

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
 Stylesheet Version v1.2

EPAS ID: PAT7599887

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	SECURITY AGREEMENT

CONVEYING PARTY DATA

Name	Execution Date
SHOCKWAVE MEDICAL, INC.	10/19/2022

RECEIVING PARTY DATA

Name:	WELLS FARGO BANK, NATIONAL ASSOCIATION
Street Address:	1525 WEST W.T. HARRIS BLVD.
City:	CHARLOTTE
State/Country:	NORTH CAROLINA
Postal Code:	28262

PROPERTY NUMBERS Total: 72

Property Type	Number
Patent Number:	8574247
Patent Number:	8709075
Patent Number:	8728091
Patent Number:	8747416
Patent Number:	8888788
Patent Number:	8956371
Patent Number:	8956374
Patent Number:	9005216
Patent Number:	9011462
Patent Number:	9011463
Patent Number:	9044618
Patent Number:	9044619
Patent Number:	9072534
Patent Number:	9138249
Patent Number:	9180280
Patent Number:	9220521
Patent Number:	9237984
Patent Number:	9289224
Patent Number:	9333000
Patent Number:	9421025

PATENT

Property Type	Number
Patent Number:	9433428
Patent Number:	9522012
Patent Number:	9554815
Patent Number:	9642673
Patent Number:	9730715
Patent Number:	9814476
Patent Number:	9867629
Patent Number:	9993292
Patent Number:	10039561
Patent Number:	10149690
Patent Number:	10159505
Patent Number:	10206698
Patent Number:	10226265
Patent Number:	10357264
Patent Number:	10420569
Patent Number:	10441300
Patent Number:	10478202
Patent Number:	10517620
Patent Number:	10517621
Patent Number:	10555744
Patent Number:	10646240
Patent Number:	10682178
Patent Number:	10702293
Patent Number:	10709462
Patent Number:	10758255
Patent Number:	10959743
Patent Number:	10966737
Patent Number:	10973538
Patent Number:	11000299
Patent Number:	11020135
Patent Number:	11026707
Patent Number:	11076874
Patent Number:	11337713
Patent Number:	11432834
Application Number:	14940029
Application Number:	16436186
Application Number:	16569303
Application Number:	16831721

Property Type	Number
Application Number:	16893400
Application Number:	16857143
Application Number:	16942605
Application Number:	17021905
Application Number:	17025866
Application Number:	16993114
Application Number:	17185276
Application Number:	17190193
Application Number:	17198001
Application Number:	17231936
Application Number:	17361941
Application Number:	17477483
Application Number:	17537325
Application Number:	17725435

CORRESPONDENCE DATA

Fax Number:

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

Phone: 212-655-3328

Email: serratelli@chapman.com

Correspondent Name: CHAPMAN AND CUTLER LLP

Address Line 1: 1270 AVENUE OF THE AMERICAS, 30TH FLOOR

Address Line 2: CATHERINE SERRATELLI

Address Line 4: NEW YORK, NEW YORK 10020

NAME OF SUBMITTER: CATHERINE SERRATELLI

SIGNATURE: /Catherine Serratelli/

DATE SIGNED: 10/20/2022

Total Attachments: 10

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RECORDATION FORM COVER SHEET PATENTS ONLY

To the Director of the U.S. Patent and Trademark Office: Please record the attached documents or the new address(es) below.

1. Name of conveying party(ies)

Shockwave Medical, Inc.

Additional name(s) of conveying party(ies) attached? Yes No

2. Name and address of receiving party(ies)

Name: Wells Fargo Bank, National Association

Internal Address: _____

Street Address: 1525 West W.T. Harris Blvd.

City: Charlotte

State: North Carolina

Country: USA Zip: 28262

Additional name(s) & address(es) attached? Yes No

3. Nature of conveyance/Execution Date(s):

Execution Date(s) October 19, 2022

Assignment

Merger

Security Agreement

Change of Name

Joint Research Agreement

Government Interest Assignment

Executive Order 9424, Confirmatory License

Other _____

4. Application or patent number(s):

This document serves as an Oath/Declaration (37 CFR 1.63).

