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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	JMG001-02
		Application Number	
Title of Invention	Appliance Immersion Cooling System		
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	
	Christopher	L.	Boyd		
Residence Information (Select One) • US Residency Non US Residency Active US Military Service					
City	Austin	State/Province	TX	Country of Residence	US
Mailing Address of Inventor:					
Address 1	1309 Bonham Terrace				
Address 2					
City	Austin	State/Province	TX		
Postal Code	78704	Country	US		
Inventor	2				Remove
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	James	P.	Koen		
Residence Information (Select One) • US Residency Non US Residency Active US Military Service					
City	Round Rock	State/Province	TX	Country of Residence	US
Mailing Address of Inventor:					
Address 1	2302 Falcon Drive				
Address 2					
City	Round Rock	State/Province	TX		
Postal Code	78681	Country	US		
Inventor	3				Remove
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	David	Christopher	Laguna		
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		JMG001-02	
		Application Number			
Title of Invention		Appliance Immersion Cooling System			

City	Austin	State/Province	TX	Country of Residence	US
------	--------	----------------	----	----------------------	----

Mailing Address of Inventor:

Address 1	2011 E. 6th Street				
Address 2					
City	Austin	State/Province	TX		
Postal Code	78702	Country	US		
Inventor	4				Remove
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Thomas	R.	Turner		
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service					
City	Georgetown	State/Province	TX	Country of Residence	US

Mailing Address of Inventor:

Address 1	4210 Malaga Dr.				
Address 2					
City	Georgetown	State/Province	TX		
Postal Code	78628	Country	US		
Inventor	5				Remove
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Kenneth	D.	Swinden		
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service					
City	Hutto	State/Province	TX	Country of Residence	US

Mailing Address of Inventor:

Address 1	132 Mustang Creek North Loop				
Address 2					
City	Hutto	State/Province	TX		
Postal Code	78634	Country	US		
Inventor	6				Remove
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Mario	Conti	Garcia		
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service					
City	Austin	State/Province	TX	Country of Residence	US

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	JMG001-02
		Application Number	
Title of Invention	Appliance Immersion Cooling System		

Mailing Address of Inventor:				
Address 1	9624 Woody Ridge View			
Address 2				
City	Austin	State/Province	TX	
Postal Code	78730	Country i	US	
Inventor	7			Remove
Legal Name				
Prefix	Given Name	Middle Name	Family Name	Suffix
	John	Charles	Tribou	
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service				
City	Austin	State/Province	TX	Country of Residence
				US

Mailing Address of Inventor:				
Address 1	9109 Middlebe Dr.			
Address 2				
City	Austin	State/Province	TX	
Postal Code	78750	Country i	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	44070		
Email Address	jvm@jvmyers.com	Add Email	Remove Email

Application Information:

Title of the Invention	Appliance Immersion Cooling System		
Attorney Docket Number	JMG001-02	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	7	Suggested Figure for Publication (if any)	1

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	JMG001-02
		Application Number	
Title of Invention	Appliance Immersion Cooling System		

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
14/355,533	2014-04-30	US

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.

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	44070		

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		Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	14355533	2014-04-30

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.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	JMG001-02
		Application Number	
Title of Invention	Appliance Immersion Cooling System		
Prior Application Status	Pending	Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
14355533	a 371 of international	PCT/US13/75126	2013-12-13
Prior Application Status		Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
PCT/US13/75126	Claims benefit of provisional	61/832211	2013-06-07
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).

Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Access Code ⁱ (if applicable)
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	JMG001-02
		Application Number	
Title of Invention	Appliance Immersion Cooling System		

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	JMG001-02
		Application Number	
Title of Invention	Appliance Immersion Cooling System		

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	Midas Green Technology, LLC		
Mailing Address Information For Applicant:			
Address 1	1905 E 6th St.		
Address 2	Suite 150		
City	Austin	State/Province	TX
Country	US	Postal Code	78702
Phone Number	5128445131	Fax Number	
Email Address	jim@midasgreentech.com		
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.

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	JMG001-02
		Application Number	
Title of Invention	Appliance Immersion Cooling System		

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:

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	/Jeffrey Van Myers/		Date (YYYY-MM-DD)	2019-01-09
First Name	Jeffrey Van	Last Name	Myers	Registration Number 27362
Additional Signature may be generated within this form by selecting the Add button.				Add

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.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	JMG001-02
		Application Number	
Title of Invention	Appliance Immersion Cooling System		

This collection of information is required by 37 CFR 1.76. 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 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet 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.**

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 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 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 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.

Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		Appliance Immersion Cooling System		
First Named Inventor/Applicant Name:		Christopher L. Boyd		
Filer:		Jeffrey Van Myers		
Attorney Docket Number:		JMG001-02		
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	75	75
UTILITY SEARCH FEE	2111	1	330	330
UTILITY EXAMINATION FEE	2311	1	380	380
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				785

Electronic Acknowledgement Receipt	
EFS ID:	34808811
Application Number:	16243732
International Application Number:	
Confirmation Number:	9248
Title of Invention:	Appliance Immersion Cooling System
First Named Inventor/Applicant Name:	Christopher L. Boyd
Customer Number:	44070
Filer:	Jeffrey Van Myers
Filer Authorized By:	
Attorney Docket Number:	JMG001-02
Receipt Date:	09-JAN-2019
Filing Date:	
Time Stamp:	16:31:54
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	JMG006_ADS_190109.pdf	1256964 824588d231cb3beaead7260d82710d7d6d404a36	no	10

Warnings:

Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	34994	no	2
			3eb2be1a78ce2a2016555fa627f1b1e20649bc90		
Warnings:					
Information:					
Total Files Size (in bytes):			1291958		
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. <u>New Applications Under 35 U.S.C. 111</u> 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. <u>National Stage of an International Application under 35 U.S.C. 371</u> 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. <u>New International Application Filed with the USPTO as a Receiving Office</u> 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

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
16/243,732	01/09/2019		785	JMG001-02		

CONFIRMATION NO. 9248

FILING RECEIPT



44070
J. V. MYERS & ASSOCIATES, P.C.
P. O. BOX 130
DRIFTWOOD, TX 78619

Date Mailed: 02/05/2019

Receipt is acknowledged of this non-provisional 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 APPLICANT, 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 Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections 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**

Inventor(s)

Christopher L. Boyd, Austin, TX;
James P. Koen, Round Rock, TX;
David Christopher Laguna, Austin, TX;
Thomas R. Turner, Georgetown, TX;
Kenneth D. Swinden, Hutto, TX;
Mario Conti Garcia, Austin, TX;
John Charles Tribou, Austin, TX;

Applicant(s)

Midas Green Technology, LLC, Austin, TX;

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 14/355,533 04/30/2014 ABN
which is a 371 of PCT/US2013/075126 12/13/2013
which claims benefit of 61/832,211 06/07/2013

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

page 1 of 4

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: 02/01/2019

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 16/243,732**

Projected Publication Date: To Be Determined - pending completion of Missing Parts

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

Appliance Immersion Cooling System

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.

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page 2 of 4

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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
16/243,732	01/09/2019	Christopher L. Boyd	JMG001-02

CONFIRMATION NO. 9248

FORMALITIES LETTER



0000000105565105

44070

J. V. MYERS & ASSOCIATES, P.C.
P. O. BOX 130
DRIFTWOOD, TX 78619

Date Mailed: 02/05/2019

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

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).

- This application was filed by reference to a previously filed application in accordance with 37 CFR 1.57(a). Applicant must submit a copy of the specification and drawings from the previously filed application, an English translation of the previously filed application and the fee required by 37 CFR 1.17(i) if it is in a language other than English, and the surcharge required by 37 CFR 1.16(f) to avoid abandonment. If the copy of the specification does not include at least one claim, then applicant must also submit at least one claim. If more than 3 independent claims, more than 20 total claims, and/or a multiple dependent claim are submitted, excess claims fees are required at the time of submission of such claims (see 37 CFR 1.16(h)-(j)). In addition, a certified copy of the previously filed application must be filed in the Office unless the previously filed application is an application filed under 35 U.S.C. 111 or 363, or the previously filed application is a foreign priority application and the conditions set forth in 37 CFR 1.55(h) are satisfied with respect to such foreign priority application. If a certified copy is required, it must be filed within the later of four months from the filing date of the application or sixteen months from the filing date of the previously filed application (unless it is accompanied by a petition including a showing of good and sufficient cause for the delay and the petition fee set forth in 37 CFR 1.17(g)).
- Surcharge as set forth in 37 CFR 1.16(f) must be submitted.
The surcharge is due for any one of:
 - late submission of the basic filing fee, search fee, or examination fee,
 - late submission of inventor's oath or declaration,
 - filing an application that does not contain at least one claim on filing, or
 - submission of an application filed by reference to a previously filed application.

SUMMARY OF FEES DUE:

The fee(s) required within **TWO MONTHS** from the date of this Notice to avoid abandonment is/are itemized below. Small entity discount is in effect. If applicant is qualified for micro entity status, an acceptable Certification

of Micro Entity Status must be submitted to establish micro entity status. (See 37 CFR 1.29 and forms PTO/SB/15A and 15B.)

- \$ 80 surcharge.
- \$(0) previous unapplied payment amount.
- \$ 80 TOTAL FEE BALANCE DUE.

Items Required To Avoid Processing Delays:

Applicant is notified that the above-identified application contains the deficiencies noted below. No period for reply is set forth in this notice for correction of these deficiencies. However, if a deficiency relates to the inventor's oath or declaration, the applicant must file an oath or declaration in compliance with 37 CFR 1.63, or a substitute statement in compliance with 37 CFR 1.64, executed by or with respect to each actual inventor no later than the expiration of the time period set in the "Notice of Allowability" to avoid abandonment. See 37 CFR 1.53(f).

- A properly executed inventor's oath or declaration has not been received for the following inventor(s):
 - Christopher L. Boyd
 - James P. Koen
 - David Christopher Laguna
 - Thomas R. Turner
 - Kenneth D. Swinden
 - Mario Conti Garcia
 - John Charles Tribou

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web, including a copy of this Notice and selecting the document description "Applicant response to Pre-Exam Formalities Notice".
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For more information about EFS-Web please call the USPTO Electronic Business Center at 1-866-217-9197 or visit our website at <http://www.uspto.gov/ebc>.

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Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/tnguyen/

PATENT APPLICATION FEE DETERMINATION RECORD						Application or Docket Number 16/243,732			
Substitute for Form PTO-875									
APPLICATION AS FILED - PART I									
(Column 1)		(Column 2)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY			
FOR	NUMBER FILED	NUMBER EXTRA		RATE(\$)	FEE(\$)	RATE(\$)	FEE(\$)		
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	75	N/A			
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A		N/A	330	N/A			
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	380	N/A			
TOTAL CLAIMS (37 CFR 1.16(i))	0	minus 20 =	*	x 50 =	0.00	OR			
INDEPENDENT CLAIMS (37 CFR 1.16(h))	0	minus 3 =	*	x 230 =	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				
				TOTAL	785	TOTAL			
* If the difference in column 1 is less than zero, enter "0" in column 2.									
APPLICATION AS AMENDED - PART II									
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)	RATE(\$)	ADDITIONAL FEE(\$)		
	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))					OR			
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					OR			
				TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE		
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)	RATE(\$)	ADDITIONAL FEE(\$)		
	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))					OR			
	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.									

SCORE Placeholder Sheet for IFW Content

Application Number: 16243732

Document Date: 02/10/2019

The presence of this form in the IFW record indicates that the following document type was received in electronic format on the date identified above. This content is stored in the SCORE database.

