504415798 06/15/2017

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT4462498

SUBMISSION TYPE:		NE	NEW ASSIGNMENT				
NATURE OF CONVEYANCE:		AS	ASSIGNMENT				
CONVEYING PARTY DA	ATA						
		Nan	ne			Execution Da	
UWE WEIERSTALL						09/17/2015	
DINGJIE WANG						10/02/2015	
JOHN SPENCE						10/23/2015	
RECEIVING PARTY DA	ТА						
Name: ARIZONA BOARD OF REGENTS ON BEHALF OF ARIZONA STATE UNIVERSITY							
Street Address:	1475 NG	ORTH SC	COTTSDALE ROAD				
Internal Address:	SKYSO	NG SUIT	E 200				
City:	SCOTT	SDALE					
State/Country:	ARIZON	NA					
Postal Code:	85257						
					_		
Property Type			Number]		
	-	15509376					
Application Number:		15509376]		
Application Number:		(312)913-	3]		
Application Number: CORRESPONDENCE D Fax Number: Correspondence will be	ATA (e sent to	(312)913- • the e-m a	6 -0002 ail address first; if t				
Application Number: CORRESPONDENCE D Fax Number: Correspondence will be using a fax number, if p	ATA (e sent to provided;	(312)913- the e-ma ; if that is	6 -0002 ail address first; if t s unsuccessful, it w				
Application Number: CORRESPONDENCE D Fax Number: <i>Correspondence will be</i> <i>using a fax number, if p</i> Phone:	ATA (e sent to provided;	(312)913- • the e-m a ; if that i 312-913-(6 -0002 ail address first; if t s unsuccessful, it w 0001				
Application Number: CORRESPONDENCE D Fax Number: <i>Correspondence will be</i> <i>using a fax number, if p</i> Phone: Email:	ATA (e sent to provided;	(312)913- (312)913- (312)913-((312-913-(docketing	5 -0002 ail address first; if t s unsuccessful, it w 0001 j@mbhb.com				
Application Number: CORRESPONDENCE D Fax Number: <i>Correspondence will be</i> <i>using a fax number, if p</i> Phone: Email: Correspondent Name:	ATA (e sent to provided, 3	(312)913- <i>the e-ma</i> <i>; if that is</i> 312-913-(docketing KIRSTEN	6 -0002 ail address first; if t s unsuccessful, it w 0001 J@mbhb.com I L. THOMSON	rill be sei			
Application Number: CORRESPONDENCE D Fax Number: <i>Correspondence will be</i> <i>using a fax number, if p</i> Phone: Email: Correspondent Name: Address Line 1:	ATA (e sent to provided, 3 () 3	(312)913- <i>the e-ma</i> <i>; if that i</i> : 312-913-0 docketing KIRSTEN 300 SOU	-0002 ail address first; if t s unsuccessful, it w 0001 J@mbhb.com I L. THOMSON TH WACKER DRIVE	rill be sei			
Application Number: CORRESPONDENCE D Fax Number: <i>Correspondence will be</i> <i>using a fax number, if p</i> Phone: Email: Correspondent Name: Address Line 1: Address Line 2:	ATA e sent to provided, d d d d d d d d d d d d d d d d d d	(312)913- <i>the e-ma</i> <i>; if that is</i> 312-913-(docketing KIRSTEN 300 SOU SUITE 31	-0002 ail address first; if t s unsuccessful, it w 0001 J@mbhb.com I L. THOMSON TH WACKER DRIVE	rill be sei			
Application Number: CORRESPONDENCE D Fax Number: Correspondence will be using a fax number, if p Phone: Email: Correspondent Name: Address Line 1: Address Line 2: Address Line 4:	ATA (e sent to provided, 3 () 4 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	(312)913- <i>the e-ma</i> 312-913-(docketing KIRSTEN 300 SOU SUITE 31 CHICAG(6 -0002 ail address first; if t s unsuccessful, it w 0001 J@mbhb.com I L. THOMSON TH WACKER DRIVE 00	rill be sei			
Application Number: CORRESPONDENCE D Fax Number: Correspondence will be using a fax number, if p Phone: Email: Correspondent Name: Address Line 1: Address Line 2:	ATA (e sent to provided, 3 () 4 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	(312)913- (312-913-(312-913-(docketing KIRSTEN 300 SOU SUITE 31 CHICAG(14-	-0002 ail address first; if t s unsuccessful, it w 0001 j@mbhb.com I L. THOMSON TH WACKER DRIVE 100 D, ILLINOIS 60606	vill be sei			
Application Number: CORRESPONDENCE D Fax Number: Correspondence will be using a fax number, if p Phone: Email: Correspondent Name: Address Line 1: Address Line 2: Address Line 4: ATTORNEY DOCKET NU	ATA (e sent to provided, 3 () 4 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	(312)913- <i>the e-ma</i> <i>; if that i</i> : 312-913-(docketing KIRSTEN 300 SOU SUITE 31 CHICAG(14- KIF	-0002 ail address first; if t s unsuccessful, it w 0001 g@mbhb.com I L. THOMSON TH WACKER DRIVE 100 D, ILLINOIS 60606 1620-PCT-US	vill be sei			
Application Number: CORRESPONDENCE D Fax Number: Correspondence will be using a fax number, if p Phone: Email: Correspondent Name: Address Line 1: Address Line 2: Address Line 4: ATTORNEY DOCKET NUNAME OF SUBMITTER:	ATA (e sent to provided, 3 () 4 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	(312)913- <i>the e-ma</i> <i>if that is</i> 312-913-0 docketing KIRSTEN 300 SOU SUITE 31 CHICAGO 14- KIF /Kir	-0002 ail address first; if t s unsuccessful, it w 0001 g@mbhb.com I L. THOMSON TH WACKER DRIVE 100 D, ILLINOIS 60606 1620-PCT-US RSTEN L. THOMSON	vill be sei			

