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 NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/357,511	08/11/2020	10739051	PA7TP0069WOAUSA	2894

49458 7590 07/22/2020

DON W. BULSON (PARK)
RENNER, OTTO, BOISSELLE & SKLAR, LLP
1621 EUCLID AVENUE / 19TH FLOOR
CLEVELAND, OH 44115

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

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 Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Christian D. Parker, Washington, MO;
Parker-Hannifin Corporation, Cleveland, OH;
Timothy A. Plassmeyer, Union, MO;
James D. Ruether, Union, MO;
Jason T. Dunn, Minneapolis, MN;
Shawn D. Ellis, Golden Valley, MN;

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 USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

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)

49458 7590 05/20/2020
DON W. BULSON (PARK)
RENNER, OTTO, BOISSELLE & SKLAR, LLP
1621 EUCLID AVENUE / 19TH FLOOR
CLEVELAND, OH 44115

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.
16/357,511	03/19/2019	Christian D. Parker	PA7TP0069WOAUSA	2894

TITLE OF INVENTION: HOSE FREE SENSOR SYSTEM FOR REFRIGERANT UNIT

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1000	$0.00	$0.00	$1000	08/20/2020

EXAMINER	ART UNIT	CLASS-SUBCLASS
MA, KUN KAI	3763	062-127000

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,
(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.

1 Renner, Otto, Boisselle & Sklar, LLP
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: Parker-Hannifin Corporation

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Cleveland, OH

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. 180988

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 /Lawrence S. Drasner/ Date July 1, 2020

Typed or printed name Lawrence S. Drasner Registration No. 38127

Electronic Patent Application Fee Transmittal	
Application Number:	16357511
Filing Date:	19-Mar-2019
Title of Invention:	HOSE FREE SENSOR SYSTEM FOR REFRIGERANT UNIT
First Named Inventor/Applicant Name:	Christian D. Parker
Filer:	Lawrence Scott Drasner/Valerie West
Attorney Docket Number:	PA7TP0069WOAUSA
Filed as Large 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:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
UTILITY APPL ISSUE FEE	1501	1	1000	1000

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**1000**

Electronic Acknowledgement Receipt	
EFS ID:	39882082
Application Number:	16357511
International Application Number:	
Confirmation Number:	2894
Title of Invention:	HOSE FREE SENSOR SYSTEM FOR REFRIGERANT UNIT
First Named Inventor/Applicant Name:	Christian D. Parker
Customer Number:	49458
Filer:	Lawrence Scott Drasner
Filer Authorized By:	
Attorney Docket Number:	PA7TP0069WOAUSA
Receipt Date:	01-JUL-2020
Filing Date:	19-MAR-2019
Time Stamp:	11:28:02
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$1000
RAM confirmation Number	E202071B28503260
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	Issue Fee Payment (PTO-85B)	2020-07-01_A7T-069_Issue_Fee.pdf	88569 1684c3da433cba21eee1812b267fcab7f1eba817	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30218 33457d5825cad1ab5abaa9b0d2d89050c5963249	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	118787		

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.

New Applications Under 35 U.S.C. 111
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.
National Stage of an International Application under 35 U.S.C. 371
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.
New International Application Filed with the USPTO as a Receiving Office
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
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www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

49458 7590 05/20/2020

DON W. BULSON (PARK)
RENNER, OTTO, BOISSELLE & SKLAR, LLP
1621 EUCLID AVENUE / 19TH FLOOR
CLEVELAND, OH 44115

EXAMINER	
MA, KUN KAI	
ART UNIT	PAPER NUMBER
3763	

DATE MAILED: 05/20/2020

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/357,511	03/19/2019	Christian D. Parker	PA7TP0069WOAUSA	2894

TITLE OF INVENTION: HOSE FREE SENSOR SYSTEM FOR REFRIGERANT UNIT

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1000	$0.00	$0.00	$1000	08/20/2020

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

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49458 7590 05/20/2020
DON W. BULSON (PARK)
RENNER, OTTO, BOISSELLE & SKLAR, LLP
1621 EUCLID AVENUE / 19TH FLOOR
CLEVELAND, OH 44115

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

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(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/357,511	03/19/2019	Christian D. Parker	PA7TP0069WOAUSA	2894

TITLE OF INVENTION: HOSE FREE SENSOR SYSTEM FOR REFRIGERANT UNIT

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1000	$0.00	$0.00	$1000	08/20/2020

EXAMINER	ART UNIT	CLASS-SUBCLASS
MA, KUN KAI	3763	062-127000

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,
(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.

1_____
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.
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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. _____

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 NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/357,511	03/19/2019	Christian D. Parker	PA7TP0069WOAUSA	2894

49458 7590 05/20/2020

DON W. BULSON (PARK)
RENNER, OTTO, BOISSELLE & SKLAR, LLP
1621 EUCLID AVENUE / 19TH FLOOR
CLEVELAND, OH 44115

EXAMINER	
MA, KUN KAI	

ART UNIT	PAPER NUMBER
3763	

DATE MAILED: 05/20/2020

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); (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. 16/357,511	Applicant(s) Parker et al.	
	Examiner KUN KAI MA	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 02/24/2020.
   ☐ 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 1-25 . 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)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.
5. ☐ Examiner's Amendment/Comment
6. ☑ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/KUN KAI MA/
Primary Examiner, Art Unit 3763

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

2. The Terminal Disclaimer filed on 02/24/2020 overcomes the Double Patenting rejection in the non-final action dated on 12/10/2019.

Reasons for Allowance

3. The following is an examiner's statement of reasons for allowance:

The prior art of record does not disclose or teach a sensor system for a refrigerant unit as recited in current independent claims 1, 10, 15 and 20; in particular,

the limitation "*there are no external physical electrical connections that extend from the first and second temperature sensors, and there are no external physical fluidic connections that extend from the first and second pressure sensors oppositely from the connectors*" recited in claims 1 and 15; and

the limitation "*each of the first temperature sensor clamp and the second temperature sensor clamp further comprises a handle and integrated electronics, and the integrated electronics are incorporated into a portion of the temperature sensor clamp and are in signal communication with the sensor element*" recited in claims 10 and 20 respectively are not disclosed or taught in the prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KUN KAI MA whose telephone number is (571) 270-3530. The examiner can normally be reached on Monday-Friday 9am-6pm.

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, Jianying Atkisson can be reached on 5712707740. 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 Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KUN KAI MA/
Primary Examiner, Art Unit 3763

Notice of References Cited	Application/Control No. 16/357,511	Applicant(s)/Patent Under Reexamination Parker et al.	
	Examiner KUN KAI MA	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-8746971-B2	06-2014	Alfano; Bryan	G01D11/24	374/141
*	B	US-20080163629-A1	07-2008	Chen; Chiang Kao	G01K13/00	62/129
*	C	US-5317903-A	06-1994	McClelland; Ralph A.	F25B45/00	62/149
*	D	US-8991254-B2	03-2015	Raguenet; Wilfrid	B25B5/06	73/587
*	E	US-20090024268-A1	01-2009	Eagan; Chris	G01M17/00	701/31.4
*	F	US-D350892-S	09-1994	Sorensen; Joseph A.		D8/395
*	G	US-20030182950-A1	10-2003	Mei, Viung C.	F25B49/005	62/129
*	H	US-20180128529-A1	05-2018	CHEN; JIE	F25B45/00	1/1
*	I	US-20020040280-A1	04-2002	Morgan, Stephen A.	B60H1/00978	702/114
*	J	US-20120241123-A1	09-2012	Alfano; Bryan	G01D11/24	165/11.1
*	K	US-20130245965-A1	09-2013	Kane; Michael John	G05B23/0264	702/33
*	L	US-5311745-A	05-1994	Lockhart; Douglas L.	G01L19/083	62/127
	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.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/357,511	Parker et al.
	Examiner	Art Unit
	KUN KAI MA	3763

CPC - Searched*		
Symbol	Date	Examiner
f25b 49/00, 2700/21, 19	12/05/2019	KM

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
Inventor search	11/25/2019	KM
EAST search (see attached)	12/05/2019	KM
Updated EAST search (see attached)	05/14/2020	KM

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
f25b	49/00, 2700/21, 19	05/14/2020	KM

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/357,511	Parker et al.
	Examiner	Art Unit
	KUN KAI MA	3763

CPC							
Symbol						Type	Version
F25B	/	49	/	00		F	2013-01-01
F25B	/	2700	/	19		A	2013-01-01
F25B	/	2700	/	21		A	2013-01-01