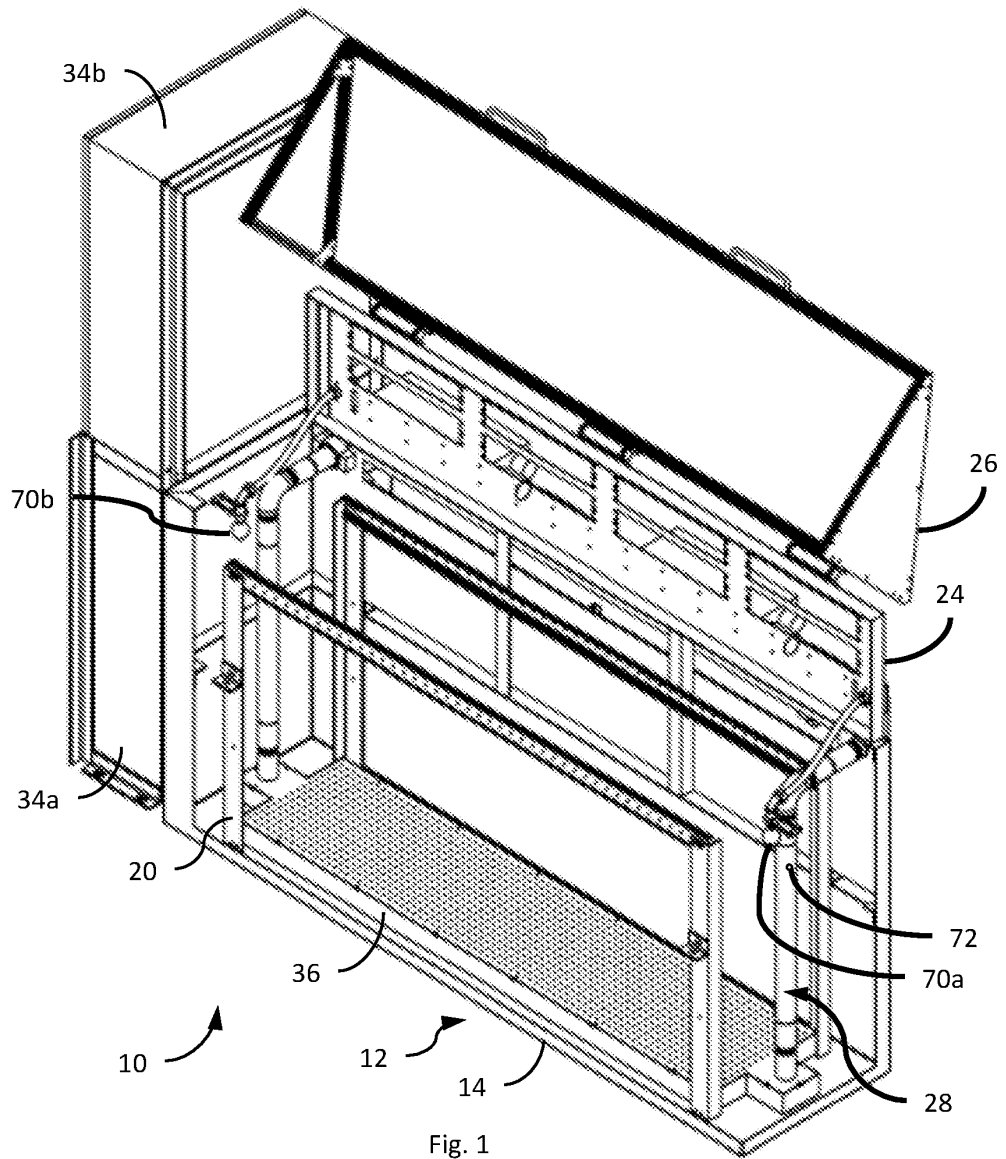
Since this was an electronic submission, there is no physical artifact folder, no artifact folder is recorded in PALM, and no paper documents or physical media exist. The TIFF images in the IFW record were created from the original documents that are stored in SCORE.

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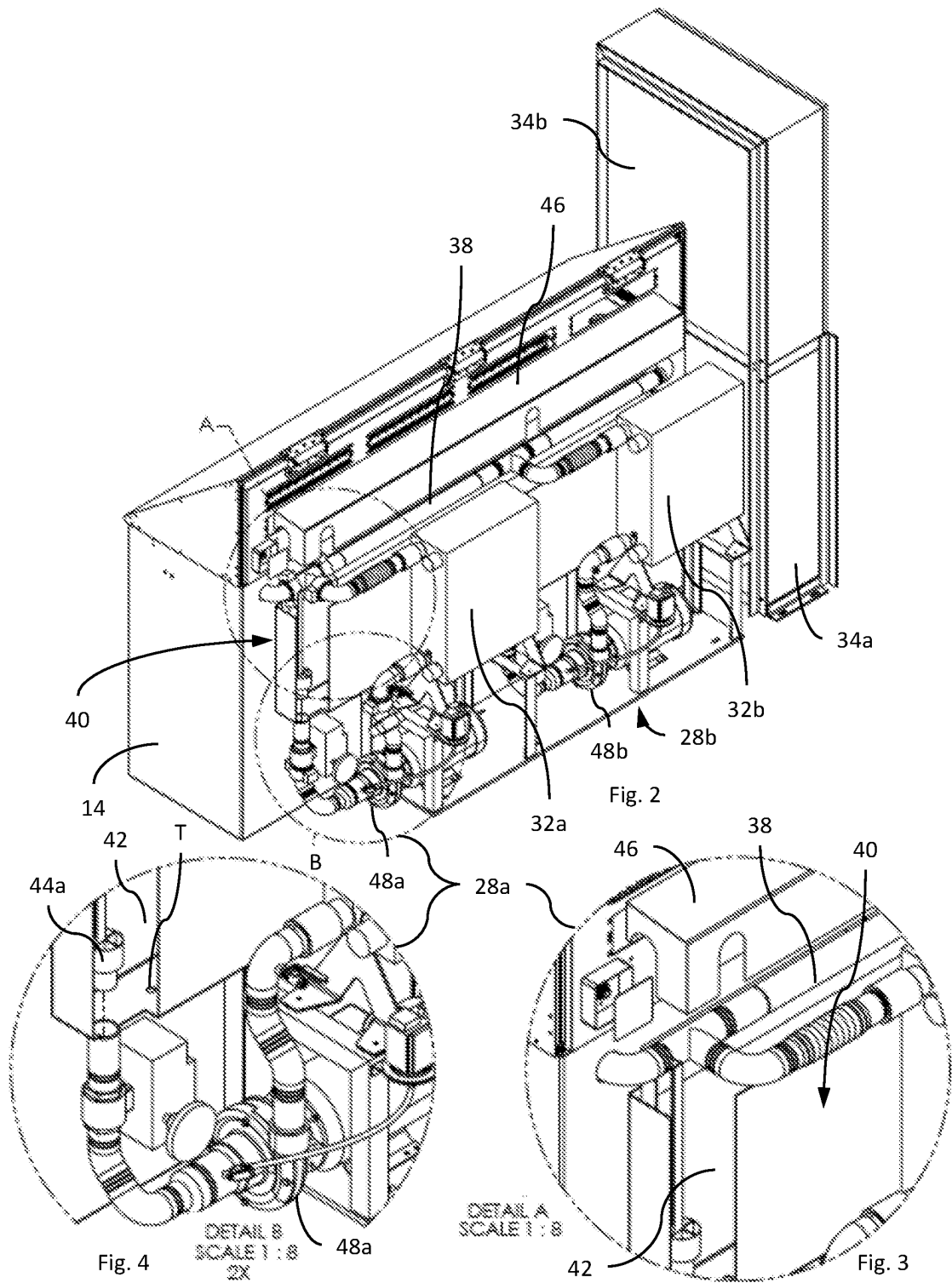
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Form Revision Date: August 26, 2013



1/xx



2/xx

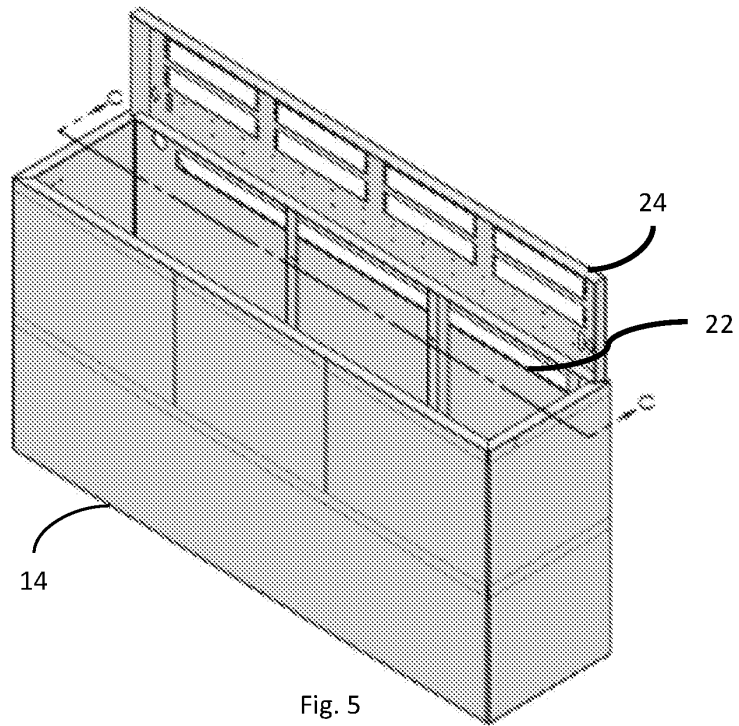
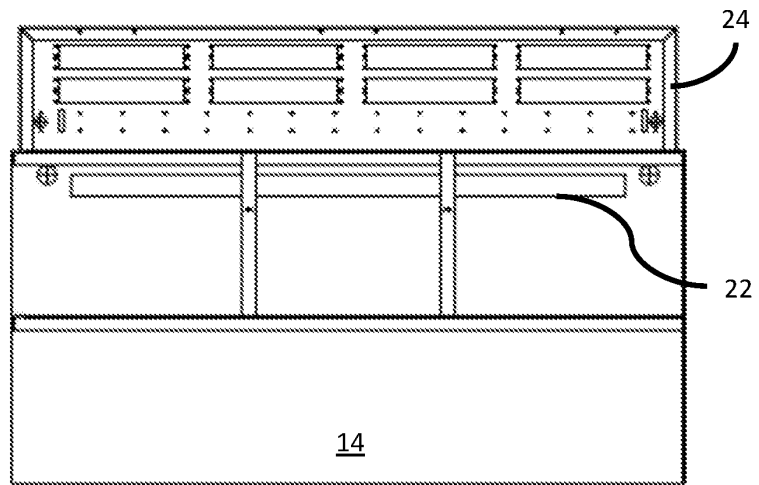


Fig. 5



Section C-C

Fig. 6

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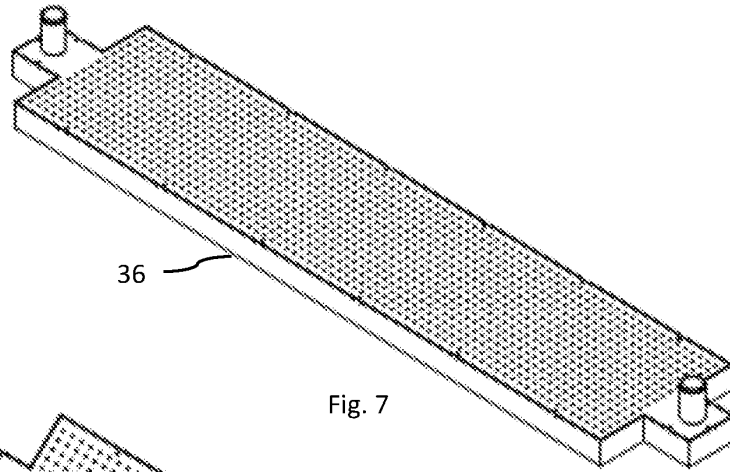