source=14-1620-PCT Assignment (EXECUTED)#page1.tif

source=14-1620-PCT Assignment (EXECUTED)#page2.tif	
source=14-1620-PCT Assignment (EXECUTED)#page3.tif	
source=14-1620-PCT Assignment (EXECUTED)#page4.tif	
source=14-1620-PCT Assignment (EXECUTED)#page5.tif	
source=14-1620-PCT Assignment (EXECUTED)#page6.tif	

ASSIGNMENT

Case No.: **14-1620-PCT** Inventors: **Uwe Weierstall, Dingjie Wang, John Spence** Date of Execution of Application: **2015** Serial No.: PCT/US15/48820

Filing Date: September 8,

In consideration of good and valuable considerations in hand paid, the receipt and sufficiency whereof are hereby acknowledged, the undersigned hereby assign to:

Arizona Board of Regents on Behalf of Arizona State University

its successors and assigns, the entire right, title and interest in the invention or improvements of the undersigned disclosed in an application for Letters Patent of the United States, entitled:

"Nozzle Apparatus and Methods for Use Thereof"

and identified as:

Case No. 14-1620-PCT

in the offices of McDONNELL BOEHNEN HULBERT & BERGHOFF LLP and in said application and any and all other applications, both United States and foreign (including but not limited to all countries on the list below*), which the undersigned may file, either solely or jointly with others, on said invention or improvements, and in any and all Letters Patent of the United States and foreign countries (including but not limited to all countries on the list below*), which may be obtained on any of said applications, and in any reissue or extension of such patents, and further assigns to said assignee the priority right provided by the International Convention.

The undersigned hereby authorize and request the United States Commissioner of Patents and Trademarks to issue said Letters Patent to said assignee.

The undersigned hereby authorize and request the attorneys of record in said application to insert in this assignment the filing date and serial number of said application when officially known, and the date of execution of the application.

The undersigned warrant themselves to be the owners of the entire right, title and interest in said invention or improvements and to have the right to make this assignment, and further warrant that there are no outstanding prior assignments, licenses, or other encumbrances on the interest herein assigned.