CPC Combination Sets								
Symbol					Type	Set	Ranking	Version
	/		/					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	25	
/KUN KAI MA/ Primary Examiner, Art Unit 3763	14 May 2020	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1,10,15,20	5

U.S. Patent and Trademark Office — Part of Paper No.: 20200514

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/357,511	Parker et al.
	Examiner	**Art Unit**
	KUN KAI MA	3763

INTERNATIONAL CLASSIFICATION					
CLAIMED					
F25B49/00	/	49	/	00	
CPCONLY	/	NLY	/		

NON-CLAIMED					
	/		/		

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**

CROSS REFERENCES(S)						
CLASS	**SUBCLASS (ONE SUBCLASS PER BLOCK)**					

NONE (Assistant Examiner)	(Date)	**Total Claims Allowed:** 25	
/KUN KAI MA/ Primary Examiner, Art Unit 3763 (Primary Examiner)	14 May 2020 (Date)	O.G. Print Claim(s) 1,10,15,20	O.G. Print Figure 5

U.S. Patent and Trademark Office — Part of Paper No.: 20200514

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/357,511	Parker et al.
	Examiner	**Art Unit**
	KUN KAI MA	3763

☑ Claims renumbered in the same order as presented by applicant ☐ CPA ☑ T.D. ☐ R.1.47

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	25	
/KUN KAI MA/ Primary Examiner, Art Unit 3763	14 May 2020	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1,10,15,20	5

U.S. Patent and Trademark Office Part of Paper No.: 20200514

EAST Search History

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S114	72	f25b2700/19.cpc.	USPAT	OR	ON	2018/12/14 13:34
S113	45	f25b2700/21.cpc.	USPAT	OR	ON	2018/12/14 11:16
S112	193	f25b49/00.cpc.	USPAT	OR	ON	2018/12/14 09:40
S148	231	f25b49/00.cpc.	USPAT	OR	ON	2020/05/13 11:11
S152	7	temperature same (sensing or detect$4 or monitor$4) same (senser or indicator or detector or probe) same clamp same refrigerant	USPAT	OR	ON	2020/05/15 12:29

5/15/2020 12:30:40 PM
C:\Users\kma1\Documents\EAST\Workspaces\16357511.wsp

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S144	883	f25b2700/21.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/05/11 18:07
S145	924	f25b2700/19.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/05/11 18:43
S146	2075	62/129.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/05/12 11:52
S147	1925	f25b49/00.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/05/13 08:37
S149	7	("20050098932" | "20060090484" | "20080077260" | "20150241316" | "4114448" | "6056282" | "6334320").PN.	US-PGPUB; USPAT	OR	ON	2020/05/14 18:48
S150	117	("20020170299" | "20030033823" | "20030051490" | "20030115890" | "3082951" | "3707851" | "3736765" | "4114448" | "4161106" | "4186563" | "4217761" | "4325223" | "4381549" | "4432232" | "4510576" | "4611470" | "4755957" | "4768346" | "4798055" | "4885914" | "4928278" | "4967567" | "5003256" | "5010743" | "5083438" | "5115643" | "5209076" | "5231598" |	US-PGPUB; USPAT; USOCR	OR	OFF	2020/05/15 09:27

		"5239865" | "5596507" | "5623834" | "5666815" | "5746061" | "5760478" | "5934088" | "5991890" | "6128910" | "6223544" | "6272868" | "6324854" | "6360551" | "6439061" | "6560976" | "6601397" | "6615594").PN. OR ("7079967").URPN.				
S151	126	((("PARKER") near3 ("Christian")) OR (("PLASSMEYER") near3 ("Timothy")) OR (("RUETHER") near3 ("James")) OR (("DUNN") near3 ("Jason")) OR (("ELLIS") near3 ("Shawn"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2020/05/15 12:11

5/15/2020 12:28:52 PM
C:\Users\kma1\Documents\EAST\Workspaces\16357511.wsp

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent application of:

Applicant(s):	Christian D. Parker et al.
Serial No:	16/357,511
Filing Date:	March 19, 2019
Title:	HOSE FREE SENSOR SYSTEM FOR REFRIGERANT UNIT
Examiner:	Kun Kai Ma
Art Unit:	3763
Docket No.	PA7TP0069WOAUSA

REPLY TO OFFICE ACTION DATED DECEMBER 10, 2019

MS Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Favorable reconsideration of the above-referenced application is respectfully requested in view of the following part(s) of this reply:

Amendments to the Claims

Remarks

In the event any fee or additional fee is due in connection with the filing of this paper, the Commissioner is authorized to charge those fees to our Deposit Account No. 18-0988 (under the above Docket Number). In the event an extension of time is needed to make the filing of this paper timely and no separate petition is attached, please consider this a petition for the requisite extension and charge the fee to our Deposit Account No. 18-0988 (under the above Docket Number).

Amendments to the Claims

1. (Currently Amended) A sensor system for a refrigerant unit comprising:

a plurality of sensors for sensing system parameters of the refrigerant unit, wherein:

the plurality of sensors comprises a first pressure sensor and a second pressure sensor, and a first temperature sensor and a second temperature sensor;

the first and second pressure sensors each comprises a connector that connects to a tube of the refrigerant unit;

the first and second temperature sensors each comprises a temperature sensor clamp having a clamping portion configured to clamp on a tube of the refrigerant unit, the clamping portion including a sensor element to measure temperature about the tube;

each of the first temperature sensor clamp and the second temperature sensor clamp further comprises a handle and integrated electronics, and the integrated electronics are incorporated into the handle and in electrical connection with the sensor element; and

there are no external physical electrical ~~or fluidic~~ connections that extend from the ~~plurality of~~first and second temperature sensors, and there are no external physical fluidic connections that extend from the first and second pressure sensors oppositely from the connectors.

2. (Original) The sensor system of claim 1, wherein:

the first pressure sensor and first temperature sensor are sensors for a high side of the refrigerant system;

the second pressure sensor and the second temperature sensor are sensors for the low side of the refrigerant system.

3. (Original) The sensor system of claim 1, wherein the clamping portion of each of the first temperature sensor clamp and the second temperature sensor clamp

includes a plurality of clamping teeth, and adjacent clamping teeth interlock in an overlapping configuration when the clamps closes inward beyond a threshold point.

4. (Original) The sensor system of claim 1, wherein the clamping portion of each of the first temperature sensor clamp and the second temperature sensor clamp includes a perforated gripping portion for gripping the tube of the refrigerant unit.

5. (Original) The sensor system of claim 4, wherein the gripping portion comprises a grating, wherein when the clamping portion clamps the tube, the grating scores the tube to clean and grip the tube.

6. (Original) The sensor system of claim 1, wherein the integrated electronics include at least one of a power source, a light emitting indicator, and a wireless interface pair button.

7. (Original) The sensor system of claim 1, wherein the integrated electronics and the plurality of sensors are sealed from environmental elements.

8. (Original) The sensor system claim 1, wherein each of the first and second pressure sensors comprises a flare quick connection for connecting the pressure sensors to the refrigerant unit.

9. (Original) The sensor system of claim 8, wherein the first and second pressure sensors further comprise an integrated charging port.

10. (Currently Amended) A temperature sensor clamp for sensing temperature in a refrigerant unit, the temperature sensor clamp comprising:

a clamping portion configured to clamp on a tube of the refrigerant unit, the clamping portion including a sensor element to measure temperature about the tube, and

a handle and integrated electronics, and the integrated electronics are incorporated into a portion of the temperature sensor clamp and are in signal communication with the sensor element;

wherein the temperature sensor clamp has no external physical electrical ~~or fluidic~~ connections.

11. (Original) The temperature sensor clamp of claim 10, wherein the clamping portion includes a perforated gripping portion for gripping the tube of the refrigerant unit.

12. (Original) The temperature sensor clamp of claim 11, wherein the gripping portion comprises a grating, wherein when the clamping portion clamps the tube, the grating scores the tube to clean and grip the tube.

13. (Original) The temperature sensor clamp of claim 10, wherein the integrated electronics include at least one of a battery, a light emitting indicator, and a wireless interface pair button.

14. (Original) The temperature sensor clamp of claim 10, wherein the clamping portion includes a plurality of clamping teeth, and adjacent clamping teeth interlock in an overlapping configuration when the clamp closes inward beyond a threshold point.

