



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

NOTICE OF ALLOWANCE AND FEE(S) DUE

8698 7590 09/10/2019
STANDLEY LAW GROUP LLP
6300 Riverside Drive
Dublin, OH 43017

EXAMINER

MATEY, MICHAEL A

ART UNIT

PAPER NUMBER

2835

DATE MAILED: 09/10/2019

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/789,331	10/20/2017	William Dunn	MAN2241-045P	2408

TITLE OF INVENTION: ELECTRONIC DISPLAY WITH COOLING

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	12/10/2019

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

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

8698 7590 09/10/2019
STANDLEY LAW GROUP LLP
6300 Riverside Drive
Dublin, OH 43017

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.
15/789,331	10/20/2017	William Dunn	MAN2241-045P	2408

TITLE OF INVENTION: ELECTRONIC DISPLAY WITH COOLING

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	12/10/2019

EXAMINER	ART UNIT	CLASS-SUBCLASS
MATEY, MICHAEL A	2835	361-688000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) The names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
- (2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
- 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☐ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

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

- ☐ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. **Change in Entity Status** (from status indicated above)

- ☐ Applicant certifying micro entity status. See 37 CFR 1.29
- ☐ Applicant asserting small entity status. See 37 CFR 1.27
- ☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____



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.
15/789,331	10/20/2017	William Dunn	MAN2241-045P	2408
8698 7590 09/10/2019 STANDLEY LAW GROUP LLP 6300 Riverside Drive Dublin, OH 43017			EXAMINER MATEY, MICHAEL A	
			ART UNIT	PAPER NUMBER
			2835	
DATE MAILED: 09/10/2019				

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. 15/789,331	Applicant(s) Dunn et al.	
	Examiner MICHAEL A MATEY	Art Unit 2835	AIA (FITF) Status No

-- 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 08/05/19.
☐ 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 1-20. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov**.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:
a) ☐ All b) ☐ Some *c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)	5. ☐ Examiner's Amendment/Comment
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.	6. ☒ Examiner's Statement of Reasons for Allowance
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.	7. ☐ Other _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.	

/M.M/ Examiner, Art Unit 2835	/HUNG S. BUI/ Primary Examiner, Art Unit 2835
----------------------------------	--

Notice of Pre-AIA or AIA Status

The present application is being examined under the pre-AIA first to invent provisions.

DETAILED ACTION

Allowable Subject Matter

1. **Claims 1-20 are allowable.**

The following is an examiners statement of reasons for allowance:

Upon conclusion of a comprehensive search of the pertinent prior art, the office indicates that the claims are allowable.

Regarding independent claim 1, patentability exists, at least in part, with the claimed combination of elements and features of:

An electronic display comprising: an electronic image assembly having a front portion and a rear portion; **an open loop ambient air flow path behind the rear portion of the electronic image assembly; a closed loop gas circulation path about the electronic image assembly; a common heat exchanger located in the pathway of both the closed loop gas circulation path and the open loop ambient air flow path; a gas circulation device positioned to force circulating gas through the common heat exchanger; and an air circulation device positioned to force ambient air through the common heat exchanger.**

Regarding independent claim 8, patentability exists, at least in part, with the claimed combination of elements and features of:

An electronic display comprising: an electronic image assembly having a front portion and a rear portion; **a closed loop gas circulation path encircling the**

electronic image assembly; an open loop ambient air flow path behind the rear portion of the electronic image assembly; a substantially planar surface located behind and spaced apart from the rear portion of the electronic image assembly, the space between the substantially planar surface and the rear portion of the electronic image assembly defining a rear channel; a common heat exchanger in gaseous communication with both the closed loop gas circulation path and the open loop ambient air flow path; at least one fan positioned to force circulating gas through the closed loop gas circulation path; at least one fan positioned to force ambient air through the open loop ambient air flow path.

Regarding independent claim 17, patentability exists, at least in part, with the claimed combination of elements and features of:

A cooling system for an electronic image assembly, comprising: **an open loop ambient air flow path at a rear portion of the electronic image assembly; a closed loop gas circulation path encircling the electronic image assembly; a common heat exchanger in gaseous communication with both the closed loop gas circulation path and the open loop ambient air flow path; a front channel defined by a space between a front portion of the electronic image assembly and a front display surface located forward of and spaced apart from the front portion of the electronic image assembly, the front channel forming a part of the closed loop gas circulation path; a rear channel defined by a space between the rear portion of the electronic image assembly and a substantially planar surface located behind and spaced apart from the rear portion of the electronic image assembly, the rear channel forming a part of the open loop ambient air flow path; at least**

one fan positioned to force circulating gas through the closed loop gas circulation path and the common heat exchanger; and at least one fan positioned to force ambient air through the open loop ambient air flow path and the common heat exchanger.

2. 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

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL A MATEY whose telephone number is (571)270-5648. The examiner can normally be reached on Monday-Friday 9AM-6PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JAYPRAKASH GANDHI can be reached on 5712723740. 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

Application/Control Number: 15/789,331
Art Unit: 2835

Page 5

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.

/M. M./
Examiner, Art Unit 2835

/HUNG S. BUI/
Acting Patent Examiner, 2835/2800

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No.: 15/789,331

Confirm. No.: 2408

Filed: 10/20/2017

Examiner: Michael A. Matey

Inventor: William Dunn; Tim Hubbard

Art Unit: 2835

Title: ELECTRONIC DISPLAY
WITH COOLING

Attorney
Docket No.: MAN2241-045P

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

FILED ELECTRONICALLY VIA EFS WEB ON 01/07/2018

RESPONSE TO OFFICE ACTION

The following amendments and remarks are in response to the Office Action mailed on 10/05/2018. It is respectfully requested that the Examiner consider the following amendments and remarks prior to further examination of the present application.

