37 CFR 1.20(d) required for this terminal disclaimer has already been paid in the above-identified application.	
Applicant claims the following fee status: ○ Small Entity ○ Micro Entity ◉ Regular Undiscounted I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.	
THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES I certify, in accordance with 37 CFR 1.4(d)(4) that I am: ◉ An attorney or agent registered to practice before the Patent and Trademark Office who is of record in this application Registration Number 77516 ○ A sole inventor ○ A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application ○ A joint inventor; all of whom are signing this request	
Signature	/Matthew S. Williams/
Name	Matthew S. Williams

*Statement under 37 CFR 3.73(b) is required if terminal disclaimer is signed by the assignee (owner).
Form PTO/SB/96 may be used for making this certification. See MPEP § 324.

Electronic Patent Application Fee Transmittal

Application Number:	17226318
Filing Date:	09-Apr-2021
Title of Invention:	HEMOSTASIS VALVES AND METHODS OF USE
First Named Inventor/Applicant Name:	Benjamin E. Merritt
Filer:	Matthew S. Williams/JiYoung Anderson
Attorney Docket Number:	111552-8016.US02

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
STATUTORY OR TERMINAL DISCLAIMER	1814	1	170	170
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**170**

Doc Code: DISQ.E.FILE
Document Description: Electronic Terminal Disclaimer – Approved

Application No.: 17226318

Filing Date: 09-Apr-2021

Applicant/Patent under Reexamination: Merritt

Electronic Terminal Disclaimer filed on May 5, 2023

☒ APPROVED

This patent is subject to a terminal disclaimer

☐ DISAPPROVED

Approved/Disapproved by: Electronic Terminal Disclaimer automatically approved by EFS-Web

U.S. Patent and Trademark Office

Electronic Acknowledgement Receipt	
EFS ID:	47957100
Application Number:	17226318
International Application Number:	
Confirmation Number:	8690
Title of Invention:	HEMOSTASIS VALVES AND METHODS OF USE
First Named Inventor/Applicant Name:	Benjamin E. Merritt
Customer Number:	25096
Filer:	Matthew S. Williams/JiYoung Anderson
Filer Authorized By:	Matthew S. Williams
Attorney Docket Number:	111552-8016.US02
Receipt Date:	05-MAY-2023
Filing Date:	09-APR-2021
Time Stamp:	12:21:58
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$170
RAM confirmation Number	E202355C21557048
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Terminal Disclaimer-Filed (Electronic)	eTerminal-Disclaimer.pdf	41300 d4e5b36bf6d616726eb97fae7eeeebdf863c31b9	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	38240 367931364a9870384b12b822c877353a529fc25c	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	79540		

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PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
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	Examiner Name	Not Yet Assigned
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U.S. PATENTS

Examiner Initial*	Cite No	Patent Number	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1.	11406801	08-09-2022	Fojtik et al.	
	2.	11554005	01-17-2023	Merritt et al.	
	3.	11559382	01-24-2023	Merritt et al.	
	4.	6818006	11-16-2004	Douk et al.	
	5.	9078682	07-14-2015	Lenker et al.	
	6.	20140052161	02-20-2014	Cully et al.	
	7.	20180042623	02-15-2018	Batiste	
	8.	20180184912	07-05-2018	Al-Ali	
	9.	20160262774	09-15-2016	HONDA	
	10.	20120172918	07-05-2012	Fifer et al.	
	11.	20050054995	03-10-2005	Barzell et al.	
	12.	5421824	06-06-1995	Clement et al.	
	13.	20210236148	08-05-2021	Marchand et al.	
	14.	5158533	10-27-1992	Strauss et al.	
	15.	20230046775	02-16-2023	Quick	
	16.	20140188127	07-03-2014	Dubrul et al.	
	17.	8535283	09-17-2013	Heaton et al.	
	18.	8753322	06-17-2014	Hu et al.	
	19.	8808259	08-19-2014	Walton et al.	
	20.	20230062809	03-02-2023	Merritt et al.	
	21.	20010031981	10-18-2001	Evans et al.	
	22.	20040102807	05-27-2004	Kusleika et al.	
	23.	6059814	05-09-2000	Ladd	
	24.	20140074144	03-13-2014	Shrivastava et al.	
	25.	20230070120	03-09-2023	Cox et al.	

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	1.	WO2006124307	11-23-2006	KERBEROS PROXIMAL SOLUTIONS, INC.		

NON-PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

EXAMINER SIGNATURE			
Examiner Signature		Date Considered	

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[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Matthew S. Williams/	Date (YYYY-MM-DD)	2023-04-04
Name/Print	Matthew S. Williams	Registration Number	77,516

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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/226,318	**04/04/2023 01:04:06 PM ET**	**111552-8016.US02**

Title of Invention

HEMOSTASIS VALVES AND METHODS OF USE

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	8690	FILED BY	Michelle Burge
PATENT CENTER #	61863870	FILING DATE	04/09/2021
CUSTOMER #	25096	FIRST NAMED INVENTOR	Benjamin E. Merritt
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Matthew Williams

Documents

TOTAL DOCUMENTS: 2

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
2023-04-04_IDS_1115528016US02.pdf	3	Information Disclosure Statement (IDS) Form (SB08)	135 KB
Warning: This is not a USPTO supplied IDS fillable form. Data in the form cannot be automatically loaded to other USPTO systems.			
FOR_WO2006124307.pdf	19	Foreign Reference	1338 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)

2023-04-04_IDS_1115528016US02.pdf	184DD336543DF2A2CAA3811C75916DECFDA832619A9244B23EF72FB9264BD06F1F2B3FCC968B3279B13F0C5762E41A033F6B1A25032EDCF0B48C9211F33E0F99
FOR_WO2006124307.pdf	4D4E16192D85DA1B42279B3E92B4AB2F1F7B9A9641A8B8FF321626546D06794936F60072ECF52BE8F6C74B7C7787E787B70CFB9C8D49DC455ED07082B58E5572

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
Benjamin E. Merritt et al.

Application No.: 17/226,318 Confirmation No.: 8690

Filed: April 9, 2021 Art Unit: Not Yet Known

For: HEMOSTASIS VALVES AND METHODS OF USE Examiner: Not Yet Known

PRELIMINARY AMENDMENT UNDER 37 C.F.R. § 1.115

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

Prior to examination on the merits, please amend the above-identified U.S. patent application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2.

Remarks begin on page 7.

AMENDMENTS TO THE CLAIMS

Please amend claim 65 and add new claims 72–78. Following is a complete listing of the claims pending in the application, as amended:

1–51. (Canceled)

52. (Previously Presented) A valve, comprising:

an elongate member defining a lumen;

an active tensioning mechanism including an actuator coupled to the elongate member via a filament extending at least partially around the elongate member, wherein the actuator is moveable between (a) a first position wherein the lumen is constricted and sealed and (b) a second position wherein the lumen is at least partially open; and

a biasing member configured to bias the actuator to the first position.

53. (Previously Presented) The valve of claim 52 wherein the elongate member is pliable.

54. (Previously Presented) The valve of claim 52 wherein the filament extends in a loop around the elongate member.

55. (Previously Presented) The valve of claim 52 wherein the actuator is a button, wherein the button is undepressed in the first position, and wherein the button is depressed in the second position.

56. (Previously Presented) The valve of claim 52 wherein, when the actuator is in the first position, the lumen is configured to remain constricted and sealed when a pressure

differential exists between (a) a first volume outside the lumen and adjacent to a first end of the elongate member and (b) a second volume outside the central lumen and adjacent to a second end of the elongate member.

57. (Previously Presented) The valve of claim 52 wherein, when the actuator is in the first position, the lumen is configured to remain constricted and sealed when vacuum pressure is applied to a volume outside the lumen and adjacent to either a first end or a second end of the elongate member.

58. (Previously Presented) The valve of claim 52 wherein the lumen extends a long a first longitudinal axis, wherein the actuator is movable between the first and second positions along a second longitudinal axis, and wherein the first longitudinal axis is orthogonal to the second longitudinal axis.

59. (Previously Presented) The valve of claim 52 wherein the biasing member is a compression spring.

60. (Previously Presented) The valve of claim 52 wherein, in the first position, the actuator pulls the filament to circumferentially constrict the elongate member such that the lumen is constricted and sealed.

61. (Previously Presented) A valve, comprising:

an elongate member defining a lumen;

a filament coupled to the elongate member;

an actuator coupled to the filament, wherein the actuator is moveable between (a) a first position wherein the lumen is constricted and sealed and (b) a second position wherein the lumen is at least partially open; and

a biasing member configured to bias the actuator to the first position.

62. (Previously Presented) The valve of claim 61 wherein the filament extends at least partially around the elongate member.

63. (Previously Presented) The valve of claim 62 wherein, in the first position, the actuator pulls the filament to circumferentially constrict the elongate member such that the lumen is constricted and sealed.

64. (Previously Presented) The valve of claim 61 wherein the elongate member is pliable.

65. (Currently Amended) The valve of claim 61 wherein the filament is monofilament.

66. (Previously Presented) The valve of claim 61 wherein the actuator is a button that is undepressed in the first position and depressed in the second position, wherein the button is movable between the first and second positions along a first longitudinal axis, wherein the lumen extends a long a second longitudinal axis, and wherein the first longitudinal axis is orthogonal to the second longitudinal axis.

67. (Previously Presented) A valve, comprising:

an elongate member defining a lumen;

a filament coupled to the elongate member; and

an actuator coupled to the elongate member, wherein the actuator is moveable between

(a) a first position in which the actuator pulls the filament to collapse the elongate

member such that the lumen is constricted and sealed and (b) a second position wherein the lumen is at least partially open.

68. (Previously Presented) The valve of claim 67, further comprising a biasing member configured to bias the actuator to the first position.

69. (Previously Presented) The valve of claim 67 wherein the elongate member is pliable, and wherein the filament extends at least partially around the elongate member.

70. (Previously Presented) The valve of claim 67 wherein the elongate member is pliable, and wherein the filament is looped around the elongate member.

71. (Previously Presented) The valve of claim 67 wherein the actuator does not substantially pull the filament in the second position such that the elongate member can expand.

72. (New) The valve of claim 52 wherein the actuator is a first actuator, wherein the filament is a first filament, wherein the biasing member is a first biasing member, and wherein the active tensioning mechanism further comprises:

a second actuator coupled to the elongate member via a second filament extending at least partially around the elongate member, wherein the second actuator is moveable between (a) a first position wherein the lumen is constricted and sealed and (b) a second position wherein the lumen is at least partially open; and

a second biasing member configured to bias the second actuator to the first position.

73. (New) The valve of claim 72 wherein the first filament has a first end portion coupled to the first actuator and a second end portion coupled to the first actuator, and wherein

the second filament has a first end portion coupled to the second actuator and a second end portion coupled to the second actuator.

74. (New) The valve of claim 73 wherein the first filament and the second filament at least partially overlap to define a constricting region about the elongate member.

75. (New) The valve of claim 74 wherein, when the second actuator is moved to the second position and/or the second actuator is moved to the second position, a size of the constricting region increases.

76. (New) The valve of claim 72 wherein the first filament extends in a loop around the elongate member, and wherein the second filament extends through the loop of the first filament around the elongate member.

77. (New) A valve, comprising:

an elongate member defining a lumen; and

an active tensioning mechanism including a first actuator coupled to the elongate member via a first filament and a second actuator coupled to the elongate member via a second filament,

wherein the first filament and the second filament at least partially overlap to define a constricting region,

wherein the elongate member extends through the constricting region, and

wherein the first actuator and/or the second actuator is moveable between (a) a first position in which the constricting region has a decreased size such that the lumen is constricted and sealed and (b) a second position in which the constricting region has an increased size such that the lumen is at least partially open.

78. (New) The valve of claim 77, further comprising at least one biasing member configured to bias the first actuator and/or the second actuator to the first position.

REMARKS

In this Preliminary Amendment, claim 65 has been amended and new claims 72–78 have been added. Support for the subject matter of claims 72–78 can be found at least in, for example, Figures 8 and 9 and paragraphs [0067]–[0070] of the application as filed. Accordingly, claims 52–78 are currently pending.

Please charge any underpayment or credit any overpayment to our Deposit Account No. 50-0665, under Order No. 111552-8016.US02 from which the undersigned is authorized to draw.

Dated: December 27, 2022

Respectfully submitted,

By /Matthew S. Williams/
Matthew S. Williams
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Attorney for Applicant

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17/226,318 - Conf# 8690
	Filing Date	April 9, 2021
	First Named Inventor	Benjamin E. Merritt
	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	111552-8016.US02

U.S. PATENTS AND PUBLICATIONS					
Examiner Initial*	Cite No	Patent Number	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1.	20220125451	04-28-2022	Hauser	
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	Attorney Docket Number	111552-8016.US02

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Examiner Initial*	Cite No	Foreign Document Number[3]	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[5]
	1.	JPH07323090A	12-12-1995	Heisei		
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	4.	WO2022109034	05-27-2022	Inari Medical, Inc.		
	5.					
	6.					

NON-PATENT LITERATURE DOCUMENTS			
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	5.		
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Examiner Signature		Date Considered	

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[4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (2).

☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

It is submitted that the Information Disclosure Statement is in compliance with 37 C.F.R. § 1.98 and the Examiner is respectfully requested to consider the listed references. This Information Disclosure Statement is not to be construed as a representation that: (i) a search has been made; (ii) additional information that may be material to the examination of this application does not exist; (iii) the information, protocols, results and the like reported by third parties are accurate or enabling; or (iv) the cited information is, or is considered to be, material to patentability. In addition, Applicant does not admit that any

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	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	111552-8016.US02

enclosed item of information constitutes prior art to the subject invention and specifically reserves the right to demonstrate that any such reference is not prior art.

COPIES OF REFERENCES

In accordance with 37 C.F.R. § 1.98(a)(2)(ii), Applicant has not submitted copies of U.S. patents and U.S. patent applications. Applicant submits herewith copies of foreign patents and non-patent literature in accordance with 37 C.F.R. § 1.98(a)(2).

Those documents which are marked with a double asterisk (**) next to the Cite No. in the attached form PTO/SB/08 are not supplied because they were previously cited by or submitted to the Office in prior application number **16/117,519** and filed on **August 30, 2018** and relied upon in this application for an earlier filing date under 35 U.S.C. § 120.

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A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Matthew S. Williams/	Date (YYYY-MM-DD)	2022-12-27
Name/Print	Matthew S. Williams	Registration Number	77,516

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APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/226,318	**12/27/2022 12:38:00 PM ET**	**111552-8016.US02**

Title of Invention

HEMOSTASIS VALVES AND METHODS OF USE

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	8690	FILED BY	JiYoung Anderson
PATENT CENTER #	61354227	FILING DATE	04/09/2021
CUSTOMER #	25096	FIRST NAMED INVENTOR	Benjamin E. Merritt
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Matthew Williams

Documents

TOTAL DOCUMENTS: 8

DOCUMENT		PAGES	DESCRIPTION	SIZE (KB)
2022-12-27-Preliminary_Amendment_claims-111552-8016US2.PDF		8	-	90 KB
2022-12-27-Preliminary_Amendment_claims-111552-8016US2-A.PE.pdf	(1-1)	1	Preliminary Amendment	75 KB
2022-12-27-Preliminary_Amendment_claims-111552-8016US2-CLM.pdf	(2-7)	6	Claims	83 KB
2022-12-27-	(8-8)	1	Applicant Arguments/Remarks	75 KB

Preliminary_Amendment_claims-111552-8016US2-REM.pdf		Made in an Amendment	
2022-12-27-IDS-SB08-111552-8016US2.PDF	5	Information Disclosure Statement (IDS) Form (SB08)	186 KB

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FOR_WO2022103848.PDF	46	Foreign Reference	1904 KB
FOR_WO2022109021.PDF	38	Foreign Reference	1605 KB
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2022-12-27-IDS-SB08-111552-8016US2.PDF	66A7FA3D10F3D3990F61AB528016FDA1757BD12A8BE54D21DCE486EF2D4D67FE6A63C26D1372ED60729F2A3F2C1D4F110857BA04047D25867304DA9F6A187BF2
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FOR_WO2022109034.PDF	987B71D46F2C34DAD73A486CB07682F5228915368B4AC9D175A5C4212C63B5FB4CFCC090917D2ACC3444E8793E78FB548D25C8B7BB3947203AE367D581A6D2B9

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

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New International Application Filed with the USPTO as a Receiving Office

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APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/226,318	12/27/2022 12:38:00 PM ET	111552-8016.US02

Title of Invention

HEMOSTASIS VALVES AND METHODS OF USE

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	8690	FILED BY	JiYoung Anderson
PATENT CENTER #	61354227	AUTHORIZED BY	Matthew Williams
CUSTOMER #	25096	FILING DATE	04/09/2021
CORRESPONDENCE ADDRESS	-	FIRST NAMED INVENTOR	Benjamin E. Merritt

Payment Information

PAYMENT METHOD	PAYMENT TRANSACTION ID	PAYMENT AUTHORIZED BY
CARD / 3369	E2022BQC38333159	JiYoung Anderson

FEE CODE	DESCRIPTION	ITEM PRICE($)	QUANTITY	ITEM TOTAL($)
1202	EACH CLAIM IN EXCESS OF 20	100.00	7	700.00
1201	EACH INDEPENDENT CLAIM IN EXCESS OF THREE	480.00	1	480.00
			TOTAL AMOUNT:	$1,180.00

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement

Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 17/226,318	Filing Date 04/09/2021	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $100 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $480 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	12/27/2022	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 27	Minus	** 20	= 7		x $100 =	700
	Independent (37 CFR 1.16(h))	* 4	Minus	*** 3	= 1		x $480 =	480
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	1180

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	SLIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/SHARON M WEST/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17/226,318 - Conf# 8690
	Filing Date	April 9, 2021
	First Named Inventor	Benjamin E. Merritt
	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	111552-8016.US02

U.S. PATENTS					
Examiner Initial*	Cite No	Patent Number	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
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	Application Number	17/226,318 - Conf# 8690
	Filing Date	April 9, 2021
	First Named Inventor	Benjamin E. Merritt
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	Attorney Docket Number	111552-8016.US02

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	Application Number	17/226,318 - Conf# 8690
	Filing Date	April 9, 2021
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17/226,318 - Conf# 8690
	Filing Date	April 9, 2021
	First Named Inventor	Benjamin E. Merritt
	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	111552-8016.US02

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	Application Number	17/226,318 - Conf# 8690
	Filing Date	April 9, 2021
	First Named Inventor	Benjamin E. Merritt
	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	111552-8016.US02

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	Application Number	17/226,318 - Conf# 8690
	Filing Date	April 9, 2021
	First Named Inventor	Benjamin E. Merritt
	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	111552-8016.US02

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	Application Number	17/226,318 - Conf# 8690
	Filing Date	April 9, 2021
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	Art Unit	Not Yet Assigned
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17/226,318 - Conf# 8690
	Filing Date	April 9, 2021
	First Named Inventor	Benjamin E. Merritt
	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	111552-8016.US02

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	Application Number	17/226,318 - Conf# 8690
	Filing Date	April 9, 2021
	First Named Inventor	Benjamin E. Merritt
	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	111552-8016.US02

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17/226,318 - Conf# 8690
	Filing Date	April 9, 2021
	First Named Inventor	Benjamin E. Merritt
	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	111552-8016.US02

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	Application Number	17/226,318 - Conf# 8690
	Filing Date	April 9, 2021
	First Named Inventor	Benjamin E. Merritt
	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	111552-8016.US02

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	Application Number	17/226,318 - Conf# 8690
	Filing Date	April 9, 2021
	First Named Inventor	Benjamin E. Merritt
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17/226,318 - Conf# 8690
	Filing Date	April 9, 2021
	First Named Inventor	Benjamin E. Merritt
	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	111552-8016.US02

	75.	International search report and written opinion mailed November 14, 2018 for PCT/US2018/040937, Applicant Stryker Corporation 16 pages.	
	76.	International Search Report and Written Opinion mailed March 28, 2019 for International Appln. No. PCT /US2018/059607	
	77.	International Search Report and Written Opinion mailed May 6, 2016 for PCT/US2016/017982	
	78.	PCT International Search Report and Written Opinion for International Patent Appln. No. PCT/US2019/032601, Applicant Stryker Corporation, dated July 23, 2019 (12 pages)	
	79.	Extended European Search Report mailed October 8, 2019 for European Patent Application No. 19191925.7	
	80.	International Search Report and Written Opinion for International Patent Appln. No. PCT/US2019/050410 dated October 25, 2019.	
	81.	International Search Report and Written Opinion for International App. No. PCT/US21/35965, Date of Filing: June 4, 2021, Applicant: Inari Medical, Inc., Date of Mailing: September 28, 2021, 12 pages.	
	82.	International Search Report and Written Opinion for International App. No. PCT/US21/45072 Date of Filing: August 6, 2021, Applicant: Inari Medical, Inc., Date of Mailing: January 20, 2022, 10 pages.	
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	84.	International Search Report and Written Opinion for International App. No. PCT/US21/59718; Date of Filing: November 17, 2021, Applicant: Inari Medical, Inc., Date of Mailing: March 22, 2022, 13 pages.	
	85.	International Search Report and Written Opinion for International App. No. PCT/US21/59735; Date of Filing: November 17, 2021, Applicant: Inari Medical, Inc., Date of Mailing: March 22, 2022, 11 pages.	
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EXAMINER SIGNATURE			
Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document.
[4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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	Filing Date	April 9, 2021
	First Named Inventor	Benjamin E. Merritt
	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	111552-8016.US02

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (2).

☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

It is submitted that the Information Disclosure Statement is in compliance with 37 C.F.R. § 1.98 and the Examiner is respectfully requested to consider the listed references. This Information Disclosure Statement is not to be construed as a representation that: (i) a search has been made; (ii) additional information that may be material to the examination of this application does not exist; (iii) the information, protocols, results and the like reported by third parties are accurate or enabling; or (iv) the cited information is, or is considered to be, material to patentability. In addition, Applicant does not admit that any enclosed item of information constitutes prior art to the subject invention and specifically reserves the right to demonstrate that any such reference is not prior art.

COPIES OF REFERENCES

In accordance with 37 C.F.R. § 1.98(a)(2)(ii), Applicant has not submitted copies of U.S. patents and U.S. patent applications. Applicant submits herewith copies of foreign patents and non-patent literature in accordance with 37 C.F.R. § 1.98(a)(2).

Those documents which are marked with a double asterisk (**) next to the Cite No. in the attached form PTO/SB/08 are not supplied because they were previously cited by or submitted to the Office in prior application number **16/117,519** and filed on **August 30, 2018** and relied upon in this application for an earlier filing date under 35 U.S.C. § 120.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17/226,318 - Conf# 8690
	Filing Date	April 9, 2021
	First Named Inventor	Benjamin E. Merritt
	Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	111552-8016.US02

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Matthew S. Williams/	Date (YYYY-MM-DD)	2022-04-22
Name/Print	Matthew S. Williams	Registration Number	77,516

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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EFS ID:	45538813
Application Number:	17226318
International Application Number:	
Confirmation Number:	8690
Title of Invention:	HEMOSTASIS VALVES AND METHODS OF USE
First Named Inventor/Applicant Name:	Benjamin E. Merritt
Customer Number:	25096
Filer:	Matthew S. Williams/Michelle Burge
Filer Authorized By:	Matthew S. Williams
Attorney Docket Number:	111552-8016.US02
Receipt Date:	22-APR-2022
Filing Date:	09-APR-2021
Time Stamp:	16:15:16
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Electronic Acknowledgement Receipt	
EFS ID:	45540330
Application Number:	17226318
International Application Number:	
Confirmation Number:	8690
Title of Invention:	HEMOSTASIS VALVES AND METHODS OF USE
First Named Inventor/Applicant Name:	Benjamin E. Merritt
Customer Number:	25096
Filer:	Matthew S. Williams/Michelle Burge
Filer Authorized By:	Matthew S. Williams
Attorney Docket Number:	111552-8016.US02
Receipt Date:	22-APR-2022
Filing Date:	09-APR-2021
Time Stamp:	16:17:38
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
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15	Non Patent Literature	NPL_EER_187457940_July_20_2020.PDF	278208 c3de00812c226a22800fca81ed4a92b12203c513	no	4
Warnings:					
Information:					

16	Non Patent Literature	NPL_Wikipedia_Embolectomy.PDF	259358 2cf35a269c326362d7772b41606b1559ca0c2360	no	4
Warnings:					
Information:					
17	Non Patent Literature	NPL_OSullivan_Thombolysis.PDF	690858 55fea1994abd71044f5bb92d2627e7321b64d05d	no	8
Warnings:					
Information:					
18	Non Patent Literature	NPL_Capture_Vascular_Systems.PDF	78649 f8edceed946b185da1c4220866ae8cf7923aff60	no	1
Warnings:					
Information:					
19	Non Patent Literature	NPL_Edwards_Fogarty.PDF	59311 fb66aee8bef21759ab6093de5ba3366df3f03615	no	1
Warnings:					
Information:					
20	Non Patent Literature	NPL_Boston-Scientific_Fetch2.PDF	2226666 eb43de37446aeeb3bd381a0cb0356dc96cf9531b	no	2
Warnings:					
Information:					
21	Non Patent Literature	NPL_Penumbra_Indigo_System.PDF	398145 8dc75b153437eee80d877694e4b647fdf09fbf57	no	7
Warnings:					
Information:					
22	Non Patent Literature	NPL_YouTube_Merci.PDF	841537 3038d44f1db83f07815af06638fe07346c6701d3	no	1
Warnings:					
Information:					

23	Non Patent Literature	NPL_Covidien_Solitaire.PDF	961842 3303c2f1ac000d2254632e5d97bc353d1ded4cee	no	6
Warnings:					
Information:					
24	Non Patent Literature	NPL_ISR_WO_PCTUS1950467_Dec_18_2019.PDF	1664296 2128c9d0bcf63fa8016133fabca75c03193c9a10	no	16
Warnings:					
Information:					
25	Non Patent Literature	NPL_ISR_WO_PCTUS1729440_July_7_2017.PDF	1290757 8c8c770b4e34d812c942b385a7042ee384a6a5eb	no	14
Warnings:					
Information:					
26	Non Patent Literature	NPL_ISR_WO_PCTUS1729472_July_7_2017.PDF	1424214 52c5def424774b4b1ada5c9c546bf911775baa52	no	15
Warnings:					
Information:					
27	Non Patent Literature	NPL_ISR_WO_PCTUS1735543_Aug_14_2017.PDF	1067427 80d59072073c564dd72e8134621bc9385c482dab	no	11
Warnings:					
Information:					
28	Non Patent Literature	NPL_ISR_WO_PCTUS1729366_Aug_29_2017.PDF	1449171 d6ac32dcab1c0c6b6dc1527c908eed56edcad10c	no	16
Warnings:					
Information:					
29	Non Patent Literature	NPL_ISR_WO_PCTUS1750933.PDF	1248371 867d725d8af483375852a841e30ad37978139c0b	no	13
Warnings:					
Information:					

30	Non Patent Literature	NPL_ISR_WO_PCTUS1729345_2-28-2018.PDF	2309325 e0734c82b145dd14d0cfb68b5903137b5c71f1ea	no	23
Warnings:					
Information:					
31	Non Patent Literature	NPL_ESR_168522126_Aug_22_2018.PDF	478171 f9542c801702510c0faf9a846f2ba69856d6e1a5	no	6
Warnings:					
Information:					
32	Non Patent Literature	NPL_ESR_181748914_Oct_5_2018.PDF	534003 4209cef5e8dd4ed57e0daf3630ce0428328a4bcf	no	6
Warnings:					
Information:					
33	Non Patent Literature	NPL_ISR_WO_PCTUS1840937_Nov_14_2018.PDF	1446145 3c3c827ab60b9a668862707fae4a3a57c80ab5b8	no	15
Warnings:					
Information:					
34	Non Patent Literature	NPL_ISR_WO_PCTUS1859607_Mar_28_2019.PDF	2751454 7aaa1b371a1e5e93938c69b69d8da10c3bbf16ff	no	23
Warnings:					
Information:					
35	Non Patent Literature	NPL_ISR_WO_PCTUS1617982_May_6_2016.PDF	2619784 6388e226ebfa8ad9a4a8318d361162fa5bd2c43c	no	14
Warnings:					
Information:					
36	Non Patent Literature	NPL_ISR_WO_PCTUS1932601_July_23_2019.PDF	1508895 1621540dc776063216643ec9b3ccd805549bcf4a	no	14
Warnings:					
Information:					

37	Non Patent Literature	NPL_ESR_191919257_Oct_8_2019.PDF	666220 62e930c8ab9892b473beee0ae1f0852e283d55a2	no	7
Warnings:					
Information:					
38	Non Patent Literature	NPL_ISR-WO_PCTUS1950410_Oct_25_2019.PDF	948328 442d99ec7181116acbe8afd8d5eadf9aaee7136f	no	9
Warnings:					
Information:					
39	Non Patent Literature	NPL_ISR_WO_PCTUS2135965_Sep_28_2021_12pages.PDF	528917 5819de047368abac302a838e0e93b73981037b1c	no	12
Warnings:					
Information:					
40	Non Patent Literature	NPL_ISR_WO_PCTUS2145072_Jan_20_2022_10pages.PDF	1444975 bfb221addca453707be3d9b2bd63eeaa1985aa75	no	10
Warnings:					
Information:					
41	Non Patent Literature	NPL_ISR_WO_PCTUS2158793_Mar_16_2022_13pages.PDF	1683995 a62683d5ed54c021203d955c1ed8a5ea49c38254	no	13
Warnings:					
Information:					
42	Non Patent Literature	NPL_ISR_WO_PCTUS2159718_Mar_22_2022_13pages.PDF	5469463 7bdccdaa41f10c50ab504e01c2a9772e64546f02	no	13
Warnings:					
Information:					
43	Non Patent Literature	NPL_ISR_WO_PCTUS2159735_Mar_22_2022_11pages.PDF	3908951 18dbe26f3bbfff7331c394826f63b3886f8c29f6	no	11
Warnings:					
Information:					
			Total Files Size (in bytes):	85721072	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
Benjamin E. Merritt et al.

Application No.: 17/226,318 Confirmation No.: 8690

Filed: April 9, 2021 Art Unit: Not Yet Known

For: HEMOSTASIS VALVES AND METHODS OF USE Examiner: Not Yet Known

NOTIFICATION OF LOSS OF ENTITLEMENT TO SMALL ENTITY STATUS AND PAYMENT OF FEE DEFICIENCY

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

Applicant, Inari Medical, Inc., hereby notifies the Patent and Trademark Office that it is not entitled to status as a small entity, and that the claim for small entity status filed by the Applicant is hereby withdrawn. Applicant also notifies the Patent and Trademark Office that the official fees were erroneously paid as a small entity and herewith submits payment of the fee deficiency as below.

TYPE OF FEE	CURRENT FEE AMOUNT FOR LARGE ENTITY	SMALL ENTITY FEE PAID	DATE SMALL ENTITY FEE PAID	DEFICIENCY OWED
Filing Fees	$320.00	$80.00	June 11, 2021	$240.00
Search Fees	$700.00	$350.00	June 11, 2021	$350.00
Exam Fees	$800.00	$400.00	June 11, 2021	$400.00
Surcharge Fees	$160.00	$80.00	June 11, 2021	$80.00
			TOTAL FEES DUE	**$1,070.00**

Please charge Deposit Account No. 50-0665, under Order No. 111552-8016US02, in the amount of $1,070.00 to cover the fee deficiency. The Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith to Deposit Account No. 50-0665, from which the undersigned is authorized to draw.

Dated: January 27, 2022

Respectfully submitted,

By /Matthew S. Williams/
Matthew S. Williams
Registration No.: 77,516

Perkins Coie LLP
P.O. Box 1247
Seattle, WA 98111-1247
Phone: (206) 359-3343
Fax: (206) 359-7198

Attorney for Applicant

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
17/226,318	**01/27/2022 01:27:13 PM ET**	**111552-8016.US02**

Title of Invention

HEMOSTASIS VALVES AND METHODS OF USE

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	8690	FILED BY	Christina Flores
PATENT CENTER #	60506359	FILING DATE	04/09/2021
CUSTOMER #	25096	FIRST NAMED INVENTOR	Benjamin E. Merritt
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Matthew Williams

Documents

TOTAL DOCUMENTS: 1

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
2022-1-27-Loss_of_Small_Entity_Fee-111552-8016US2.pdf	2	Notification of loss of entitlement to small entity status	21 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
2022-1-27-Loss_of_Small_Entity_Fee-111552-8016US2.pdf	5E520F15CE506CD78E134EB4D5A855CA93A4D4D6C196314C F0DA2621F3EBF72B8A121B1B0AFD22A27D013105025EAF970 1E027CF788F65C896A0170F0F114AA6

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
17/226,318	04/09/2021	Benjamin E. Merritt	111552-8016.US02

CONFIRMATION NO. 8690

25096
PERKINS COIE LLP - SEA General
PATENT-SEA
P.O. BOX 1247
SEATTLE, WA 98111-1247

PUBLICATION NOTICE



Title:HEMOSTASIS VALVES AND METHODS OF USE

Publication No.US-2021-0290925-A1
Publication Date:09/23/2021

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Public Records Division. The Public Records Division can be reached by telephone at (571) 272-3150 or (800) 972-6382, by facsimile at (571) 273-3250, by mail addressed to the United States Patent and Trademark Office, Public Records Division, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently https://portal.uspto.gov/pair/PublicPair. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
17/226,318	04/09/2021		910	111552-8016.US02	20	3

CONFIRMATION NO. 8690

UPDATED FILING RECEIPT

25096
PERKINS COIE LLP - SEA General
PATENT-SEA
P.O. BOX 1247
SEATTLE, WA 98111-1247

OC000000128302373

Date Mailed: 06/15/2021

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections provided that the request is grantable.

Inventor(s)

Benjamin E. Merritt, San Clemente, CA;
John C. Thress, Capistrano Beach, CA;
Paul Lubock, Monarch Beach, CA;

Applicant(s)

Inari Medical, Inc., Irvine, CA;

Power of Attorney: The patent practitioners associated with Customer Number 25096

Domestic Priority data as claimed by applicant

This application is a CON of 16/117,519 08/30/2018 PAT 11000682
which claims benefit of 62/554,931 09/06/2017

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 04/14/2021

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/226,318**

Projected Publication Date: 09/23/2021

Non-Publication Request: No

Early Publication Request: No
**** SMALL ENTITY ****
Title

HEMOSTASIS VALVES AND METHODS OF USE

Preliminary Class

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific

countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

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Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 17/226,318

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	80		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	350		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	400		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	20 minus 20 =	*	x 50 =	0.00	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*	x 240 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	830		TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)	OR	RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

Docket No.: 111552-8016.US02
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
Benjamin E. Merritt et al.

Application No.: 17/226,318 Confirmation No.: 8690

Filed: April 9, 2021 Art Unit: Not Yet Known

For: HEMOSTASIS VALVES AND METHODS OF USE Examiner: Not Yet Known

RESPONSE TO NOTICE TO FILE MISSING PARTS OF APPLICATION

MS Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

In response to the Notice to File Missing Parts of Application – Filing Date Granted mailed April 15, 2021, Applicant submits herewith the Filing Fee for the Application (as shown on the accompanying Fee Transmittal). Applicant submits herewith a Preliminary Amendment and a General Fee Authorization.

Payment will be made by credit card covering the fees set forth in 37 C.F.R. §§ 1.16(f), 1.16(a), 1.16(k), 1.16(o), and 1.17(a)(2). The Director is hereby authorized to charge any deficiency or credit any overpayment in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 50-0665, under Order No. 111552-8016.US02.

Dated: June 11, 2021

Respectfully submitted,

By: /Matthew S. Williams/

152767718.1

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(206) 359-8000
(206) 359-7198 (Fax)
Attorney for Applicant

PTO/SB/17 (10-20)
Approved for use through 12/31/2020. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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FEE TRANSMITTAL

Complete if known	
Application Number	17/226,318 - Conf. No. 8690
Filing Date	2021-04-09
First Named Inventor	Benjamin E. Merritt
Examiner Name	Not Yet Known
Art Unit	Not Yet Known
Practitioner Docket No.	111552-8016.US02

☑ Applicant asserts small entity status. See 37 CFR 1.27.

☐ Applicant certifies micro entity status. See 37 CFR 1.29. Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.

TOTAL AMOUNT OF PAYMENT ($) 910.00

METHOD OF PAYMENT (check all that apply)

☐ Check ☑ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): _____

☑ Deposit Account Deposit Account Number: 50-0665 Deposit Account Name: Perkins Coie LLP

For the above-identified deposit account, the Director is hereby authorized to (check all that apply):

☐ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, **except for the filing fee**

☑ Charge any additional fee(s) or underpayment of fee(s) under 37 CFR 1.16 and 1.17 ☑ Credit any overpayment of fee(s)

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES (U = undiscounted fee; S = small entity fee; M = micro entity fee)

	FILING FEES			SEARCH FEES			EXAMINATION FEES			
Application Type	**U ($)**	**S ($)**	**M ($)**	**U ($)**	**S ($)**	**M ($)**	**U ($)**	**S ($)**	**M ($)**	**Fees Paid ($)**
Utility	320	160*	80	700	350	175	800	400	200	830
Design	220	110	55	160	80	40	640	320	160	0
Plant	220	110	55	440	220	110	660	330	165	0
Reissue	320	160	80	700	350	175	2,320	1,160	580	0
Provisional	300	150	75	0	0	0	0	0	0	0

* The $160 small entity status filing fee for a utility application is further reduced to $80 for a small entity status applicant who files the application via EFS-Web.

2. EXCESS CLAIM FEES

Fee Description	**Undiscounted Fee ($)**	**Small Entity Fee ($)**	**Micro Entity Fee ($)**
Each claim over 20 (including Reissues)	100	50	25
Each independent claim over 3 (including Reissues)	480	240	120
Multiple dependent claims	860	430	215

Total Claims		**Extra Claims**		**Fee ($)**		**Fee Paid ($)**
20	-20 or HP =	0	x	50	=	0.00

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims		**Extra Claims**		**Fee ($)**		**Fee Paid ($)**
3	-3 or HP =	0	x	240	=	0.00

HP = highest number of independent claims paid for, if greater than 3.

Multiple Dependent Claims

Fee ($)	**Fee Paid ($)**
0	0

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is $420 ($210 for small entity) ($105 for micro entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets		**Extra Sheets**		**Number of each additional 50 or fraction thereof**		**Fee ($)**		**Fee Paid ($)**
55	- 100 =	0	/ 50 =	0 (round **up** to a whole number)	x	210	=	0

4. OTHER FEE(S)

	Fees Paid ($)
Non-English specification, $140 fee ($70 for small entity) ($35 for micro entity)	0.00
Non-electronic filing fee under 37 CFR 1.16(t) for a utility application, $400 fee ($200 small or micro entity)	0.00
Other (e.g., late filing surcharge): Surcharge	80.00

SUBMITTED BY

Signature	/Matthew S. Williams/	Registration No. (Attorney/Agent) 77,516	Telephone (206) 359-3343
Name (Print/Type)	Matthew S. Williams		Date 2021-06-11

This collection of information is required by 37 CFR 1.136. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
Benjamin E. Merritt et al.

Application No.: 17/226,318	Confirmation No.: 8690
Filed: April 9, 2021	Art Unit: Not Yet Known
For: HEMOSTASIS VALVES AND METHODS OF USE	Examiner: Not Yet Known

AUTHORIZATION FOR: EXTENSIONS OF TIME UNDER 37 C.F.R. § 1.136(a)(3) AND PAYMENT OF FEES UNDER 37 C.F.R. § 1.17

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

With respect to the above-identified application, the Commissioner is authorized to treat any concurrent or future reply requiring a petition for an extension of time under 37 C.F.R. § 1.136(a)(3) for its timely submission as incorporating a petition therefor for the appropriate length of time.