For said considerations the undersigned hereby agree, upon the request and at the expense of said assignee, its successors and assigns, to execute any and all divisional, continuation and substitute applications for said invention or improvements, and any necessary oath, affidavit or declaration relating thereto, and any application for the reissue or extension of any Letters Patent that may be granted upon said application and any and all applications and other documents for Letters Patent in foreign countries (including but not limited to all countries on the list below*) on said invention or improvements, that said assignee, its successors or assigns may deem necessary or expedient, and for the said considerations the undersigned

PATENT REEL: 042725 FRAME: 0739 authorize said assignee to apply for patents for said invention or improvements in its own name in such countries where such procedure is proper and further agree, upon the request of said assignee, its successors and assigns, to cooperate to the best of the ability of the undersigned with said assignee, its successors and assigns, in any proceedings or transactions involving such applications or patents, including the preparation and execution of preliminary statements, giving and producing evidence, and performing any and all other acts necessary to obtain, maintain and enforce said Letters Patent, both United States and foreign, and vest all rights therein hereby conveyed in the assignee, its successors and assigns, whereby said Letters Patent will be held and enjoyed by the said assignee, its successors and assigns, to the full end of the term for which said Letters Patent will be granted, as fully and entirely as the same would have been held and enjoyed by the undersigned if this assignment had not been made.

*Countries include, but are not limited to: all member countries of the Patent Cooperation Treaty (PCT) including Albania, Algeria, Antigua and Barbuda, Armenia, Australia, Austria, Azerbaijan, Barbados, Belarus, Belgium, Belize, Benin, Bosnia and Herzegovina, Brazil, Bulgaria, Burkina Faso, Cameroon, Canada, Central African Republic, Chad, China, Colombia, Congo, Costa Rica, Cote d'Ivoire, Croatia, Cuba, Cyprus, Czech Republic, Democratic People's Republic of Korea, Denmark, Dominica, Ecuador, Estonia, Finland, France, Gabon, Gambia, Georgia, Germany, Ghana, Greece, Grenada, Guinea, Guinea-Bissau, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Japan, Kazakhstan, Kenya, Krygyzstan, Latvia, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Madagascar, Malawi, Mali, Mauritania, Mexico, Monaco, Mongolia, Monaco, Mongolia, Morocco, Netherlands, New Zealand, Niger, Norway, Poland, Portugal, Republic of Korea, Republic of Moldova, Romania, Russian Federation, Saint Lucia, Senegal, Sierra Leone, Singapore, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, Sudan, Swaziland, Sweden, Switzerland, Tajikstan, The former Yugoslav Republic of Macedonia, Togo, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Uganda, Ukraine, United Arab Emirates, United Kingdom, United Republic of Tanzania, United States of America, Uzbekistan, Vietnam, Yugoslavia, Zambia, Zimbabwe.

Uwe Weierstall

09/17/2015

Date

Dingjie Wang

Date

John Spence

Date

ASSIGNMENT

Case No.: **14-1620-PCT** Inventors: **Uwe Weierstall, Dingjie Wang, John Spence** Date of Execution of Application: **2015**

Serial No.: PCT/US15/48820

Filing Date: September 8,

In consideration of good and valuable considerations in hand paid, the receipt and sufficiency whereof are hereby acknowledged, the undersigned hereby assign to:

Arizona Board of Regents on Behalf of Arizona State University

its successors and assigns, the entire right, title and interest in the invention or improvements of the undersigned disclosed in an application for Letters Patent of the United States, entitled:

"Nozzle Apparatus and Methods for Use Thereof"

and identified as:

Case No. 14-1620-PCT

in the offices of MCDONNELL BOEHNEN HULBERT & BERGHOFF LLP and in said application and any and all other applications, both United States and foreign (including but not limited to all countries on the list below*), which the undersigned may file, either solely or jointly with others, on said invention or improvements, and in any and all Letters Patent of the United States and foreign countries (including but not limited to all countries on the list below*), which may be obtained on any of said applications, and in any reissue or extension of such patents, and further assigns to said assignee the priority right provided by the International Convention.