15. (Currently Amended) A sensor system for a refrigerant unit comprising:

a plurality of sensors for sensing system parameters of the refrigerant unit; and

wherein:

the plurality of sensors comprises a first pressure sensor and a second pressure sensor, and a first temperature sensor and a second temperature sensor;

the first and second pressure sensors each comprises a connector that connects to a tube of the refrigerant unit;

the first and second temperature sensors each comprises a temperature sensor clamp having a clamping portion configured to clamp on a tube of the refrigerant unit, the clamping portion including a sensor element to measure temperature about the tube;

each of the first temperature sensor clamp and the second temperature sensor clamp further comprises a handle and integrated electronics, and the integrated electronics are incorporated into a portion of the temperature sensor clamp and are in signal communication with the sensor element; and

there are no external physical electrical ~~or fluidic~~ connections that extend from the ~~plurality of~~ first and second temperature sensors, and there are no external physical fluidic connections that extend from the first and second pressure sensors oppositely from the connectors.

16. (Currently Amended) The sensor system of claim 15, wherein:

the first pressure sensor and first temperature sensor are sensors for a high side of the refrigerant system;

the second pressure sensor and the second temperature sensor are sensors for the low side of the refrigerant system.~~.~~

17. (Original) The sensor system of claim 15, further comprising a portable electronic device configured to receive the system parameters from the plurality of sensors and to calculate system conditions for the refrigerant based on the system parameters, and there are no external physical connections among the plurality of sensors and the portable electronic device; and

wherein the system conditions calculated by the portable electronic device comprise superheat and subcooling for the refrigerant system.

18. (Currently Amended) The sensor system of claim 17, ~~further comprising a~~wherein the portable electronic device is configured to receive the system parameters from the plurality of sensors over a wireless interface.

19. (Original) The sensor system of claim 17 wherein the portable electronic device comprises:

a communications interface for wirelessly receiving the system parameters from the plurality of sensors;

a memory storing a program application for calculating system conditions; and

a processor device configured to receive the sensor parameters via the communications interface, and to execute the program application to calculate the system conditions based on the system parameters.

20. (Original) A sensor system for a refrigerant unit comprising:

a plurality of sensors for sensing system parameters of the refrigerant unit; and

a receiving unit that gathers and combines data from at least two of the plurality of sensors;

wherein:

the plurality of sensors comprises a first pressure sensor and a second pressure sensor, and a first temperature sensor and a second temperature sensor;

the first and second temperature sensors each comprises a temperature sensor clamp having a clamping portion configured to clamp on a tube of the refrigerant unit, the clamping portion including a sensor element to measure temperature about the tube;

each of the first temperature sensor clamp and the second temperature sensor clamp further comprises a handle and integrated electronics, and the integrated electronics are incorporated into a portion of the temperature sensor clamp and are in signal communication with the sensor element.

21. (Original) The sensor system of claim 20, wherein:

the receiving unit comprises a portable electronic device;

the first pressure sensor senses pressure on a high side of the refrigerant system and the second pressure sensor senses pressure on a low side of the refrigerant

system, wherein the first pressure sensor and the second pressure sensor are configured for wirelessly communicating pressure sensor data to the portable electronic device;

the first temperature sensor clamp has a clamping portion with a temperature sensor to measure temperature about a tube located on the high side of the refrigerant system and the second temperature sensor clamp has a clamping portion with a temperature sensor to measure temperature about a tube located on the low side of the refrigerant system; and

at least one of the first temperature sensor clamp and the second temperature sensor clamp includes integrated electronics that are configured for wirelessly communicating temperature sensor data to the portable electronic device.

22. (Original) The sensor system of claim 21, wherein the first pressure sensor includes a pressure sensor housing having a threaded end for connection to the high side of the refrigerant system, and the second pressure sensor includes a pressure sensor housing having a threaded end for connection to the low side of the refrigerant system.

23. (Original) The sensor system of claim 22, wherein the pressure sensor housings include an integrated refrigerant charging port.

24. (Original) The sensor system of claim 21, wherein the wireless communication by the pressure sensors and/or the at least one temperature sensor clamp is by Bluetooth communication.

25. (Original) The sensor system of claim 21, wherein the integrated electronics in the first temperature sensor clamp is configured for wirelessly communicating sensor data to the portable electronic device and the integrated electronics in the second temperature sensor clamp are configured for wirelessly communicating sensor data to the portable electronic device

Remarks

Claims 1-25 are pending in the application. The various parts of the Office Action (and other matters, if any) are discussed below under appropriate headings.

I. Claim Objections

The Examiner objects to claims 16 and 18 for minor format issues, which are corrected. The claim objections, therefore, should be withdrawn.

II. Prior Art Rejections

A. Lack of External Physical Connections

Commensurately with the parent case, independent claim 1 is amended as to the nature of the lack of external physical connections from the pressure and temperature sensors. In this regard, the Examiner had interpreted the phrasing "there are no external physical electrical or fluidic connections" to mean that if a given sensor lacks either one of external physical electrical or fluidic connections, but has the other, this claim element is met. Applicant disputes this interpretation, as a proper meaning of such phrasing should be that ***there are no external physical electrical and fluidic connections at all***, i.e., a reference that teaches a temperature sensor clamp that has external physical electrical connections but lacks external physical fluidic connection ***does not*** meet this limitation.

To further prosecution based on the lack of external physical connections, independent claims 1 and 15 as to the sensor system are amended to recite "there are no external physical electrical connections that extend from the first and second temperature sensors, and there are no external physical fluidic connections that extend from the first and second pressure sensors oppositely from the connectors." Independent claim 10 as to the temperature sensor clamp similarly is amended to recite "the temperature sensor clamp has no external physical electrical connections." Based on the lack of external physical connections, independent claims 1, 10, and 15 are patentable, and claims dependent upon such claims are patentable for at least the same reasons.

As detailed in connection with the parent case, in the current application, the depiction and description of the lack of external physical connections among the plurality of sensors is clearly and explicitly set forth.

FIG. 4

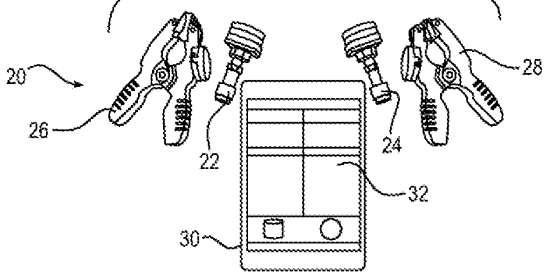
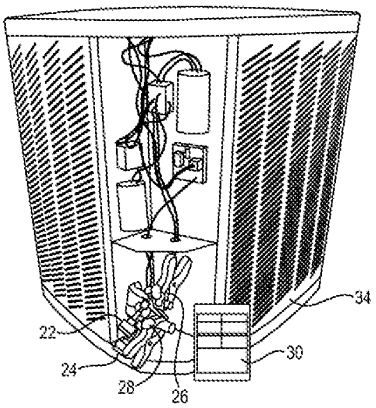


FIG. 5



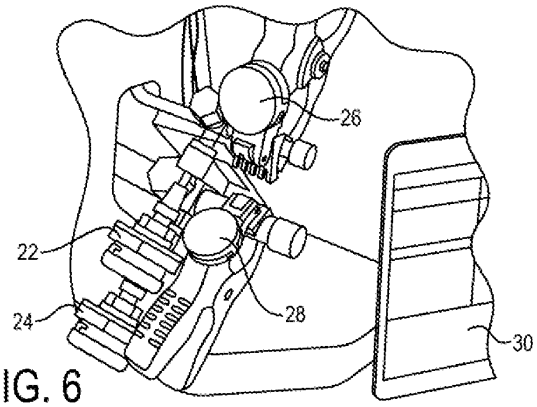


FIG. 6

Application Figs. 4-6, reproduced above, and the related description provide physical and structural representations of the sensors that demonstrate the lack of external physical connections. Such configuration is contrasted against conventional systems as illustrated in application Figs. 1-3 of the current application, reproduced below, which show the use of various external physical electrical and fluidic connections (hose, wires, gauges) that have been employed in conventional configurations.