Fig. 7

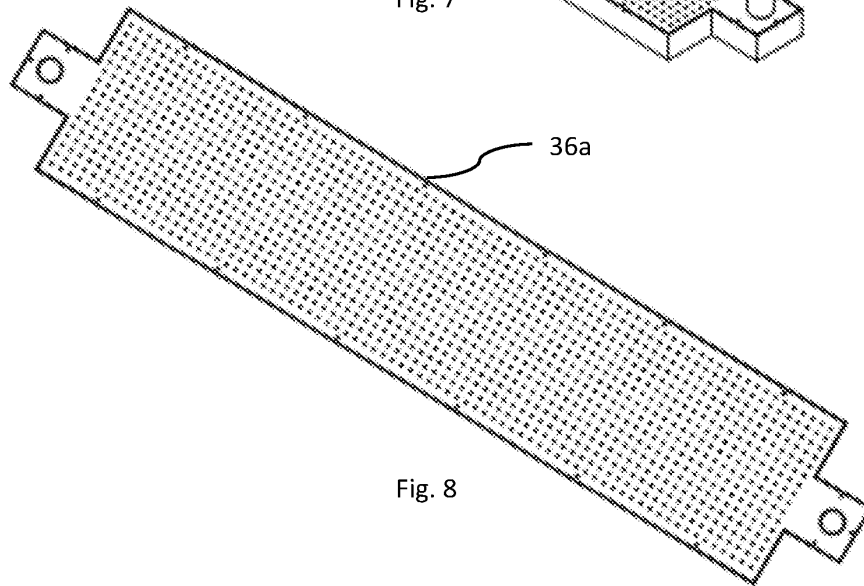


Fig. 8

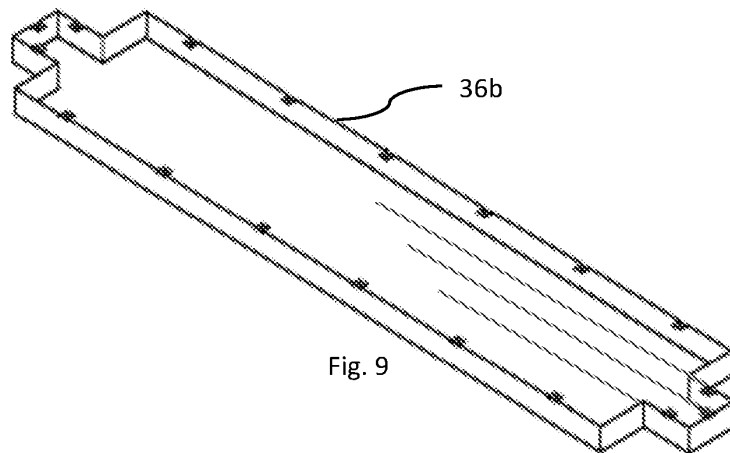
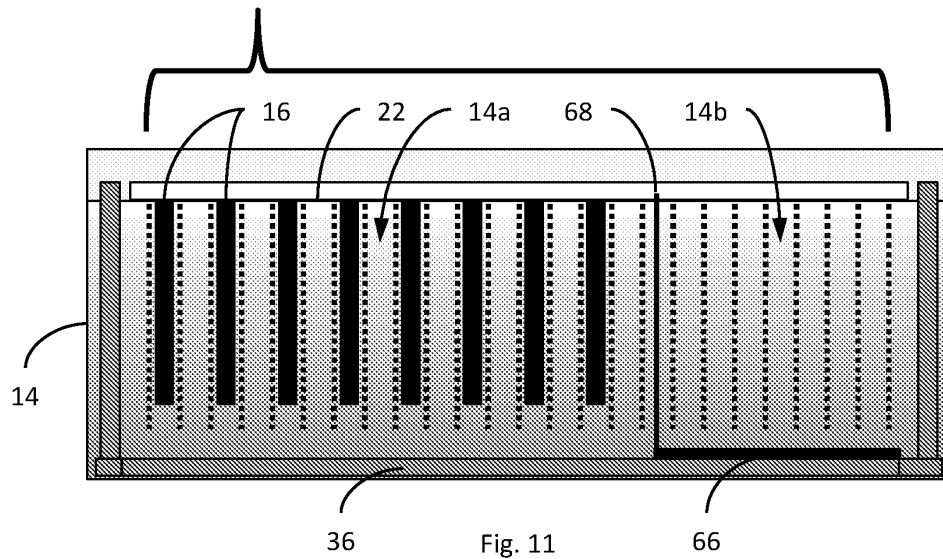
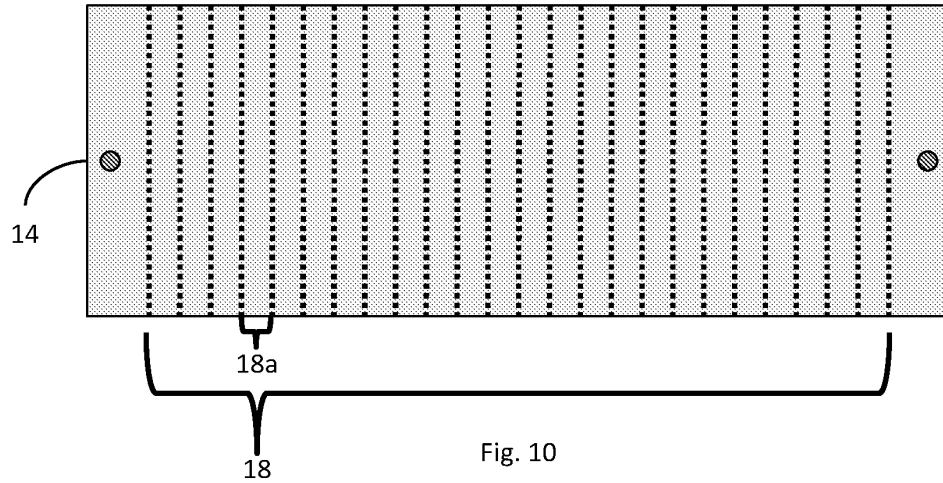


Fig. 9

A/XX



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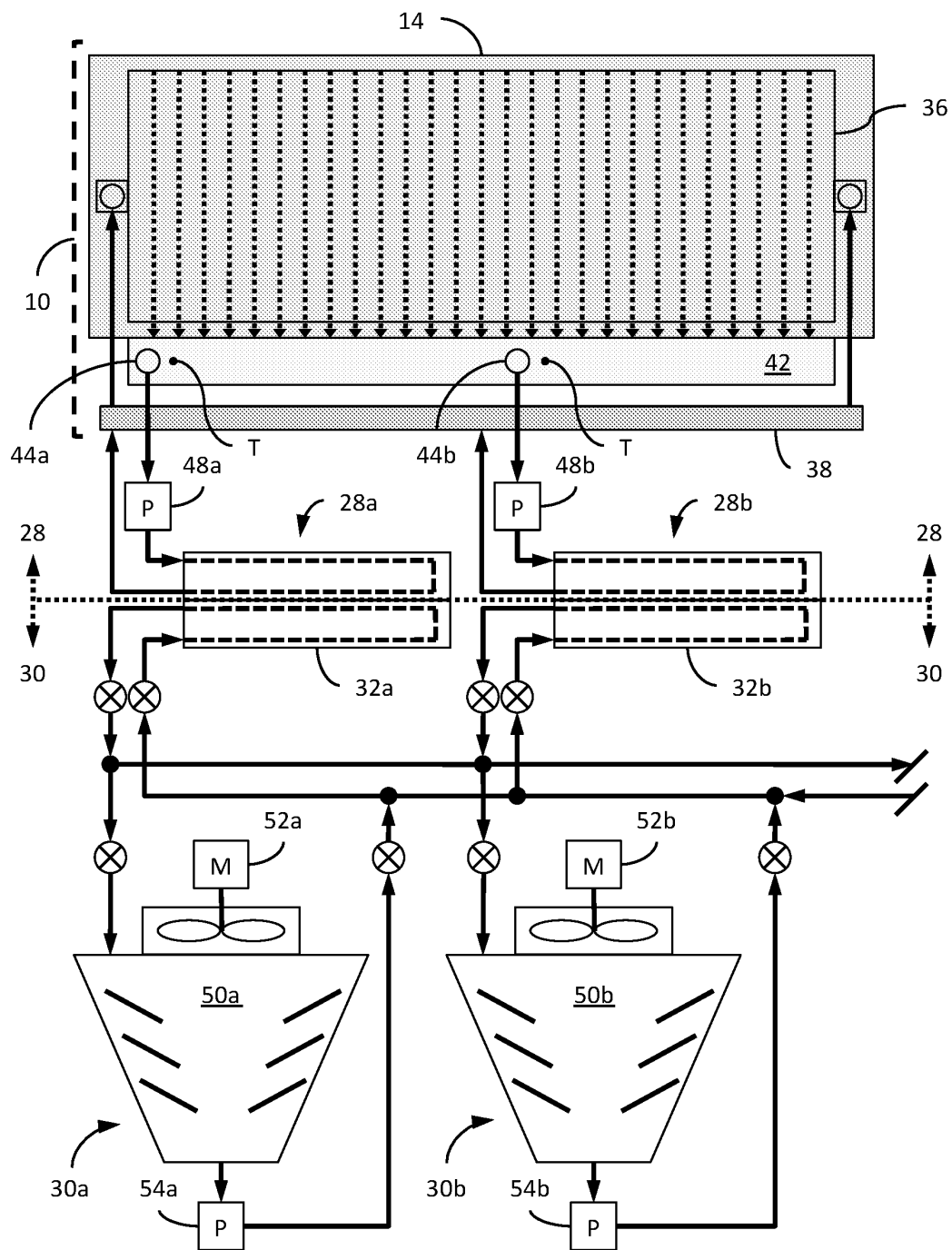


Fig. 12

6/xx

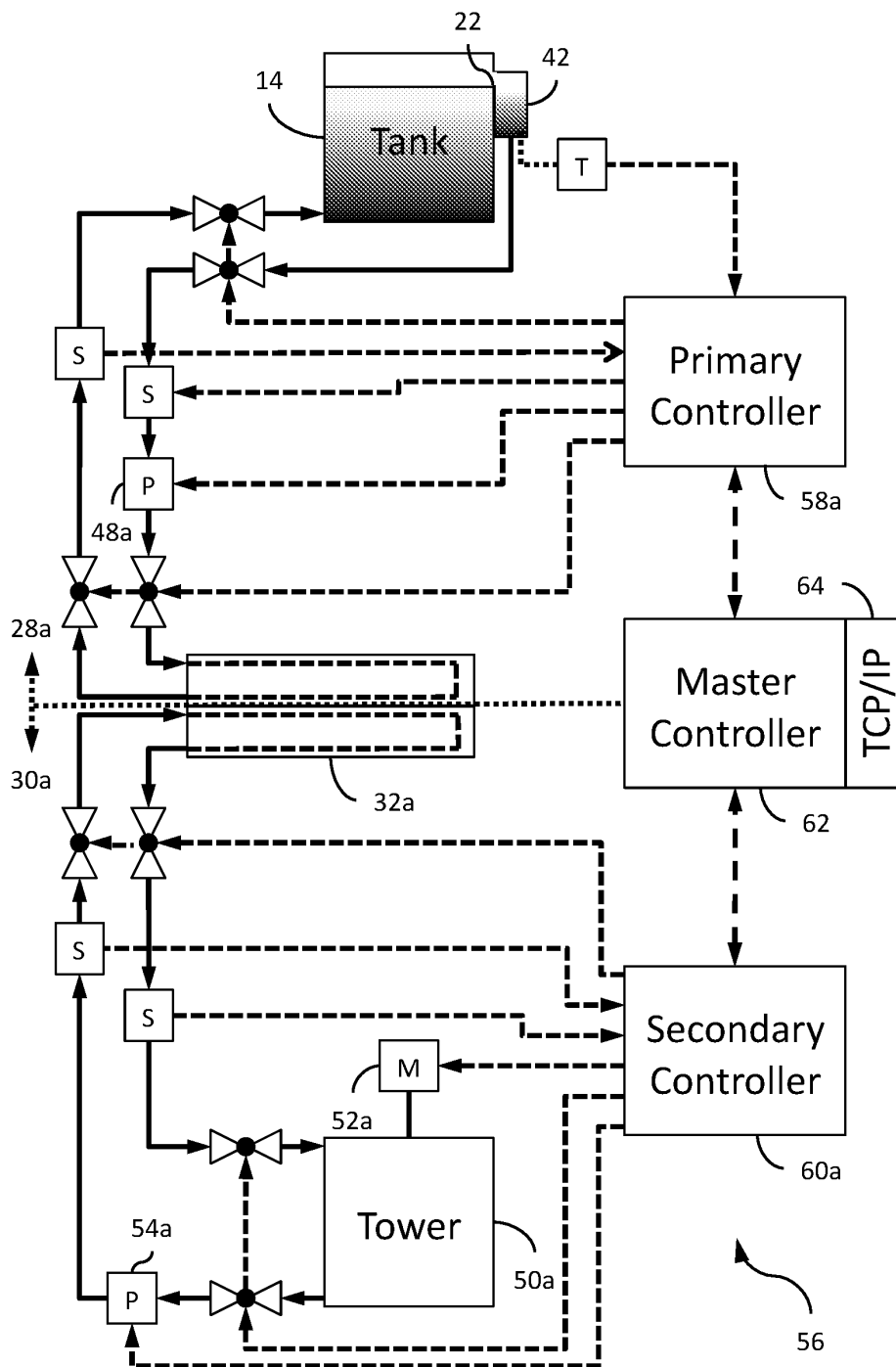


Fig. 13

7/xx

Electronic Patent Application Fee Transmittal				
Application Number:		16243732		
Filing Date:		09-Jan-2019		
Title of Invention:		Appliance Immersion Cooling System		
First Named Inventor/Applicant Name:		Christopher L. Boyd		
Filer:		Jeffrey Van Myers		
Attorney Docket Number:		JMG001-02		
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
LATE FILING FEE FOR OATH OR DECLARATION	2051	1	80	80
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 (\$)				80