The Commissioner is also authorized to charge any extension of time fees or other fees that may be required under 37 C.F.R. § 1.17 for any paper filed concurrently herewith or in the future, or credit any overpayment, to Deposit Account No. 50-0665.

Dated: June 11, 2021

Respectfully submitted,

By /Matthew S. Williams/
Matthew S. Williams
Registration No.: 77,516

Perkins Coie LLP
P.O. Box 1247
Seattle, WA 98111-1247
Phone: (206) 359-3343
Fax: (206) 359-7198

Attorney for Applicant

Electronic Patent Application Fee Transmittal

Application Number:	17226318
Filing Date:	09-Apr-2021
Title of Invention:	HEMOSTASIS VALVES AND METHODS OF USE
First Named Inventor/Applicant Name:	Benjamin E. Merritt
Filer:	Matthew S. Williams/JiYoung Anderson
Attorney Docket Number:	111552-8016.US02

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
UTILITY FILING FEE (ELECTRONIC FILING)	4011	1	80	80
UTILITY SEARCH FEE	2111	1	350	350
UTILITY EXAMINATION FEE	2311	1	400	400
Pages:				
Claims:				
Miscellaneous-Filing:				
LATE FILING FEE FOR OATH OR DECLARATION	2051	1	80	80
Petition:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**910**

Electronic Acknowledgement Receipt	
EFS ID:	42968794
Application Number:	17226318
International Application Number:	
Confirmation Number:	8690
Title of Invention:	HEMOSTASIS VALVES AND METHODS OF USE
First Named Inventor/Applicant Name:	Benjamin E. Merritt
Customer Number:	25096
Filer:	Matthew S. Williams/JiYoung Anderson
Filer Authorized By:	Matthew S. Williams
Attorney Docket Number:	111552-8016.US02
Receipt Date:	11-JUN-2021
Filing Date:	09-APR-2021
Time Stamp:	16:53:55
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$910
RAM confirmation Number	E20216AG54334185
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Applicant Response to Pre-Exam Formalities Notice	2021-6-11-ResponseTo_MissingPartsNotice-111552-8016US2.PDF	77873 1313a3d01e000a3d27414d8e1513e693fb673cdb	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	Fee_Transmittal-111552-8016US2.PDF	892279 929bf51a46c7114880007b490aea6a969e7839d4	no	2
Warnings:					
Information:					
3	Preliminary Amendment	2021-6-11-Preliminary_Amendment-111552-8016US2.PDF	87372 c3742c8d6f692019ff559f4f69b740744b1f7f13	no	6
Warnings:					
Information:					
4	Miscellaneous Incoming Letter	2021-6-11-GeneralFeeAutho-111552-8016US2.PDF	80885 354d17e8cb3bd89353b08b84b415e9361994d8df	no	2
Warnings:					
Information:					
5	Fee Worksheet (SB06)	fee-info.pdf	37489 38e501daf2e598bdf4714d1145b171425fcd4eb8	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1175898		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
Benjamin E. Merritt et al.

Application No.: 17/226,318	Confirmation No.: 8690
Filed: April 9, 2021	Art Unit: Not Yet Known
For: HEMOSTASIS VALVES AND METHODS OF USE	Examiner: Not Yet Known

PRELIMINARY AMENDMENT UNDER 37 C.F.R. § 1.115

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

Prior to examination on the merits, please amend the above-identified U.S. patent application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2.

Remarks begin on page 6 of this paper.

AMENDMENTS TO THE CLAIMS

Please cancel claims 1–51 and add new claims 52–71. Following is a complete listing of the claims pending in the application:

1–51. (Canceled)

52. (New) A valve, comprising:

an elongate member defining a lumen;

an active tensioning mechanism including an actuator coupled to the elongate member via a filament extending at least partially around the elongate member, wherein the actuator is moveable between (a) a first position wherein the lumen is constricted and sealed and (b) a second position wherein the lumen is at least partially open; and

a biasing member configured to bias the actuator to the first position.

53. (New) The valve of claim 52 wherein the elongate member is pliable.

54. (New) The valve of claim 52 wherein the filament extends in a loop around the elongate member.

55. (New) The valve of claim 52 wherein the actuator is a button, wherein the button is undepressed in the first position, and wherein the button is depressed in the second position.

56. (New) The valve of claim 52 wherein, when the actuator is in the first position, the lumen is configured to remain constricted and sealed when a pressure differential exists between (a) a first volume outside the lumen and adjacent to a first end of the elongate member

and (b) a second volume outside the central lumen and adjacent to a second end of the elongate member.

57. (New) The valve of claim 52 wherein, when the actuator is in the first position, the lumen is configured to remain constricted and sealed when vacuum pressure is applied to a volume outside the lumen and adjacent to either a first end or a second end of the elongate member.

58. (New) The valve of claim 52 wherein the lumen extends a long a first longitudinal axis, wherein the actuator is movable between the first and second positions along a second longitudinal axis, and wherein the first longitudinal axis is orthogonal to the second longitudinal axis.

59. (New) The valve of claim 52 wherein the biasing member is a compression spring.

60. (New) The valve of claim 52 wherein, in the first position, the actuator pulls the filament to circumferentially constrict the elongate member such that the lumen is constricted and sealed.

61. (New) A valve, comprising:

an elongate member defining a lumen;

a filament coupled to the elongate member;

an actuator coupled to the filament, wherein the actuator is moveable between (a) a first position wherein the lumen is constricted and sealed and (b) a second position wherein the lumen is at least partially open; and

a biasing member configured to bias the actuator to the first position.

62. (New) The valve of claim 61 wherein the filament extends at least partially around the elongate member.

63. (New) The valve of claim 62 wherein, in the first position, the actuator pulls the filament to circumferentially constrict the elongate member such that the lumen is constricted and sealed.

64. (New) The valve of claim 61 wherein the elongate member is pliable.

65. (New) The valve of claim wherein the filament is monofilament.

66. (New) The valve of claim 61 wherein the actuator is a button that is undepressed in the first position and depressed in the second position, wherein the button is movable between the first and second positions along a first longitudinal axis, wherein the lumen extends a long a second longitudinal axis, and wherein the first longitudinal axis is orthogonal to the second longitudinal axis.

67. (New) A valve, comprising:

an elongate member defining a lumen;

a filament coupled to the elongate member; and

an actuator coupled to the elongate member, wherein the actuator is moveable between (a) a first position in which the actuator pulls the filament to collapse the elongate member such that the lumen is constricted and sealed and (b) a second position wherein the lumen is at least partially open.

68. (New) The valve of claim 67, further comprising a biasing member configured to bias the actuator to the first position.

69. (New) The valve of claim 67 wherein the elongate member is pliable, and wherein the filament extends at least partially around the elongate member.

70. (New) The valve of claim 67 wherein the elongate member is pliable, and wherein the filament is looped around the elongate member.

71. (New) The valve of claim 67 wherein the actuator does not substantially pull the filament in the second position such that the elongate member can expand.

REMARKS

In this Preliminary Amendment, claims 1–51 have been canceled and new claims 52–71 have been added. No new matter has been added. Accordingly, claims 52–71 are currently pending.

Please charge any underpayment or credit any overpayment to our Deposit Account No. 50-0665, under Order No. 111552-8016.US02 from which the undersigned is authorized to draw.

Dated: June 11, 2021

Respectfully submitted,

By /Matthew S. Williams/
Matthew S. Williams
Registration No.: 77,516

Perkins Coie LLP
P.O. Box 1247
Seattle, WA 98111-1247
Phone: (206) 359-8000
Fax: (206) 359-7198

Attorney for Applicant

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 17/226,318

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	80		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	350		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	400		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	51 minus 20 =	* 31	x 50 =	1550	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	4 minus 3 =	* 1	x 240 =	240			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	2620		TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)	OR	RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
17/226,318	04/09/2021		0.00	111552-8016.US02	51	4

CONFIRMATION NO. 8690

FILING RECEIPT

25096
PERKINS COIE LLP - SEA General
PATENT-SEA
P.O. BOX 1247
SEATTLE, WA 98111-1247

OC000000124901081

Date Mailed: 04/15/2021

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections provided that the request is grantable.

Inventor(s)

Benjamin E. Merritt, San Clemente, CA;
John C. Thress, Capistrano Beach, CA;
Paul Lubock, Monarch Beach, CA;

Applicant(s)

Inari Medical, Inc., Irvine, CA;

Power of Attorney: The patent practitioners associated with Customer Number 25096

Domestic Priority data as claimed by applicant

This application is a CON of 16/117,519 08/30/2018
which claims benefit of 62/554,931 09/06/2017

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 04/14/2021

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/226,318**

Projected Publication Date: To Be Determined - pending completion of Missing Parts

Non-Publication Request: No

Early Publication Request: No
**** SMALL ENTITY ****
Title

HEMOSTASIS VALVES AND METHODS OF USE

Preliminary Class

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific

countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
17/226,318	04/09/2021	Benjamin E. Merritt	111552-8016.US02

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FILED UNDER 37 CFR 1.53(b)

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An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

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- The application search fee must be submitted.
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- Surcharge as set forth in 37 CFR 1.16(f) must be submitted.
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- $ **1550** for **31** total claims over 20.

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Signature		Date (Optional)	
Name	Brian J. Cox		
Title	Vice President, Inari Medical, Inc.		

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HEMOSTASIS VALVES AND METHODS OF USE

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation of U.S. Patent Application No. 16/117,519, filed on August 30, 2018, and titled "HEMOSTASIS VALVES AND METHODS OF USE," which claims the benefit of U.S. Provisional Patent Application No. 62/554,931, filed on September 6, 2017, and titled "HEMOSTASIS VALVES AND METHODS OF USE," each of which is herein incorporated by reference in its entirety.

BACKGROUND

[0002] During a surgical procedure, a portion of a patient's body (e.g., vasculature) is accessed to allow for performance of a desired intervention or treatment. During such surgical procedures, it is desired to minimize patient blood loss, prevent delivery of air into the vasculature, and to maintain the sterility of the accessed portions or sites of the patient's body so as to prevent issues such as infection. Further, the desire for improved patient outcomes has led to the development of hemostasis valves that facilitate minimally invasive surgery.

[0003] In minimally invasive surgery, small incisions are created through a blood vessel which one or several catheters are inserted. Each of these one or several catheters can define a lumen extending longitudinally through that catheter. These catheters are moved to a position proximate to tissue, nerves, or other body structures targeted by the surgery, and then tools for performing the procedure are inserted through the lumens of some or all of these catheters.

[0004] To minimize blood loss, prevent delivery of air into the vasculature, and to facilitate maintenance of sterility within the patient's body (e.g., blood vessel), these catheters are equipped with hemostasis valves. These valves seal or selectably seal the lumens of the catheters. In many instances, these valves can seal the lumen of the catheter when a tool extends through the catheter, and specifically through the valve. Additionally the valves can seal the lumen when a tool is removed or does not extend through the catheter.

[0005] While such traditional hemostasis valves are greatly beneficial for intravascular access, they have some drawbacks. For example, some valves may not seal adequately for all

interventional applications or tools, and/or the operation of some valves may be complicated for operator use. The drawbacks of such valve designs may in turn increase the complexity of any surgery performed therewith and/or reduce patient safety (e.g., bleeding, infection, and/or other detrimental complications). Accordingly, new and improved hemostasis valves and methods of use are desired.

SUMMARY

[0006] The following relates to valves, medical systems incorporating valves, and methods of using the same. The valve can include a tubular member that can be constricted, collapsed, and/or sealed by one or several tensioning mechanisms. The tensioning mechanism can include at least one filament that extends around at least a portion of the tubular member. The filament can interact with the tubular member to constrict, collapse, and/or seal the tubular member via manipulation of the tensioning mechanism(s). A tool can be inserted through the valve to gain access to a patient's body and specifically to gain access to a blood vessel. Through the use of the tensioning mechanism and filament to constrict, collapse, and/or seal the tubular member, the valve can seal around a wide range of tool sizes and shapes, as well as multiple tools of differing sizes simultaneously. Additionally, such a valve creates a robust seal that maintains its seal when a vacuum is applied such as occurs during aspiration.

[0007] Aspects of the present disclosure relate to a hemostatic valve for sealing a medical device. The hemostatic valve includes an elongate member having a first end, a second end, and a central lumen extending therebetween. In some embodiments, the elongate member is pliable. The hemostatic valve can include a reinforcement structure extending along at least a portion of the elongate member, such that the reinforcement structure is coupled to the elongate member. The hemostatic valve includes an active tensioning mechanism coupled to the elongate member. In some embodiments, the tensioning mechanism is moveable between a first configuration in which the central lumen is constricted and sealed and a second configuration in which the central lumen is open. Optionally, the valve may be manually adjusted by the user to intermediate positions between fully open and fully closed. Additionally, an instrument (e.g. catheter) may provide an intermediate position where the valve creates hemostasis without user adjustment.

[0008] In some embodiments, the elongate member can be a compliant polymer tube. In some embodiments, the tensioning mechanism can include at least one filament extending at least partially around the elongate member. In some embodiments, the reinforcement structure is positioned between the at least one filament and the elongate member. In some embodiments, the reinforcement structure can be a braided mesh. In some embodiments, the reinforcement structure is coupled to the elongate member at a position proximate to the first end of the elongate member and at a position proximate to the second end of the elongate member. In some embodiments, the reinforcement structure is not coupled to the elongate member at a position between the first end of the elongate member and the second end of the elongate member. In some embodiments, the central portion of the compliant polymer tube that is constrained or collapsed by the tensioning mechanism, and at least one filament, is not coupled to the reinforcement structure.

[0009] In some embodiments, the tensioning mechanism can include an actuator coupled to the at least one filament. In some embodiments there are two tensioning mechanisms coupled to the at least one filament that operate in opposite directions. In some embodiments the two tensioning mechanisms are attached to the same filament. In some embodiments the two tensioning mechanisms are attached to opposing filaments. In some embodiments, the actuator can be moveable to control movement of the at least one filament from a first position in which the central lumen is constricted and sealed to a second position in which the central lumen is open. In some embodiments, the at least one filament is in the first position when the tensioning mechanism is in the first configuration. In some embodiments, the actuator is biased towards the first position. In some embodiments, the actuator is biased toward the second position. In some embodiments, the actuator can be a manual actuator.

[0010] In some embodiments, the at least one filament forms a loop around the elongate member. In some embodiments, the at least one filament forms a bight around a portion of the elongate member. In some embodiments, the at least one filament can include a first filament and a second filament. In some embodiments, each of the first filament and the second filament are coupled to the same actuator. In some embodiments, each of the first filament and the second filament are coupled to different actuators. In some embodiments, the first filament and the second filament are moveable from the first position to the second position. In some embodiments, each of the first filament and the second filament form a loop around the elongate member. In some

embodiments, the first filament forms a first bight around a first portion of the elongate member, and the second filament forms a second bight around a second portion of the elongate member. In some embodiments, the first bight extends through the second bight.

[0011] In some embodiments, the hemostatic valve can include a shell defining a first aperture and a second aperture. In some embodiments, the elongate member extends from the first aperture to the second aperture and fluidly couples the first aperture and the second aperture. In some embodiments, the tensioning mechanism is self-adjustable to seal around tools of different sizes extending through the hemostatic valve. In some embodiments, the central lumen can comprise a single lumen, and in some embodiments, the central lumen can comprise a plurality of lumens.

[0012] One aspect of the present disclosure relates to a delivery system for intravascular access of a blood vessel within a patient's body. The delivery system includes a catheter having a first end, a second end, and a catheter lumen extending therebetween and a hemostatic valve coupled to the first end of the catheter. The hemostatic valve includes a tubular member having a first end, a second end, and a central lumen extending therebetween. In some embodiments, the central lumen of the tubular member is fluidly coupled with the catheter lumen. The hemostatic valve includes an active tensioning mechanism coupled to the tubular member, the tensioning mechanism can be moveable between a first configuration in which the tensioning mechanism constricts on the central lumen and the central lumen is sealed and a second configuration in which the central lumen is open.

[0013] In some embodiments, the hemostatic valve further includes a reinforcement structure extending along at least a portion of the tubular member. In some embodiments, the reinforcement structure is located between the tensioning mechanism and the tubular member. In some embodiments, the reinforcement structure can be a braided mesh. In some embodiments, the reinforcement structure is coupled to the tubular member at a position proximate to the first end of the tubular member and at a position proximate to the second end of the tubular member. In some embodiments, the reinforcement structure is adhered to the tubular member at the first end of the tubular member and at the second end of the tubular member. In some embodiments, the reinforcement structure is uncoupled to the tubular member between the first end of the tubular member and the second end of the tubular member.

[0014] In some embodiments, the tensioning mechanism can include at least one filament extending at least partially around the tubular member. In some embodiments, the tensioning mechanism can include an actuator coupled to the at least one filament. In some embodiments, moving the tensioning mechanism from the first configuration to the second configuration can include moving the actuator and the thereto coupled at least one filament from a first position to a second position. In some embodiments, the filament constricts and seals the central lumen of the tubular member when the filament is in the first position.

[0015] In some embodiments, the actuator can be a manual actuator. In some embodiments, the actuator can include a pair of opposing and depressable buttons, which buttons can be biased towards an undepressed position. In some embodiments, the central lumen is sealed when the buttons are in the undepressed position. In some embodiments, the filament can be a monofilament. In some embodiments, the filament can be at least one of: a polymer filament; or a metallic filament. In some embodiments, the catheter can include a thrombus extraction device.

[0016] One aspect of the present disclosure relates to a method of sealing a delivery device accessing a blood vessel of a patient. The method includes inserting the delivery device including a catheter and a hemostatic valve into the blood vessel of the patient. In some embodiments, the catheter can have a first end, a second end, and a catheter lumen extending therethrough. In some embodiments, the hemostatic valve can be coupled to the first end and can have a tubular member defining a central lumen fluidly coupled with the catheter lumen and a tensioning mechanism coupled with the tubular member. In some embodiments, the tensioning mechanism collapses and seals the central lumen in a first configuration and thereby seals access to the blood vessel. The method can include moving the tensioning mechanism of the hemostatic valve to a second configuration. In some embodiments, the central lumen is open and access to the blood vessel is unsealed when the tensioning mechanism is in the second configuration. The method can include advancing a shaft of a tool through the delivery device until a first end of the tool reaches a desired position within the blood vessel of the patient and a portion of the shaft is positioned within the central lumen of the tubular member. The method can include returning the tensioning mechanism of the hemostatic valve to the first configuration such that the tubular member collapses on the shaft of the tool and seals around the shaft of the tool.

[0017] In some embodiments, the method includes retracting the shaft of the tool from the delivery device. In some embodiments, the tensioning mechanism is maintained in the first configuration during and after the retracting of the shaft of the tool from the delivery device. In some embodiments, the tensioning mechanism is moved to the second configuration during the retracting of the shaft of the tool from the delivery device, and the tensioning mechanism is returned to the first configuration after the shaft of the tool is retracted from the delivery device.

[0018] In some embodiments, the tensioning mechanism can include at least one filament extending at least partially around the tubular member. In some embodiments, the at least one filament collapses the tubular member when the tensioning mechanism is in the first configuration. In some embodiments, the at least one filament circumferentially constricts the tubular member to collapse the tubular member when the tensioning mechanism is in the first configuration. In some embodiments, the hemostatic valve can include a reinforcement structure located between the at least one filament and the tubular member.

[0019] In some embodiments, the at least one filament forms a loop around the elongate member, and moving the tensioning mechanism from the second configuration to the first configuration reduces a size of the loop to thereby constrict the tubular member within the loop. In some embodiments, the filament forms at least one bight around a portion of the elongate member. In some embodiments, the filament can include a first filament and a second filament. In some embodiments, the at least one bight can include a first bight oriented in a first direction and formed by the first filament and a second bight oriented in a second direction and formed by the second filament. In some embodiments, the first and second bights overlap to encircle a portion of the tubular member within a constricting area.