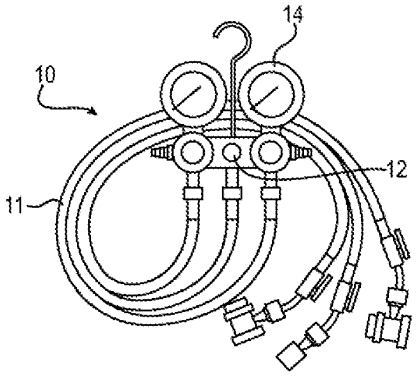


FIG. 1

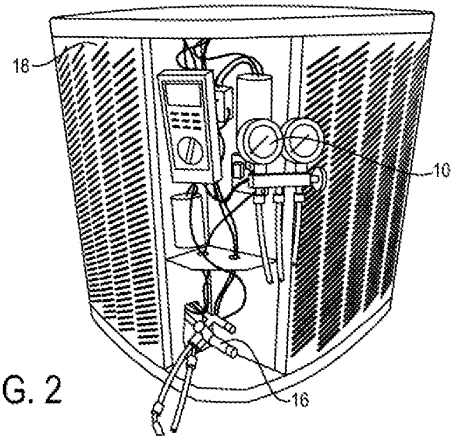


FIG. 2

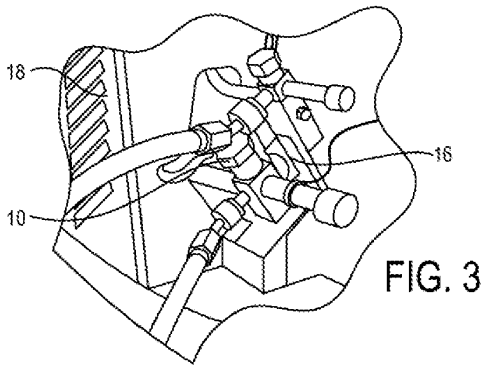
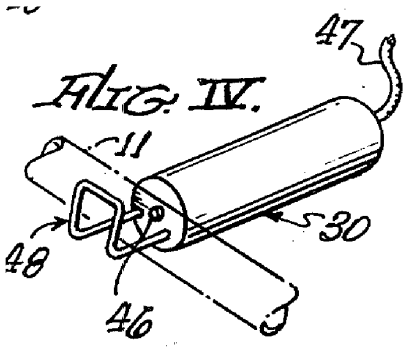


FIG. 3

As described in the current application, the absence of external physical electrical or fluid connections among the sensors 22, 24, 26, and 28 (and the reading device 30) in Applicant's system (Figs. 4-6 above) results in a system that is more portable and otherwise permits full freedom of movement of the operator as compared to conventional configurations (Figs. 1-3 above), as there are no restrictive tethers (neither electrical nor fluidic) among the components. The Examiner's interpretation of such features is precluded by the current claim amendments.

The temperature sensor clamp claims 10-15 stand rejected principally based on Merritt, U.S. 4,144,448 (Merritt). The Examiner likewise cites to Merritt as to temperature sensor clamp features of independent claims 1 and 15, which recite the overall sensor system. In Merritt, the purported temperature sensor clamps 30 (and 30a/30b) clearly have an external physical electrical connection, by which the probe

cable 47 connects the temperature sensor probe 30 to a measuring unit 16 for carrying the sensor signals and for electrical connection to a battery. (Merritt at col. 6, lines 35-37; Figs. II and IV.) Merritt Fig. IV is reproduced below and illustrates the external physical electrical connection implemented as probe cable 47. Merritt, therefore, does not teach the claim feature that the temperature sensor clamp has no external physical electrical connections.



As to the lack of external physical connections for the overall sensor system claims, the Examiner further cites to Bell et al., U.S. 2006/0090484 (Bell). Bell early on was cited and distinguished during the PCT phase, and equally is inapplicable to the current claims.

At a basic level, the sensors in Bell have external physical connections. As to the pressure sensors, Bell teaches that a suction pressure ***line*** 36 is connected between the monitoring unit and the low pressure side of the evaporator 38, and that an auxiliary pressure ***line*** 37 is connected from the monitoring unit to any location on the coolant loop. (Bell at paragraphs [0029, 0031].) Fig. 2 of Bell (reproduced below, with oval indicators added) specifically depicts hose connections of the pressure lines 36 and 37 to the monitoring unit 4. The pressure sensors, therefore, are connected to the measuring unit by external physical fluidic connections.

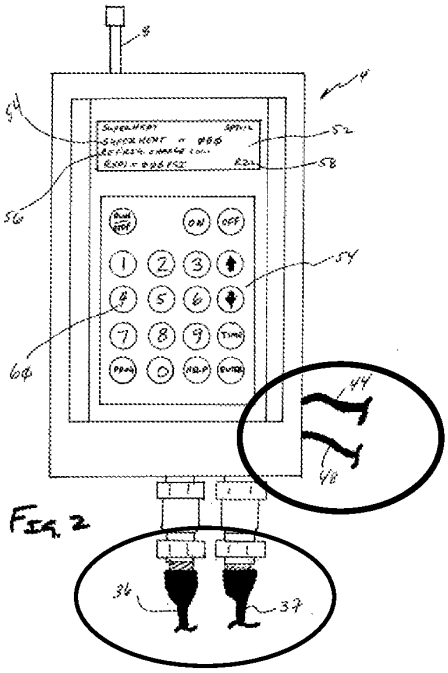


Fig. 2

Regarding the temperature sensors, Bell describes a temperature ***line*** 44 that connects the monitoring unit 4 to a temperature sensor 42 for sensing the temperature of the coolant. A second temperature ***line*** 48 connects a unit temperature sensor 46 to the monitoring unit 4. (Bell at paragraph [0029].) Bell further describes (see paragraph [0033]) a third temperature sensor probe 50 associated with a remote sensing unit 6 that is placed inside a structure being cooled. The remote sensing unit 6 can transmit information received from the sensor probe to the monitoring unit 4. The probe is connected to the sensing unit 6 via probe ***line*** 64, depicted for example in Bell Fig. 4 (reproduced below). The Bell temperature sensors, therefore, all include external physical electrical connections.

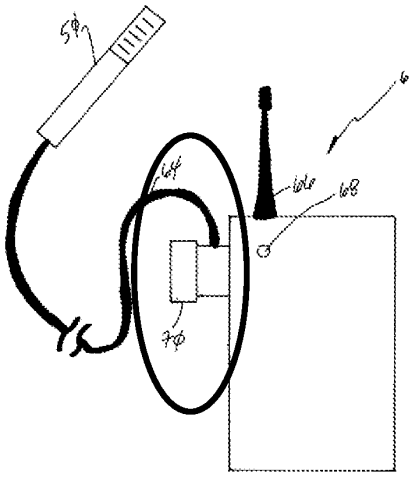


FIG. 4

Bell combined with Merritt, therefore, do not teach the claim features that "there are no external physical electrical connections that extend from the first and second temperature sensors, and there are no external physical fluidic connections that extend from the first and second pressure sensors oppositely from the connectors." This specific configuration of four sensors lacking the recited external physical connections is not taught by the combination of Merritt in view of Bell. Without the configuration of the claimed invention lacking such external physical connections, an operator using the system of Merritt and/or Bell lacks the freedom of movement that a user of the claimed invention has. Independent claims 1, 10, and 15, therefore, are patentable over the cited references, and the dependent claims depending upon independent claims 1, 10, and 15 are patentable for at least the same reasons. The rejections of such claims, therefore, should be withdrawn.

B. Lack of Integrated Electronics In Temperature Sensor Clamps

Further regarding the temperature sensor clamp, the independent claims recite "integrated electronics are incorporated into the handle" of the temperature sensor clamp (e.g., independent claim 1), or more broadly "integrated electronics are incorporated into a portion of the temperature sensor clamp" (e.g., independent claims

10, 15, and 20), with the integrated electronics being in signal communication with the sensor element. Dependent claims (see claims 6 and 13) further recite that the "integrated electronics include at least one of a power source, a light emitting indicator, and a wireless interface pair button." In this manner, sensor data can be transmitted wirelessly to an external processing device, which again avoids the need for having any external physical electrical connections from the temperature sensor clamps.

The Examiner relies on Merritt as teaching the claimed integrated electronics, but Applicant disputes the Examiner's conclusion that Merritt teaches integrated electronics incorporated into the temperature sensor clamp that are in signal communication with the sensor element. ***In Merritt, only the sensor elements 46a/46b are contained in the sensor probes 30a/30b, and the other electronics are part of the measuring unit 16.***

The Examiner relies on Merritt Fig. V for the conclusion that the battery 54 in Merritt is integrated into the probes 30. Merritt Fig V, however, is a ***block diagram*** of the full temperature sensor circuitry, but Merritt Fig V ***is not a structural diagram*** that illustrates the physical relationships among the various components. As to the positioning of the battery, Merritt states: "The present unit 16 is battery operated, and is therefore self-contained." (Merritt at col. 4, lines 64-65.) The battery, therefore, actually is incorporated into the unit 16. The section of Merritt entitled "The Probe" makes no mention that the probes 30 contain a battery. (See Merritt at col. 5, line 40 to col. 6, line 2.) In the regard, Merritt states: "An electronic probe cable 47 transmits the electric probe signals from the temperature-sensitive probe module 46 to temperature circuitry 37 discussed above." (Merritt at col 5, lines 51-54.) In addition, as cited above Merritt further states: "***the probe cable 47*** of Fig. V requires only a wire for carrying the probe signal, and ***two wires for power connection to the battery***. (Merritt at col. 6, lines 35-37, emphasis added.) There is no teaching in Merritt, therefore, that the battery, or any other electronics in addition to the sensor element, are incorporated into the purported temperature sensor clamp. Bell and the other secondary references essentially on their face do not teach such deficiencies of Merritt.