Electronic Acknowledgement Receipt	
EFS ID:	35106698
Application Number:	16243732
International Application Number:	
Confirmation Number:	9248
Title of Invention:	Appliance Immersion Cooling System
First Named Inventor/Applicant Name:	Christopher L. Boyd
Customer Number:	44070
Filer:	Jeffrey Van Myers
Filer Authorized By:	
Attorney Docket Number:	JMG001-02
Receipt Date:	10-FEB-2019
Filing Date:	09-JAN-2019
Time Stamp:	11:37:17
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	EFT
Payment was successfully received in RAM	\$80
RAM confirmation Number	021119INTEFSW11381200
Deposit Account	
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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	Specification	JMG001_s_131213.pdf	147468	no	19
			3170e085ffd37edfbc10403abf9fe0f6d8fd5907		
Warnings:					
Information:					
2	Drawings-only black and white line drawings	JMG001_d_131213.pdf	300827	no	7
			1474519164b937e8626ca696d1ed4663503b56ed		
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30496	no	2
			2a9b91a4f7d508d45cf4a1a1ab6be261c539dc1		
Warnings:					
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Total Files Size (in bytes):			478791		
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. <u>New Applications Under 35 U.S.C. 111</u> 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. <u>National Stage of an International Application under 35 U.S.C. 371</u> 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. <u>New International Application Filed with the USPTO as a Receiving Office</u> 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.					

APPLIANCE IMMERSION COOLING SYSTEM

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is related to the following Provisional Applications:

1. Serial Number 61/737,200, filed 14 December 2012 ("*First Parent Provisional*"); and
2. Serial Number 61/832,211, filed 7 June 2013 ("*Second Parent Provisional*");

and hereby claims benefit of the filing dates thereof pursuant to 37 CFR §1.78(a)(4). (Collectively, "*Parent Provisionals*"). The subject matter of the Parent Provisionals, each in its entirety, is expressly incorporated herein by reference.

BACKGROUND OF THE INVENTION

1. Field of the Invention.

[0002] The present invention relates generally to electrical appliance cooling systems, and, in particular, to an improved appliance immersion cooling system and method of operation.

2. Description of the Related Art.

[0003] In general, in the descriptions that follow, we will *italicize* the first occurrence of each special term of art which should be familiar to those skilled in the art of *immersion cooling* systems. In addition, when we first introduce a term that we believe to be new or that we will use in a context that we believe to be new, we will **bold** the term and provide the definition that we intend to apply to that term.

[0004] US 4,590,538, "Immersion Cooled High Density Electronic Assembly", Cray (filed 18 November 1981 and issued 20 May 1986) ("Cray"), is an early example of an immersion system for cooling electronic components during normal operation. On information and belief, the machine disclosed therein was the Cray-2 super-computer ("Cray-2") manufactured by Cray Research, Inc. ("Cray Research"), of Chippewa Falls, Wisconsin. Of particular interest to the present application is the description of the significant advantages resulting from

using an *electrically non-conductive* or *dielectric fluid* to extract heat from electronic circuit assemblies during normal operation (see, *e.g.*, col. 1, line 66 - col. 2, line 29).

[0005] On information and belief, Cray Research released, in 1985, a marketing brochure entitled "The CRAY-2 Computer System" (a copy of which is submitted herewith) describing the Cray-2. Of particular interest in this brochure is the description therein of the significant advantages resulting from using a dielectric fluid to extract heat from electronic circuit assemblies during normal operation (see, pages 10 and 13).

[0006] US 5,167,511, "High Density Interconnect Apparatus", Krajewski, *et al.* (issued 27 November 1992) ("Krajewski"), discloses another example of an immersion system for cooling electronic components during normal operation (see, *e.g.*, col. 2, lines 43-51). On information and belief, a machine implementing the Krajewski system was also marketed by Cray Research as a follow-on super-computer to the Cray-2.

[0007] One particular problem in the vertical-stack-type systems disclosed in the above references is the necessity of draining the cooling fluid whenever physical access to the electronic modules was required. In general, such an operation, besides being time consuming, requires the entire system to be switched off, especially if the component requiring attention is an essential element in the system architecture, such as the central processing unit ("CPU"). One possible solution to this problem is to immerse circuit assemblies vertically into a tank containing the cooling fluid such that each of the various assemblies can be withdrawn independently from the tank for servicing, replacement, upgrade, *etc.* One interesting example of such a system is disclosed in a web-presentation entitled "Puget Custom Computer's mineral-oil-cooled PC", by Nilay Patel ("Puget") (posted 12 May 2007 at 11:57AM; a copy of which is submitted herewith). As noted by the author, the lack of supplemental apparatus in the Puget system to extract waste heat from the oil inherently limited its operating capabilities.

[0008] Another problem with the Cray Research systems in particular is the nature and cost of the chosen cooling fluid: *fluorocarbon* liquids. As is known, other dielectric fluids, such as *mineral oil*, have better heat transfer characteristics; of course, being an oil, the use thereof does represent a greater residue problem on modules that may be repairable. Notwithstanding, the Puget system implemented precisely this design choice.

[0009] US Patent Application Publication 2011/0132579, "Liquid Submerged, Horizontal Computer Appliance Rack and Systems and Method of Cooling such a Appliance Rack", Best, *et al.* ("Best"), discloses a appliance immersion tank system, include support apparatus for extracting waste heat from the tank cooling fluid and dissipating to the environment the heat so extracted. Although an improvement in several respects over the prior art discussed above, this system exhibits, *inter alia*, the following problems: generally non-uniform flow patterns through the several appliance slots within the tank, potentially resulting in uneven cooling across all slots; constricted dielectric fluid supply and return ports resulting in unnecessarily high fluid flow velocities at the respective points of connection to the tank; poor *scalability*; and inadequate attention to *fail-soft operation*.

[0010] The subject matter of all of the prior art references discussed above, each in its entirety, is expressly incorporated herein by reference.

[0011] We submit that what is needed is an improved appliance tank immersion system and method of operation. In particular, we submit that such a system should provide performance generally comparable to the best prior art techniques but more efficiently and effectively than known implementations of such prior art techniques.

BRIEF SUMMARY OF THE INVENTION

[0012] In accordance with a preferred embodiment of our invention, ...

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0013] Our invention may be more fully understood by a description of certain preferred embodiments in conjunction with the attached drawings in which:

[0014] Fig. 1 illustrates, in partial cut-away form, a front perspective of a tank module of an appliance immersion cooling system constructed in accordance with our invention;

[0015] Fig. 2 illustrates a rear perspective of the tank module shown in Fig. 1;

[0016] Fig. 3 illustrates a close-up perspective of a detail A of Fig. 2;

[0017] Fig. 4 illustrates a close-up perspective of a detail B of Fig. 2;

[0018] Fig. 5 illustrates, in perspective view, several details of the tank shown in Fig. 1, with special emphasis on the dielectric fluid recovery weir integrated into the long rear wall of the tank;

[0019] Fig. 6 illustrates, in cross-section view, the section C-C in Fig. 5;

[0020] Fig. 7 illustrates, in perspective view, the plenum facility shown in Fig. 1;

[0021] Fig. 8 illustrates, in top plan view, the orifice plate portion of the plenum facility shown in Fig. 7;

[0022] Fig. 9 illustrates, in perspective view, the chamber portion of the plenum facility shown in Fig. 7;

[0023] Fig. 10 illustrates, in top plan view, a plurality of appliance slots distributed vertically along, and extending transverse to, a long axis of the tank of Fig. 1;

[0024] Fig. 11 illustrates, in longitudinal cross-sectional view, the plurality of appliance slots distributed vertically along, and extending transverse to, the long axis of the tank of Fig. 1;

[0025] Fig. 12 illustrates, in flow schematic form, one instantiation of a flow arrangement suitable for implementing our invention; and

[0026] Fig. 13 illustrates, in control schematic form, one instantiation of a flow control facility suitable for implementing our invention.

[0027] In the drawings, similar elements will be similarly numbered whenever possible. However, this practice is simply for convenience of reference and to avoid unnecessary proliferation of numbers, and is not intended to imply or

suggest that our invention requires identity in either function or structure in the several embodiments.

DETAILED DESCRIPTION OF THE INVENTION

[0028] Shown in Fig. 1 (front view) and Fig. 2 (rear view) is a tank module 10 adapted for use in an appliance immersion cooling system constructed in accordance with a preferred embodiment of our invention. For convenience of reference, we have illustrated in Fig. 1 the tank facility 12 of the immersion module 10 in partial cut-away to emphasize several important internal facilities; we have shown the tank facility 12 in isolation in Fig. 5. In general, the tank facility 12 comprises: a tank 14 adapted to immerse in a dielectric fluid a plurality of electrical appliances 16, *e.g.*, contemporary computer *servers* (see, *e.g.*, Fig. 11), each in a respective appliance slot 18a distributed vertically along, and extending transverse to, a long axis of the tank 14 (see, generally, Fig. 10); an appliance rack facility 20 of convention design adapted to suspend the appliances 16 (see, *e.g.*, Fig. 11) in respective appliance slots 18 (see, Fig. 10); a weir 22 (best seen in isolation in Fig. 5 and Fig. 6), integrated horizontally into one long wall of the tank 14 adjacent all appliance slots 18, and adapted to facilitate substantially uniform recovery of the dielectric fluid flowing through each of the appliance slots 18; an interconnect panel facility 24 attached to the upper rear edge of the tank 14 and adapted to mount various appliance *power distribution* equipment, cable interconnection panels and the like (none shown); and a cover 26 adapted to be opened and closed from the front of the tank 14 (and which may include a translucent portion to allow viewing of the interior of the tank 14 when in the closed position). In addition to the tank facility 12, the immersion module 10 comprises: a primary circulation facility 28 (portions of which are shown in both Fig. 1 and Fig. 2); a secondary fluid circulation facility 30 (of which only redundant heat exchangers 32a and 32b are shown in Fig. 2); and control equipment cabinets 34a and 34b, each adapted to accommodate the module status and control equipment associated with a respective one of the primary circulation facilities 28a and 28b (see, Fig. 13).