[0020] In some embodiments, moving the tensioning mechanism from the second configuration to the first configuration can include moving the first bight in the first direction and the second bight in the direction to reduce the size of the constricting area and collapse and seal the central lumen of the tubular member. In some embodiments, the tensioning mechanism can include an actuator. In some embodiments, moving the tensioning mechanism to the second configuration can include manipulating the actuator. In some embodiments, the method includes applying a vacuum to the delivery device and/or delivery system to aspirate material through the catheter. In

some embodiments, the central lumen remains sealed during the aspiration. In some embodiments, the tool can include a thrombus extraction device.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] Figure 1 is a perspective view of one embodiment of a delivery device.

[0022] Figure 2 is a side-section view of one embodiment of a hemostasis valve in a first configuration.

[0023] Figure 3 is a side-section view of one embodiment of the valve in a second configuration.

[0024] Figure 4 is a side-section view of one embodiment of the valve in the first configuration and with a tool extending through the valve.

[0025] Figure 5 is a side-section view of one embodiment of a single-button hemostasis valve in a first configuration.

[0026] Figure 6 is a perspective view of a filament of a valve forming a loop.

[0027] Figure 7 is a perspective view of two filaments of a valve, each of the filaments forming a loop.

[0028] Figure 8 is a perspective view of two overlapping and interlocked bights in an open configuration.

[0029] Figure 9 is a perspective view of two overlapping and interlocked bights in a closed configuration.

[0030] Figure 10 is a flowchart illustrating one embodiment of a method for sealing a valve and/or catheter.

[0031] Figure 11 is a side view of one embodiment of a thrombectomy system including the delivery device.

[0032] Figure 12 is a side-section view of another embodiment of a hemostasis valve having two-piece caps.

DETAILED DESCRIPTION

[0033] The present disclosure relates to a valve that can be used a hemostasis valve. This valve, also referred to herein as a garrote valve can seal with or without a tool extending through the valve. The garrote valve provides convenient, single-handed operation for a wide range of medical devices including catheters, wires, embolectomy systems, or the like. This single-handed operation of the garrote valve allows the user to easily and quickly swap different tools being used through the valve without compromising hemostasis and therefore simplifying the procedure. Combined with single-handed operation, the garrote valve provides robust sealing either with or without a tool extending through the valve. This robust sealing minimizes leakage in applications with a pressure differential on different sides of the valve. This pressure differential can arise, for example, during the application of vacuum aspiration in a procedure. Even under such conditions, as well as under other conditions, the garrote valve maintains seal integrity and prevents leakage in one or both directions.

[0034] The garrote valve includes a tubular member. The tubular member is a flexible member that defines a central lumen, which can, in some embodiments, define a single lumen, and in some embodiments, defines a plurality of lumens. In some embodiments, each of the plurality of lumens can comprise the same size and shape, and in some embodiments, some or all of the plurality of lumens can comprise different sizes and shapes. In some embodiments, for example, the plurality of lumens can comprise a lumen sized and/or shaped to receive a guide wire and a lumen sized and/or shaped to receive a tool. The tubular member extends at least partially through a constricting mechanism. The constricting mechanism can be moved from a first configuration to a second configuration, and the constricting mechanism can collapse and/or seal the central lumen of the tubular member when the constricting mechanism is in the first configuration. The constricting mechanism creates the above-discussed robust seal of the tubular member and thus of the valve.

[0035] With reference now to **Figure 1**, a perspective view of one embodiment of a delivery system 100, also referred to herein as a delivery device 100, is shown. The delivery system 100 can include a catheter 102 and a garrote valve 104, also referred to herein as valve 104. The catheter 102 can comprise a shaft 106, also referred to herein as an elongate sheath 106, having a proximal end 108, also referred to herein as a first end 108, that can connect to the valve 104 and a distal end

110, also referred to herein as a second end 110. The shaft 106 can define a catheter lumen 112 extending from the proximal end 108 of the shaft 106 to the distal end 110 of the shaft 106. The catheter 102 and specifically the shaft 106 can comprise a variety of shapes and sizes and can be made from a variety of materials. In some embodiments, the catheter 102 can be flexible and/or can be made from a biocompatible material. The elongate sheath 106 can have an outer diameter of at least 4 French, at least 6 French, at least 8 French, at least 10 French, at least 12 French, at least 14 French, at least 18 French, at least 20 French, at least 22 French, between 4 French and 30 French, between 8 French and 24 French, between 12 French and 20 French, and/or any other or intermediate size.

[0036] The valve 104 can include an outer shell 114. The outer shell 114 can comprise a variety of shapes and sizes and can be made from a variety of materials. In some embodiments, the outer shell 114 can be made from one or several polymers or composites. The outer shell 114 can include features that allow interaction with and/or control of the valve 104 to move the valve 104 between the first configuration and the second configuration.

[0037] The outer shell 114 can include a proximal cap 116 located at a proximal end 118 of the outer shell 114 and a distal cap 120 located at a distal end 122 of the shell 114. The proximal cap 116 can include and/or house a proximal aperture 124, also referred to herein as a proximal channel 124, a first channel 124, or a first aperture 124, that extends through the proximal cap 116, and the distal cap 120 can include and/or house a distal aperture 126, also referred to herein as a distal channel 126, a second channel 126, or second aperture 126, that extends through the distal cap 120. As seen in Figure 1, the distal cap 120 connects to the shaft 106 of the catheter 102 at the distal end 122 of the valve 104.

[0038] The proximal cap 116 and the distal cap 120 are connected via a housing 128. The housing 128 can be a one-piece housing 128 or a multi-piece housing 128. In the embodiment depicted in Figure 1, the housing comprises a two-piece housing 128. The housing 128 can be configured to receive and couple with each of the proximal cap 116 and the distal cap 120, and as seen in Figure 1, the housing 128 is coupled with each of the proximal cap 116 and the distal cap 120 to secure the relative position of the proximal cap 116 and the distal cap 120 with respect to each other.

[0039] The housing 128 can define an interior channel 130 through which an elongate member 132, also referred to herein as a tubular member 132, a septum 132, or a tubular septum 132, can extend and connect the proximal cap 116 and the distal cap 120. The elongate member 132 can comprise a variety of shapes and sizes and can be made from a variety of materials. In some embodiments, the elongate member 132 can comprise a compliant tubular structure that can be, for example, a thin-walled compliant tubular structure. The thin-walled structure of the elongate member 132 can facilitate the collapse, and specifically the uniform collapse of the elongate member 132 and the sealing of the elongate member 132. In some embodiments, the elongate member 132 is an elastic, resilient material that may comprise a polymer including either a natural or synthetic polymer. In some embodiments, the elongate member can comprise an elastic, resilient material that may comprise silicone, urethane, ethylene-vinyl acetate, natural or synthetic rubber or other elastomers known in the art. In some embodiments, the elongate member 132 can comprise a silicone tube.

[0040] The elongate member 132 can comprise a proximal end 134, also referred to herein as a first end 134, that can couple to the proximal cap 116, and a distal end 136, also referred to herein as a second end 136, that can couple to the distal cap 120. The elongate member 132 can define a central lumen 138 that can extend from the first end 134 to the second end 136 of the elongate member 132. The elongate member 132 can be coupled to the proximal cap 116 such that the central lumen 138 is fluidly coupled with the proximal aperture 124 of the proximal cap 116, and the elongate member 132 can be coupled to the distal cap 120 such that the central lumen 138, as seen in **Figure 2** and in **Figure 3**, is fluidly coupled with the distal aperture 126 of the distal cap 120.

[0041] The central lumen 138 of the elongate member 132 can be defined by a wall of the elongate member 132 that can have a thickness that is uniform along the length of the elongate member 132 between the first end 134 and the second end 136, or that is non-uniform along the length of the elongate member 132 between the first end 134 and the second end 136. In some embodiments, the wall can have a thickness that is approximately between 0.005 inches and 0.05 inches, and/or approximately between 0.010 inches and 0.030 inches. As used anywhere herein, "approximately" refers to a range of +/- 10% of the value and/or range of values for which "approximately" is used.

[0042] In some embodiments, the elongate member 132 can be cylindrically shaped, and specifically can be circular-cylindrically shaped. In some embodiments, the elongate member 132 can be dog-bone shaped to facilitate, for example, connection to each of the proximal cap 116 and the distal cap 120. In some embodiments, the elongate member 132 can include one or several outward-extending protuberances that engage with all or portions of a constricting mechanism 141, also referred to herein as a tensioning mechanism 141, of the valve 104 to secure a position of all or portions of the constricting mechanism 141 with respect to the elongate member 132. In some embodiments, the constricting mechanism 141 can be self-adjusting to seal around tools of different sizes extending through the valve 104.

[0043] The constricting mechanism 141 can, in some embodiments, collapse and seal the elongate member 132 via compression and/or constriction, and specifically via constriction with at least one filament 150. The constricting mechanism 141 can comprise: an actuator 142 which can be a manual actuator such as one or several buttons 144; and the at least one filament 150 that can extend at least partially around the elongate member 132. In some embodiments, the use of the constricting mechanism 141 can facilitate sealing of the valve around tools or instruments of a wide range of sizes and/or diameters, and particularly around tools or instruments that fit through the elongate member 132.

[0044] The housing 128 can further include one or several retention features 140. The one or several retention features 140 of the housing can engage with and retain all or portions of the constricting mechanism 141 of the valve 104. In some embodiments, the one or several retention features 140 of the housing 128 can retain the actuator 142 and/or can couple the actuator 142 to the housing 128. The actuator 142 can comprise any desired type of actuator including, for example, a manual actuator and/or an automated actuator such as, for example, an electromechanical actuator including a solenoid-based actuator. In some embodiments, the actuator can comprise one or several buttons 144, and specifically, as depicted in Figure 1, the actuator 142 can comprise a first button 144-A and a second button 144-B. Alternatively, and as depicted in **Figure 5**, the actuator 142 can comprise a single button 144. In such an embodiment, the filament 150 can be coupled to the single button 144 and to a portion of the housing 128 such as, for example, to grip portion 500 of the housing 128 such that the movement of the single button 144 causes the sealing and/or opening of the elongate member 132 and of the valve 104.

[0045] The actuator 142 can be biased towards a configuration such as, for example, biased towards the first configuration or biased towards the second configuration. As depicted in Figure 2, which shows the constricting mechanism 141 in the first configuration, the actuator 142 can be biased towards the first configuration wherein the elongate member 132 is collapsed and/or sealed by a bias feature 146. In this first configuration, the buttons 144 can be in a first position, also referred to herein as an undepressed position. This bias feature 146 can, as shown in Figure 2, include a first spring 148-A configured to bias the first button 144-A towards the first position corresponding to the first configuration of the constricting mechanism 141, and a second spring 148-B configured to bias the second button 144-B towards a first position corresponding to the first configuration of the constricting mechanism 141. One or both of the first spring 148-A and the second spring 148-B can comprise a tension spring, compression spring, a torsion spring, a coil spring, or any other desired type of spring.

[0046] In some embodiments, one or both of the first spring 148-A and the second spring 148-B can generate sufficient force so as to allow actuation of the actuator 142 with a single hand and so as to collapse and seal the elongate member 132 when the constricting mechanism 141 is in the first configuration. In some embodiments, one or both of the first spring 148-A and the second spring 148-B can generate a force of: at least 0.1 pounds, at least 0.2 pounds, at least 0.3 pounds, at least 0.4 pounds, at least 0.5 pounds, at least 0.6 pounds, at least 0.7 pounds, at least 0.8 pounds, at least 0.9 pounds, at least 1 pound, at least 1.5 pounds, at least 2 pounds, at least 3 pounds, at least 5 pounds, and/or at least 10 pounds and in some embodiments one or both of the first spring 148-A and the second spring 148-B can generate a force approximately between: 0.1 and 10 pounds, 0.1 and 5 pounds, 0.1 and 1.5 pounds, 0.2 and 1 pounds, and/or 0.4 and 0.8 pounds.

[0047] The constricting mechanism 141 can include at least one filament 150 that extends at least partially around the elongate member 132. In some embodiments, the at least one filament 150 can circumferentially constrict the elongate member 132 to collapse and seal the elongate member 132 when the constricting mechanism 141 is in the first configuration. The filament can be made from a variety of materials including, for example, a polymer, a synthetic, and/or a metal. In some embodiments, the filament 150 can be nylon, stainless steel, nitinol, silicone, or the like. In some embodiments, the filament can comprise a single strand such as, for example, a monofilament, and in some embodiments, the filament can comprise a plurality of strands that can be, for example,

twisted, woven, grouped, and/or fused to form the filament. In some embodiments, the filament 150 can comprise one or several threads, lines, cords, rope, ribbon, flat wire, sheet, or tape.

[0048] The filament 150 can be coupled to the actuator 142 such that the filament 150 selectively constricts, collapses, and/or seals the elongate member 132, and specifically the central lumen 138 of the elongate member 132 based on the movement and/or position of the actuator 142. In some embodiments, the filament 150 can be connected to one or both of the buttons 144-A, 144-B such that the filament 150 collapses, constricts, and/or seals the elongate member 132 and specifically the central lumen 138 of the elongate member 132 when the buttons 144-A, 144-B are in the first position, and the filament 150 can be connected to one or both of the buttons 144-A, 144-B such that the elongate member 132 and specifically the central lumen 138 of the elongate member 132 is open and uncollapsed when the buttons 144-A, 144-B are in the second position. In some embodiments in which the actuator 142 comprises a single button 144, as depicted in Figure 5, the filament 150 can be connected to the button 144 and to the housing 128 such that the filament 150 is tightened when the button 144 moves to the first position.

[0049] In some embodiments, the at least one filament 150 can extend along an axis 152 that can be perpendicular to a central axis 154 of the elongate member 132 and/or of the apertures 124, 126. In some embodiments, the axis 152 of the at least one filament 150 can intersect and be perpendicular to the central axis 154 of the elongate member 132 and/or of the apertures 124, 126. In some embodiments, the actuator 142, and specifically the buttons 144-A, 144-B can move along this axis 152 when moved from the first position to the second position.

[0050] In Figure 3, an embodiment of the valve 104 with the constricting mechanism 141 in the second configuration is shown. As specifically shown, both of the first and second buttons 144-A, 144-B are in the second position, depressed into the retention features 140 of the housing 128. In this second position, the filament 150 is loosened, thereby allowing the expansion of the elongate member 132 and the unsealing of the central lumen 138 of the elongate member 132.

[0051] As further seen in Figure 3, the proximal cap 116 has a proximal end 300 and a distal end 302. The proximal cap 116 can include a funnel portion 301 of the proximal aperture 124, which funnel portion 301 can facilitate insertion of a tool into the proximal aperture 124. The distal end 302 of the proximal cap 116 can partially extend into the interior channel 130 of the housing 128. The proximal cap 116 can include a mating feature 304 that can mate with the proximal end

134 of the elongate member 132. In some embodiments, the proximal end 134 of the elongate member 132 can fit over the mating feature 304 of the proximal cap 116. The proximal end 134 of the elongate member 132 can be compressed between the mating feature 304 of the elongate member 132 and a portion of the interior channel 130 of the housing 128 into which the mating feature 304 is inserted to thereby secure the proximal end 134 of the elongate member 132 on the mating feature 304. In some embodiments, the proximal end 134 of the elongate member 132 can be further secured on the mating feature 304 by a proximal O-ring 306 that can be compressed between the housing 128 and the mating feature 304 of the proximal cap 116 to sealingly couple the elongate member 132 to the proximal cap 116.

[0052] The distal cap 120 has a proximal end 308 and a distal end 310. The distal cap can include a mating feature 312 located on the proximal end 308 of the distal cap 120, which mating feature 312 can mate with the distal end 136 of the elongate member 132. In some embodiments, the distal end 136 of the elongate member 132 can fit over the mating feature 312 of the distal cap 123. The distal end 136 of the elongate member 132 can be compressed between the mating feature 312 of the elongate member 132 and a portion of the interior channel 130 of the housing 128 into which the mating feature 312 is inserted to thereby secure the distal end 136 of the elongate member 132 on the mating feature 312. In some embodiments, the distal end 136 of the elongate member 132 can be further secured on the mating feature 312 by a distal O-ring 314 that can be compressed between the housing 128 and the mating feature 312 of the proximal cap 116 to sealingly couple the elongate member 132 to the distal cap 120.

[0053] The distal cap 120 can, in some embodiments, further include a side port barb 314 that can extend laterally away from the distal cap 120 and specifically away from the distal aperture 126 of the distal cap 120. The side port barb 314 can define a side port channel 316 that can extend through the side port barb 314 and fluidly connect to the distal aperture 126. In some embodiments, the side port barb 314 can include a securement feature 318 such as a barb that can secure coupling of a hose or tube to the side port barb 314.

[0054] In some embodiments, the side barb 314 can be used to apply a vacuum to the portions of the delivery device 100, and particularly to portions of the delivery device 100 that are distal of the axis 152 along which the elongate member 132 seals. This vacuum can be applied to aspirate a material through the delivery device 100, and specifically through the catheter 102 of the delivery

device. This aspirated material can be a biological material including, for example, bodily fluids, multi-phase bodily materials that can include, for example, a fluidic portion and at least one solid portion, or the like.

[0055] In some embodiments, due to the narrowing shape of the elongate member 132 when the constricting mechanism 141 is in the first configuration, a vacuum applied to the portions of the delivery device 100 distal to the axis 152 draws the elongate member 132 towards the first configuration and can, in some embodiments, increase the strength, robustness, and/or strength of the seal of the valve 104. This attribute of the valve 104 can provide benefits over other valve designs in which a vacuum can compromise the seal of the valve, and thus the ability to draw a vacuum and aspirate can be limited.

[0056] In some embodiments, the valve 104 can further include a reinforcement structure 320 that can extend along all or portions of the elongate member 132. The reinforcement structure 320 can facilitate the uniform collapse of the elongate member 132, can prevent the at least one filament 150 from cutting through and/or tearing the elongate member 132, and can assist in guiding one or several tools through the elongate member 132. The reinforcement structure 320 can be tubular, can extend along and around the elongate member 132, and can be positioned so as to be between the elongate member 132 and the at least one filament 150.

[0057] The reinforcement structure 320 can include a proximal end 322 and a distal end 324. In some embodiments, the reinforcement structure 320 extends along and around the elongate member 132, and is positioned such that the proximal end 322 of the reinforcement structure 320 is proximate to the first end 134 of the elongate member 132 and the distal end 324 of the reinforcement structure 320 is proximate to the second end 136 of the elongate member 132.

[0058] The reinforcement structure 320 can be coupled to the elongate member 132. In some embodiments, the reinforcement structure 320 is coupled to the elongate member 132 along the length of the reinforcement structure 320, and in some embodiments, the reinforcement structure 320 is coupled to the elongate member 132 and distinct positions along the length of the elongate member 132 and/or the reinforcement structure 320. In one embodiment, for example, the reinforcement structure 320 can be coupled to the elongate member 132 at one or both of the proximal end 322 of the reinforcement structure 320 and the distal end 324 of the reinforcement structure 320 and/or at one or both of the first end 134 and the second end 136 of the elongate

member 132. In some embodiments, the reinforcement structure 320 can be coupled to the elongate member 132 via one or several other components of the valve 104. In some embodiments, the reinforcement structure 320 can be coupled to the elongate member 132 via the compression of the reinforcement structure 320 and the elongate member 132 between the housing 128 and one or both of the proximal 116 and the distal 120.

[0059] In some embodiments, the reinforcement structure 320 can be adhered to the elongate member 132 via, for example, an adhesive such as silicone adhesive. In some embodiments, the adhesive can be circumferentially applied to the reinforcement structure 320 and/or the elongate member 132 in an adhesive ring that can, for example, a have a length approximately between: 0.010 inches and 0.5 inches; 0.02 and 0.4 inches; 0.050 inches and 0.0250 inches, or any other or intermediate range.

[0060] In one embodiment, each of the proximal end 322 and the distal end 324 of the reinforcement structure 320 can be adhered via an adhesive to the elongate member 132. In such an embodiment, the reinforcement structure 320 may be uncoupled to the elongate member 132 at positions other than the coupling at one or both of the proximal end 322 and the distal end 324 of the reinforcement structure 320, and thus the reinforcement structure 320 is uncoupled to the elongate member 132 at a position between the first end 134 and the second end 136 of the elongate member 134 and/or between the proximal end 322 and the distal end 324 of the reinforcement structure 320.