The combined references, therefore, do not teach the claim features pertaining to the integrated electronics of the temperature sensor clamp that are in signal communication with the sensor element, as recited in independent claims 1, 10, 15, and 20, as well as the additional features recited in dependent claims 6 and 13. Such claims, therefore (and any additional associated dependent claims), are patentable over the cited art on such basis in addition to the features pertaining to the lack of external physical connections.

III. Double Patenting

The Examiner asserts an obvious-type double patenting rejection in that the current claims allegedly are not patentably distinct over claims of the parent case. A Terminal Disclaimer is being filed herewith to traverse the double patenting rejection.

IV. Conclusion

In view of the foregoing, request is made for timely examination of the present application.

The absence in this reply of any comments on the other contentions set forth in the Office Action should not be construed to be acquiescence thereof. Rather, no comment is needed since the rejections should be withdrawn for at least the foregoing reasons.

Respectfully submitted,

RENNER, OTTO, BOISSELLE & SKLAR, LLP

By /Lawrence S. Drasner/
Lawrence S. Drasner, Reg. No. 38,127

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(216) 621-1113

Electronic Acknowledgement Receipt	
EFS ID:	38665225
Application Number:	16357511
International Application Number:	
Confirmation Number:	2894
Title of Invention:	HOSE FREE SENSOR SYSTEM FOR REFRIGERANT UNIT
First Named Inventor/Applicant Name:	Christian D. Parker
Customer Number:	49458
Filer:	Lawrence Scott Drasner
Filer Authorized By:	
Attorney Docket Number:	PA7TP0069WOAUSA
Receipt Date:	24-FEB-2020
Filing Date:	19-MAR-2019
Time Stamp:	13:10:22
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		A7T-069-CNT_Filed-OA-Response.pdf	810764 a65bb0f8cac1a8fdec3053197d8becac967d70ca	yes	15

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	7
	Applicant Arguments/Remarks Made in an Amendment	8	15
Warnings:			
Information:			
	Total Files Size (in bytes):	810764	

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New Applications Under 35 U.S.C. 111
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.
National Stage of an International Application under 35 U.S.C. 371
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.
New International Application Filed with the USPTO as a Receiving Office
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/26 U.S. Patent and Trademark Office Department of Commerce

Electronic Petition Request	**TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT**
Application Number	16357511
Filing Date	19-Mar-2019
First Named Inventor	Christian Parker
Attorney Docket Number	PA7TP0069WOAUSA
Title of Invention	HOSE FREE SENSOR SYSTEM FOR REFRIGERANT UNIT

☒ 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
Parker-Hannifin Corporation	100%

The owner(s) with 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 prior patent number(s)

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as the term of said prior patent is presently shortened by any terminal disclaimer. 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 the prior patent 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 the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the prior patent, "as the term of said prior patent is presently shortened by any terminal disclaimer," in the event that said prior patent later:
- 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 presently shortened by any terminal disclaimer.

◉ 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 38127 ○ 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	/LawrenceSDrasner/
Name	Lawrence S Drasner

*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:	16357511
Filing Date:	19-Mar-2019
Title of Invention:	HOSE FREE SENSOR SYSTEM FOR REFRIGERANT UNIT
First Named Inventor/Applicant Name:	Christian D. Parker
Filer:	Lawrence Scott Drasner
Attorney Docket Number:	PA7TP0069WOAUSA
Filed as Large 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	1814	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.: 16357511

Filing Date: 19-Mar-2019

Applicant/Patent under Reexamination: Parker

Electronic Terminal Disclaimer filed on February 24, 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:	38668867
Application Number:	16357511
International Application Number:	
Confirmation Number:	2894
Title of Invention:	HOSE FREE SENSOR SYSTEM FOR REFRIGERANT UNIT
First Named Inventor/Applicant Name:	Christian D. Parker
Customer Number:	49458
Filer:	Lawrence Scott Drasner
Filer Authorized By:	
Attorney Docket Number:	PA7TP0069WOAUSA
Receipt Date:	24-FEB-2020
Filing Date:	19-MAR-2019
Time Stamp:	13:15:12
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$160
RAM confirmation Number	E20202ND15094309
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	33486 c361a35500bb4fbf69155c837e838373cd8e7e31	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30454 88bfce17d106830c1fad1134a272c6f190d0819b	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	63940		

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.

New Applications Under 35 U.S.C. 111
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.
National Stage of an International Application under 35 U.S.C. 371
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.
New International Application Filed with the USPTO as a Receiving Office
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.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 16/357,511	Filing Date 03/19/2019	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $100 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $460 =	
☐ 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).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	02/24/2020	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 25	Minus	** 25	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 4	Minus	*** 4	= 0		x $460 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	SLIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/SHARON M WEST/
*** 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 number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. 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 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.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/357,511	03/19/2019	Christian D. Parker	PA7TP0069WOAUSA	2894

49458 7590 12/10/2019

DON W. BULSON (PARK)
RENNER, OTTO, BOISSELLE & SKLAR, LLP
1621 EUCLID AVENUE / 19TH FLOOR
CLEVELAND, OH 44115

EXAMINER
MA, KUN KAI

ART UNIT	PAPER NUMBER
3763	

NOTIFICATION DATE	DELIVERY MODE
12/10/2019	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):

ipdocket@rennerotto.com

PTOL-90A (Rev. 04/07)

Office Action Summary	Application No. 16/357,511	Applicant(s) Parker et al.	
	Examiner KUN KAI MA	Art Unit 3763	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 03/19/2019.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.** 2b) ☑ This action is non-final.

3)☐ 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.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-25 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-25 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, 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.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☑ The drawing(s) filed on 03/19/2019 is/are: a)☑ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ 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)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☑ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Claim Objections

2. Claims 16 and 18 are objected to because of the following informalities:

There are two period marks at the end of claim 16.

Claim 18 recites the limitation "a portable electronic device" in lines 1-2 which should be recites to --the portable electronic device-- for proper antecedent basis.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a)(1) the claimed invention was patented, described in a printed publication, or in public use, on sale or otherwise available to the public before the effective filing date of the claimed invention.

4. Claim(s) 10-11 and 13 is/are rejected under 35 U.S.C. 102(a)(1) as being anticipated by Merritt (4,114,448).

Regarding claim 10, Merritt discloses a temperature sensor clamp for sensing temperature in a refrigerant unit (see figures I-V), the temperature sensor clamp (see figure IV) comprising:

a clamping portion (46, 48) configured to clamp on a tube (11) of the refrigerant unit (see figures I and IV), the clamping portion including a sensor element (46a or 46b) to measure temperature about the tube (11), and

a handle (the handle portion) and integrated electronics (at least battery 54), and the integrated electronics (at least battery 54) are incorporated into a portion of the temperature sensor clamp (30) and are in signal communication with the sensor element (46a or 46b; see figure V);

wherein the temperature sensor clamp (30) has no external physical electrical or fluidic connections (**alternative limitation**; Merritt discloses the temperature sensor claim 30 has no fluidic connections).

Regarding claim 11, Merritt discloses the clamping portion (46 and 48) includes a perforated gripping portion (48) for gripping the tube (11) of the refrigerant unit (see figures I-V).

Regarding claim 13, Merritt discloses the integrated electronics (at least battery 54) include at least one of a battery (54), a light emitting indicator, and a wireless interface pair button.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 11-12 is/are rejected under 35 U.S.C. 103 as being unpatentable over Merritt in view of Desmarais (6,056,282).

Regarding claim 11, Merritt fails to disclose the clamping portion includes a perforated gripping portion for gripping the tube of the refrigerant unit.

Desmarais teaches a clamping device comprises a gripping portion (20 and 22) comprises a grating (28; Col. 4, lines 44-50; see figure 2).

It would have been obvious to one having ordinary skill in the art before the effective filing date of the claim invention to have modified the sensor system of Merritt to incorporate the grating as taught by Desmarais in order to remove corrosion or dust on the tube such that the sensor can contact the tube properly.