[0029] As can be best seen in Fig. 2, the primary circulation facility 28 (comprising redundant sub-facilities 28a and 28b) comprises both passive

(conduits, couplers, etc.) and active (valves, pumps, sensors, etc.) components; a subset of the passive components are shared, whereas, in general, the active components are duplicated and adapted to cooperate in operation as separate, redundant sub-facilities. Excluding the tank 14, the primary shared component is the plenum facility 36 (see, Fig. 1 and Fig. 7) comprising an orifice plate 36a (see, Fig. 8) and a plenum chamber 36b (see, Fig. 9). As can be seen in Fig. 1, cooled dielectric fluid is pumped into both ends of the plenum facility 36 via a shared distribution header 38 (see, Fig. 2 and Fig. 3). In general, the plenum plate 36a comprises at least one row of orifices vertically aligned with each appliance slot 18a, with the dimensions and flow rates of each set being adapted to provide substantially equal flow of the dielectric fluid upwardly into each appliance slot 18a. Preferably, each appliance slot 18a is supplied via several rows of orifices, thus generally tending to reduce the volume of the dielectric fluid exiting each orifice and to make the flow of dielectric fluid more uniform upwardly through the appliance slots 18. One further shared component is the dielectric fluid recovery facility 40 (Fig. 2) comprising a dielectric fluid recovery reservoir 42 (see, Fig. 3, Fig. 4 and Fig. 13) positioned vertically beneath the overflow lip of the weir 22 and adapted smoothly to receive the dielectric fluid as it flows over the weir 22; the dielectric fluid recovery reservoir 42 is further adapted to allow the recovered fluid to be removed from the reservoir 42 via redundant recovery ports 44a and 44b (only port 44a can be seen in Fig. 2 as the port 44b is obscured by the heat exchanger 32a; but see Fig. 12). As can be seen in both Fig. 3 and Fig. 4, we consider it desirable to provide a *vortex breaker* at the input of each of the recovery ports 44. Also, we provide a removable recovery reservoir cover 46 adapted to also cover a major portion of the distribution header 38; note that, in both Fig. 2 and Fig. 3, we have illustrated the reservoir cover 46 in a partially raised orientation so as to better depict details that would otherwise be obscured. Note that we have constructed the reservoir 42 such that the average height of dielectric fluid above the recovery ports 44 develops sufficient *hydrostatic head* to meet the requirements of the pumps 48, while also tending to minimize the likelihood of breaking suction during normal operation.

[0030] At this point in the primary circulation facility 28, we provide fully redundant sub-facilities 28a and 28b, each comprising a primary circulation pump (48a and 48b) and associated passive and active components which, collectively, provide the motive power for circulating the dielectric fluid through the shared components and tank 14. As can be generally seen, each of these sub-facilities 28a and 28b is adapted to recover the dielectric fluid exiting the tank 14 via the weir 22, re-pressurize the recovered fluid, pass the re-pressurized fluid through a respective one of the heat exchangers 32a and 32b, and then back to the plenum facility 36 via the header 38.

[0031] Shown in Fig. 12 is one flow arrangement suitable for integrating our tank module 10 into a fully redundant, appliance immersion cooling system, comprising the primary circulation facility 28 and the secondary fluid circulation facility 30. In general, the secondary fluid circulation facility 30 comprises redundant secondary circulation sub-facilities 30a and 30b, each of which is adapted to circulate a cooling fluid, *e.g.*, treated water, through the respective heat exchanger 32a and 32b to extract heat from dielectric fluid counter-circulating therethrough and to dissipate to the environment the heat so extracted. In the illustrated embodiment, each of the secondary fluid sub-facilities 30a and 30b comprise conventional cooling towers 50a (including fan facility 52a) and 50b (including fan facility 52b), and secondary circulation pumps 54a and 54b. To facilitate flexible operation in installations including multiple immersion modules 10 in combination with a plurality of secondary circulation sub-facilities 30, a common header arrangement can be implemented as illustrated in the secondary fluid circulation loop, with flow control valves located at key flow control points as is known.

[0032] Shown in Fig. 13 is a control facility 56 adapted to monitor and control the operation of both the immersion module 10 (including all active components of the primary circulation facility 28), and the secondary fluid circulation facility 30. As will be evident to those skilled in this art, efficient operation of our immersion module 10 requires continuous monitoring and control of several essential operating parameters, including fluidic temperatures, pressures, conductivity and *pH* at several points in the primary and secondary circulation loops.

Although the several sensory and control functions can be implemented using traditional dedicated hardware components, we prefer to employ at least one *programmable logic controller* ("PLC"), commercially available from any of a number of respected vendors, *e.g.*, the *Allen-Bradley* brand of PLCs from Rockwell Automation, Inc. In the instantiation illustrated in Fig. 13, we have depicted: a primary controller 58a adapted to monitor and control the operation of the primary circulation sub-facility 28a as a function of the temperature of the dielectric fluid in the tank 14; a secondary controller 60a adapted to monitor and control the operation of the secondary fluid circulation sub-facility 30a as a function of the temperature of the dielectric fluid flowing through the heat exchanger 32a; and a master controller 62 adapted to coordinate the activities of the primary controller 58a and secondary controller 60a. As can be seen, we have incorporated into the primary circulation sub-facility 28a: supply and return *sensors*, including a *temperature probe*, T, inserted into a *thermowell* (not shown) installed in the bottom of the reservoir 42 adjacent a respective return port 44a (note that, in Fig. 4, only one of the holes that receive the thermowells is illustrated, but both holes are illustrated in Fig. 12); a pair of sensor facilities, S, which may sense temperature, pressure and conductivity, as deemed desirable); and return (and, if desired, supply) *flow control valves* and controls for the primary circulation pump 48a; of course, a redundant set of these components exists for the primary circulation sub-facility 28b. In general, the goal is to maintain the temperature of the dielectric fluid in the tank 14 between a predetermined minimum temperature and a predetermined maximum temperature.

[0033] As noted above, we have provided separate control equipment cabinets 34a and 34b, each adapted to accommodate the several components comprising a respective one of the primary controllers 58a and 58b. For convenience of access, we prefer to co-locate with each of the cooling towers 50 a protective housing (not shown) for the respective secondary controller 60. Of course, the control facility 56 can be instantiated as a single, multi-module PLC facility, with similar or other combinations of monitoring devices as deemed most appropriate for a particular installation. Alternatively, one or more, and perhaps all, of the

functions performed by the controllers 58, 60 and 62 may be implemented in the form of dedicated *application-specific software* executing on a conventional computer platform having the appropriate resources; indeed, it would be entirely feasible to implement the entire control facility 56 on a server 16 installed in a tank 14.

[0034] One desirable enhancement that we recommend is a remote control facility, implemented, *e.g.*, via the master controller 62 (or by way of a direct, per-controller *interface*), adapted to facilitate remote monitoring of system status (*e.g.*, temperatures, pressures, *etc.*) and control over system control parameters (*e.g.*, temperature and pressure limits, *etc.*) to the primary controllers 58 and secondary controllers 60. For example, using a conventional data communication hardware module 64, *e.g.*, an *ethernet* card implementing the *TCP/IP* protocol, a modern *web browser* can be adapted to provide a *graphical user interface* ("*GUI*") with sufficient functionality to facilitate monitoring and control of an entire installation from a remote location. Such a GUI may be implemented using any of a number of programming paradigms, *e.g.*, *PHP*, *.NET* and the like.

[0035] Operational control of redundant, continuous process flow systems is generally well known. Preferable, each of the several redundant sub-facilities are routinely activated to assure current functionality, and to allow the inactive sub-facility to be serviced according to an established schedule. We believe this continuous rotation of system resources to be so important that we recommend switching the sub-facilities at least once, and preferably, several times, per day; although this is possible to implement manually, we prefer to enable the master controller 62 to control the sequencing of the several switch-over operations. One further aspect of this sophistication in control is the ability to perform *stress testing* of the several sub-systems under controlled conditions so as to assure appropriate response to real-time emergencies.

[0036] In our First Parent Provisional, we have disclosed an alternate embodiment comprising an appliance immersion tank facility wherein the function of the plenum facility 36 is performed by a manifold facility comprising a ladder-arrangement of tubular spray bars, each bar of which supplies dielectric fluid to a respective appliance slot. As we noted, one particular advantage of this

arrangement is that individual spray bars may be shut off if the respective appliance slot is not occupied and, thus, save energy. To further increase energy efficiency, we have provided optional vertical flow barriers adapted to partition the tank into an active portion, having active appliances, and a stagnant portion, having no active appliances. One further enhancement we disclosed is the provision of temperature sensors per appliance slot, such that the flow rate through each spray bar can be dynamically varied as a function of the temperature of the dielectric fluid exiting the respective slot. Other operative configurations will be readily perceived by those skilled in this art.

[0037] In a manner analogous to the embodiment described in our First Parent Provisional, it would be advantageous, from an energy point of view, to provide a plurality of flow barrier plates 66 (shown by way of example only in Fig. 11), each adapted to be attached to the top of the plenum facility 36 so as substantially to block the flow of the dielectric fluid through the row(s) of orifices in the plenum plate 36a corresponding to at least a respective one of the appliance slots 18a; an elastomeric layer (not shown) could be provided on the interface surface of the plate(s) 66 to enhance the sealing effect. Such an arrangement would allow the total flow through the plenum facility 36 to be adjusted, in the field, as a function of the actual number of active appliances 16 in the tank 14. Further, this arrangement can incorporate a relocatable vertical baffle plate 68 (see Fig. 11) adapted substantially to partition the tank 14 into an active portion 14a containing the active appliances 16 and an inactive portion 14b containing no appliances (or at least no active appliances 16); preferably, the baffle plate 68 is adapted to be mounted in the appliance rack facility 28 in a manner similar to an actual appliance 16 (the baffle plate 68 need not fully block the flow of dielectric fluid between the active portion 14a and inactive portion 14b, but only significantly impede the flow between these portions). Note that, in the example scenario illustrated in Fig. 11, we have shown one possible arrangement of a total of 8 active appliances 16 distributed across 16 appliance slots 18a so as to spread the total heat load across adjacent empty slots 18a. Such an optimal arrangement is possible only if less than a majority of the available appliance slots 18a are occupied by an active appliance 16. Clearly, such optional

adjunct facilities enhance flexibility in operation, accommodating dynamic adjustment of the flow rates in the primary circulation sub-facilities 28a and 28b under variable heat loads, while providing opportunities to conserve energy that might otherwise be expended moving the dielectric fluid through the inactive portion 14b of the tank 14. Other operative configurations will be readily perceived by those skilled in this art.

[0038] In our Second Parent Provisional, we have disclosed another embodiment comprising a more conventional, less-modularized instantiation with appropriate flow and control facilities. In this embodiment, we chose to implement tank clusters, comprising, *e.g.*, 4 appliance immersion tank facilities, with substantially all of the other equipment being constructed from stand-alone, commercially available components. Such an arrangement offers greater opportunities to select and install improved components, or to add enhancements to the installation, as deemed desirable after initial installation. Other operative configurations will be readily perceived by those skilled in this art.

[0039] As we noted above with reference to the embodiment illustrated in Fig. 12, the secondary flow header facility is well adapted to allow any secondary circulation sub-facility 30 to be connected to any active heat exchanger 32. Such a facility provides great flexibility in dealing with unusual system conditions, especially in installations wherein the secondary circulation sub-facilities 30a and 30b are each sized to support a cluster of tank modules 10. Imagine, for example, that, while one of the secondary circulation facilities 30, say sub-facility 30a, is being serviced, the activities of the set of appliances 16 in one tank 14 in the cluster are higher than normal, resulting in a rise in temperature in that tank 14 above the desired maximum. In response, the master controller 62 can direct Primary Controllers 58a and 58b assigned to tank 14 to operate both of the primary circulation sub-facilities 28a and 28b simultaneously, *i.e.*, in parallel. Using the secondary flow header facility, the heat being extracted by both of the heat exchangers 32a and 32b may be dissipated using the resources of the single on-line secondary circulation sub-facility 30b. Thus, one clear advantage of this alternate embodiment is the ability dynamically to perform *load balancing* across

all system resources. Other operative configurations to support sub-system load balancing will be readily perceived by those skilled in this art.