[0061] The lack of coupling of the reinforcement structure 320 to the elongate member 132 can facilitate and improve the collapse of the elongate member 132 around a tool 400, also referred to herein as instrument 400 or device 400, inserted through the valve 104 as shown in **Figure 4**. The tool 400 can be any device inserted through the valve 104 including, for example, one or several additional catheters, lines, wires, grippers, punches, cutters, or the like. As seen in Figure 4, the tool 400 is inserted through the valve 104 and specifically through the elongate member 132 of the valve. As shown, the constricting mechanism 141 is in the first configuration and the elongate member 132 and the central lumen 138 of the elongate member 132 is collapsed around the tool 400, and specifically around a shaft 402 of the tool 400 to thereby seal the valve 104 around the tool 400 and specifically around the shaft 402 of the tool 400. The constricting mechanism 141 can seal

around tools 400 that fit through the elongate member 132, regardless of the size of the tool 400. Thus, the valve can be used with a wide variety of tools.

[0062] The reinforcement structure 320 can comprise a variety of designs, shapes, sizes, and materials. In some embodiments, the reinforcement structure 320 can be sized and shaped so as to receive elongate member 132 and to be positioned between the elongate member 132 and the at least one filament 150. In some embodiments, the reinforcement structure 320 can be made from a material sufficiently strong to prevent the cutting of the at least one filament 150 through the elongate member 132.

[0063] In some embodiments, the reinforcement structure can comprise a coil or a mesh sheath. The mesh sheath can, in some embodiments, comprise a braided mesh. The braided mesh can be made from any desired number of wires in any desired configuration. In some embodiments, the braided mesh can comprise a 4 wire braided mesh, an 8 wire braided mesh, a 12 wire braided mesh, a 16 wire braided mesh, a 20 wire braided mesh, a 24 wire braided mesh, a 32 wire braided mesh, a 48 wire braided mesh, a 64 wire braided mesh, a 72 wire braided mesh, an 80 wire braided mesh, a 96 wire braided mesh, or any other or intermediate braided mesh. In some embodiments, the braided mesh can comprise: a 1x1 configuration. In some embodiments, the wire in the braided mesh can be any desired material including, for example, a metal wire such as a nitinol wire or a stainless steel wire, a polymer wire, or a natural wire. In one embodiment, the braided mesh can comprise a 48 wire mesh in a 1x1 configuration made with a nitinol wire having a diameter of 0.003 inches.

[0064] With reference now to **Figures 6** through **9**, different embodiments and/or configurations of the filament 150 are shown. The filament 150 can comprise a single filament 150 having a first end 600 and a second end 602 as shown in Figure 6. The filament 150, and specifically which first and second ends 600, 602 can be coupled to the actuator 142 to move the filament 150 between the first and second configurations or positions and/or from the first configuration or position to the second configuration or position. In some embodiments, both of the first end 600 and the second end 602 can be coupled to a single button 144, in some embodiments, each of the first end 600 and the second end 602 can be coupled to different buttons 144, and in some embodiments, one of the first end 600 and the second end 602 can be coupled to a button 144

and the other of the first end 600 and the second end 602 can be coupled to the housing 128 or other portion of the valve 104.

[0065] In some embodiments, the filament 150 can comprise multiple filaments, and specifically, as shown in Figures 7 through 9, the filament 150 can comprise a first filament 150-A and a second filament 150-B. In embodiments in which the filament 150 comprises multiple filaments, each of the multiple filaments can have a first end 700 and a second end 702. The first and second filaments 150-A, 150-B can be coupled to the actuator 142. In such embodiments, the first and second ends 700, 702 can be coupled to the actuator 142 to move the filaments 150-A, 150-B between the first and second configurations and/or from the first configuration to the second configuration. In some embodiments, both of the first end 700 and the second end 702 of one or more of the multiple filaments 150 can be coupled to a single button 144, in some embodiments, each of the first end 700 and the second end 702 of one or more of the multiple filaments 150 can be coupled to different buttons 144, and in some embodiments, one of the first end 700 and the second end 702 of one or more of the multiple filaments 150 can be coupled to one button 144 and the other of the first end 700 and the second end 702 of those one or more filaments 150 can be coupled to the housing 128 or other portion of the valve 104.

[0066] The filament 150 can be arranged in a variety of configurations. In some embodiments, the filament 150 can be configured to form a single loop 604 that can extend around the elongate member 132 and/or through which the elongate member 132 can be received as shown in Figure 6, and in some embodiments, the filament 150 can be configured to form multiple loops, and specifically a first loop 704 and a second loop 706 as shown in Figure 7. The first and second loops 704, 706 can each receive the elongate member 132. In some embodiments, a diameter or size of the loop 604, or of the loops 704, 706 can decrease when the constricting mechanism 141 is moved from the second configuration to the first configuration.

[0067] In some embodiments, the filament 150 can be configured to form a bight 800, which bight 800 can be a single bight or multiple bights. As used herein, a "bight" refers to a U-shaped section between the two ends of the filament 150. As depicted in Figures 8 and 9, the bight 800 can comprise multiple bights, and specifically a first bight 800-A and a second bight 800-B. In some embodiments, the first bight 800-A can extend through the second bight 800-B such that the first and second bights 800-A, 800-B interlock, whereas in other embodiments, the first and second

bights 800-A, 800-B can be non-interlocking. Similarly, in embodiments containing the filament 150 having multiple loops, one or several of the multiple loops can be interlocking.

[0068] In some embodiments, the bight 800, and specifically one or both of the first bight 800-A and the second bight 800-B can be formed around a portion of the elongate member 132 and/or can extend around a portion of the elongate member 132. Each bight 800 can define a partially enclosed receiving area 808 wherein the elongate member 132 can be received. Thus, the first bight 800-A can define a first receiving area 808-A and the second bight 800-B can define a second receiving area 808-B.

[0069] As seen in Figures 8 and 9, multiple bights, and specifically the first and the second bights 800-A, 800-B can be positioned and oriented such that the first bight 800-A has a first orientation or first direction as indicated by arrow 810, and the second bight has a second orientation or second direction as indicated by the arrow 812. In some embodiments, the first orientation is different from the second orientation such that the first and second receiving areas 808-A, 808-B overlap and define an encircled area 814, also referred to herein as a constricting area 814. The elongate member 132 can be received within the encircled area 814. In embodiments in which bights 800-A, 800-B overlap to define the encircled area 814, the movement of the constricting mechanism 141 to the first configuration can result in and/or include the first bight 800-A moving in the direction indicated by the arrow 810 and/or the second bight 800-B moving in the direction indicated by the arrow 812, which movement of the bights 800-A, 800-B decreases the size of the encircled area 814 and constricts, collapses, and/or seals the elongate member 132 extending through the encircled area 814.

[0070] The filament(s) 150 forming the bights 800 can each apply an arcuate line or narrow longitudinal zone of pressure to the elongate member 132. If the filament(s) are circular in cross-section, the zone of pressure can be very small, and can, in some embodiments, be less than the diameter or thickness of the filament. In some embodiments, the filaments have a diameter or width less than about 2.5mm, less than about 2mm, less than about 1.5mm, less than about 1.25mm, less than about 1mm, less than about 0.75mm, less than about 0.5mm, and/or less than about 0.25mm. In some embodiments, the filaments can have a diameter or width of between about 0.01mm and 2.5mm, between about 0.05mm and 2mm, between about 0.1mm and 1mm, and/or between about 0.125mm and 0.70mm. In some embodiments, the arcuate line or zone of pressure may form two

opposing arcs and in other embodiments, the arcuate line of pressure may be a singular substantially circular line or zone that encircles the elongate member at least once. The longitudinal length of the of the line or zone of pressure may be very short compared to other valves known in the art. In some embodiments, the longitudinal length of the zone of pressure applied to the elongate member 132 by the filament(s) 150 may be less than about 2.0mm and in some embodiments less than about 0.5mm. In some embodiments, the filament(s) 150 can have any desired cross-sectional shape including, for example, a circular cross-section, a rectangular cross-section, an oval cross-section, a square cross-section, a polygonal cross-section, a triangular cross-section, or any other desired shape of cross-section.

[0071] With reference now to **Figure 10**, a flowchart illustrating one embodiment of a process 1000 for sealing a valve 104 and/or catheter 102 accessing a body of a patient is shown. The process 1000 can be performed using the valve 104 and/or the delivery system 100. The process 1000 begins at block 1002, wherein the delivery device 100, and specifically the catheter 102 of the delivery device 100 is inserted into the body of the patient. In some embodiments, this can include inserting the catheter 102 into a portion of the circulator system of the patient such as, for example, a blood vessel including an artery or a venous vessel. In some embodiments, the delivery device 100 can be inserted into the body of the patient directly through an aperture or incision in the patient, and in some embodiments, the delivery device 100 can be inserted into the body of the patient via another catheter or device. In some embodiments, the constricting mechanism 141 can be in the first configuration while the delivery device 100 and/or the catheter 102 is inserted into the patient's body.

[0072] After the delivery device 100 is inserted into the body of the patient, the process 1000 proceeds to block 1004, wherein the constricting mechanism 141 is moved from the first configuration to the second configuration. As described above, the central lumen 138 of the elongate member 132 is unsealed when the constricting mechanism 141 is in the second configuration. In some embodiments, the moving of the constricting mechanism 141 from the first configuration to the second configuration can include the manipulation of the actuator 142 and/or the control of the actuator 142, and specifically the depressing of the one or several buttons 144 to move the filament 150 from the first position to the second position to allow the expansion and opening of the central lumen 138 of the elongate member 132.

[0073] After the constricting mechanism 141 is moved from the first configuration to the second configuration, the process 1000 proceeds to block 1006, wherein the tool 400, and specifically the shaft 402 of the tool 400 is advanced through the delivery device 100 and specifically through the valve 104 until a first end of the tool reaches a desired position within the body of the patient. In some embodiments, a portion of the shaft 402 can be positioned within the central lumen 138 of the elongate member 132 after the advancing of the tool 400 through the delivery device 100. In some embodiments, after the tool 400 is advanced through the delivery device 100, the desired procedure can be performed with the tool.

[0074] After the tool 400 is advanced through the delivery device 100, or while the tool 400 is being advanced through the delivery device 100, the process 1000 proceeds to block 1008, wherein the constricting mechanism 141 is returned to the first configuration. In some embodiments, the returning of the constricting mechanism 141 to the first configuration can include the release of the one or several buttons 144 and/or the control of the actuator 142 to reconfigure the constricting mechanism 141 to the first configuration. In some embodiments, the return of the constricting mechanism 141 to the first configuration can result in the collapse and/or sealing of the elongate member 132 and specifically the central lumen 138 of the elongate member 132 around the tool 400 and specifically around the shaft 402 of the tool 400. The return of the constricting mechanism 141 to the first configuration, or the movement of the constricting mechanism 141 to the first configuration can include the decreasing of the size and/or diameter of one or several loops formed by the filament 150 and/or the movement of one or several bights 800 such as, for example, the movement of the first bight 800-A in the first direction indicated by arrow 810 and the movement of the second bight 800-B in the second direction indicated by arrow 812 to reduce the size of the constricting area 814. In some embodiments, after the constricting mechanism is returned to the first configuration, the desired procedure can be performed with the tool.

[0075] After the constricting mechanism is returned to the first configuration, the process 1000 proceeds to block 1010, wherein the tool 400, and specifically the shaft 402 of the tool 400 is retracted from the delivery device 100, and more specifically from the valve 104. In some embodiments, the valve 104 can remain sealed during the retracing of the tool 400 and/or the shaft 402 of the tool. In some embodiments, the valve 104 remains sealed during the retracting of the tool 400 and/or the retracting of the shaft 402 of the tool 400 as the constricting mechanism 141 can

remain in the first configuration during the retracing of the tool 400 and/or the shaft 402 of the tool 400.

[0076] In some embodiments, the constricting mechanism 141 can be moved to the second configuration to allow the retraction of the tool 400 and/or the shaft 402 of the tool 400 from the valve 104, and the constricting mechanism 141 can be returned to the first configuration when the tool 400 and/or the shaft 402 of the tool 400 is removed from the valve 104. In some embodiments, the retraction of the tool 400 and/or shaft 402 of the tool 400 from the valve 104 can be performed with the constricting mechanism 141 left in the first configuration. In some embodiments, the constricting mechanism 141 can be moved to the second configuration, and then returned to the first configuration via the manipulation and/or control of the actuator 142, which manipulation and/or control of the actuator 142 can include the depressing of the one or several buttons 144 to move the constricting mechanism 141 to the second configuration, and the release of the one or several buttons 144 to return the constricting mechanism 141 to the first configuration. In some embodiments, if the procedure is complete, the delivery device 100 can then be removed from the body of the patient, and any incision created for the procedure can be closed.

[0077] With reference now to Figure 11, a side view of one embodiment of a thrombectomy system 1100 including the delivery device 100 and a thrombus extraction device 1102 is shown. In some embodiments, the thrombectomy system 1100 can be used to access a blood vessel 1104 to treat and/or extract a thrombus 1106 from the blood vessel 1104. The thrombus extraction device 1102 can include a self-expanding coring element 206 and expandable cylindrical portion 208. In some embodiments, and as shown in Figure 11, the thrombus extraction device 1102 can be the tool 400 that can extend through the valve 104, and in some embodiments, the valve 104 can be a part of the thrombus extraction device 1102. Further details of thrombectomy systems, thrombus extraction devices, and methods of using the same are disclosed in: U.S. Application No. 15/268,296, filed September 16, 2016, and entitled "INTRAVASCULAR TREATMENT OF VASCULAR OCCLUSION AND ASSOCIATED DEVICES, SYSTEMS, AND METHODS"; U.S. Application No. 15/498,320, filed April 26, 2017, and entitled "DEVICES AND METHODS FOR TREATING VASCULAR OCCLUSION"; and U.S. Application No. 15/466,740, filed on March 22, 2017, and entitled "DEVICE AND METHOD FOR TREATING VASCULAR OCCLUSION", the entirety of each of which is hereby incorporated by reference herein.

[0078] With reference now to Figure 12, a side-section view of another embodiment of the hemostasis valve 104 having two piece caps 116, 120 is shown. The valve 104 can include a housing 128 defining an interior channel 130 through which the tubular member 132 can extend. The valve 104 can include the proximal cap 116 and the distal cap 120. In some embodiments, the proximal cap 116 can comprise a two piece cap and can include a proximal exterior member 1200 and a proximal channel member 1202. In some embodiments, the distal cap 120 can comprise a two-piece cap and can include a distal exterior member 1204 and a distal channel member 1206. In some embodiments, this coupling between the proximal exterior member 1200 and the proximal channel member 1202 and/or the coupling between the distal exterior member 1204 and the distal channel member 1206 can be a sealed coupling so as to prevent the leakage of material including fluid or gas between the respective ones of the proximal exterior member 1200 and the proximal channel member 1202 and/or the distal exterior member 1204 and the distal channel member 1206. In some embodiments, this sealing coupling can be achieved and/or maintained via a seal such as an O-ring 1208 that can be positioned between the proximal exterior member 1200 and the proximal channel member 1202 and/or between the distal exterior member 1204 and the distal channel member 1206.

[0079] In some embodiments, the proximal exterior member 1200 can be coupled, and in some embodiments, rotatingly coupled to the proximal channel member 1202 in a manner to allow the rotation of the proximal exterior member 1200 without rotating the proximal channel member 1202. Similarly, in some embodiments, the distal exterior member 1204 can be rotatingly coupled to the distal channel member 1206 in a manner to allow the rotation of the distal exterior member 1204 without the rotating of the distal channel member 1206. In some such embodiments, the channel members 1202, 1206 can be non-rotatable with respect to the housing 128 and/or the tubular member 132, and one or both of the exterior members 1200, 1204 can be rotatable with respect to the housing 128 and/or the tubular member 132. In such an embodiment, the maintaining of the rotational position of the channel members 1202, 1206 with respect to the housing 128 and/or the tubular member 132 can prevent the twisting of the tubular member 132 which can result in the sealing of the tubular member 132 regardless of the configuration of the constructing mechanism 141.

[0080] The exterior members 1200, 1204 can comprise a variety of shapes and sizes and can include a variety of features. In some embodiments, one or both of the exterior members 1200, 1204 can be coupled to, for example, a shaft similar to the shaft 106 shown in figure 1. In some embodiments, for example, the distal exterior member 1204 can be coupled to a shaft 106, including, for example, can be non-detachably coupled to the shaft 106. In some embodiments, one or both of the exterior members can include one or several features configured to facilitate coupling with the valve 104. These one or several features can include, for example, one or several male or female: connectors; couplers; attachment mechanisms; or the like. In some embodiments, these one or several features can facilitate use of the valve with other existing components, instruments, tools, or the like. In some embodiments, for example, one or both of the exterior members 1200, 1204 can comprise either a male or female luer fitting, and specifically as shown in Figure 12, the distal exterior member 1204 can comprise a male luer fitting 1210.

[0081] Several aspects of the present technology are set forth in the following examples.

1. A hemostatic valve for sealing a medical device, the hemostatic valve comprising:

an elongate member having a first end, a second end, and a central lumen extending therebetween, wherein the elongate member is pliable;

a reinforcement structure extending along at least a portion of the elongate member, wherein the reinforcement structure is coupled to the elongate member; and

an active tensioning mechanism coupled to the elongate member, wherein the tensioning mechanism is moveable between a first configuration wherein the central lumen is constricted and sealed and a second configuration wherein the central lumen is open.

2. The hemostatic valve of example 1, wherein the elongate member comprises a compliant polymer tube.

3. The hemostatic valve of example 1 or 2, wherein the tensioning mechanism comprises at least one filament extending at least partially around the elongate member.

4. The hemostatic valve of example 3, wherein the reinforcement structure is positioned between the at least one filament and the elongate member.

5. The hemostatic valve of example 4, wherein the reinforcement structure comprises a braided mesh.

6. The hemostatic valve of example 4 or 5, wherein the reinforcement structure is coupled to the elongate member at a position proximate to the first end of the elongate member and at a position proximate to the second end of the elongate member.

7. The hemostatic valve of example 6, wherein the reinforcement structure is not coupled to the elongate member at a position between the first end of the elongate member and the second end of the elongate member.

8. The hemostatic valve of any one of examples 3–7, wherein the tensioning mechanism comprises an actuator coupled to the at least one filament, wherein the actuator is moveable to control movement of the at least one filament from a first position wherein the central lumen is constricted and sealed to a second position wherein the central lumen is open, wherein the at least one filament is in the first position when the tensioning mechanism is in the first configuration.

9. The hemostatic valve of example 8, wherein the actuator is biased towards the first position.

10. The hemostatic valve of example 8 or 9, wherein the actuator is biased toward the second position.

11. The hemostatic valve of any one of examples 8–10, wherein the actuator comprises a manual actuator.

12. The hemostatic valve of any one of examples 8–11, wherein the at least one filament forms a loop around the elongate member.

13. The hemostatic valve of any one of examples 8–12, wherein the at least one filament forms a bight around a portion of the elongate member.

14. The hemostatic valve of any one of examples 8–13, wherein the at least one filament comprises a first filament and a second filament, wherein each of the first filament and the second filament are coupled to the actuator, and wherein the first filament and the second filament are moveable from the first position to the second position.

15. The hemostatic valve of example 14, wherein each of the first filament and the second filament form a loop around the elongate member.

16. The hemostatic valve of example 14 or 15, wherein the first filament forms a first bight around a first portion of the elongate member, and wherein the second filament forms a second bight around a second portion of the elongate member.

17. The hemostatic valve of example 16, wherein the first bight extends through the second bight.

18. The hemostatic valve of any one of examples 1–17, further comprising a shell defining a first aperture and a second aperture, wherein the elongate member extends from the first aperture to the second aperture and fluidly couples the first aperture and the second aperture.

19. The hemostatic valve of any one of examples 1–18, wherein the tensioning mechanism is self-adjustable to seal around tools of different sizes extending through the hemostatic valve.

