503023174 10/17/2014

PATENT ASSIGNMENT COVER SHEET

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| SUBMISSION TYPE: | NEW ASSIGNMENT |
|-----------------------|----------------|
| NATURE OF CONVEYANCE: | ASSIGNMENT |

CONVEYING PARTY DATA

| Name | Execution Date |
|--------------------|----------------|
| GERARDO A. BRUCKER | 10/15/2014 |
| TIMOTHY C. SWINNEY | 10/11/2014 |
| BRANDON J. KELLY | 10/13/2014 |

RECEIVING PARTY DATA

| Name: | MKS INSTRUMENTS, INC. | |
|-------------------|-----------------------|--|
| Street Address: | 2 TECH DRIVE | |
| Internal Address: | SUITE 201 | |
| City: | ANDOVER | |
| State/Country: | MASSACHUSETTS | |
| Postal Code: | 01810 | |

PROPERTY NUMBERS Total: 1

| Property Type | Number |
|---------------------|----------|
| Application Number: | 14500820 |

CORRESPONDENCE DATA

Fax Number: (978)341-0136

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.

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| ATTORNEY DOCKET NUMBER: | 0100.2367-001 | |
|-------------------------|--------------------|--|
| NAME OF SUBMITTER: | CATHERINE HEATH | |
| SIGNATURE: | / catherineheath / | |
| DATE SIGNED: | 10/17/2014 | |

Total Attachments: 5

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> PATENT REEL: 033971 FRAME: 0202

Joint

<u>ASSIGNMENT</u>

WHEREAS, we, Gerardo A. Brucker, Timothy C. Swinney, and Brandon J. Kelly, , have invented a certain improvement in Cold Cathode Ionization Vacuum Gauge described in an application for Patent,

| | the specification of which is about to be filed in the United States Patent Office (use for utility (37 CFR § 1.53(b)) and design filings only); |
|-------------|---|
| | is about to be filed in the United States Patent Office as a Provisional Application |
| \boxtimes | the specification of which is United States Application No. 14/500,820, filed September 29, 2014; |
| | the specification of which is a Patent Cooperation Treaty Application, International Application No. [], filed , which designates the United States of America [and is assigned United States Application No.]; |
| | which was patented under United States Patent No. []. |

WHEREAS, MKS Instruments, Inc. (hereinafter "ASSIGNEE"), a corporation organized and existing under the laws of the Commonwealth of Massachusetts, and having a usual place of business at 2 Tech Drive, Suite 201, Andover, MA 01810 desires to confirm its interest therein in accordance with agreements duly entered into with us;

NOW, THEREFORE, to all whom it may concern be it known that for and in consideration of said agreements and of other good and valuable consideration, the receipt of which is hereby acknowledged, we have sold, assigned and transferred and by these presents do hereby sell, assign and transfer unto said ASSIGNEE, its successors, assigns and legal representatives, the entire right, title and interest in and throughout the United States of America, its territories and all foreign countries, in and to said invention as described in said application, together with the entire right, title and interest in and to said application and such Letters Patent as may issue on said invention; said invention, application and Letters Patent to be held and enjoyed by said ASSIGNEE for its own use and behalf and for its successors, assigns and legal representatives, to the full end of the term for which said Letters Patent may be granted as fully and entirely as the same would have been held by us had this assignment and sale not been made; we hereby convey all rights arising under or pursuant to any and all international agreements, treaties or laws relating to the protection of industrial property by filing any such applications for Letters Patent. We hereby acknowledge that this assignment, being of the entire right, title and interest in and to said invention, carries with it the right in ASSIGNEE to apply for any and all related provisional and nonprovisional, international and national phase applications, including any and all substitution, reissue, divisional, continuation, and continuation-in-part applications, and obtain from competent authorities in all countries of the world any and all Letters Patent by attorneys and agents of ASSIGNEE's selection and the right to procure the grant of all such Letters Patent to ASSIGNEE for its own name as assignee of the entire right, title and interest therein; we hereby expressly authorize the filing of an International Patent Application under the

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Patent Cooperation Treaty which corresponds to and claims the priority of the above-identified application;