Regarding claim 12, Merritt as modified discloses the gripping portion comprises a grating (28, Desmarais), wherein when the clamping portion clamps the tube, the grating scores the tube to clean and grip the tube (the grating 28 of Desmarais is capable of cleaning and gripping the tube).

7. Claim 14 is/are rejected under 35 U.S.C. 103 as being unpatentable over Merritt in view of Panosian (2005/0098932).

Regarding claim 14, Merritt fails to disclose the clamping portion includes a plurality of clamping teeth, and adjacent clamping teeth interlock in an overlapping configuration when the clamp closes inward beyond a threshold point.

Panosian teaches a spring clamp system comprises a clamping portion of each clamp (see figure 2) includes a plurality of clamping teeth (paragraph [0023]), and

adjacent clamping teeth interlock in an overlapping configuration (see figure 3) when the clamps closes inward beyond a threshold point (see figure 3; paragraph [0023]).

It would been obvious to one having ordinary skill in the art at the time before the effective filing date of the claim invention to have modified the sensor system of Merritt to incorporate teeth and the interlock in an overlapping configuration as taught by Panosian in order to securely clamping the sensor on refrigerant tubes.

8. Claims 1, 4, 6 and 15 is/are rejected under 35 U.S.C. 103 as being unpatentable over Merritt (4,114,448) in view of Bell et al. (2006/0090484).

Regarding claim 1, Merritt discloses a sensor system for a refrigerant unit (see figures I-V) comprising:

a plurality of sensors (30a and 30b) for sensing system parameters (temperatures) of the refrigerant unit (see figures I-IV), wherein:

the plurality of sensors (30a and 30b) comprises a first temperature sensor (30a) and a second temperature sensor (30b);

the first and second temperature sensors (30a and 30b) each comprises a temperature sensor clamp (46, 48 and handle portion) having a clamping portion (46 and 48) configured to clamp on a tube of the refrigerant unit (see figures I-V), the clamping portion (46 and 48) including a sensor element (46a and 46b) to measure temperature about the tube (see figure IV);

each of the first temperature sensor clamp (46, 48 and handle portion of temperature sensor 30a) and the second temperature sensor clamp (46, 48 and handle portion of temperature sensor 30b) further comprises a handle (the handle portion) and

integrated electronics (the integrated electronics within the sensor element 46 such as, battery 54; Col. 6, lines 11-37; see figure V), and the integrated electronics are incorporated into the handle (the handle portion; see figures III and V) and in electrical connection with the sensor element (46a and 46b); and

there are no external physical electrical or fluidic connections (**alternative limitation**; the fluidic connection has been addressed) that extend from the plurality of sensors (Merritt discloses there are no fluidic connections that extend from the plurality of sensors 30a and 30b).

However, Merritt fails to disclose the plurality of sensors comprises a first pressure sensor and a second pressure sensor.

Bell teaches a sensor system for a refrigerant unit comprises a plurality of sensors comprises a first pressure sensor (the pressure sensor 40 which associated with pressure line 36) and a second pressure sensor (pressure sensor which associated with the auxiliary pressure line 37) and a first temperature sensor (42) and a second temperature sensor (46).

It would have been obvious to one having ordinary skill in the art at the time before the effective filing date of the claim invention to have modified the sensor system of Merritt to incorporate the pressure sensors in addition to the temperature sensor as taught by Bell in order to improve data acquisition by directly measuring the pressure of the refrigerant by using pressure sensors instead of obtaining pressure reading by converting temperature reading into pressure reading.

Regarding claim 4, Merritt discloses the clamping portion (46 and 48) of each of the first temperature sensor clamp (30a) and the second temperature sensor clamp

(30b) includes a perforated gripping portion (48) for gripping the tube (11) of the refrigerant unit (see figure IV).

Regarding claim 6, Merritt discloses the integrated electronics (battery; see figure V) include at least one of a power source (battery 54), a light emitting indicator, and a wireless interface pair button.

Regarding claim 15, Merritt modified in detail as in claim 1 above discloses a sensor system (see figures I-V of Merritt and figures 1-3 of Bell) for a refrigerant unit comprising:

a plurality of sensors (the pressure sensors of Bell and temperature sensors of Merritt) for sensing system parameters (pressures and temperatures) of the refrigerant unit (see figures I-V of Merritt and figures 1-3 of Bell); and wherein:

the plurality of sensors comprises a first pressure sensor (the pressure sensor which associated with pressure line 37, Bell) and a second pressure sensor (the pressure sensor which associated with pressure line 36, Bell), and a first temperature sensor (30a) and a second temperature sensor (30b; see figure II of Bell);

the first and second temperature sensors (30a and 30b) each comprises a temperature sensor clamp (46, 48 and handle portion) having a clamping portion (46 and 48) configured to clamp on a tube (11) of the refrigerant unit (see figure IV), the clamping portion (46 and 48) including a sensor element (46a or 46b) to measure temperature about the tube (11; see figure IV);

each of the first temperature sensor clamp (46, 48 and handle portion of sensor 30a) and the second temperature sensor clamp (46, 48 and handle portion of sensor 30b) further comprises a handle (the handle portion) and integrated electronics (at least

the battery 54), and the integrated electronics (battery 54 and terminals) are incorporated into a portion of the temperature sensor clamp (46, 48 and handle portion) and are in signal communication with the sensor element (46a or 46b; see figures I-V); and

there are no external physical electrical or fluidic connections (**alternative limitation**) that extend from the plurality of sensors (Merritt discloses there are no fluidic connections that extend from the plurality of sensors 30a and 30b).

9. Claim 3 is/are rejected under 35 U.S.C. 103 as being unpatentable over Merritt in view of Bell as applied to claim 1 above and further in view of Panosian.

Regarding claim 3, Merritt fails to disclose the clamping portion (48) of each of the first temperature sensor clamp and the second temperature sensor clamp includes a plurality of clamping teeth, and adjacent clamping teeth interlock in an overlapping configuration when the clamps closes inward beyond a threshold point.

Panosian teaches a spring clamp system comprises a clamping portion of each clamp (see figure 2) includes a plurality of clamping teeth (paragraph [0023]), and adjacent clamping teeth interlock in an overlapping configuration (see figure 3) when the clamps closes inward beyond a threshold point (see figure 3; paragraph [0023]).

It would been obvious to one having ordinary skill in the art at the time before the effective filing date of the claim invention to have modified the clamping portion of Merritt to incorporate claimed clamp which includes teeth and the interlock in an overlapping configuration as taught by Panosian in order to securely clamping the sensor on refrigerant tubes.

10. Claims 4-5 is/are rejected under 35 U.S.C. 103 as being unpatentable over Merritt in view of Bell as applied to claim 1 above and further in view of Desmarais.

Regarding claim 4, Merritt discloses the clamping portion (46 and 48) of each of the first temperature sensor clamp (30a) and the second temperature sensor clamp (30b).

However, Merritt fails to disclose the clamping portion of each of the first temperature sensor clamp and the second temperature sensor clamp includes a perforated gripping portion for gripping the tube of the refrigerant unit.

Desmarais teaches a clamping device comprises a gripping portion (20 and 22) comprises a grating (28; Col. 4, lines 44-50; see figure 2).

It would have been obvious to one having ordinary skill in the art before the effective filing date of the claim invention to have modified the sensor system of Merritt to incorporate the grating as taught by Desmarais in order to remove corrosion or dust on the tube such that the sensor can contact the tube properly.

Regarding claim 5, Merritt as modified discloses the gripping portion comprises a grating (28, Desmarais), wherein when the clamping portion clamps the tube, the grating scores the tube to clean and grip the tube (the grating 28 of Desmarais is capable of cleaning and gripping the tube).

11. Claim 7 is/are rejected under 35 U.S.C. 103 as being unpatentable over Merritt in view of Bell as applied to claim 1 above and further in view of Ulrich et al. (2015/0241316).

Regarding claim 7, Merritt fails to disclose the integrated electronics and the plurality of sensors are sealed from environmental elements.

Ulrich teaches a service device for air conditioning systems comprises a stowage compartment for receiving temperature sensor (see figure 4D) such that the temperature sensor is sealed from the environmental elements.

It would have been obvious to one having ordinary skill in the art at the time before the effective filing date of the claim invention to have modified the sensor system of Merritt to incorporate a stowage compartment as taught by Ulrich in order to properly store the plurality of sensors which includes integrated electronics.