20. The hemostatic valve of any one of examples 1–19, wherein the central lumen comprises a single lumen.

21. The hemostatic valve of any one of examples 1–20, wherein the central lumen comprises a plurality of lumens.

22. A delivery system for intravascular access of a blood vessel within a patient's body, the delivery system comprising:

a catheter having a first end, a second end, and a catheter lumen extending therebetween;

a hemostatic valve coupled to the first end of the catheter, the hemostatic valve comprising:

a tubular member having a first end, a second end, and a central lumen extending therebetween, wherein the central lumen of the tubular member is fluidly coupled with the catheter lumen; and

an active tensioning mechanism coupled to the tubular member, the tensioning mechanism moveable between a first configuration wherein the tensioning mechanism constricts on the central lumen and the central lumen is sealed and a second configuration wherein the central lumen is open.

23. The delivery system of example 22, wherein the hemostatic valve further comprises a reinforcement structure extending along at least a portion of the tubular member.

24. The delivery system of example 22 or 23, wherein the reinforcement structure is located between the tensioning mechanism and the tubular member.

25. The delivery system of example 24, wherein the reinforcement structure comprises a braided mesh.

26. The delivery system of example 24 or 25, wherein the reinforcement structure is coupled to the tubular member at a position proximate to the first end of the tubular member and at a position proximate to the second end of the tubular member.

27. The delivery system of example 26, wherein the reinforcement structure is adhered to the tubular member at the first end of the tubular member and at the second end of the tubular member.

28. The delivery system of example 27, wherein the reinforcement structure is uncoupled to the tubular member between the first end of the tubular member and the second end of the tubular member.

29. The delivery system of any one of examples 22–28, wherein the tensioning mechanism comprises at least one filament extending at least partially around the tubular member.

30. The delivery system of example 29, wherein the tensioning mechanism comprises an actuator coupled to the at least one filament, wherein moving the tensioning mechanism from the first configuration to the second configuration comprises moving the actuator and the thereto coupled at least one filament from a first position to a second position, wherein the filament constricts and seals the central lumen of the tubular member when the filament is in the first position.

31. The delivery system of example 30, wherein the actuator comprises a manual actuator.

32. The delivery system of example 31, wherein the actuator comprises a pair of opposing and depressable buttons, wherein the buttons are biased towards an undepressed position.

33. The delivery system of example 31 or 32, wherein the central lumen is sealed when the buttons are in the undepressed position.

34. The delivery system of any one of examples 30–33, wherein the filament comprises a monofilament.

35. The delivery system of any one of examples 30–34, wherein the filament comprises at least one of: a polymer filament; or a metallic filament.

36. The delivery system of any one of examples 22–35, wherein the catheter comprises a thrombus extraction device.

37. A method of sealing a delivery device accessing a blood vessel of a patient, the method comprising:

inserting the delivery device comprising a catheter and a hemostatic valve into the blood vessel of the patient, the catheter having a first end, a second end, and a catheter lumen extending therethrough, and the hemostatic valve coupled to the first end and having a tubular member defining a central lumen fluidly coupled with the catheter lumen and a tensioning mechanism coupled with the tubular member, wherein the tensioning mechanism collapses and seals the central lumen in a first configuration and thereby seals access to the blood vessel;

moving the tensioning mechanism of the hemostatic valve to a second configuration, wherein the central lumen is open and access to the blood vessel is unsealed when the tensioning mechanism is in the second configuration;

advancing a shaft of a tool through the delivery device until a first end of the tool reaches a desired position within the blood vessel of the patient and a portion of the shaft is positioned within the central lumen of the tubular member; and

returning the tensioning mechanism of the hemostatic valve to the first configuration such that the tubular member collapses on the shaft of the tool and seals around the shaft of the tool.

38. The method of example 37, further comprising retracting the shaft of the tool from the delivery device.

39. The method of example 38, wherein the tensioning mechanism is maintained in the first configuration during and after the retracting of the shaft of the tool from the delivery device.

40. The method of example 38 or 39, wherein the tensioning mechanism is moved to the second configuration during the retracting of the shaft of the tool from the delivery device, and wherein the tensioning mechanism is returned to the first configuration after the shaft of the tool is retracted from the delivery device.

41. The method of any one of examples 37–40, wherein the tensioning mechanism comprises at least one filament extending at least partially around the tubular member, wherein the at least one filament collapses the tubular member when the tensioning mechanism is in the first configuration.

42. The method of example 41, wherein the at least one filament circumferentially constricts the tubular member to collapse the tubular member when the tensioning mechanism is in the first configuration.

43. The method of example 41 or 42, wherein the hemostatic valve comprises a reinforcement structure located between the at least one filament and the tubular member.

44. The method of any one of examples 41–43, wherein the at least one filament forms a loop around the elongate member, and wherein moving the tensioning mechanism from the second configuration to the first configuration reduces a size of the loop to thereby constrict the tubular member within the loop.

45. The method of any one of examples 41–44, wherein the filament forms at least one bight around a portion of the elongate member.

46. The method of example 45, wherein the filament comprises a first filament and a second filament, and wherein the at least one bight comprises a first bight oriented in a first direction and formed by the first filament and a second bight oriented in a second direction and formed by the second filament, wherein the first and second bights overlap to encircle a portion of the tubular member within an constricting area.

47. The method of example 46, wherein moving the tensioning mechanism from the second configuration to the first configuration comprises moving the first bight in the first direction and the second bight in the direction to reduce the size of the constricting area and collapse and seal the central lumen of the tubular member.

48. The method of any one of examples 37–47, wherein the tensioning mechanism comprises an actuator, and wherein moving the tensioning mechanism to the second configuration comprises manipulating the actuator.

49. The method of any one of examples 37–48, further comprising applying a vacuum to the delivery device to aspirate material through the catheter, wherein the central lumen remains sealed during the aspiration.

50. The method of any one of examples 37–49, wherein the tool comprises a thrombus extraction device.

51. A hemostatic valve for sealing a medical device, the hemostatic valve comprising:

an elongate member having a first end, a second end, and a central lumen comprising a plurality of lumens extending therebetween, wherein the elongate member is pliable; and

an active tensioning mechanism coupled to the elongate member, wherein the tensioning mechanism is moveable between a first configuration wherein the central lumen is constricted and sealed and a second configuration wherein the central lumen is open.

[0082] Other variations are within the spirit of the present invention. Thus, while the invention is susceptible to various modifications and alternative constructions, certain illustrated embodiments thereof are shown in the drawings and have been described above in detail. It should be understood, however, that there is no intention to limit the invention to the specific form or forms disclosed, but on the contrary, the intention is to cover all modifications, alternative constructions, and equivalents falling within the spirit and scope of the invention, as defined in the appended claims.

[0083] In the previous description, various embodiments of the present invention are described. For purposes of explanation, specific configurations and details are set forth in order to provide a thorough understanding of the embodiments. However, it will also be apparent to one skilled in the art that the present invention may be practiced without the specific details. Furthermore, well-known features may be omitted or simplified in order not to obscure the embodiment being described.

[0084] The use of the terms "a" and "an" and "the" and similar referents in the context of describing the invention (especially in the context of the following claims) are to be construed to cover both the singular and the plural, unless otherwise indicated herein or clearly contradicted by context. The terms "comprising," "having," "including," and "containing" are to be construed as open-ended terms (i.e., meaning "including, but not limited to,") unless otherwise noted. The term "connected" is to be construed as partly or wholly contained within, attached to, or joined together, even if there is something intervening. Recitation of ranges of values herein are merely intended to serve as a shorthand method of referring individually to each separate value falling within the range, unless otherwise indicated herein, and each separate value is incorporated into the specification as if it were individually recited herein. All methods described herein can be performed in any suitable order unless otherwise indicated herein or otherwise clearly contradicted by context. The use of any and all examples, or exemplary language (e.g., "such as") provided herein, is intended merely to better illuminate embodiments of the invention and does not pose a limitation on the scope of the invention unless otherwise claimed. No language in the specification should be construed as indicating any non-claimed element as essential to the practice of the invention.

[0085] Preferred embodiments of this invention are described herein, including the best mode known to the inventors for carrying out the invention. Variations of those preferred embodiments may become apparent to those of ordinary skill in the art upon reading the foregoing description. The inventors expect skilled artisans to employ such variations as appropriate, and the inventors intend for the invention to be practiced otherwise than as specifically described herein. Accordingly, this invention includes all modifications and equivalents of the subject matter recited in the claims appended hereto as permitted by applicable law. Moreover, any combination of the above-described elements in all possible variations thereof is encompassed by the invention unless otherwise indicated herein or otherwise clearly contradicted by context.

[0086] All references, including publications, patent applications, and patents, cited herein are hereby incorporated by reference to the same extent as if each reference were individually and specifically indicated to be incorporated by reference and were set forth in its entirety herein.

WHAT IS CLAIMED IS:

1. A hemostatic valve for sealing a medical device, the hemostatic valve comprising:

an elongate member having a first end, a second end, and a central lumen extending therebetween, wherein the elongate member is pliable;

a reinforcement structure extending along at least a portion of the elongate member, wherein the reinforcement structure is coupled to the elongate member; and

an active tensioning mechanism coupled to the elongate member, wherein the tensioning mechanism is moveable between a first configuration wherein the central lumen is constricted and sealed and a second configuration wherein the central lumen is open.

2. The hemostatic valve of claim 1, wherein the elongate member comprises a compliant polymer tube.

3. The hemostatic valve of claim 1, wherein the tensioning mechanism comprises at least one filament extending at least partially around the elongate member.

4. The hemostatic valve of claim 3, wherein the reinforcement structure is positioned between the at least one filament and the elongate member.

5. The hemostatic valve of claim 4, wherein the reinforcement structure comprises a braided mesh.

6. The hemostatic valve of claim 4, wherein the reinforcement structure is coupled to the elongate member at a position proximate to the first end of the elongate member and at a position proximate to the second end of the elongate member.

7. The hemostatic valve of claim 6, wherein the reinforcement structure is not coupled to the elongate member at a position between the first end of the elongate member and the second end of the elongate member.

8. The hemostatic valve of claim 3, wherein the tensioning mechanism comprises an actuator coupled to the at least one filament, wherein the actuator is moveable to control movement of the at least one filament from a first position wherein the central lumen is constricted and sealed to a second position wherein the central lumen is open, wherein the at least one filament is in the first position when the tensioning mechanism is in the first configuration.

9. The hemostatic valve of claim 8, wherein the actuator is biased towards the first position.

10. The hemostatic valve of claim 8, wherein the actuator is biased toward the second position.

11. The hemostatic valve of claim 8, wherein the actuator comprises a manual actuator.

12. The hemostatic valve of claim 8, wherein the at least one filament forms a loop around the elongate member.

13. The hemostatic valve of claim 8, wherein the at least one filament forms a bight around a portion of the elongate member.

14. The hemostatic valve of claim 8, wherein the at least one filament comprises a first filament and a second filament, wherein each of the first filament and the second filament are coupled to the actuator, and wherein the first filament and the second filament are moveable from the first position to the second position.

15. The hemostatic valve of claim 14, wherein each of the first filament and the second filament form a loop around the elongate member.

16. The hemostatic valve of claim 14, wherein the first filament forms a first bight around a first portion of the elongate member, and wherein the second filament forms a second bight around a second portion of the elongate member.

17. The hemostatic valve of claim 16, wherein the first bight extends through the second bight.

18. The hemostatic valve of claim 1, further comprising a shell defining a first aperture and a second aperture, wherein the elongate member extends from the first aperture to the second aperture and fluidly couples the first aperture and the second aperture.

19. The hemostatic valve of claim 1, wherein the tensioning mechanism is self-adjustable to seal around tools of different sizes extending through the hemostatic valve.

20. The hemostatic valve of claim 1, wherein the central lumen comprises a single lumen.

21. The hemostatic valve of claim 1, wherein the central lumen comprises a plurality of lumens.

22. A delivery system for intravascular access of a blood vessel within a patient's body, the delivery system comprising:

a catheter having a first end, a second end, and a catheter lumen extending therebetween;

a hemostatic valve coupled to the first end of the catheter, the hemostatic valve comprising:

a tubular member having a first end, a second end, and a central lumen extending therebetween, wherein the central lumen of the tubular member is fluidly coupled with the catheter lumen; and

an active tensioning mechanism coupled to the tubular member, the tensioning mechanism moveable between a first configuration wherein the tensioning mechanism constricts on the central lumen and the central lumen is sealed and a second configuration wherein the central lumen is open.

23. The delivery system of claim 22, wherein the hemostatic valve further comprises a reinforcement structure extending along at least a portion of the tubular member.

24. The delivery system of claim 23, wherein the reinforcement structure is located between the tensioning mechanism and the tubular member.

25. The delivery system of claim 24, wherein the reinforcement structure comprises a braided mesh.

26. The delivery system of claim 24, wherein the reinforcement structure is coupled to the tubular member at a position proximate to the first end of the tubular member and at a position proximate to the second end of the tubular member.

27. The delivery system of claim 26, wherein the reinforcement structure is adhered to the tubular member at the first end of the tubular member and at the second end of the tubular member.

28. The delivery system of claim 27, wherein the reinforcement structure is uncoupled to the tubular member between the first end of the tubular member and the second end of the tubular member.

29. The delivery system of claim 22, wherein the tensioning mechanism comprises at least one filament extending at least partially around the tubular member.

30. The delivery system of claim 29, wherein the tensioning mechanism comprises an actuator coupled to the at least one filament, wherein moving the tensioning mechanism from the first configuration to the second configuration comprises moving the actuator and the thereto coupled at least one filament from a first position to a second position, wherein the filament constricts and seals the central lumen of the tubular member when the filament is in the first position.

31. The delivery system of claim 30, wherein the actuator comprises a manual actuator.

32. The delivery system of claim 31, wherein the actuator comprises a pair of opposing and depressable buttons, wherein the buttons are biased towards an undepressed position.

33. The delivery system of claim 31, wherein the central lumen is sealed when the buttons are in the undepressed position.

34. The delivery system of claim 30, wherein the filament comprises a monofilament.

35. The delivery system of claim 30, wherein the filament comprises at least one of: a polymer filament; or a metallic filament.

36. The delivery system of claim 22, wherein the catheter comprises a thrombus extraction device.

37. A method of sealing a delivery device accessing a blood vessel of a patient, the method comprising:

inserting the delivery device comprising a catheter and a hemostatic valve into the blood vessel of the patient, the catheter having a first end, a second end, and a catheter lumen extending therethrough, and the hemostatic valve coupled to the first end and having a tubular member defining a central lumen fluidly coupled with the catheter lumen and a tensioning mechanism coupled with the tubular member, wherein the tensioning mechanism collapses and seals the central lumen in a first configuration and thereby seals access to the blood vessel;

moving the tensioning mechanism of the hemostatic valve to a second configuration, wherein the central lumen is open and access to the blood vessel is unsealed when the tensioning mechanism is in the second configuration;

advancing a shaft of a tool through the delivery device until a first end of the tool reaches a desired position within the blood vessel of the patient and a portion of the shaft is positioned within the central lumen of the tubular member; and

returning the tensioning mechanism of the hemostatic valve to the first configuration such that the tubular member collapses on the shaft of the tool and seals around the shaft of the tool.

38. The method of claim 37, further comprising retracting the shaft of the tool from the delivery device.

39. The method of claim 38, wherein the tensioning mechanism is maintained in the first configuration during and after the retracting of the shaft of the tool from the delivery device.

40. The method of claim 38, wherein the tensioning mechanism is moved to the second configuration during the retracting of the shaft of the tool from the delivery device, and wherein the tensioning mechanism is returned to the first configuration after the shaft of the tool is retracted from the delivery device.

41. The method of claim 37, wherein the tensioning mechanism comprises at least one filament extending at least partially around the tubular member, wherein the at least one filament collapses the tubular member when the tensioning mechanism is in the first configuration.

42. The method of claim 41, wherein the at least one filament circumferentially constricts the tubular member to collapse the tubular member when the tensioning mechanism is in the first configuration.

43. The method of claim 41, wherein the hemostatic valve comprises a reinforcement structure located between the at least one filament and the tubular member.

44. The method of claim 41, wherein the at least one filament forms a loop around the elongate member, and wherein moving the tensioning mechanism from the second configuration to the first configuration reduces a size of the loop to thereby constrict the tubular member within the loop.

45. The method of claim 41, wherein the filament forms at least one bight around a portion of the elongate member.

46. The method of claim 45, wherein the filament comprises a first filament and a second filament, and wherein the at least one bight comprises a first bight oriented in a first direction and formed by the first filament and a second bight oriented in a second direction and formed by the second filament, wherein the first and second bights overlap to encircle a portion of the tubular member within a constricting area.

47. The method of claim 46, wherein moving the tensioning mechanism from the second configuration to the first configuration comprises moving the first bight in the first direction and the second bight in the direction to reduce the size of the constricting area and collapse and seal the central lumen of the tubular member.

48. The method of claim 37, wherein the tensioning mechanism comprises an actuator, and wherein moving the tensioning mechanism to the second configuration comprises manipulating the actuator.

49. The method of claim 37, further comprising applying a vacuum to the delivery device to aspirate material through the catheter, wherein the central lumen remains sealed during the aspiration.

50. The method of claim 37, wherein the tool comprises a thrombus extraction device.

51. A hemostatic valve for sealing a medical device, the hemostatic valve comprising:

an elongate member having a first end, a second end, and a central lumen comprising a plurality of lumens extending therebetween, wherein the elongate member is pliable; and

an active tensioning mechanism coupled to the elongate member, wherein the tensioning mechanism is moveable between a first configuration wherein the central lumen is constricted and sealed and a second configuration wherein the central lumen is open.

ABSTRACT OF THE DISCLOSURE

Devices, systems, and methods for sealing medical devices, particularly during intravascular access, are disclosed herein. Some aspects relate to a hemostatic valve for sealing a wide range of medical devices, such as catheters, wires, embolectomy systems. The valve can include an elongate member having a first end, a second end, and a central lumen extending therebetween. A reinforcement structure extends along at least a portion of the elongate member and is coupled to the elongate member. A shell defining a first aperture and a second aperture may be included, which first and second apertures can be fluidly coupled by the elongate member. A tensioning mechanism is coupled to the shell and to the elongate member, the tensioning mechanism can be moveable between a first configuration wherein the tensioning mechanism is collapsed and the central lumen is sealed and a second configuration wherein the central lumen is open.