A. Patent Application No.(s)

B. Patent No.(s)

See Schedule A to Patent Collateral Agreement attached

See Schedule A to Patent Collateral Agreement attached

Additional numbers attached? Yes No

5. Name and address to whom correspondence concerning document should be mailed:

Name: Chapman and Cutler LLP

Internal Address: Attn: Catherine Serratelli

Street Address: 1270 Avenue of the Americas,
30th Floor

City: New York

State: New York Zip: 10020

Phone Number: (212) 655-3328

Docket Number: _____

Email Address: serratelli@chapman.com

6. Total number of applications and patents involved: 72

7. Total fee (37 CFR 1.21(h) & 3.41) \$ _____

Authorized to be charged to deposit account

Enclosed

None required (government interest not affecting title)

8. Payment Information

Deposit Account Number _____

Authorized UserName _____

9. Signature:

10/19/2022

Signature

Date

Catherine Serratelli

Name of Person Signing

Total number of pages including cover sheet, attachments, and documents:

10

Documents to be recorded (including cover sheet) should be faxed to (571) 273-0140, or mailed to:
Mail Stop Assignment Recordation Services, Director of the USPTO, P.O.Box 1450, Alexandria, V.A. 22313-1450

PATENT
REEL: 061728 FRAME: 0135

PATENT COLLATERAL AGREEMENT

This 19th day of October, 2022, SHOCKWAVE MEDICAL, INC., a Delaware corporation (the "Grantor"), for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, assigns, mortgages and pledges to WELLS FARGO BANK, NATIONAL ASSOCIATION, as Administrative Agent, and its successors and assigns (in such capacity, the "Administrative Agent") for the benefit of the Secured Parties, and grants to Administrative Agent, for the benefit of the Secured Parties, a continuing security interest in and to all of the right, title and interest of the Grantor in, to and under the following property, wherever located, and whether now existing or hereafter arising or acquired from time to time (the "Patent Collateral"):

(i) Each patent and patent application listed on Schedule A hereto and all of the inventions described and claimed therein and any and all reissues, divisions, continuations, continuations-in-part, renewals, extensions and reexaminations thereof and amendments thereto; and

(ii) All proceeds of the foregoing, including without limitation (x) any and all royalties, fees, income, payments and other proceeds now or hereafter due or payable with respect to any and all of the foregoing and (y) any and all claims and causes of action by the Grantor against third parties for damages, restitution and injunctive and other legal and equitable relief by reason of past, present or future infringement, misappropriation, violation, misuse, breach or default of any patent or patent application listed on Schedule A hereto, in each case together with the right but no obligation to sue for and collect, or otherwise recover, said damages;

to secure the payment and performance of all Secured Obligations of the Grantor as set out in that certain Collateral Agreement of even date herewith by and among the Grantor, the other parties from time to time party thereto and Administrative Agent, as the same may be amended, modified, or restated from time to time (the "Collateral Agreement"). Terms defined in the Collateral Agreement and not otherwise defined herein shall have the meaning assigned thereto in the Collateral Agreement.

The Grantor authorizes the Commissioner for Patents and any other government officials to record and register this Patent Collateral Agreement upon request by the Administrative Agent.

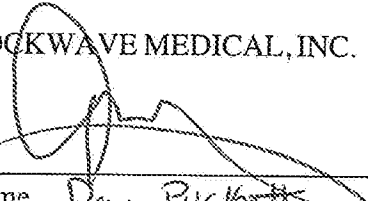
The Grantor does hereby further acknowledge and affirm that the rights and remedies of the Administrative Agent with respect to the assignment, mortgage, pledge and security interest in the patents and patent applications made and granted hereby are more fully set forth in the Collateral Agreement, the terms and provisions of which are incorporated herein by reference as if fully set forth herein. The rights and remedies of the Administrative Agent with respect to the Patent Collateral are as provided by the Collateral Agreement and related documents, and nothing in this Patent Collateral Agreement shall be deemed to limit such rights and remedies.

This Patent Collateral Agreement may be executed in any number of counterparts, and by the different parties on different counterpart signature pages, all of which taken together shall constitute one and the same agreement. Any of the parties hereto may execute this Patent Collateral Agreement by signing any such counterpart and each of such counterparts shall for all purposes be deemed to be an original. Delivery of a counterpart hereof by facsimile or in electronic (i.e., "pdf" or "tif") format shall be effective as delivery of a manually executed counterpart hereof. This Patent Collateral Agreement shall be construed and determined in accordance with the laws of the United States and the State of New York without regard to conflicts of law principles that would require application of the laws of another jurisdiction. This Patent Collateral Agreement will be binding on and shall inure to the benefit of the parties hereto and their respective successors and assigns.

[SIGNATURE PAGE TO FOLLOW]

IN WITNESS WHEREOF, the Grantor has caused this Patent Collateral Agreement to be duly executed as of the date and year last above written.

