

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
Stylesheet Version v1.2

EPAS ID: PAT4808948

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
GREGORY TERRENCE GARAY	01/18/2018
MEREDITH DUBELMAN	01/22/2018
XI YANG	01/11/2018
TINGFAN PANG	01/23/2018
MICHAEL SCOTT COLE	01/17/2018
BRIAN DAVID PRZESLAWSKI	01/26/2018
DOUGLAS GERARD KONITZER	01/09/2018
NICOLE BARBA	01/23/2018
KIRK GALLIER	01/09/2018
BRIAN KEITH	01/23/2018
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	GENERAL ELECTRIC COMPANY
<b>Street Address:</b>	1 RIVER ROAD
<b>City:</b>	SCHENECTADY
<b>State/Country:</b>	NEW YORK
<b>Postal Code:</b>	12345
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
Application Number:	15887601
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	(202)857-6395
<i>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.</i>	
<b>Phone:</b>	2028576000
<b>Email:</b>	scott.dodge@arentfox.com
<b>Correspondent Name:</b>	ARENT FOX LLP
<b>Address Line 1:</b>	1717 K STREET NW
<b>Address Line 4:</b>	WASHINGTON, D.C. 20006
<b>ATTORNEY DOCKET NUMBER:</b>	320596/037216.00157

<b>NAME OF SUBMITTER:</b>	SCOTT DODGE
<b>SIGNATURE:</b>	/Scott Dodge/
<b>DATE SIGNED:</b>	02/05/2018
<b>Total Attachments: 13</b> source=320591-1_US_Combined_Dec_Assign_as_filed_5FEB2018#page1.tif source=320591-1_US_Combined_Dec_Assign_as_filed_5FEB2018#page2.tif source=320591-1_US_Combined_Dec_Assign_as_filed_5FEB2018#page3.tif source=320591-1_US_Combined_Dec_Assign_as_filed_5FEB2018#page4.tif source=320591-1_US_Combined_Dec_Assign_as_filed_5FEB2018#page5.tif source=320591-1_US_Combined_Dec_Assign_as_filed_5FEB2018#page6.tif source=320591-1_US_Combined_Dec_Assign_as_filed_5FEB2018#page7.tif source=320591-1_US_Combined_Dec_Assign_as_filed_5FEB2018#page8.tif source=320591-1_US_Combined_Dec_Assign_as_filed_5FEB2018#page9.tif source=320591-1_US_Combined_Dec_Assign_as_filed_5FEB2018#page10.tif source=320591-1_US_Combined_Dec_Assign_as_filed_5FEB2018#page11.tif source=320591-1_US_Combined_Dec_Assign_as_filed_5FEB2018#page12.tif source=320591-1_US_Combined_Dec_Assign_as_filed_5FEB2018#page13.tif	

COMBINED DECLARATION AND GLOBAL ASSIGNMENT

**FOR UTILITY OR DESIGN PATENT APPLICATION**

As the below named inventors, we hereby declare that:

This declaration and assignment are directed to:

**INTEGRATED CASTING CORE-SHELL STRUCTURE FOR MAKING CAST COMPONENT WITH NOVEL COOLING HOLE ARCHITECTURE**

the specification of which is attached hereto

OR

United States application or PCT international application number

15/887,601 filed on February 2, 2018, as amended on [date] (if applicable).

(We hereby authorize and request the Company or its delegated attorneys or agents to insert above the application number and filing date of the application when known.)

The above-identified application was made or authorized to be made by us.

We believe that we are original joint inventors of a claimed invention in the application.

We hereby acknowledge that any willful false statement made in this declaration is punishable under 18 USC § 1001 by fine or imprisonment of not more than five (5) years, or both.

We have reviewed and understand the contents of the above-identified application, including the claims, as amended by any amendment referred to above.

We acknowledge the duty to disclose information which is material to the patentability of this application as defined in 37 CFR § 1.56, including, for continuation-in-part applications, material information which became available between the filing date of the prior application and the filing date of the continuation-in-part application.

In accordance with our obligation(s) under an Employee Innovation and Proprietary Information Agreement or (as applicable) arising out of other agreements (such as, but not limited to, the Services Agreement between General Electric Company, a New York corporation, and our employers), and/or for other good and valuable consideration of which we acknowledge receipt, I/we,

Inventor First Name	Inventor Middle Name	Inventor Last Name		Residence Town	Residence State	Residence Country
Gregory	Terrence	GARAY	of	West Chester	OH	US
Meredith		DUBELMAN	of	Liberty Township	OH	US

Xi		YANG	of	Mason	OH	US
Tingfan		PANG	of	West Chester	OH	US
Michael	Scott	COLE	of	Dayton	OH	US
Brian	David	PRZESLAWSKI	of	Liberty Township	OH	US
Douglas	Gerard	KONITZER	of	West Chester	OH	US
Nicole		BARBA	of	Cincinnati	OH	US
Kirk		GALLIER	of	Cincinnati	OH	US
Brian		KEITH	of	Cincinnati	OH	US

GE Docket No. 320596

hereby sell and assign to:

Name of Company: <i>General Electric Company</i>
Entity Type (optional): <i>New York corporation</i>
Address: <i>1 River Road, Schenectady, New York 12345 USA</i>

herein referred to as "Company", its successors and assigns our entire respective rights, titles and interests in and to the invention and improvements made or conceived by us described in the application(s) listed above and in the following table:

Country of Filing	Type of Filing	Application Number	Filing Date	Title

(We hereby authorize and request the Company or its delegated attorneys or agents to insert above the application number and filing date of the application(s) when known.)

and any and all applications for patent and patents therefrom in any and all countries, including all divisions, continuations, continuations-in-part, reexaminations, renewals, and reissues thereof, and all rights of priority resulting from the filing of the application(s), and authorize and request any official whose duty it is to issue patents, to issue any patent on the inventions and improvements resulting therefrom to the Company, or its successors or assigns, and agree that on request and without further consideration, we will communicate to the Company or its representatives or nominees any facts known to us respecting the inventions and improvements and testify in any legal proceeding, make all rightful oaths, sign all lawful papers and execute all instruments or documents required or requested for the making and prosecution of any applications of any type for patent, utility model, or other similar rights in all countries including, but not limited to, any provisional, non-provisional, continuation, continuation-in-part, divisional, renewal or substitute thereof, for any derivation proceedings relating thereto, and, as to any patents that issue from such applications, for any supplemental examination, derivation proceeding, opposition, post grant review, reissue, re-examination, inter partes review, or extension thereof, and generally do everything possible to aid the Company, its successors, assigns, and nominees to obtain and enforce proper patent protection for the invention and its improvements in all countries.

Remuneration claims of the inventor(s)/assignor(s) potentially arising from German Law on Employee Inventions, or any other respective country law, remain unaffected by this assignment.

INVENTOR 1

Signature: Gregory T. Garay Date: 1/18/2018  
Gregory Terrence GARAY

Witnessed by: [Signature] Date: 1/18/2018  
Signature

Ben Christopher Jones  
Printed Name of Witness

Witnessed by: [Signature] Date: 1/18/2018  
Signature

DANIEL ENDRICOTT OSGOOD  
Gregory Terrence GARAY

**SECTION BELOW IS FOR USE ONLY IF SIGNING IN PRESENCE OF A NOTARY**

\_\_\_\_\_ Date: \_\_\_\_\_

Inventor Name

STATE OF

ss.

COUNTY OF

This \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_ before me personally came the above-named Gregory Terrence GARAY, to me personally known as the individual who executed the foregoing assignment, who acknowledged to me that he/she executed the same of his/her own free will for the purposes therein set forth.

Seal

\_\_\_\_\_

(Notary Public)

INVENTOR 2

Signature: Meredith Dubelman Date: 1/22/18  
Meredith DUBELMAN

Witnessed by: [Signature] Date: 1/22/18  
Signature

Christopher Barnhill  
Printed Name of Witness

Witnessed by: [Signature] Date: 1/22/18  
Signature

Stephanie DePalma  
Printed Name of Witness

**SECTION BELOW IS FOR USE ONLY IF SIGNING IN PRESENCE OF A NOTARY**

\_\_\_\_\_ Date: \_\_\_\_\_  
Meredith DUBELMAN

STATE OF

ss.

COUNTY OF

This \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_ before me personally came the above-named Meredith DUBELMAN, to me personally known as the individual who executed the foregoing assignment, who acknowledged to me that he/she executed the same of his/her own free will for the purposes therein set forth.

Seal

\_\_\_\_\_

(Notary Public)

INVENTOR 3

Signature:  
XI YANG

*Xi Yang*

Date:

*1/11/2018*

Witnessed by:

*William Murphy*  
Signature

Date:

*1/19/2018*

*WILLIAM MURPHY*

Printed Name of Witness

Witnessed by:

*Brian Graham*  
Signature

Date:

*1/19/2018*

*Brian Graham*

Printed Name of Witness

**SECTION BELOW IS FOR USE ONLY IF SIGNING IN PRESENCE OF A NOTARY**

Date:

\_\_\_\_\_  
XI YANG

STATE OF

ss.

COUNTY OF

This \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_ before me personally came the above-named XI YANG, to me personally known as the Individual who executed the foregoing assignment, who acknowledged to me that he/she executed the same of his/her own free will for the purposes therein set forth.

Seal

\_\_\_\_\_  
(Notary Public)

GE Docket No. 320595

INVENTOR :

Signature: Tingfan FANG  
Tingfan FANG

Date: 1/23/2018

Witnessed by: [Signature]  
Signature

Date: 1/23/2018

Pam Christine Jones  
Printed Name of Witness

Witnessed by: [Signature]  
Signature

Date: 1/23/2018

Erin N BARBER  
Printed Name of Witness

**SECTION BELOW IS FOR USE ONLY IF SIGNING IN PRESENCE OF A NOTARY**

\_\_\_\_\_  
Tingfan FANG

Date: \_\_\_\_\_

STATE OF \_\_\_\_\_

ss.