[0040] Preferably, one or more filters (not shown) are included in the flow path through each of the primary circulation sub-facilities 28a and 28b to remove any particulates or other undesirable foreign matter that may have been picked up by the dielectric fluid on its passage through the entire primary circulation facility 28; chemical sensors may also be provided to detect the presence of unexpected chemicals that may indicate failure of sub-components within one of the appliances 16. Similar components, such as pH sensors, may also be included in the secondary fluid circulation facility 30.

[0041] As can be seen generally in Fig. 1, we provide a pair of low dielectric fluid level sensors 70a and 70b adapted to trigger an alarm signal in the event that, for whatever reason, the level of the dielectric fluid in the tank 14 drops below a predetermined minimum level. Additionally, the responsive primary controller 58 can initiate other actions to address the detected problem, including activating audio alarms, transmitting electronic alert signals and the like.

[0042] To solve a reciprocal problem, namely leakage from an external portion of the primary circulation loop 28 resulting in the dielectric fluid in the tank 14 being *back-siphoned* through the plenum facility 36, we recommend incorporating a *siphon breaker* 72 (see, Fig. 1) in the supply pipe at a predetermined location well above the plenum facility 36 but somewhat below the level of the weir 24. Such a siphon breaker can be as simple as a relatively small diameter hole 72 drilled through the supply pipe at the selected location; due to the relatively high viscosity of the dielectric fluid, even when heated, any resulting leakage during normal operation will be relatively insignificant. Other operative responses to address these and other unusual fluidic conditions will be readily perceived by those skilled in this art.

[0043] As is known (see, *e.g.*, Best), many conventional, commercially available electrical/electronic appliances include components that will not function correctly if immersed in a dielectric fluid, especially one as *viscous* as mineral oil: cooling fans and rotating media disk drives. In general, all cooling fans are

unnecessary in an immersion cooling system and can be simply removed. The media drives, however, are usually necessary for normal appliance operation. One option is to remove each drive, totally seal the drive against fluid entry, and reinstall the now-sealed drive (pre-sealed drives are also available). Another option is to remove the drive and mount it on the interconnect panel facility 24; typically special cabling will be required to re-attach the drive to the internal appliance *socket*. Yet another option is to replace the rotating media drive with a *solid-state drive* having no moving components. Other operative configurations will be readily perceived by those skilled in this art.

[0044] It will be recognized that, in all of the embodiments described herein, emphasis was placed on minimizing the total volume of the dielectric fluid circulating throughout each immersion module 10. We submit that the key concept here is to move the secondary fluid to the point of heat exchange with the primary fluid, rather than to move the primary fluid to the point of heat exchange with the secondary fluid. Thus, in our preferred embodiment, all of the essential components of the primary circulation facility 28 are tightly co-located with the tank 14 so as to form a highly-integrated module. Further, our placement of the reservoir 42 outside of (but immediately adjacent to) the tank 14 tends to reduce the total volume of the dielectric fluid (as opposed to the alternative arrangement we proposed in our First Provisional, wherein a recovery trough was disposed within the tank 14); then, we positioned the components comprising the primary circulation sub-facilities 28 so as to be vertically beneath the *footprint* of the reservoir 42. In addition to conserving valuable floor space in a typical *data center* installation, the resulting modular configuration facilitates both easy initial installation and subsequent upgrade to efficiently satisfy increasing data center workloads. Indeed, our invention greatly enhances system *scalability*, a key concern to data center operators. Finally, our system-wide redundancy substantially assures fail-soft operation during periods of unusual environmental conditions, infrastructure instability or political unrest.

[0045] Although we have described our invention in the context of particular embodiments, one of ordinary skill in this art will readily realize that many

modifications may be made in such embodiments to adapt either to specific implementations. By way of example, it will take but little effort to adapt our invention for use with electronic appliances other than contemporary servers; and to adjust the dimensions of the appliance accommodation slots accordingly. Similarly, practitioners in the art will readily recognize that other, known secondary circulation facilities may be employed effectively, including forced air, *vapor compression* systems, *earth-water sink loops*, *waste heat recovery and recycling* systems, and the like (see, *e.g.*, the several alternatives discussed in Best). Further, the several elements described above may be implemented using any of the various known manufacturing methodologies, and, in general, be adapted so as to be operable under either hardware or software control or some combination thereof, as is known in this art.

[0046] Thus it is apparent that we have provided an improved system and method of operation for immersion cooling of appliances and the like. In particular, we submit that such a method and apparatus provides performance generally comparable to the best prior art techniques but more efficiently and effectively than known implementations of such prior art techniques.

CLAIMS

What we claim is:

1. An appliance immersion cooling system comprising:
 - a tank adapted to immerse in a dielectric fluid a plurality of electrical appliances, each in a respective appliance slot distributed vertically along, and extending transverse to, a long wall of the tank, the tank comprising:
 - a weir, integrated horizontally into the long wall of the tank adjacent all appliance slots, adapted to facilitate substantially uniform recovery of the dielectric fluid flowing through each appliance slot;
 - a primary circulation facility adapted to circulate the dielectric fluid through the tank, comprising:
 - a plenum, positioned adjacent the bottom of the tank, adapted to dispense the dielectric fluid substantially uniformly upwardly through each appliance slot;
 - a secondary fluid circulation facility adapted to extract heat from the dielectric fluid circulating in the primary circulation facility, and to dissipate to the environment the heat so extracted; and
 - a control facility adapted to coordinate the operation of the primary and secondary fluid circulation facilities as a function of the temperature of the dielectric fluid in the tank.
2. The system of claim 1 wherein the tank and primary circulation facility comprise a tightly co-located module.
3. The system of claim 1 wherein the tank further comprises:
 - an interconnect panel facility adapted to mount appliance support equipment.
4. The system of claim 1 wherein the primary circulation facility further comprises:

at least first and second primary circulation sub-facilities, each adapted to operate independently to circulate the dielectric fluid through the tank; wherein the control facility is further adapted to coordinate the operation of the first and second primary circulation sub-facilities and the secondary fluid circulation facilities so to maintain the temperature of the dielectric fluid in the tank substantially between a predetermined minimum temperature and a predetermined maximum temperature.

5. The system of claim 1 wherein the control facility further comprises a communication facility adapted to facilitate monitoring and control of the control facility from a remote location.

6. A tank module adapted for use in an appliance immersion cooling system, the tank module comprising:

a tank adapted to immerse in a dielectric fluid a plurality of electrical appliances, each in a respective appliance slot distributed vertically along, and extending transverse to, a long wall of the tank, the tank comprising:

a weir, integrated horizontally into the long wall of the tank adjacent all appliance slots, adapted to facilitate substantially uniform recovery of the dielectric fluid flowing through each appliance slot;

a primary circulation facility adapted to circulate the dielectric fluid through the tank, comprising:

a plenum, positioned adjacent the bottom of the tank, adapted to dispense the dielectric fluid substantially uniformly upwardly through each appliance slot; and

a control facility adapted to control the operation of the primary fluid circulation facility as a function of the temperature of the dielectric fluid in the tank.

7. The module of claim 6 wherein the tank and primary circulation facility comprise a tightly co-located module.

8. The module of claim 6 wherein the tank further comprises:

an interconnect panel facility adapted to mount appliance support equipment.

9. The module of claim 6 wherein the primary circulation facility further comprises:

at least first and second primary circulation sub-facilities, each adapted to operate independently to circulate the dielectric fluid through the tank;

wherein the control facility is further adapted to coordinate the operation of the first and second primary circulation sub-facilities so to maintain the temperature

of the dielectric fluid in the tank substantially between a predetermined minimum temperature and a predetermined maximum temperature.

10. The module of claim 6 wherein the control facility further comprises a communication facility adapted to facilitate monitoring and control of the control facility from a remote location.

APPLIANCE IMMERSION COOLING SYSTEM

ABSTRACT OF THE DISCLOSURE

A appliance immersion tank system comprising: a generally rectangular tank adapted to immerse in a dielectric fluid a plurality of appliances, each in a respective appliance slot distributed vertically along, and extending transverse to, the long axis of the tank; a primary circulation facility adapted to circulate the dielectric fluid through the tank; a secondary fluid circulation facility adapted to extract heat from the dielectric fluid circulating in the primary circulation facility, and to dissipate to the environment the heat so extracted; and a control facility adapted to coordinate the operation of the primary and secondary fluid circulation facilities as a function of the temperature of the dielectric fluid in the tank. A plenum, positioned adjacent the bottom of the tank, is adapted to dispense the dielectric fluid substantially uniformly upwardly through each appliance slot. A weir, integrated horizontally into a long wall of the tank, is adapted to facilitate substantially uniform recovery of the dielectric fluid flowing through each appliance slot. All active and most passive components of both the primary and secondary fluid circulation facilities, and the control facility are fully redundant, and are adapted automatically to operate in a fail-soft mode.



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
16/243,732	01/09/2019	Christopher L. Boyd	JMG001-02

CONFIRMATION NO. 9248

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INFORMAL NOTICE



Date Mailed: 03/22/2019

INFORMATIONAL NOTICE TO APPLICANT

Applicant is notified that the above-identified application contains the deficiencies noted below. No period for reply is set forth in this notice for correction of these deficiencies. However, if a deficiency relates to the inventor's oath or declaration, the applicant must file an oath or declaration in compliance with 37 CFR 1.63, or a substitute statement in compliance with 37 CFR 1.64, executed by or with respect to each actual inventor no later than the expiration of the time period set in the "Notice of Allowability" to avoid abandonment. See 37 CFR 1.53(f).

The item(s) indicated below are also required and should be submitted with any reply to this notice to avoid further processing delays.

- A properly executed inventor's oath or declaration has not been received for the following inventor(s):
Christopher L. Boyd
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Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

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CONFIRMATION NO. 9248

UPDATED FILING RECEIPT



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Date Mailed: 03/22/2019

Receipt is acknowledged of this non-provisional 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 APPLICANT, 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 Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections 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**

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This application is a CON of 14/355,533 04/30/2014 ABN
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which claims benefit of 61/832,211 06/07/2013

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

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page 1 of 4

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The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 16/243,732**

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**** SMALL ENTITY ****

Title

Appliance Immersion Cooling System

Preliminary Class

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

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NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop

technology, manufacture products, deliver services, and grow your business, visit <http://www.SelectUSA.gov> or call +1-202-482-6800.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 16/243,732			
APPLICATION AS FILED - PART I									
(Column 1)		(Column 2)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY			
FOR	NUMBER FILED	NUMBER EXTRA		RATE(\$)	FEE(\$)		RATE(\$)		
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	75		N/A		
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A		N/A	330		N/A		
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	380		N/A		
TOTAL CLAIMS (37 CFR 1.16(i))	10	minus 20 =	*	x 50 =	0.00	OR			
INDEPENDENT CLAIMS (37 CFR 1.16(h))	2	minus 3 =	*	x 230 =	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				
				TOTAL	785		TOTAL		
* If the difference in column 1 is less than zero, enter "0" in column 2.									
APPLICATION AS AMENDED - PART II									
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)	
	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))						OR		
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						OR		
				TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE		
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)	
	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))						OR		
	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.									

Sheet No. 8

Box No. 100 (a) **DECLARATION:** ONLY TO BE COMPLETED for the purposes of the designation of the United States of America.
The declaration must be made in the following manner and in the following order: (1) the inventor must first declare that he or she is the inventor of the invention (in general) and the specific device or device in Box No. 100 (a). If the device is a process, the device should not be included in the request.

Declaration of Invention (Box 100) and State Invention
for the purposes of the designation of the United States of America

I hereby declare that I believe I am the original inventor or an original joint inventor of a claimed invention in the application.

This declaration is attached to the international application of which it forms a part of filing an invention with application.

This declaration is attached to international application No. PCT/..... of the following declaration pursuant to Rule 100.

I hereby declare that the above identified international application was made or authorized to be made by me.

I hereby acknowledge that any willful 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.

Name: David Christopher L.

Residence: Austin, TX, USA

(City and other US data, if applicable, or country)

Mailing Address: 1500 Barton Terrace, Austin, TX 78704, USA

Inventor's Signature: David Christopher L.