SHOCKWAVE MEDICAL, INC.

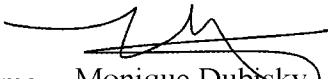
By 
Name Dan Puckett
Title CEO

[Signature Page to Patent Collateral Agreement]

PATENT
REEL: 061728 FRAME: 0138

Accepted and agreed to as of the date and year last above written.

WELLS FARGO BANK, NATIONAL ASSOCIATION

By 
Name Monique Dubisky
Title Managing Director

**Schedule A
to Patent Collateral Agreement**

Patents and Patent Applications

Patent Title	Application No.	Filing Date	Publication No.	Patent No.	Status
Shock wave valvuloplasty device with moveable shock wave generator	13/291875	11/08/2011	None	8574247	Issued
Shock wave valvuloplasty device with moveable shock wave generator	14/046635	10/04/2013	None	8709075	Issued
Shockwave catheter system with energy control	14/079463	11/13/2013	None	8728091	Issued
Low profile electrodes for an angioplasty shock wave catheter	14/061554	10/23/2013	None	8747416	Issued
Low profile electrodes for an angioplasty shock wave catheter	13/831543	03/14/2013	None	8888788	Issued
Shockwave balloon catheter system	12/482995	06/11/2009	None	8956371	Issued
Shockwave balloon catheter system	13/049199	03/16/2011	None	8956374	Issued
Shockwave catheter system with energy control	14/271276	05/06/2014	None	9005216	Issued
Shockwave balloon catheter system	13/646570	10/05/2012	None	9011462	Issued
Shock wave balloon catheter with multiple shock wave sources	14/271342	05/06/2014	None	9011463	Issued
Shockwave valvuloplasty catheter system	12/611997	11/04/2009	None	9044618	Issued
Shockwave valvuloplasty catheter system	13/207381	08/10/2011	None	9044619	Issued
Non-cavitation shockwave balloon catheter system	13/465264	05/07/2012	None	9072534	Issued
Shock wave catheter system with arc preconditioning	13/777807	02/26/2013	None	9138249	Issued
Drug delivery shockwave balloon catheter system	12/581295	10/19/2009	None	9180280	Issued

Patent Title	Application No.	Filing Date	Publication No.	Patent No.	Status
Shockwave catheter	13/957276	08/01/2013	None	9220521	Issued
Shockwave nerve therapy system and method	13/960683	08/06/2013	None	9237984	Issued
Shock wave valvuloplasty device with moveable shock wave generator	14/229735	03/28/2014	None	9289224	Issued
Shockwave catheter system with energy control	13/615107	09/13/2012	None	9333000	Issued
Shockwave valvuloplasty catheter system	14/693155	04/22/2015	None	9421025	Issued
Low profile electrodes for an angioplasty shock wave catheter	14/515130	10/15/2014	None	9433428	Issued
Shockwave catheter system with energy control	14/218858	03/18/2014	None	9522012	Issued
Shockwave valvuloplasty with multiple balloons	13/962315	08/08/2013	None	9554815	Issued
Shock wave balloon catheter with multiple shock wave sources	13/534658	06/27/2012	None	9642673	Issued
Shock wave guide wire	14/273063	05/08/2014	None	9730715	Issued
Shock wave valvuloplasty device with moveable shock wave generator	15/018160	02/08/2016	None	9814476	Issued
Angioplasty balloon	14/445314	07/29/2014	None	9867629	Issued
Shock wave balloon catheter with multiple shock wave sources	15/474885	03/30/2017	None	9993292	Issued
Shockwave balloon catheter System	14/660539	03/17/2015	None	10039561	Issued
Shockwave valvuloplasty catheter system	15/213105	07/18/2016	None	10149690	Issued
Shockwave catheter system with energy control	15/065607	03/09/2016	None	10159505	Issued
Low profile electrodes for an angioplasty shock wave catheter	15/220999	07/27/2016	None	10206698	Issued