12. Claims 1-2, 15-16 and 20 is/are rejected under 35 U.S.C. 103 as being unpatentable over Bell in view of Merritt.

Regarding claim 1, Bell discloses a sensor system for a refrigerant unit (see figures 1-3) comprising:

a plurality of sensors (the pressure sensors which associated with pressure lines 36 and 37 and temperature sensors which associated with temperature lines 44 and 48) for sensing system parameters (pressures and temperatures) of the refrigerant unit (see figures 1-3), wherein:

the plurality of sensors (the pressure sensors which associated with pressure lines 36 and 37 and temperature sensors which associated with temperature lines 44 and 48) comprises a first pressure sensor (the pressure sensor which associated with pressure line 36) and a second pressure sensor (the pressure sensor which associated with pressure line 37), and a first temperature sensor (the temperature sensor which

associated with temperature line 44) and a second temperature sensor (the temperature sensor which associated with temperature line 48);

the first temperature sensors (temperature sensors which associated with temperature line 48) comprises a temperature sensor clamp (46 and 62) having a clamping portion (62) configured to clamp on a tube of the refrigerant unit (see figure 3), the clamping portion (62) including a sensor element (46) to measure temperature about the tube (see figure 3);

the first temperature sensor clamp (46 and 62) further comprises a handle (the handle portion of the C-clamp 62); and

there are no external physical electrical or fluidic connections (**alternative limitation**; the fluidic connection has been addressed) that extend from the plurality of sensors (Bell discloses there are no fluidic connections that extend from the plurality of sensors which associated with pressure lines and temperature lines 36 and 37, and 44 and 48).

However, Bell fails to disclose the first temperature sensor clamp further comprise integrated electronics and the integrated electronics are incorporated into the handle and in electrical connection with the first sensor element and the second temperature sensor comprises a temperature sensor clamp having a clamping portion configured to clamp on a tube of the refrigerant unit, the clamping portion including a sensor element to measure temperature about the tube and the second sensor clamp further comprises a handle and integrated electronics and the integrated electronics are incorporated into the handle and in electrical connection with the second sensor element.

Merritt teaches a sensor system for a refrigerant unit comprises a first temperature sensor (30a) and a second temperature sensor (30b). Wherein the first and second temperature sensors (30a and 30b) each comprises a temperature sensor clamp (46, 48 and handle portion) having a clamping portion (46 and 48) configured to clamp on a tube of the refrigerant unit (see figures I-V), the clamping portion (46 and 48) including a sensor element (46a and 46b) to measure temperature about the tube (see figure IV); each of the first temperature sensor clamp (46, 48 and handle portion of temperature sensor 30a) and the second temperature sensor clamp (46, 48 and handle portion of temperature sensor 30b) further comprises a handle (the handle portion) and integrated electronics (the integrated electronics within the sensor element 46 such as, battery 54; Col. 6, lines 11-37; see figure V), and the integrated electronics are incorporated into the handle (the handle portion; see figures III and V) and in electrical connection with the sensor element (46a and 46b).

It would have been obvious to one having ordinary skill in the art at the time before the effective filing date of the claim invention to have modified the sensor system of Bell to substitute the claimed temperature sensors as taught by Merritt in order to measure the refrigerant temperature by clamping the temperature sensors on the refrigerant tube (see **MPEP 2143 B**).

Regarding claim 2, Bell discloses the first pressure sensor (the pressure sensor which associated with the pressure line 37) and first temperature sensor (the temperature sensor which associated with the temperature line 48) are sensors for a high side of the refrigerant system (high pressure side of the refrigerant system); the second pressure sensor (the pressure sensor which associated with the suction

pressure line 36) and the second temperature sensor (the temperature sensor which associated with the suction temperature line 44) are sensors for the low side of the refrigerant system (low pressure side of the refrigerant system).

Regarding claim 15, Bell as modified in detail as in claim 1 above discloses a sensor system for a refrigerant unit (see figures 1-3 of Bell and figures IV-V of Merritt) comprising:

a plurality of sensors (the pressure sensors which associated with pressure lines 36 and 37 and the temperature sensor which associated with temperature lines 44 and 48) for sensing system parameters (pressures and temperatures) of the refrigerant unit (see figures 1-3 of Bell); and

wherein:

the plurality of sensors comprises a first pressure sensor (the pressure sensor which associated with pressure line 37) and a second pressure sensor (the pressure sensor which associated with pressure line 36), and a first temperature sensor (the temperature sensor which associated with temperature line 48) and a second temperature sensor (the temperature sensor which associated with temperature line 44);

the first and second temperature sensors (the temperature sensor which associated with temperature lines 44 and 48) each comprises a temperature sensor clamp (46, 48 and handle portion, Merritt) having a clamping portion (46 and 48) configured to clamp on a tube of the refrigerant unit (see figures 1-3 of Bell and figure IV, Merritt), the clamping portion (46 and 48) including a sensor element (46a or 46b) to measure temperature about the tube (see figures 1-3 of Bell and figure IV, Merritt);

each of the first temperature sensor clamp (46, 48 and handle portion of sensor 30a, Merritt) and the second temperature sensor clamp (46, 48 and handle portion of sensor 30b, Merritt) further comprises a handle (handle portion) and integrated electronics (at least battery 54, voltage divider and terminals), and the integrated electronics (at least battery 54, voltage divider and terminals) are incorporated into a portion of the temperature sensor clamp (46 and 48) and are in signal communication with the sensor element (46a or 46b; see figures IV-V); and

there are no external physical electrical or fluidic connections (**alternative limitation**) that extend from the plurality of sensors (Bell discloses there are no fluidic connections that extend from the plurality of sensors which associated with pressure lines and temperature lines 36 and 37, and 44 and 48).

Regarding claim 16, Bell as modified discloses the first pressure sensor (the pressure sensor which associated with the pressure line 37) and first temperature sensor (the temperature sensor which associated with the temperature line 48) are sensors for a high side of the refrigerant system (high pressure side of the refrigerant system); the second pressure sensor (the pressure sensor which associated with the suction pressure line 36) and the second temperature sensor (the temperature sensor which associated with the suction temperature line 44) are sensors for the low side of the refrigerant system (low pressure side of the refrigerant system).

Regarding claim 20, Bell as modified in detail as in claim 1 above discloses a sensor system for a refrigerant unit (see figures 1-3 of Bell and figures IV-V of Merritt) comprising:

a plurality of sensors (the pressure sensors which associated with pressure lines 36 and 37 and the temperature sensor which associated with temperature lines 44 and 48) for sensing system parameters (pressures and temperatures) of the refrigerant unit (see figures 1-3 of Bell); and

a receiving unit (4) that gathers and combines data from at least two of the plurality of sensors (36, 37, 44 and 48);

wherein:

the plurality of sensors (36, 37, 44 and 48) comprises a first pressure sensor (37) and a second pressure sensor (36), and a first temperature sensor (48) and a second temperature sensor (44; see figure 2 of Bell);

the first and second temperature sensors (44 and 48) each comprises a temperature sensor clamp (see figure IV of Merritt) having a clamping portion (46, 48 and handle portion) configured to clamp on a tube of the refrigerant unit (see figure IV of Merritt), the clamping portion (46, 48 and handle portion) including a sensor element (46a or 46b) to measure temperature about the tube (see figure IV of Merritt);

each of the first temperature sensor clamp (30a) and the second temperature sensor clamp (30b; see figure IV of Merritt) further comprises a handle (the handle portion) and integrated electronics (at least the battery 54, the voltage divider and terminals), and the integrated electronics (at least the battery 54, the voltage divider and terminals) are incorporated into a portion of the temperature sensor clamp (30a and 30b) and are in signal communication with the sensor element (46a or 46b; see figures I-V of Merritt).

13. Claims 8-9 is/are rejected under 35 U.S.C. 103 as being unpatentable over Bell in view of Merritt as applied to claim 1 above and further in view of Brown et al. (6,334,320).

Regarding claim 8, Bell discloses the first and second pressure sensors (the pressure sensors which associated with the pressure lines 36 and 37) connected to the refrigerant unit (see figures 1-2).

However, Bell fails to disclose each of the first and second pressure sensors comprises a flare quick connection.

Brown teaches an electronic manifold for a refrigerant servicing unit comprises a pressure transducer which comprises a flare quick connection for connecting the pressure sensor to the refrigerant unit (Col. 3, lines 1-10; see figures 1-5).

It would have been obvious to one having ordinary skill in the art at the time before the effective filing date of the claim invention to have modified the sensor system of Bell to incorporate the flare-type connection as taught by Brown in order to secure the coupling of the pressure sensor.