(The signature must be that of the inventor, not that of the agent)

Name: James P. Koon

Residence: Round Rock, TX, USA

(City and other US data, if applicable, or country)

Mailing Address: 2000 Fulshear Drive, Round Rock, Texas 78681, USA

Inventor's Signature: James P. Koon

(The signature must be that of the inventor, not that of the agent)

Name: David Christopher L.

Residence: Austin, TX, USA

(City and other US data, if applicable, or country)

Mailing Address: 2011 E. 8th St., Austin, TX 78702, USA

Inventor's Signature: David Christopher L.

(The signature must be that of the inventor, not that of the agent)

☒ This declaration is continued on the following sheet, "Continuation of Box No. 100 (a)".

Form PCT/US/100 (Declaration sheet (a)) (24 September 2012)

See Annex to the request form

Continuation of Box No. VIII (i) to (v) **DECLARATION**

If the space is insufficient in any of Boxes Nos. VIII (i) to (v) to furnish all the information, including in the case where more than two inventors are to be named in Box No. VIII (iv), in such case, write "Continuation of Box No. VIII..." (indicate the item number of the Box) and furnish the information in the same manner as required for the purposes of the Box in which the space was insufficient. If additional space is needed in respect of two or more declarations, a separate continuation box must be used for each such declaration. If this Box is not used, this sheet should not be included in the request.

Name: Thomas R. Turner

Residence: Georgetown, TX, USA

Mailing Address: 4210 Malaga Dr., Georgetown, TX 78628, USA

Signature:  Date: 9/17/2018

Name: Kenneth D. Swinden

Residence: Hutto, TX, USA

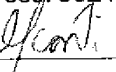
Mailing Address: 132 Mustang Creek North Loop, Hutto, TX 78634, USA

Signature: _____ Date: _____

Name: Mario Conti Garcia

Residence: Austin, T, USA

Mailing Address: 9624 Woody Ridge View, Austin, TX 78730, USA

Signature:  Date: Dec, 19 2013

Name: John Charles Tribou

Residence: Austin, TX, USA

Mailing Address: 9109 Middlebie Dr., Austin, TX 78750, USA

Signature: _____ Date: _____

Continuation of Box No. VIII (i) to (v) DECLARATION

If the space is insufficient in any of Boxes Nos. VII (i) to (v) to furnish all the information, including in the case where more than two inventors are to be named in Box No. VII (v), in such case, write "Continuation of Box No. VII ..." (indicate the item number of the box) and furnish the information in the same manner as required for the purposes of the Box in which the space was insufficient. If additional space is needed in respect of two or more declarations, a separate continuation box must be used for each such declaration. If this box is not used, this sheet should not be included in the request.

Name: Thomas R. Turner

Residence: Georgetown, TX, USA

Mailing Address: 4210 Malaga Dr., Georgetown, TX 78628, USA

Signature: _____ Date: _____

Name: Kenneth D. Swinden

Residence: Hutto, TX, USA

Mailing Address: 132 Mustang Creek North Loop, Hutto, TX 78634, USA

Signature: _____ Date: _____

Name: Mario Conti Garcia

Residence: Austin, T, USA

Mailing Address: 9624 Woody Ridge View, Austin, TX 78730, USA

Signature: *[Signature]* Date: Dec 19, 2013

Name: John Charles Tribou

Residence: Austin, TX, USA

Mailing Address: 9109 Middlebie Dr., Austin, TX 78750, USA

Signature: *[Signature]* Date: Dec 19, 2013

Continuation of Box No. Y10 (b) (1) DECLARATION

Indicate space is insufficient in one of Boxes Y10, Y11 or Y12 to furnish all the information, including in the case where more than two inventors are to be named in Box No. Y10 (b) (1) or in one of Boxes Y11 or Y12, to indicate the firm number of the firm and furnish the information in the space provided is requested for the purpose of the firm in which the order was made. If additional space is needed, complete the following declaration as separate declarations for each firm for each declaration. If this Box is not used, this sheet should not be included in the request.

Name: Thomas R. Turner
Residence: Georgetown, TX, USA
Mailing Address: 4210 Malaga Dr., Georgetown, TX 78626, USA

Signature: _____ Date: _____

Name: Kenneth D. Swinden
Residence: Hutto, TX, USA
Mailing Address: 132 Mustang Creek North Loop, Hutto, TX 78634, USA

Signature: *Kenneth D. Swinden* Date: *9-18-2018*

Name: Mario Conti Garcia
Residence: Austin, TX, USA
Mailing Address: 9624 Woody Ridge View, Austin, TX 78730, USA

Signature: *Mario Conti Garcia* Date: *9-19-2018*

Name: John Charles Tribou
Residence: Austin, TX, USA
Mailing Address: 8108 Middlebie Dr., Austin, TX 78750, USA

Signature: _____ Date: _____

Electronic Acknowledgement Receipt	
EFS ID:	35500049
Application Number:	16243732
International Application Number:	
Confirmation Number:	9248
Title of Invention:	Appliance Immersion Cooling System
First Named Inventor/Applicant Name:	Christopher L. Boyd
Customer Number:	44070
Filer:	Jeffrey Van Myers
Filer Authorized By:	
Attorney Docket Number:	JMG001-02
Receipt Date:	22-MAR-2019
Filing Date:	09-JAN-2019
Time Stamp:	10:43:02
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	Oath or Declaration filed	JMG001_PCT_Request_131213_3.pdf	219530 499fd38147c1f75800732d9b25753345a8a7c27d	no	1

Warnings:

Information:					
2	Oath or Declaration filed	JMG001_PCT_Request_Turner.pdf	21443 94ec23a8c0faed33442571eb160bc2fcb34c9cd5	no	1
Warnings:					
Information:					
3	Oath or Declaration filed	JMG001_PCT_Request_Tribou.pdf	139404 8ac8bc514adc5e3f99aa6862c00af27ea2906d3c	no	1
Warnings:					
Information:					
4	Oath or Declaration filed	JMG001_PCT_Request_Swinden.pdf	355180 af8ef42a00d112b486ef2a3ad3347b70cf6dbed5	no	1
Warnings:					
Information:					
Total Files Size (in bytes):			735557		
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. <u>New Applications Under 35 U.S.C. 111</u> 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. <u>National Stage of an International Application under 35 U.S.C. 371</u> 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. <u>New International Application Filed with the USPTO as a Receiving Office</u> 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

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
16/243,732	01/09/2019	Christopher L. Boyd	JMG001-02

CONFIRMATION NO. 9248

44070
J. V. MYERS & ASSOCIATES, P.C.
P. O. BOX 130
DRIFTWOOD, TX 78619

PUBLICATION NOTICE



Title:Appliance Immersion Cooling System

Publication No.US-2019-0200482-A1

Publication Date:06/27/2019

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 Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

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.

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

I hereby appoint:

☒

Practitioners associated with Customer Number:

44070**OR**☐

Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number

Name	Registration Number

As attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignments documents attached to this form in accordance with 37 CFR 3.73(c).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:

☒

The address associated with Customer Number:

44070**OR**

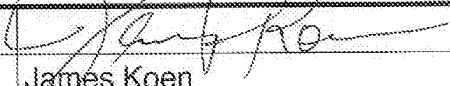
☐	Firm or Individual Name			
	Address			
	City	State	Zip	
	Country			
	Telephone	Email		

Assignee Name and Address: Midas Green Technologies, LLC.
8107 Springdale Road, Suite 103
Austin, TX 78724

A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of The practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature		Date	4-8-20
Name	James Koen	Telephone	512.844.5131
Title	CEO		

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. 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 3 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.

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: Midas Green Technologies, LLC

Application No./Patent No.: 16/243,732

Filed/Issue Date: 9 January 2019

Titled: Appliance Immersion Cooling System

_____, a _____
(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☒ The assignee of the entire right, title, and interest.
2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):
- ☐ The extent (by percentage) of its ownership interest is _____. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.
- ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (e.g., bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

- A. ☒ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel 033551, Frame 0489, or for which a copy thereof is attached.
- B. ☐ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

2. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

[Page 1 of 2]

This collection of information is required by 37 CFR 3.73(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.

STATEMENT UNDER 37 CFR 3.73(c)

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
 Reel _____, Frame _____, or for which a copy thereof is attached.

4. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
 Reel _____, Frame _____, or for which a copy thereof is attached.

5. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
 Reel _____, Frame _____, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
 Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☐ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Jeffrey Van Myers/

Signature

Jeffrey Van Myers

Printed or Typed Name

Date

27,362

Title or Registration Number

[Page 2 of 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.
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Electronic Acknowledgement Receipt	
EFS ID:	39104960
Application Number:	16243732
International Application Number:	
Confirmation Number:	9248
Title of Invention:	Appliance Immersion Cooling System
First Named Inventor/Applicant Name:	Christopher L. Boyd
Customer Number:	44070
Filer:	Jeffrey Van Myers
Filer Authorized By:	
Attorney Docket Number:	JMG001-02
Receipt Date:	08-APR-2020
Filing Date:	09-JAN-2019
Time Stamp:	19:39:35
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	PoA_200408_s.pdf	855461	no	2
			ecce740ff1f1f08bc9d18ad40ac318dd2c1ca90f		

Warnings:

Information:					
2	Miscellaneous Incoming Letter	PoA_Statement_200408.pdf	117300	no	3
			5b7a242583a284233a591e46436a090dbe608470		
Warnings:					
Information:					
Total Files Size (in bytes):			972761		
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. <u>New Applications Under 35 U.S.C. 111</u> 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. <u>National Stage of an International Application under 35 U.S.C. 371</u> 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. <u>New International Application Filed with the USPTO as a Receiving Office</u> 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/25 U.S. Patent and Trademark Office Department of Commerce
Electronic Petition Request	TERMINAL DISCLAIMER TO OBIATE A PROVISIONAL DOUBLE PATENTING REJECTION OVER A PENDING "REFERENCE" APPLICATION	
Application Number	16243732	
Filing Date	09-Jan-2019	
First Named Inventor	Christopher Boyd	
Attorney Docket Number	JMG001-02	
Title of Invention	Appliance Immersion Cooling System	
☒ 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	
Midas Green Technologies, LLC	100%	
The owner(s) of 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 any patent granted on pending reference Application Number(s)		
14355533 filed on 04/30/2014 as the term of any patent granted on said reference application may be shortened by any terminal disclaimer filed prior to the grant of any patent on the pending reference application. 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 any patent granted on the reference application 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 any patent granted on the instant application that would extend to the expiration date of the full statutory term of any patent granted on said reference application, "as the term of any patent granted on said reference application may be shortened by any terminal disclaimer filed prior to the grant of any patent on the pending reference application," in the event that any such patent granted on the pending reference application: 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 shortened by any terminal disclaimer filed prior to its grant.		
☒ 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 <u>27362</u>	
☐ 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	/Jeffrey Van Myers/
Name	Jeffrey Van Myers

*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:		16243732		
Filing Date:		09-Jan-2019		
Title of Invention:		Appliance Immersion Cooling System		
First Named Inventor/Applicant Name:		Christopher L. Boyd		
Filer:		Jeffrey Van Myers		
Attorney Docket Number:		JMG001-02		
Filed as Small 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	2814	1	160	160
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 (\$)				160

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

Application No.: 16243732

Filing Date: 09-Jan-2019

Applicant/Patent under Reexamination: Boyd

Electronic Terminal Disclaimer filed on April 13, 2020

☒ 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:	39134354
Application Number:	16243732
International Application Number:	
Confirmation Number:	9248
Title of Invention:	Appliance Immersion Cooling System
First Named Inventor/Applicant Name:	Christopher L. Boyd
Customer Number:	44070
Filer:	Jeffrey Van Myers
Filer Authorized By:	
Attorney Docket Number:	JMG001-02
Receipt Date:	13-APR-2020
Filing Date:	09-JAN-2019
Time Stamp:	09:39:44
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	EFT
Payment was successfully received in RAM	\$ 160
RAM confirmation Number	E20204C039399169
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	33958	no	2
			a8318f4081c12d324dbedce30e4970684be7b3fc		
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30459	no	2
			de0a2c9ff0077dceb06dd14830e0a489321a8456		
Warnings:					
Information:					
Total Files Size (in bytes):			64417		
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. <u>New Applications Under 35 U.S.C. 111</u> 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. <u>National Stage of an International Application under 35 U.S.C. 371</u> 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. <u>New International Application Filed with the USPTO as a Receiving Office</u> 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.					