Patent Title	Application No.	Filing Date	Publication No.	Patent No.	Status
Shock wave device with polarity switching	15/138147	04/25/2016	None	10226265	Issued
Shock wave balloon catheter with insertable electrodes	15/370900	12/06/2016	None	10357264	Issued
Shock wave guide wire	15/652070	07/17/2017	None	10420569	Issued
Drug delivery shock wave balloon catheter system	15/491408	04/19/2017	None	10441300	Issued
Shock wave valvuloplasty device with moveable shock wave generator	15/729238	10/10/2017	None	10478202	Issued
Shock wave catheter system with energy control	15/347486	11/09/2016	None	10517620	Issued
Method of managing energy delivered by a shockwave through dwell time compensation	16/554497	08/28/2019	None	10517621	Issued
Shock wave electrodes	15/346132	11/08/2016	None	10555744	Issued
Aortic leaflet repair using shock wave applicators	15/725161	10/04/2017	None	10646240	Issued
Shock wave balloon catheter with multiple shock wave sources	15/979182	05/14/2018	None	10682178	Issued
Two-stage method for treating calcified lesions within the wall of a blood vessel	16/544516	08/19/2019	None	10702293	Issued
Low profile electrodes for a shock wave catheter	15/817073	11/17/2017	None	10709462	Issued
Shock wave valvuloplasty with multiple balloons	15/377090	12/13/2016	None	10758255	Issued
Shockwave balloon catheter system	16/028225	07/05/2018	None	10959743	Issued
Device and method for generating forward directed shock waves	15/989016	05/24/2018	None	10966737	Issued
Shockwave catheter system with energy control	16/222679	12/17/2018	None	10973538	Issued

Patent Title	Application No.	Filing Date	Publication No.	Patent No.	Status
Shockwave valvuloplasty catheter system	16/183438	11/07/2018	None	11000299	Issued
Shock wave device for treating vascular plaques	15/937720	03/27/2018	None	11020135	Issued
Shock wave device with polarity switching	16/261391	01/29/2019	None	11026707	Issued
Low profile electrodes for an angioplasty shock wave catheter	16/240556	01/04/2019	None	11076874	Issued
Shock wave electrodes	16/691449	11/21/2019	None	11337713	Issued
Shock wave catheter system with energy control	16/694712	11/25/2019	None	11432834	Issued
SHOCK WAVE VALVULOPLASTY DEVICE AND METHODS	14/940029	11/12/2015	20160135828	N/A	Pending
SYSTEM FOR TREATING OCCLUSIONS IN BODY LUMENS	16/436186	06/10/2019	20190388110	N/A	Pending
DRUG DELIVERY SHOCK WAVE BALLOON CATHETER SYSTEM	16/569303	09/12/2019	20200000484	N/A	Pending
AORTIC LEAFLET REPAIR USING SHOCK WAVE APPLICATORS	16/831721	03/26/2020	20200246032	N/A	Pending
LOW PROFILE ELECTRODES FOR A SHOCK WAVE CATHETER	16/893400	06/04/2020	20200297366	N/A	Pending
SHOCK WAVE BALLOON CATHETER WITH MULTIPLE SHOCK WAVE SOURCES	16/857143	04/23/2020	20200383724	N/A	Pending
SHOCK WAVE VALVULOPLASTY WITH MULTIPLE BALLOONS	16/942605	07/29/2020	20210038237	N/A	Pending
LESION CROSSING SHOCK WAVE CATHETER	17/021905	09/15/2020	20210085347	N/A	Pending
SYSTEM FOR TREATING THROMBUS IN BODY LUMENS	17/025866	09/18/2020	20210085348	N/A	Pending

Patent Title	Application No.	Filing Date	Publication No.	Patent No.	Status
LOW PROFILE ELECTRODES FOR A SHOCK WAVE CATHETER	16/993114	08/13/2020	20210085383	N/A	Pending
DEVICE AND METHOD FOR GENERATING FORWARD DIRECTED SHOCK WAVES	17/185276	02/25/2021	20210177445	N/A	Pending
SHOCKWAVE BALLOON CATHETER SYSTEM	17/190193	03/02/2021	20210282792	N/A	Pending
SHOCKWAVE CATHETER SYSTEM WITH ENERGY CONTROL	17/198001	03/10/2021	20210290259	N/A	Pending
SHOCKWAVE VALVULOPLASTY CATHETER SYSTEM	17/231936	04/15/2021	20210338258	N/A	Pending
LOW PROFILE ELECTRODES FOR AN ANGIOPLASTY SHOCK WAVE CATHETER	17/361941	06/29/2021	20220015785	N/A	Pending
SYSTEM FOR TREATING THROMBUS IN BODY LUMENS	17/477483	09/16/2021	20220125453	N/A	Pending
LESION CROSSING SHOCK WAVE CATHETER	17/537325	11/29/2021	20220183708	N/A	Pending
SHOCK WAVE ELECTRODES	17/725435	04/20/2022	20220240958	N/A	Pending