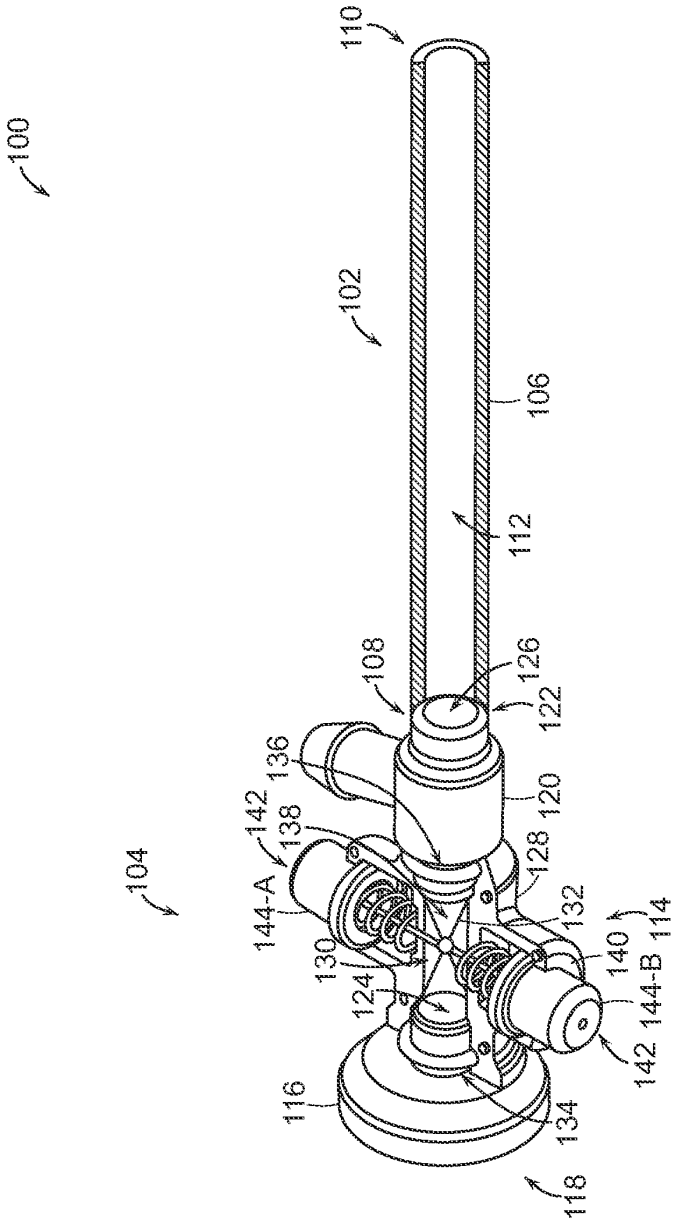

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FIG. 1

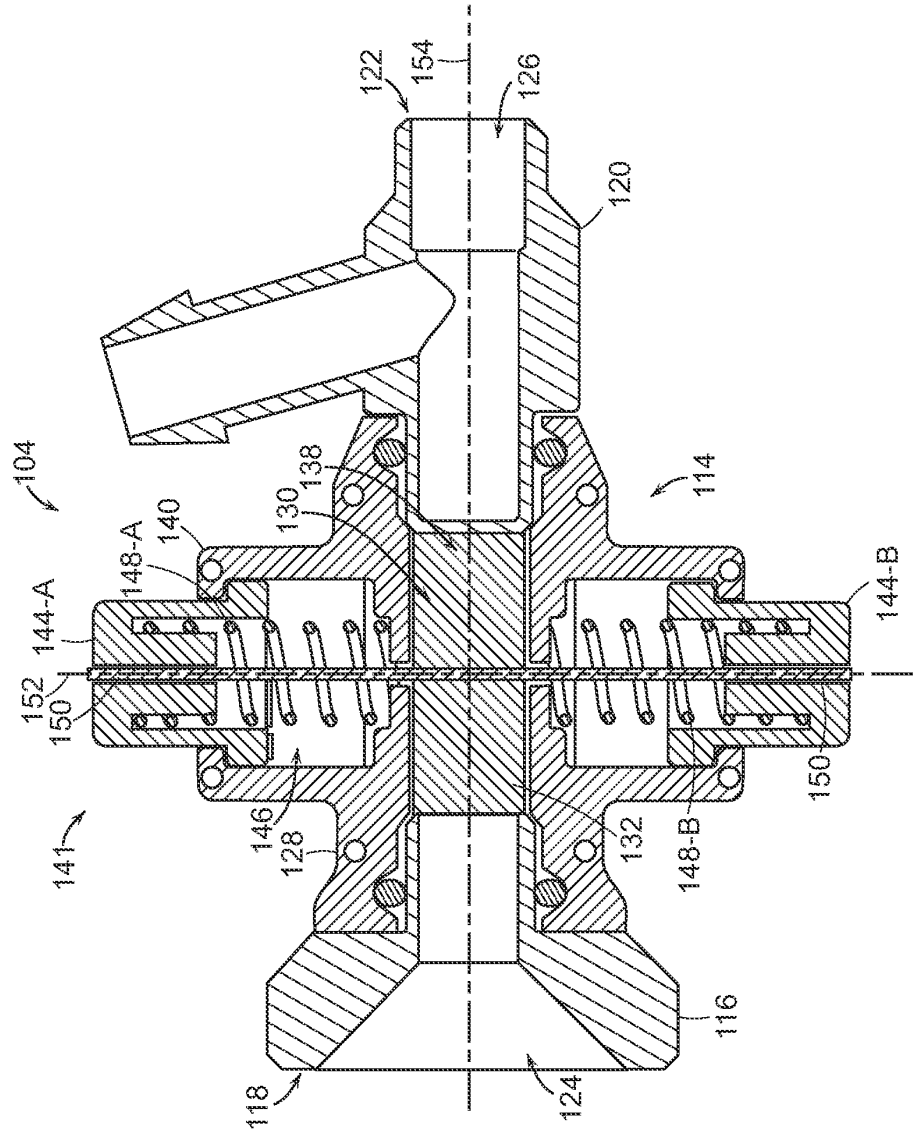

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FIG. 2

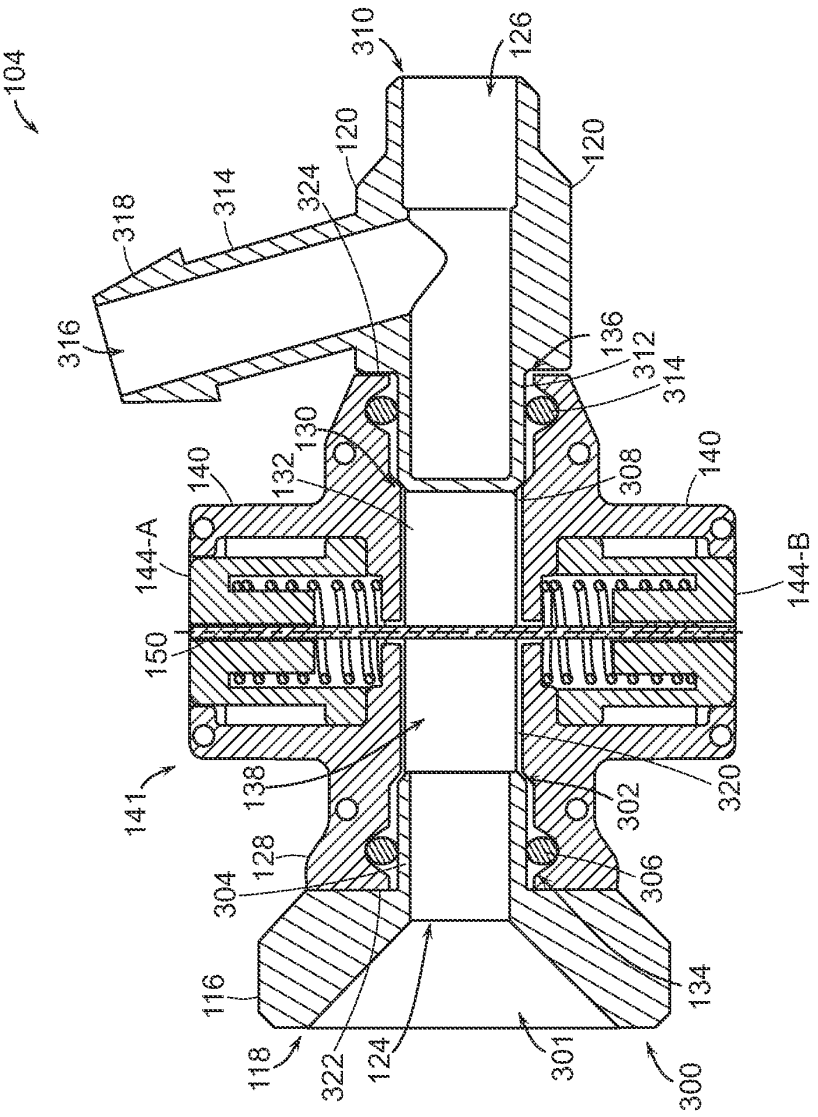

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FIG. 3

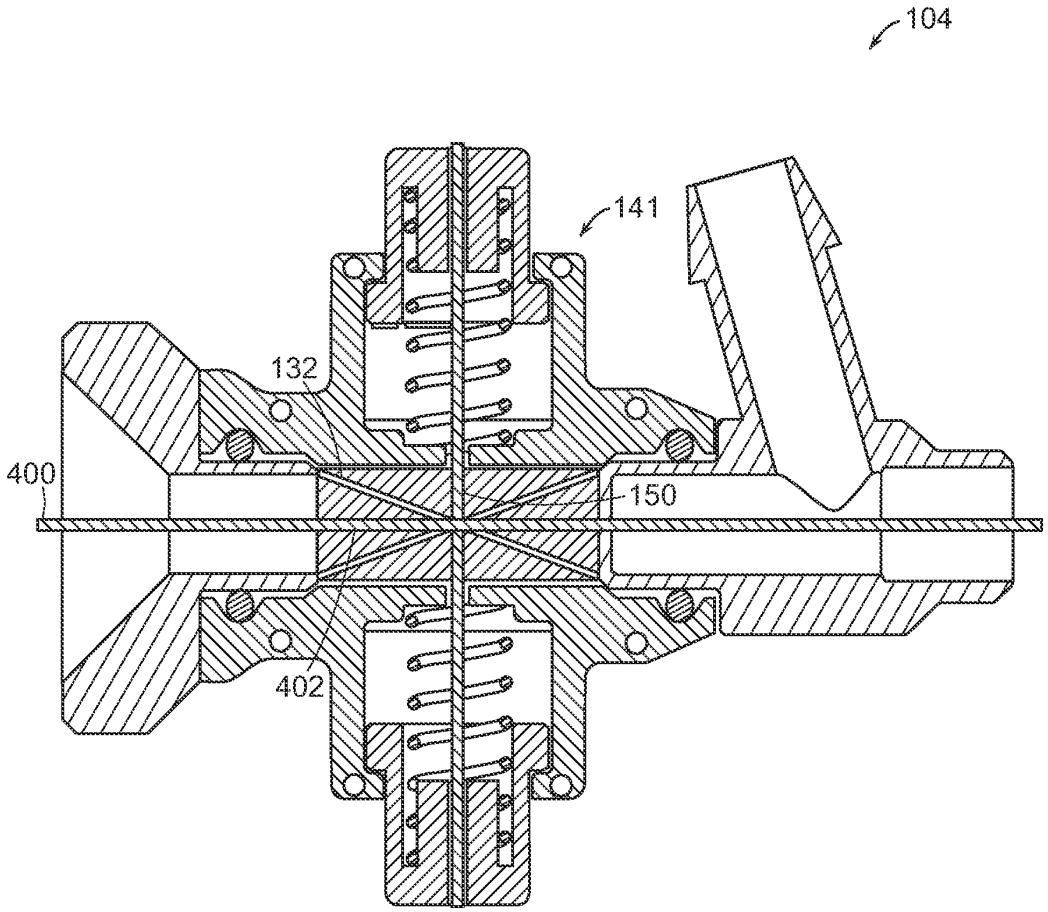


FIG. 4

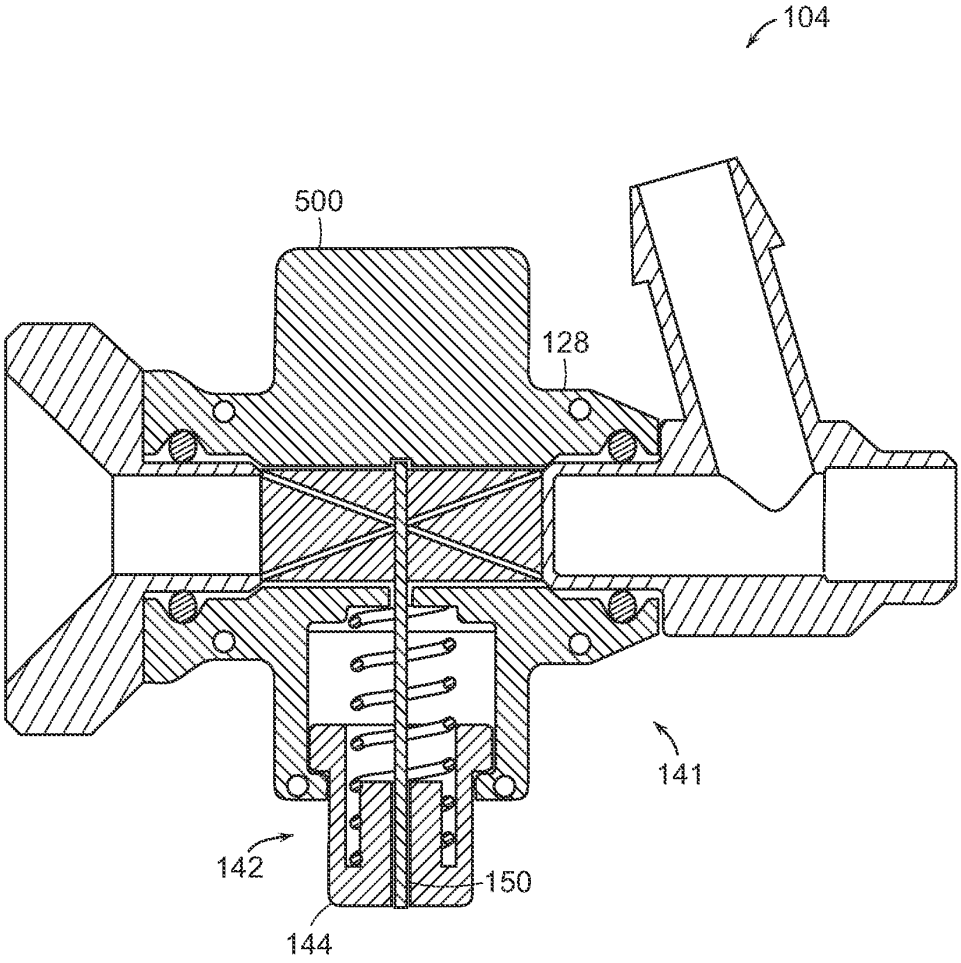


FIG. 5

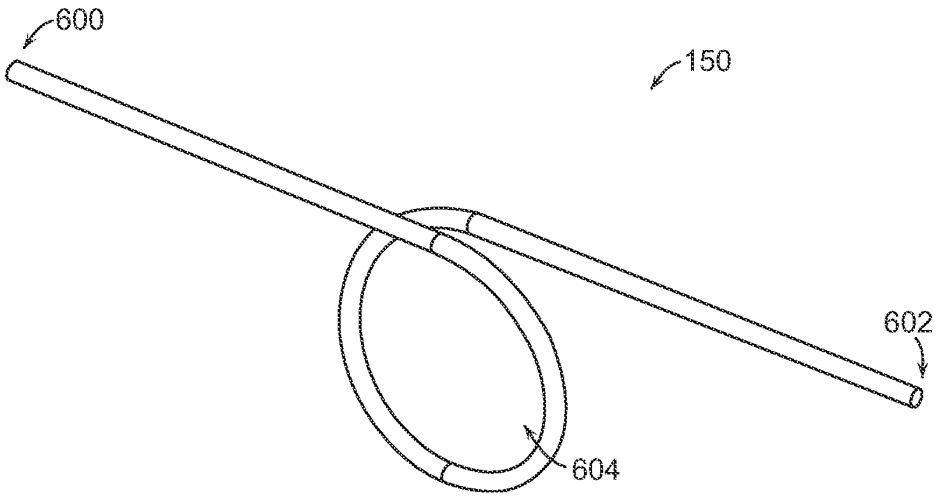


FIG. 6

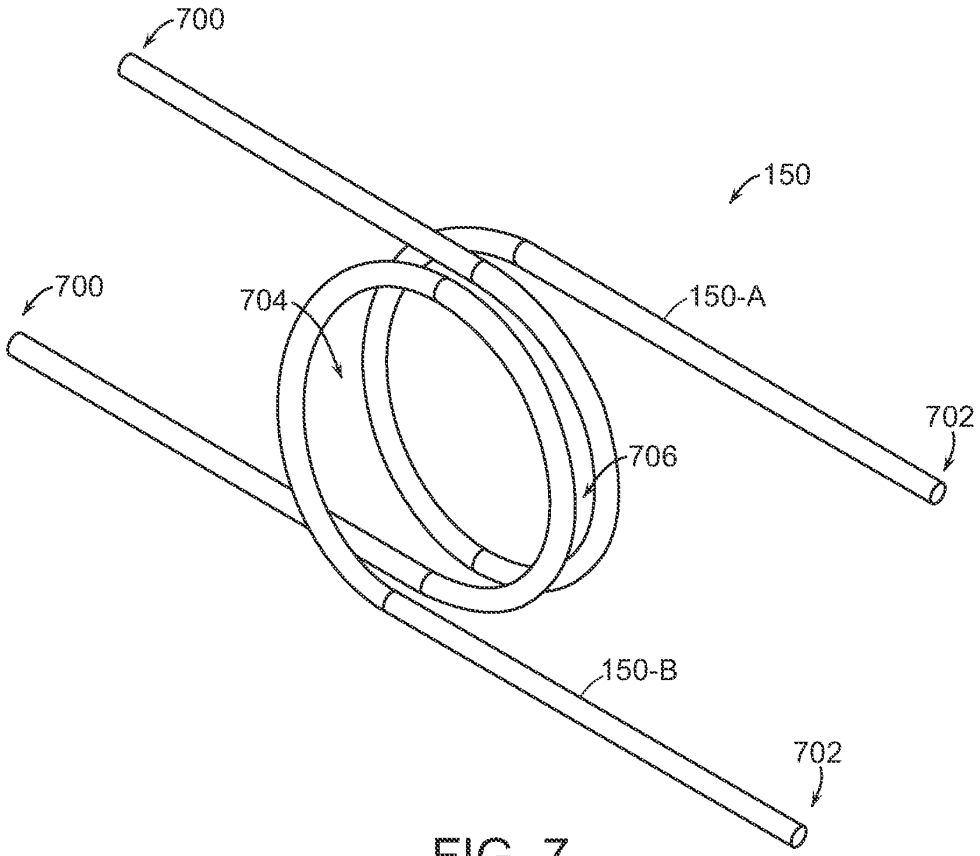


FIG. 7

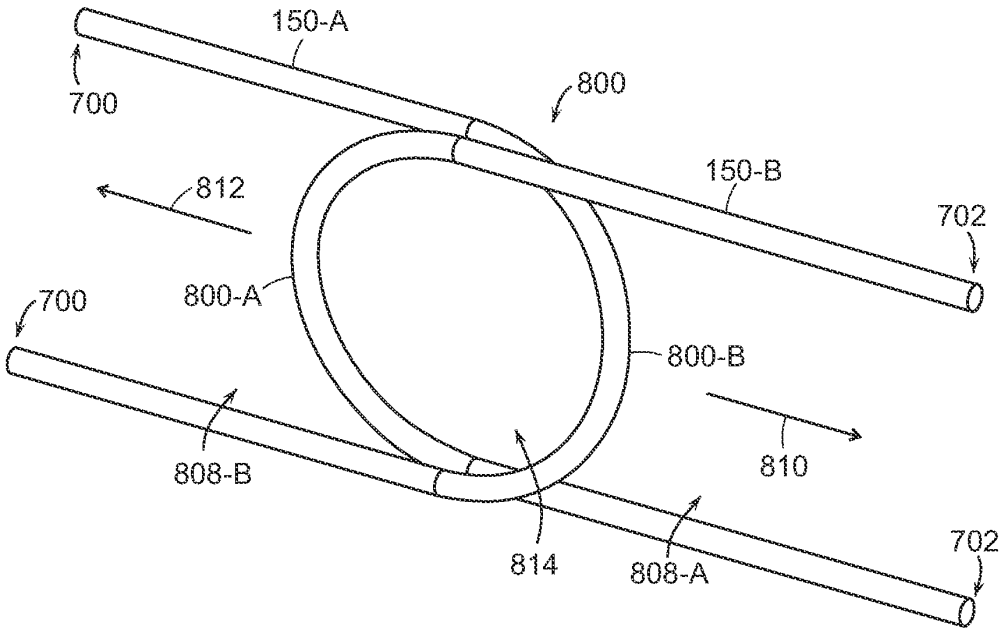

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FIG. 8

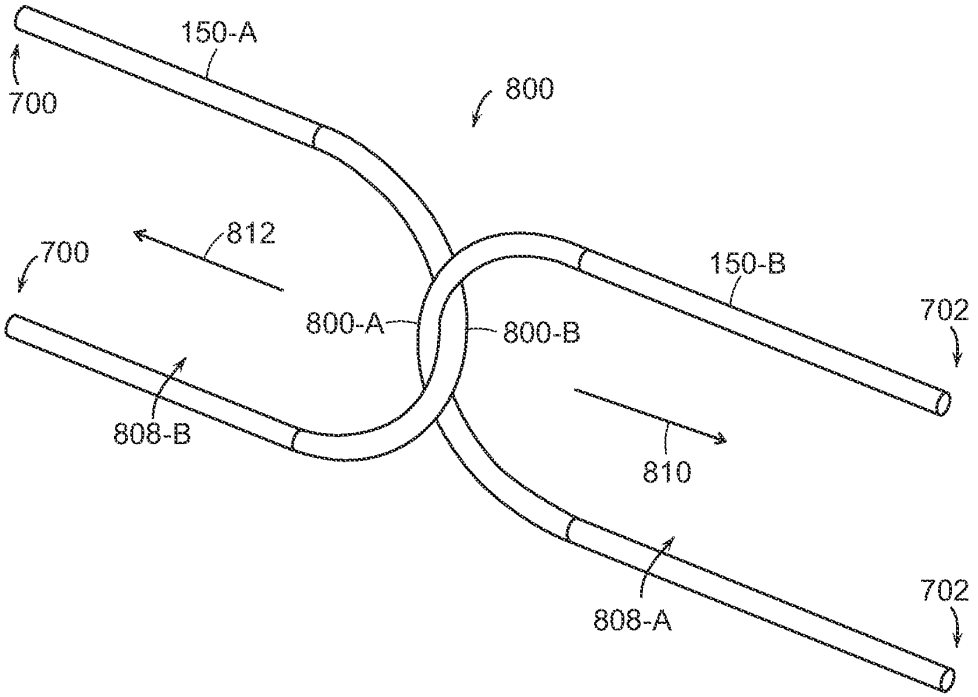

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FIG. 9

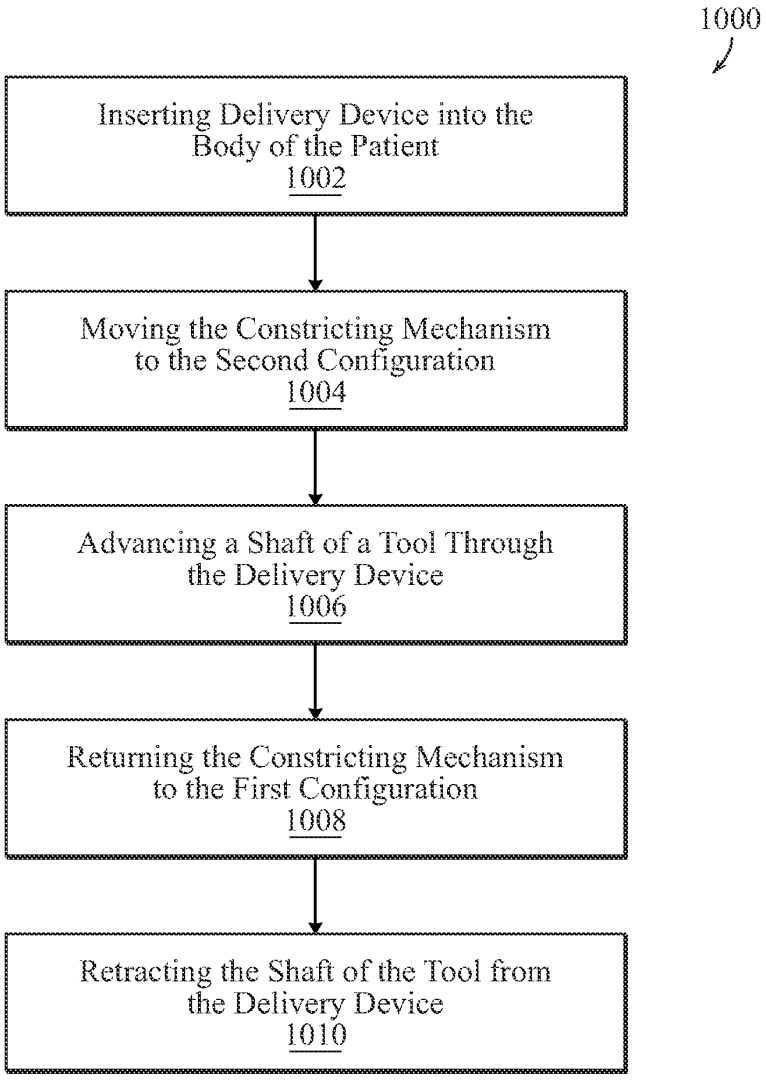

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Inserting Delivery Device into the Body of the Patient
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Moving the Constricting Mechanism to the Second Configuration
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Advancing a Shaft of a Tool Through the Delivery Device
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Returning the Constricting Mechanism to the First Configuration
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Retracting the Shaft of the Tool from the Delivery Device
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FIG. 10

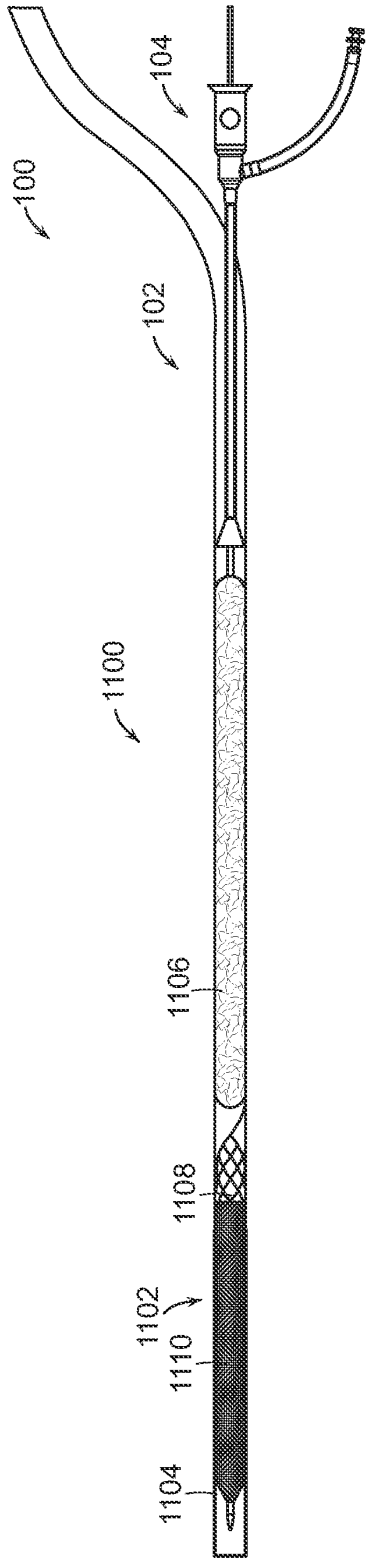


FIG. 11

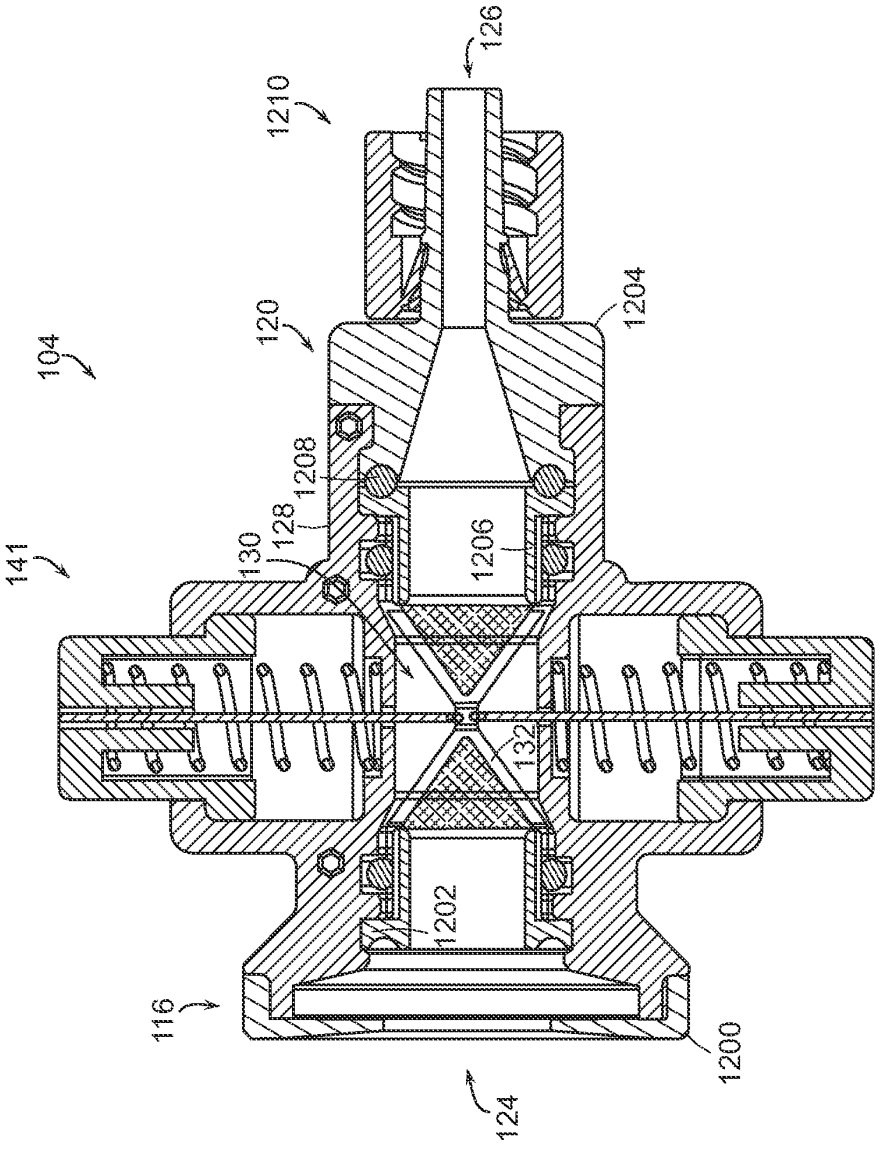

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FIG. 12

Electronic Acknowledgement Receipt	
EFS ID:	42411956
Application Number:	17226318
International Application Number:	
Confirmation Number:	8690
Title of Invention:	HEMOSTASIS VALVES AND METHODS OF USE
First Named Inventor/Applicant Name:	Benjamin E. Merritt
Customer Number:	25096
Filer:	Matthew S. Williams/JiYoung Anderson
Filer Authorized By:	Matthew S. Williams
Attorney Docket Number:	111552-8016.US02
Receipt Date:	09-APR-2021
Filing Date:	
Time Stamp:	12:11:42
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal of New Application	New_Application_Transmittal-111552-8016US2.PDF	1407702 726289903 4f491d7e89ec33309af991a8e54b9d2	no	2
Warnings:					

Information:					
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Warnings:					
Information:					
3	Oath or Declaration filed	Declarations-parent-111552-8016US2.PDF	516241 a5c30477acff5dde1d2e6bfb9b455d82d08489e3	no	3
Warnings:					
Information:					
4	Transmittal Letter	POA_Trans-111552-8016US2.PDF	66570 7dda615081decc003ec788aa4a4aec0be128b1c5	no	1
Warnings:					
Information:					
5	Power of Attorney	Inari_POA.PDF	89923 25f7f4b49794b3726f1832191855c11e5f0029f4	no	1
Warnings:					
Information:					
6		CON_Application-111552-8016US2-pto.PDF	183029 504ead52c07d153e31b8ace716d7b93140777692	yes	41

Multipart Description/PDF files in .zip description		
Document Description	**Start**	**End**
Specification	1	33
Claims	34	40
Abstract	41	41

Warnings:					
Information:					
7	Drawings-only black and white line drawings	Drawings-111552-8016US2-pto.PDF	195481 66648bb2049beadbf2c4a6861102107dd980e048	no	10

Warnings:	
Information:	
Total Files Size (in bytes):	4282110

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.
National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.
New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/AIA/15 (10-17)
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UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No.	111552-8016.US02
First Named Inventor	Benjamin Edward Merritt
Title	HEMOSTASIS VALVES AND METHODS OF USE
Priority Mail Express® Label No.	Electronically Filed

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

1. ☐ **Fee Transmittal Form** (PTO/SB/17 or equivalent)
2. ☑ **Applicant asserts small entity status.** See 37 CFR 1.27
3. ☐ **Applicant certifies micro entity status.** See 37 CFR 1.29. Applicant must attach form PTO/SB/15A or B or equivalent.
4. ☑ **Specification** [*Total Pages* 41] Both the claims and abstract must start on a new page. *(See MPEP § 608.01(a) for information on the preferred arrangement)*
5. ☑ **Drawing(s)** (35 U.S.C. 113) [*Total Sheets* 10]
6. **Inventor's Oath or Declaration** [*Total Pages* 3] *(including substitute statements under 37 CFR 1.64 and assignments serving as an oath or declaration under 37 CFR 1.63(e))*
   a. ☐ Newly executed (original or copy)
   b. ☑ A copy from a prior application (37 CFR 1.63(d))
7. ☑ **Application Data Sheet** ** See note below.* See 37 CFR 1.76 (PTO/AIA/14 or equivalent)
8. **CD-ROM or CD-R** in duplicate, large table, or Computer Program (*Appendix*)
   ☐ Landscape Table on CD
9. **Nucleotide and/or Amino Acid Sequence Submission** (*if applicable, items a. – c. are required*)
   a. ☐ Computer Readable Form (CRF)
   b. ☐ Specification Sequence Listing on:
      i. ☐ CD-ROM or CD-R (2 copies); or
      ii. ☐ Paper
   c. ☐ Statements verifying identity of above copies

ADDRESS TO: **Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450**

ACCOMPANYING APPLICATION PAPERS

10. ☐ **Assignment Papers** (cover sheet & document(s)) Name of Assignee _____
11. ☐ **37 CFR 3.73(c) Statement** (*when there is an assignee*) ☑ **Power of Attorney**
12. ☐ **English Translation Document** (*if applicable*)
13. ☐ **Information Disclosure Statement** (PTO/SB/08 or PTO-1449)
    ☐ Copies of citations attached
14. ☐ **Preliminary Amendment**
15. ☐ **Return Receipt Postcard** (*MPEP § 503*) (*Should be specifically itemized*)
16. ☐ **Certified Copy of Priority Document(s)** (*if foreign priority is claimed*)
17. ☐ **Nonpublication Request** Under 35 U.S.C. 122(b)(2)(B)(i). Applicant must attach form PTO/SB/35 or equivalent.
18. ☐ **Other:** _____

*Note: (1) Benefit claims under 37 CFR 1.78 and foreign priority claims under 1.55 **must** be included in an Application Data Sheet (ADS).
(2) For applications filed under 35 U.S.C. 111, the application must contain an ADS specifying the applicant if the applicant is an assignee, person to whom the inventor is under an obligation to assign, or person who otherwise shows sufficient proprietary interest in the matter. See 37 CFR 1.46(b).

19. CORRESPONDENCE ADDRESS

☑ The address associated with Customer Number: 25096 **OR** ☐ Correspondence address below

Name					
Address					
City		State		Zip Code	
Country		Telephone		Email	

Signature	/Matthew S. Williams/	Date	2021-04-09
Name (Print/Type)	Matthew S. Williams	Registration No. (Attorney/Agent)	77,516

This collection of information is required by 37 CFR 1.53(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	111552-8016.US02
	Application Number	