Regarding claim 9, Bell as modified discloses the first and second pressure sensors further comprise an integrated charging port (electrical conductor 34; see figure 4 of Brown).

14. Claims 17-19, 21 and 24-25 is/are rejected under 35 U.S.C. 103 as being unpatentable over Bell in view of Merritt as applied to claims 15 and 20 above and further in view of Ulrich and Porter et al. (2008/0077260).

Regarding claim 17, Bell as modified discloses further comprises a portable electronic device (4, see figure 2) configured to receive the system parameters (pressures and temperature) from the plurality of sensors (36, 37, 44 and 48) and to calculate system conditions (superheat and subcooling) for the refrigerant based on the system parameters (pressures and temperatures), and wherein the system conditions calculated by the portable electronic device (4) comprise superheat for the refrigerant system (see abstract).

However, Bell fails to disclose there are no external physical connections among the plurality of sensors and the portable electronic device and the system conditions calculated by the portable electronic device comprise subcooling.

Ulrich teaches the portable electronic device (120) and the system conditions calculated by the portable electronic device (120) comprise superheat and subcooling (paragraph [0033]).

It would have been obvious to one having ordinary skill in the art at the time before the effective filing date of the claim invention to have modified the sensor system of Bell to incorporate a subcooling system condition as taught by Ulrich in order to improve the analysis accuracy of the refrigeration system.

Porter teaches a refrigeration system comprises the sensor system (eight sensors 145) in wireless communication with the electronic device (150) wherein there are no external physical connections among the plurality of sensors (145) and the electronic device (150; see figure 1).

It would have been obvious to one having ordinary skill in the art at the time before the effective filing date of the claim invention to have modified the sensor system

of Bell to incorporate wireless communication between sensors and portable electronic device as taught by Porter in order to avoid physical connection complexity.

Regarding claim 18, Bell as modified discloses the sensor system further comprises a portable electronic device (4) is configured to receive the system parameters (pressures and temperatures) from the plurality of sensors (36, 37, 44 and 48) over a wireless interface (see figure 1 of Porter).

Regarding claim 19, Bell as modified discloses the portable electronic device (4) comprises:

a communications interface for wirelessly receiving the system parameters (pressures and temperatures) from the plurality of sensors (36, 37, 44 and 48; see figure 1 of Porter);

a memory storing a program application (bottom PROG in the electronic device; see figure 2) for calculating system conditions (superheat and subcooling; Ulrich); and

a processor device (it is understood to one having ordinary skill in the art that the electronic device includes a processor to executes the program to calculate the superheat and subcooling) configured to receive the sensor parameters (pressures and temperatures) via the communications interface (see figure 1 of Porter), and to execute the program application (PROG) to calculate the system conditions (superheat and subcooling) based on the system parameters (pressures and temperatures).

Regarding claim 21, Bell as modified discloses the receiving unit comprises a portable electronic device (4; see figure 2 of Bell);

the first pressure sensor (37) senses pressure on a high side of the refrigerant system (high pressure side of evaporator) and the second pressure sensor (36) senses

pressure on a low side of the refrigerant system (low pressure side of evaporator), wherein the first pressure sensor (37) and the second pressure sensor (36) are configured for wirelessly communicating pressure sensor data to the portable electronic device (4; see figure 1 of Porter);

the first temperature sensor clamp (46, 48 and handle portion of sensor 30a) has a clamping portion (46 and 48) with a temperature sensor (46a) to measure temperature about a tube located on the high side of the refrigerant system (high pressure side of the system; see figure IV of Merritt) and the second temperature sensor clamp (46, 48 and handle portion of sensor 30b) has a clamping portion (46 and 48) with a temperature sensor (46b) to measure temperature about a tube located on the low side of the refrigerant system (low pressure side of the system); and

at least one of the first temperature sensor clamp and the second temperature sensor clamp includes integrated electronics (at least the battery 54, voltage divider and terminals) that are configured for wirelessly communicating (see figure 1 of Porter) temperature sensor data to the portable electronic device (4; see figure IV of Merritt).

Regarding claim 24, Bell as modified discloses the wireless communication by the pressure sensors and/or the at least one temperature sensor clamp (44 and 48) is by Bluetooth communication (paragraph [0066], Porter).

Regarding claim 25, Bell as modified discloses the integrated electronics (the electronics of the temperature sensitive module 46) in the first temperature sensor clamp (46 and 48, Merritt) is configured for wirelessly communicating (Porter) sensor data to the portable electronic device (4, Bell) and the integrated electronics (the electronics of the temperature sensitive module 46) in the second temperature sensor

clamp (46 and 48, Merritt) are configured for wirelessly communicating (Porter) sensor data to the portable electronic device (4, Bell; see figures 1-3 of Bell, figures IV-V of Merritt and figure 1 of Porter).

15. Claims 22-23 is/are rejected under 35 U.S.C. 103 as being unpatentable over Bell in view of Merritt, Ulrich and Porter as applied to claim 21 above and further in view of Brown.

Regarding claim 22, Bell as modified discloses the first pressure sensor (37) for connection to the high side of the refrigerant system (high pressure side of the system), and the second pressure sensor (36) for connection to the low side of the refrigerant system (low pressure side of the system).

However, Bell fails to disclose the first pressure sensor (37) includes a pressure sensor housing having a threaded end, and the second pressure sensor (36) includes a pressure sensor housing having a threaded end.

Brown teaches pressure transducer includes a pressure sensor housing (50) having a threaded end (54; see figures 3-4).

It would have been obvious to one having ordinary skill in the art at the time before the effective filing date of the claim invention to have modified the pressure sensors of Bell to incorporate the claimed structure of the sensors as taught by Brown in order to provide securer connection to attach the pressure sensors to the refrigerant system.

Regarding claim 23, Bell as modified discloses the pressure sensor housing includes an integrated refrigerant charging port (51; see figures 3-4 of Brown).

Double Patenting

16. 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(l)(1) - 706.02(l)(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 1-25 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-16 and 19-20 of U.S. Patent No. 10,281,183B2. Although the claims at issue are not identical, they are not patentably distinct from each other.

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KUN KAI MA whose telephone number is (571)-270-3530. The examiner can normally be reached on Monday-Friday 9am-6pm.

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, Jianying Atkisson can be reached on 5712707740. 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 Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KUN KAI MA/
Primary Examiner, Art Unit 3763

Notice of References Cited	Application/Control No. 16/357,511	Applicant(s)/Patent Under Reexamination Parker et al.	
	Examiner KUN KAI MA	Art Unit 3763	Page 1 of 1

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*	B	US-6056282-A	05-2000	Desmarais; Carey	B25B5/003	269/152
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	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
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	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.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/357,511	Parker et al.
	Examiner	Art Unit
	KUN KAI MA	3763

CPC - Searched*		
Symbol	Date	Examiner
f25b 49/00, 2700/21, 19	12/05/2019	KM

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
Inventor search	11/25/2019	KM
EAST search (see attached)	12/05/2019	KM

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

Bibliographic Data

Application No: 16/357,511

Foreign Priority claimed: ○ Yes ◉ No

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

Verified and Acknowledged: /KUN KAI MA/ Examiner's Signature | Initials

Title: HOSE FREE SENSOR SYSTEM FOR REFRIGERANT UNIT

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
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CONTINUING DATA

This application is a CON of 14913834 02/23/2016 PAT 10281183

14913834 is a 371 of PCT/US2015/011900 01/19/2015

PCT/US2015/011900 has PRO of 61929363 01/20/2014

yes /KM/

FOREIGN APPLICATIONS

none /KM/

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S133	124	((("PARKER") near3 ("Christian")) OR (("PLASSMEYER") near3 ("Timothy")) OR (("RUETHER") near3 ("James")) OR (("DUNN") near3 ("Jason")) OR (("ELLIS") near3 ("Shawn"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2019/11/25 19:35
S134	723	f25b2700/21.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/26 09:33
S135	786	f25b2700/19.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/26 10:26
S136	2078	62/129.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/12/04 15:36
S137	1	("20150241316").pn.	US-PGPUB; USPAT	OR	ON	2019/12/04 16:37
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT	PA7TP0069WOAUSA	HEREWITH
	First Named Inventor: Christian Parker	
(Use several sheets if necessary)	Filing Date March 19, 2019	Art Unit Not Yet Assigned

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EXAMINER SIGNATURE	/KUN KAI MA/	DATE CONSIDERED	12/05/2019

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Information Disclosure Statement Form PTO/SB/08a (Modified)

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