AND, we hereby further agree for ourselves and our executors and administrators to execute upon request any other lawful documents and likewise to perform any other lawful acts which may be deemed necessary to secure fully the aforesaid invention to said ASSIGNEE, its successors, assigns and legal representatives, but at its or their expense and charges, including the execution of applications for patents in foreign countries, and the execution of any future applications including substitution, reissue, divisional or continuation, continuation-in-part applications, and all related provisional and nonprovisional, international and national phase applications, and preliminary or other statements and the giving of testimony in any interference or other proceeding in which said invention or any application or patent directed thereto may be involved:

AND, we do hereby authorize and request each Patent Office and the Commissioner of Patents of the United States to issue such Letters Patent as shall be granted upon said invention to said ASSIGNEE, its successors, assigns, and legal representatives.

IN TESTIMONY WHEREOF, we have hereunto set our hands and affixed our seals the date set forth below.

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| Inventor's Signature: 7/13-12-12-12 |
|---|
| Gerardo A. Brucker |
| State/Commonwealth |
| of <u>COLORADO</u> County of <u>BOULDE</u> R |
| On this 15 th day of 000800 2014, before me, the undersigned notary public, personally appeared Gerardo A. Brucker, |
| personally known to me, or |
| proved to me through satisfactory evidence of identification, which was |
| Colored Drivers Liconse |
| to be the person whose name was signed on the foregoing instrument in my presence, and acknowledged that he/she signed the foregoing instrument as his/her free act and deed. |
| (SEAL) Notary Public Penny Snite |
| PENNEY SMITH ROLL ROLL SMITH (print name) |
| State of Colorado Commission # 20114052552 My Commission Expires Aug 17, 2015 My Commission Expires Aug 17, 2015 |

| | TO THE TAXABLE PROPERTY OF THE |
|---|--|
| inventor's Signature: | |
| State/Commonwealth of Oblado County of LARLOS | nothy C. Swinney |
| On this day ofCTV(S) public, personally appeared Timothy C. S | before me, the undersigned notary lwinney, |
| personally known to me, or | |
| proved to me through satisfactory Colorago Divers Lice | evidence of identification, which was |
| to be the person whose name was signed of | on the foregoing instrument in my presence, and going instrument as his/her free act and deed. |
| (SEAL) TRACEY INGRAM NOTARY PUBLIC STATE OF COLORADO | Notary Public Pace (print name) |
| My Commission Expires 05/11/2016 | My Commission expires 5 / 11 / 16 |
| Inventor's Signature: | |
| State/Commonwealth | randon J. Kelly |
| of County of | |
| On this day of public, personally appeared Brandon J. Ke | 20 . hefore me, the undersigned notary elly, |
| personally known to me, or | |
| proved to me through satisfactory t | evidence of identification, which was |
| to be the person whose name was signed o acknowledged that he/she signed the foreg | n the foregoing instrument in my presence, and oing instrument as his/her free act and deed. |
| (SEAL) | Notary Public |
| | (print name) |
| | My Commission expires / / |

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| Inventor's Signature: |
|---|
| Timothy C. Swinney |
| State/Commonwealth of |
| County of |
| On this day of 20, before me, the undersigned notary public, personally appeared Timothy C. Swinney, |
| personally known to me, or |
| proved to me through satisfactory evidence of identification, which was |
| to be the person whose name was signed on the foregoing instrument in my presence, and acknowledged that he/she signed the foregoing instrument as his/her free act and deed. |
| (SEAL) Notary Public |
| (print name) |
| My Commission expires// |
| Inventor's Signature: Brandon I. Kelly |
| Brandon J. Kelly |
| State/Commonwealth of County of Koulder |
| • |
| On this 17 day of October 2017, before me, the undersigned notary public, personally appeared Brandon J. Kelly, |
| personally known to me, or |
| proved to me through satisfactory evidence of identification, which was |
| Colorado Diver License |
| to be the person whose name was signed on the foregoing instrument in my presence, and acknowledged that he/she signed the foregoing instrument as his/her free act and decided (SEAL) MARY L SLATZER NOTARY PUBLIC STATE OF COLORADO NOTARY 10 19084010738 My Commission expires My Commission expires |

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RECORDED: 10/17/2014