Title of Invention	HEMOSTASIS VALVES AND METHODS OF USE	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Benjamin	E.	Merritt	

Residence Information (Select One) ● US Residency Non US Residency Active US Military Service

City	San Clemente	State/Province	CA	Country of Residence	US

Mailing Address of Inventor:

Address 1	c/o Inari Medical, Inc.
Address 2	9 Parker, Suite #100

City	Irvine	State/Province	CA
Postal Code	92618	Country	US

Inventor 2 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	John	C.	Thress	

Residence Information (Select One) ◉ US Residency Non US Residency Active US Military Service

City	Capistrano Beach	State/Province	CA	Country of Residence	US

Mailing Address of Inventor:

Address 1	c/o Inari Medical, Inc.
Address 2	9 Parker, Suite #100

City	Irvine	State/Province	CA
Postal Code	92618	Country	US

Inventor 3 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Paul		Lubock	

Residence Information (Select One) ◉ US Residency Non US Residency Active US Military Service

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	111552-8016.US02
	Application Number	
Title of Invention	HEMOSTASIS VALVES AND METHODS OF USE	

City	Monarch Beach	State/Province	CA	Country of Residence	US

Mailing Address of Inventor:

Address 1	c/o Inari Medical, Inc.		
Address 2	9 Parker, Suite #100		
City	Irvine	**State/Province**	CA
Postal Code	92618	**Country**	US

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	25096		
Email Address	patentprocurement@perkinscoie.com	Add Email	Remove Email

Application Information:

Title of the Invention	HEMOSTASIS VALVES AND METHODS OF USE		
Attorney Docket Number	111552-8016.US02	**Small Entity Status Claimed**	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	10	**Suggested Figure for Publication (if any)**	2

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	111552-8016.US02
	Application Number	
Title of Invention	HEMOSTASIS VALVES AND METHODS OF USE	

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	● Customer Number	US Patent Practitioner	◯ Limited Recognition (37 CFR 11.9)
Customer Number	25096		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	16/117519	2018-08-30
Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
16/117519	Claims benefit of provisional	62/554931	2017-09-06

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button. Add

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	111552-8016.US02
	Application Number	
Title of Invention	HEMOSTASIS VALVES AND METHODS OF USE	

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)

Remove

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button. Add

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	111552-8016.US02
	Application Number	
Title of Invention	HEMOSTASIS VALVES AND METHODS OF USE	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	111552-8016.US02
	Application Number	
Title of Invention	HEMOSTASIS VALVES AND METHODS OF USE	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1 Remove

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

● Assignee	Legal Representative under 35 U.S.C. 117	Joint Inventor
Person to whom the inventor is obligated to assign.	Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:

If the Applicant is an Organization check here. ☒

Organization Name	Inari Medical, Inc.		
Mailing Address Information For Applicant:			
Address 1	9 Parker, Suite #100		
Address 2			
City	Irvine	**State/Province**	CA
Country	US	Postal Code	92618
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button. Add

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

PTO/AIA/14 (11-15)
Approved for use through 04/30/2017. OMB 0651-0032
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	111552-8016.US02
	Application Number	
Title of Invention	HEMOSTASIS VALVES AND METHODS OF USE	

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

Remove

If the Assignee or Non-Applicant Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country i		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button. Add

Signature:

Remove

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Matthew S. Williams/			Date (YYYY-MM-DD)	2021-04-09
First Name	Matthew S.	Last Name	Williams	Registration Number	77,516

Additional Signature may be generated within this form by selecting the Add button. Add

PTO/AIA/14 (11-15)
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	111552-8016.US02
	Application Number	
Title of Invention	HEMOSTASIS VALVES AND METHODS OF USE	

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Privacy Act Statement

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The information provided by you in this form will be subject to the following routine uses:

1 The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3 A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent CooperationTreaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	HEMOSTASIS VALVES AND METHODS OF USE

As the below named inventor, I hereby declare that:

This declaration is directed to:

[ ] The attached application, or

[x] United States application or PCT international application number 16/117,519

filed on August 30, 2018.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any wilful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Benjamin E. Merritt Date: 8/31/18

Signature: _____

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S.Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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LEGAL NAME OF INVENTOR

Inventor: John C. Thress Date: 8/31/18

Signature: _____

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form. Use an additional PTO/AIA/01 form for each additional inventor.

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LEGAL NAME OF INVENTOR

Inventor: Paul Lubock Date: September 11, 2018

Signature:

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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PTO/AIA/82A (07-13)
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TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	Not Yet Assigned
Filing Date	Concurrently Herewith
First Named Inventor	Benjamin E. Merritt
Title	HEMOSTASIS VALVES AND METHODS OF USE
Art Unit	Not Yet Assigned
Examiner Name	Not Yet Assigned
Attorney Docket Number	111552-8016US2

SIGNATURE of Applicant or Patent Practitioner

Signature	/Matthew S. Williams/	Date (Optional)	2021-04-09
Name	Matthew S. Williams	Registration Number	77,516
Title (if Applicant is a juristic entity)	Attorney for Applicant		
Applicant Name (if Applicant is a juristic entity)	Inari Medical, Inc.		

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.

[x] *Total of 1 forms are submitted.

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