The undersigned hereby authorize and request the United States Commissioner of Patents and Trademarks to issue said Letters Patent to said assignee.

The undersigned hereby authorize and request the attorneys of record in said application to insert in this assignment the filing date and serial number of said application when officially known, and the date of execution of the application.

The undersigned warrant themselves to be the owners of the entire right, title and interest in said invention or improvements and to have the right to make this assignment, and further warrant that there are no outstanding prior assignments, licenses, or other encumbrances on the interest herein assigned.

For said considerations the undersigned hereby agree, upon the request and at the expense of said assignee, its successors and assigns, to execute any and all divisional, continuation and substitute applications for said invention or improvements, and any necessary oath, affidavit or declaration relating thereto, and any application for the reissue or extension of any Letters Patent that may be granted upon said application and any and all applications and other documents for Letters Patent in foreign countries (including but not limited to all countries on the list below*) on said invention or improvements, that said assignee, its successors or assigns may deem necessary or expedient, and for the said considerations the undersigned

PATENT REEL: 042725 FRAME: 0741 authorize said assignee to apply for patents for said invention or improvements in its own name in such countries where such procedure is proper and further agree, upon the request of said assignee, its successors and assigns, to cooperate to the best of the ability of the undersigned with said assignee, its successors and assigns, in any proceedings or transactions involving such applications or patents, including the preparation and execution of preliminary statements, giving and producing evidence, and performing any and all other acts necessary to obtain, maintain and enforce said Letters Patent, both United States and foreign, and vest all rights therein hereby conveyed in the assignee, its successors and assigns, whereby said Letters Patent will be held and enjoyed by the said assignee, its successors and assigns, to the full end of the term for which said Letters Patent will be granted, as fully and entirely as the same would have been held and enjoyed by the undersigned if this assignment had not been made.

*Countries include, but are not limited to: all member countries of the Patent Cooperation Treaty (PCT) including Albania, Algeria, Antigua and Barbuda, Armenia, Australia, Austria, Azerbaijan, Barbados, Belarus, Belgium, Belize, Benin, Bosnia and Herzegovina, Brazil, Bulgaria, Burkina Faso, Cameroon, Canada, Central African Republic, Chad, China, Colombia, Congo, Costa Rica, Cote d'Ivoire, Croatia, Cuba, Cyprus, Czech Republic, Democratic People's Republic of Korea, Denmark, Dominica, Ecuador, Estonia, Finland, France, Gabon, Gambia, Georgia, Germany, Ghana, Greece, Grenada, Guinea, Guinea-Bissau, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Japan, Kazakhstan, Kenya, Krygyzstan, Latvia, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Madagascar, Malawi, Mali, Mauritania, Mexico, Monaco, Mongolia, Monaco, Mongolia, Morocco, Netherlands, New Zealand, Niger, Norway, Poland, Portugal, Republic of Korea, Republic of Moldova, Romania, Russian Federation, Saint Lucia, Senegal, Sierra Leone, Singapore, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, Sudan, Swaziland, Sweden, Switzerland, Tajikstan, The former Yugoslav Republic of Macedonia, Togo, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Uganda, Ukraine, United Arab Emirates, United Kingdom, United Republic of Tanzania, United States of America, Uzbekistan, Vietnam, Yugoslavia, Zambia, Zimbabwe,

Uwe Weierstall	/	Date
Dingjie Wang	\sim	10/2 /2015 Date
John Spence		Date

ASSIGNMENT

Case No.: **14-1620-PCT** Inventors: **Uwe Weierstall, Dingjie Wang, John Spence** Date of Execution of Application: **2015**

Serial No.: PCT/US15/48820

Filing Date: September 8,

In consideration of good and valuable considerations in hand paid, the receipt and sufficiency whereof are hereby acknowledged, the undersigned hereby assign to:

Arizona Board of Regents on Behalf of Arizona State University

its successors and assigns, the entire right, title and interest in the invention or improvements of the undersigned disclosed in an application for Letters Patent of the United States, entitled:

"Nozzle Apparatus and Methods for Use Thereof"

and identified as:

Case No. 14-1620-PCT

in the offices of MCDONNELL BOEHNEN HULBERT & BERGHOFF LLP and in said application and any and all other applications, both United States and foreign (including but not limited to all countries on the list below*), which the undersigned may file, either solely or jointly with others, on said invention or improvements, and in any and all Letters Patent of the United States and foreign countries (including but not limited to all countries on the list below*), which may be obtained on any of said applications, and in any reissue or extension of such patents, and further assigns to said assignee the priority right provided by the International Convention.

The undersigned hereby authorize and request the United States Commissioner of Patents and Trademarks to issue said Letters Patent to said assignee.

The undersigned hereby authorize and request the attorneys of record in said application to insert in this assignment the filing date and serial number of said application when officially known, and the date of execution of the application.

The undersigned warrant themselves to be the owners of the entire right, title and interest in said invention or improvements and to have the right to make this assignment, and further warrant that there are no outstanding prior assignments, licenses, or other encumbrances on the interest herein assigned.

For said considerations the undersigned hereby agree, upon the request and at the expense of said assignee, its successors and assigns, to execute any and all divisional, continuation and substitute applications for said invention or improvements, and any necessary oath, affidavit or declaration relating thereto, and any application for the reissue or extension of any Letters Patent that may be granted upon said application and any and all applications and other documents for Letters Patent in foreign countries (including but not limited to all countries on the list below*) on said invention or improvements, that said assignee, its successors or assigns may deem necessary or expedient, and for the said considerations the undersigned

PATENT REEL: 042725 FRAME: 0743 authorize said assignee to apply for patents for said invention or improvements in its own name in such countries where such procedure is proper and further agree, upon the request of said assignee, its successors and assigns, to cooperate to the best of the ability of the undersigned with said assignee, its successors and assigns, in any proceedings or transactions involving such applications or patents, including the preparation and execution of preliminary statements, giving and producing evidence, and performing any and all other acts necessary to obtain, maintain and enforce said Letters Patent, both United States and foreign, and vest all rights therein hereby conveyed in the assignee, its successors and assigns, whereby said Letters Patent will be held and enjoyed by the said assignee, its successors and assigns, to the full end of the term for which said Letters Patent will be granted, as fully and entirely as the same would have been held and enjoyed by the undersigned if this assignment had not been made.

*Countries include, but are not limited to: all member countries of the Patent Cooperation Treaty (PCT) including Albania, Algeria, Antigua and Barbuda, Armenia, Australia, Austria, Azerbaijan, Barbados, Belarus, Belgium, Belize, Benin, Bosnia and Herzegovina, Brazil, Bulgaria, Burkina Faso, Cameroon, Canada, Central African Republic, Chad, China, Colombia, Congo, Costa Rica, Cote d'Ivoire, Croatia, Cuba, Cyprus, Czech Republic, Democratic People's Republic of Korea, Denmark, Dominica, Ecuador, Estonia, Finland, France, Gabon, Gambia, Georgia, Germany, Ghana, Greece, Grenada, Guinea, Guinea-Bissau, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Japan, Kazakhstan, Kenya, Krygyzstan, Latvia, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Madagascar, Malawi, Mali, Mauritania, Mexico, Monaco, Mongolia, Monaco, Mongolia, Morocco, Netherlands, New Zealand, Niger, Norway, Poland, Portugal, Republic of Korea, Republic of Moldova, Romania, Russian Federation, Saint Lucia, Senegal, Sierra Leone, Singapore, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, Sudan, Swaziland, Sweden, Switzerland, Tajikstan, The former Yugoslav Republic of Macedonia, Togo, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Uganda, Ukraine, United Arab Emirates, United Kingdom, United Republic of Tanzania, United States of America, Uzbekistan, Vietnam, Yugoslavia, Zambia, Zimbabwe.

Uwe	Weierstall

Dingjie Wang John Spence Date

Date

10/23/2015

Date