COUNTY OF \_\_\_\_\_

This \_\_\_\_\_ day of \_\_\_\_\_ before me personally came the above-named Tingfan FANG, to me personally known as the individual who executed the foregoing assignment, who acknowledged to me that he/she executed the same of his/her own free will for the purposes therein set forth.

Soar

\_\_\_\_\_

(Notary Public)

INVENTOR 5

Signature: \_\_\_\_\_  
Michael Scott COLE

Date: 17 JAN 2018

Witnessed by: Taryn Hewitt  
Signature

Date: 01/17/18

Taryn Hewitt  
Printed Name of Witness

Witnessed by: Dylan Becker  
Signature

Date: 1/17/18

Dylan Becker  
Printed Name of Witness

**SECTION BELOW IS FOR USE ONLY IF SIGNING IN PRESENCE OF A NOTARY**

\_\_\_\_\_  
Michael Scott COLE

Date: \_\_\_\_\_

STATE OF \_\_\_\_\_  
COUNTY OF \_\_\_\_\_ ss.

This \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_ before me personally came the above-named Michael Scott COLE, to me personally known as the individual who executed the foregoing assignment, who acknowledged to me that he/she executed the same of his/her own free will for the purposes therein set forth.

Seal

\_\_\_\_\_  
(Notary Public)



INVENTOR 7

Signature: Douglas Gerard KONTITZER Date: 1/9/18  
Douglas Gerard KONTITZER

Witnessed by: Mark Gorman Date: 1/9/18  
Signature

MARK GORMAN  
Printed Name of Witness

Witnessed by: D'Arcy S. Stone Date: 9 January 2018  
Signature

D'Arcy S. Stone  
Printed Name of Witness

**SECTION BELOW IS FOR USE ONLY IF SIGNING IN PRESENCE OF A NOTARY**

\_\_\_\_\_  
Date: \_\_\_\_\_  
Douglas Gerard KONTITZER

STATE OF \_\_\_\_\_  
COUNTY OF \_\_\_\_\_ ss.

This \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_ before me personally came the above-named Douglas Gerard KONTITZER, to me personally known as the individual who executed the foregoing assignment, who acknowledged to me that he/she executed the same of his/her own free will for the purposes therein set forth.

Seal  
\_\_\_\_\_

(Notary Public)

INVENTOR 8

Signature: [Signature] Date: 1/23/2018

**Nicole BARBA**

Witnessed by: [Signature] Date: 1/23/2018  
Signature

Brian Schaldach  
Printed Name of Witness

Witnessed by: [Signature] Date: 1-23-2018  
Signature

Caroon Ehteshami  
Printed Name of Witness

**SECTION BELOW IS FOR USE ONLY IF SIGNING IN PRESENCE OF A NOTARY**

\_\_\_\_\_  
Nicole BARBA Date: \_\_\_\_\_

STATE OF \_\_\_\_\_  
COUNTY OF \_\_\_\_\_ ss.

This \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_ before me personally came the above-named **Nicole BARBA**, to me personally known as the individual who executed the foregoing assignment, who acknowledged to me that he/she executed the same of his/her own free will for the purposes therein set forth.

Seal

\_\_\_\_\_  
(Notary Public)

INVENTOR 9

Signature: \_\_\_\_\_

*[Handwritten Signature]*

Date: \_\_\_\_\_

*JAN 9 2018*

Kirk GALLIER

Witnessed by: \_\_\_\_\_

*[Handwritten Signature]*  
Signature

Date: \_\_\_\_\_

*01/09/2018*

Printed Name of Witness

*YO-LIANG LIN*

Witnessed by: \_\_\_\_\_

*[Handwritten Signature]*  
Signature

Date: \_\_\_\_\_

*1/9/18*

Printed Name of Witness

*David A. Frey*

**SECTION BELOW IS FOR USE ONLY IF SIGNING IN PRESENCE OF A NOTARY**

\_\_\_\_\_  
Kirk GALLIER

Date: \_\_\_\_\_

STATE OF \_\_\_\_\_

ss. \_\_\_\_\_

COUNTY OF \_\_\_\_\_

This \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_ before me personally came the above-named **Kirk GALLIER**, to me personally known as the individual who executed the foregoing assignment, who acknowledged to me that he/she executed the same of his/her own free will for the purposes therein set forth.

Seal

\_\_\_\_\_

(Notary Public)

INVENTOR 10

Signature: Brian D. Keith Date: 1/23/2018

Brian KEITH

Witnessed by: [Signature] Date: 1/23/2018  
Signature

Jamil Grant  
Printed Name of Witness

Witnessed by: [Signature] Date: 1/23/2018  
Signature

HARJIT SHURA  
Printed Name of Witness

**SECTION BELOW IS FOR USE ONLY IF SIGNING IN PRESENCE OF A NOTARY**

\_\_\_\_\_  
Brian KEITH Date: \_\_\_\_\_

STATE OF \_\_\_\_\_  
COUNTY OF \_\_\_\_\_ ss.

This \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_ before me personally came the above-named Brian KEITH, to me personally known as the individual who executed the foregoing assignment, who acknowledged to me that he/she executed the same of his/her own free will for the purposes therein set forth.

Seal  
\_\_\_\_\_

(Notary Public)