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/243,732	01/09/2019	Christopher L. Boyd	JMG001-02	9248
44070	7590	04/13/2020		
J. V. MYERS & ASSOCIATES, P.C.			EXAMINER	
P. O. BOX 130			RUSSELL, DEVON L	
DRIFTWOOD, TX 78619				
			ART UNIT	PAPER NUMBER
			3763	
			NOTIFICATION DATE	DELIVERY MODE
			04/13/2020	ELECTRONIC

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

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

aap@jvmyers.com
jp@jvmyers.com
jvm@jvmyers.com

DETAILED ACTION

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on nonstatutory double patenting provided the reference application or patent either is shown to be commonly owned with the examined application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. See MPEP § 717.02 for applications subject to examination under the first inventor to file provisions of the AIA as explained in MPEP § 2159. See MPEP §§ 706.02(I)(1) - 706.02(I)(3) for applications not subject to examination under the first inventor to file provisions of the AIA. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO Internet website contains terminal disclaimer forms which may be used. Please visit www.uspto.gov/patent/patents-forms. The filing date of the application in which the form is filed determines what form (e.g., PTO/SB/25, PTO/SB/26, PTO/AIA/25, or PTO/AIA/26) should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal

Disclaimer that meets all requirements is auto-processed and approved immediately upon submission.

For more information about eTerminal Disclaimers, refer to

www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp.

Claims 1-10 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-10 of U.S. Patent No. 10,405,457. Although the claims at issue are not identical, they are not patentably distinct from each other because the claims of US 10,405,457 recite every element of the present claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DEVON L RUSSELL whose telephone number is (571)270-1858. The examiner can normally be reached on M-Th, 9-4.

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, Edward Landrum can be reached on 571.272.5567. 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

Application/Control Number: 16/243,732
Art Unit: 3763

Page 4

Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DEVON RUSSELL/
Primary Examiner, Art Unit 3763

<i>Notice of References Cited</i>	Application/Control No. 16/243,732		Applicant(s)/Patent Under Reexamination Boyd et al.	
	Examiner DEVON L RUSSELL		Art Unit 3763	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-4590538-A	05-1986	Cray, Jr.; Seymour R.	H05K7/20236	361/700
*	B	US-20110132579-A1	06-2011	Best; Christiaan Scott	H05K7/20763	165/104.31
*	C	US-20060126292-A1	06-2006	Pfahnl; Andreas C.	H05K7/20563	361/695
*	D	US-3406244-A	10-1968	SEVGIN OKTAY	G06F1/20	174/15.1
*	E	US-20060274501-A1	12-2006	Miller; Charles A.	G01R31/2863	361/690
*	F	US-20050259402-A1	11-2005	Yasui, Hidehiko	H02M7/003	361/716
*	G	US-5167511-A	12-1992	Krajewski; Nicholas J.	H01R4/01	361/785
*	H	US-20110075353-A1	03-2011	Attlessey; Chad Daniel	H05K7/20345	361/679.47
*	I	US-20110240281-A1	10-2011	Avery; Randall N.	G05D23/1917	165/287
*	J	US-5297621-A	03-1994	Taraci; Richard	G01R31/2891	165/104.13
	K					
	L					
	M					

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.

U.S. Patent and Trademark Office
PTO-892 (Rev. 01-2001)

Notice of References Cited

Part of Paper No. 20200408

<i>Search Notes</i> 	Application/Control No. 16/243,732	Applicant(s)/Patent Under Reexamination Boyd et al.
	Examiner DEVON L RUSSELL	Art Unit 3763

CPC - Searched*		
Symbol	Date	Examiner
h05k7/20236, 20272, 20327; h01l23/44	04/08/2020	DR

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
see EAST history	04/08/2020	DR

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
same as above		04/08/2020	DR

/DEVON RUSSELL/ Primary Examiner, Art Unit 3763	
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EAST Search History**EAST Search History (Prior Art)**

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L9	1336	h05k7/20236.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/04/08 15:35
L10	857	H01L23/44.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/04/08 15:35
L11	6169	H01L23/42.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/04/08 15:35
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S2	1	14/355533.app.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/10/28 15:36
S3	8	("4590538" "5167511").pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/10/28 15:38
S4	2	("4590538" "5167511").pn.	US-PGPUB; USPAT	OR	ON	2016/10/28 15:40
S5	4	("20110132579" "20060126292" "20110075353" "20110240281").pn.	US-PGPUB; USPAT	OR	ON	2016/10/28 15:41
S6	53	("20060064709" "20070213000" "20080158818" "7318322" "7911782" "20040246683" "7184269" "20060123436" "20070199340" "5297621" "7307841" "7609518" "20110075353" "7911793" "20100290190" "20110132579" "20030053293" "20080026509" "8009419" "20060274501" "20070025081" "4834257" "20080029250" "20070267741" "7210304" "20100246118" "7086247" "7905106" "6374627" "6600656" "20040008490" "20100302678" "20110240281" "20020185262"	US-PGPUB; USPAT	OR	ON	2016/10/28 15:59

		"20050114876" "20060250755" "20090260777" "7403392" "20060135042" "20030127240" "20050259402" "20080030945" "20070034360" "20100226094" "20050083657" "20060026610" "20080017355" "20080055845" "6909606" "20080196870" "6621707" "20070006599" "20080017355" "7318322" "4590538").PN.				
S7	466	h05k7/20236.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/11/01 10:51
S8	254	((dielectric\$4 near fluid) with immers\$3) and (computer)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/05/11 18:49
S9	539	H01L23/44.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/05/11 18:50
S10	4216	H01L23/42.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/05/11 19:02
S11	125	S10 and immers\$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/05/11 19:03
S12	122	S11 not S9	US-PGPUB; USPAT; USOCR; FPRS;	OR	ON	2017/05/11 19:03

			EPO; JPO; DERWENT; IBM_TDB			
S13	326	361/699.ccls. and (immers\$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/05/11 19:06
S14	326	361/699.ccls. and (immers\$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/05/11 19:06
S16	6	"8009419".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/05/29 13:33
S17	98	("20020117291" "20030081380" "20040221604" "20040246683" "20050007739" "20050036288" "20050105273" "20050122678" "20050162832" "20060007656" "20060012958" "20060012959" "20060037739" "20060039112" "20070034360" "20070227710" "20070268669" "20080017355" "20090260777" "20100101759" "20100101765" "20100103614" "20100103618" "20100103620" "20100246118" "3406244" "3812402" "3858090" "4302793" "4493010" "4590538" "4700272" "4765397" "4847731" "4928206" "5021924" "5131233" "5448108" "5458185" "5613552" "5731954" "5757615" "5943211" "6019167" "6052284" "6069791" "6098175" "6115251" "6134108" "6148905" "6181554" "6234240" "6313990" "6333849" "6496367" "6504719" "6574105" "6625023" "6664627" "6807056"	US-PGPUB; USPAT; USOCR	OR	ON	2018/05/29 13:34

		"6938678" "6947282" "6972954" "6979772" "6988537" "6999316" "7054165" "7120018" "7242581" "7295436" "7307841" "7414845" "7609518" "7724517" "7905106" "7911782" "7911793").PN. OR ("8009419").URPN.				
S18	36	("3406244").URPN.	USPAT	OR	ON	2018/05/29 13:42
S19	0	(ru-2042294-\$ su-1764094-\$).did.	USPAT	OR	ON	2018/05/29 13:47
S20	1649	H05K7/20272.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/08/13 09:04
S21	6	"8009419".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/08/13 09:09
S22	1	16/243732.app.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/04/07 14:17
S23	1336	h05k7/20236.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/04/07 14:17
S24	857	H01L23/44.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/04/07 14:17

S25	6169	H01L23/42.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/04/07 14:17
S26	2785	H05K7/20272.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/04/07 14:17

4/8/2020 3:48:45 PM

C:\Users\drussell1\Documents\EAST\Workspaces\16243732.wsp

Bibliographic Data

Application No: 16/243,732

Foreign Priority claimed: ☐ Yes ☒ No

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

Verified and Acknowledged: /DEVON RUSSELL/

Examiner's Signature

Initials

Title: Appliance Immersion Cooling System

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
01/09/2019	062	3763	JMG001-02
RULE			

APPLICANTS

Midas Green Technology, LLC, Austin, TX,

INVENTORS

Christopher L. Boyd Austin, TX, UNITED STATES

James P. Koen Round Rock, TX, UNITED STATES

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Thomas R. Turner Georgetown, TX, UNITED STATES

Kenneth D. Swinden Hutto, TX, UNITED STATES

Mario Conti Garcia Austin, TX, UNITED STATES

John Charles Tribou Austin, TX, UNITED STATES

CONTINUING DATA

This application is a CON of 14355533 04/30/2014 PAT 10405457

14355533 is a 371 of PCT/US2013/075126 12/13/2013

PCT/US2013/075126 has PRO of 61832211 06/07/2013

FOREIGN APPLICATIONS

IF REQUIRED, FOREIGN LICENSE GRANTED**

02/01/2019

** SMALL ENTITY **

STATE OR COUNTRY

UNITED STATES

ADDRESS

J. V. MYERS & ASSOCIATES, P.C.

P. O. BOX 130

DRIFTWOOD, TX 78619

UNITED STATES
FILING FEE RECEIVED
\$785



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	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
16/243,732	01/09/2019	Christopher L. Boyd	JMG001-02

CONFIRMATION NO. 9248

POA ACCEPTANCE LETTER

44070
J. V. MYERS & ASSOCIATES, P.C.
P. O. BOX 130
DRIFTWOOD, TX 78619



Date Mailed: 04/14/2020

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 04/08/2020.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/cnguyen/



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Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

44070 7590 04/16/2020
J. V. MYERS & ASSOCIATES, P.C.
P. O. BOX 130
DRIFTWOOD, TX 78619

EXAMINER

RUSSELL, DEVON L

ART UNIT

PAPER NUMBER

3763

DATE MAILED: 04/16/2020

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/243,732	01/09/2019	Christopher L. Boyd	JMG001-02	9248

TITLE OF INVENTION: Appliance Immersion Cooling System

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$500	\$0.00	\$0.00	\$500	07/16/2020

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 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity 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 and an extra copy of the form should be submitted. 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

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 including the Patent, advance orders and notification of maintenance fees 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.

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

44070 7590 04/16/2020
J. V. MYERS & ASSOCIATES, P.C.
P. O. BOX 130
DRIFTWOOD, TX 78619

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.
16/243,732	01/09/2019	Christopher L. Boyd	JMG001-02	9248

TITLE OF INVENTION: Appliance Immersion Cooling System

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$500	\$0.00	\$0.00	\$500	07/16/2020

EXAMINER	ART UNIT	CLASS-SUBCLASS
RUSSELL, DEVON L	3763	062-141000

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/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,

1 _____

(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.

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) ☐ Advance Order - # of Copies _____

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

☐ Electronic Payment via 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

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

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.

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.

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. _____



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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/243,732	01/09/2019	Christopher L. Boyd	JMG001-02	9248
44070	7590	04/16/2020	EXAMINER	
J. V. MYERS & ASSOCIATES, P.C.			RUSSELL, DEVON L	
P. O. BOX 130			ART UNIT	
DRIFTWOOD, TX 78619			PAPER NUMBER	
			3763	
DATE MAILED: 04/16/2020				

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

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) 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.

Notice of Allowability	Application No. 16/243,732	Applicant(s) Boyd et al.	
	Examiner DEVON L RUSSELL	Art Unit 3763	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 4/13/20.
☐ 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 1-10. 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)	5. ☐ Examiner's Amendment/Comment
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.	6. ☐ Examiner's Statement of Reasons for Allowance
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.	7. ☐ Other _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.	

/DEVON RUSSELL/ Primary Examiner, Art Unit 3763	
--	--