AMENDMENTS

- **A Listing of the Claims** begins on page 3 of this Response.
- **Remarks/Arguments** begin on page 9 of this Response.

Listing of the Claims

The following listing of the claims is provided for the Examiner's convenience:

Claims:

1 (original): An electronic display comprising:

- an electronic image assembly having a front portion and a rear portion;
- an open loop ambient air flow path behind the rear portion of the electronic image assembly;
- a closed loop gas circulation path about the electronic image assembly;
- a common heat exchanger located in the pathway of both the closed loop gas circulation path and the open loop ambient air flow path;
- a gas circulation device positioned to force circulating gas through the common heat exchanger; and
- an air circulation device positioned to force ambient air through the common heat exchanger.

2 (original): The electronic display of claim 1, further comprising:

- a substantially planar surface located behind and spaced apart from the rear portion of the electronic image assembly; and
- a space defined between the rear portion of the electronic image assembly and the substantially planar surface;

wherein the space is in gaseous communication with the open loop ambient air flow path.

3 (original): The electronic display of claim 2, wherein the substantially planar surface is a plate.

4 (original): The electronic display of claim 2, wherein the substantially planar surface is a portion of the heat exchanger.

5 (original): The electronic display of claim 1, further comprising:

a front display surface spaced apart from the front portion of the electronic image assembly; and

a front channel defined by the space between the front display surface and the front portion of the electronic image assembly, the front channel forming part of the closed loop gas circulation path.

6 (original): The electronic display of claim 1, further comprising at least one electronic component located in the pathway of the closed loop gas circulation path, the at least one electronic component selected from the group consisting of transformers, circuit boards, resistors, capacitors, batteries, power modules, motors, inductors, illumination devices, wiring, wiring harnesses, lights, thermo-electric devices, and switches.

7 (original): The electronic display of claim 1, further comprising a cooling device placed near an entrance to the open loop ambient air flow path for reducing the temperature of ambient air entering the open loop ambient air flow path.

8 (original): An electronic display comprising:

an electronic image assembly having a front portion and a rear portion;

a closed loop gas circulation path encircling the electronic image assembly;

an open loop ambient air flow path behind the rear portion of the electronic image assembly;

a substantially planar surface located behind and spaced apart from the rear portion of the electronic image assembly, the space between the substantially planar surface and the rear portion of the electronic image assembly defining a rear channel;

a common heat exchanger in gaseous communication with both the closed loop gas circulation path and the open loop ambient air flow path;

at least one fan positioned to force circulating gas through the closed loop gas circulation path;

at least one fan positioned to force ambient air through the open loop ambient air flow path.

9 (original): The electronic display of claim 8, wherein the open loop ambient air flow path is also in gaseous communication with the rear channel.

10 (original): The electronic display of claim 8, further comprising a second open loop ambient air flow path in gaseous communication with the rear channel.

11 (original): The electronic display of claim 8, wherein:

the common heat exchanger includes first and second gas pathways, the first and second gas pathways being isolated from each other;

where the first gas pathway is in gaseous communication with the open loop ambient air flow path; and

where the second gas pathway is in gaseous communication with the closed loop gas circulation path.

12 (original): The electronic display of claim 11, wherein the first gas pathway is also in gaseous communication with the rear channel.

13 (original): The electronic display of claim 8, wherein the substantially planar surface is a plate.

14 (original): The electronic display of claim 8, wherein the substantially planar surface is a portion of the heat exchanger.

15 (original): The electronic display of claim 8, further comprising:

a front display surface spaced apart from the front portion of the electronic image assembly; and

a front channel defined by a space between the front display surface and the front portion of the electronic image assembly, the front channel forming part of the closed loop gas circulation path.

16 (original): The electronic display of claim 8, further comprising at least one electronic component located in the pathway of the closed loop gas circulation path, the at least one electronic component selected from the group consisting of transformers, circuit boards, resistors, capacitors, batteries, power modules, motors, inductors, illumination devices, wiring, wiring harnesses, lights, thermo-electric devices, and switches.

17 (original): A cooling system for an electronic image assembly, comprising:

an open loop ambient air flow path at a rear portion of the electronic image assembly;

a closed loop gas circulation path encircling the electronic image assembly;

a common heat exchanger in gaseous communication with both the closed loop gas circulation path and the open loop ambient air flow path;

a front channel defined by a space between a front portion of the electronic image assembly and a front display surface located forward of and spaced apart from the front portion of the electronic image assembly, the front channel forming a part of the closed loop gas circulation path;

a rear channel defined by a space between the rear portion of the electronic image assembly and a substantially planar surface located behind and spaced apart from the rear portion of the electronic image assembly, the rear channel forming a part of the open loop ambient air flow path;

at least one fan positioned to force circulating gas through the closed loop gas circulation path and the common heat exchanger; and

at least one fan positioned to force ambient air through the open loop ambient air flow path and the common heat exchanger.

18 (original): The cooling system of claim 17, wherein the substantially planar surface is a plate.

19 (original): The cooling system of claim 17, wherein the substantially planar surface is a portion of the common heat exchanger.

20 (original): The cooling system of claim 17, further comprising at least one electronic component located in the pathway of the closed loop gas circulation path, the at least one electronic component selected from the group consisting of transformers, circuit boards, resistors, capacitors, batteries, power modules, motors, inductors, illumination devices, wiring, wiring harnesses, lights, thermo-electric devices, and switches.

REMARKS/ARGUMENTS

In the Claims:

Claims 1-20 were pending in the application as of the mailing date of the current Office Action, with all of said claims being rejected. Claims 1-20 remain pending in the application.

Rejection of Claims 1-20 Under 35 U.S.C. § 102

The Examiner rejected Claims 1-20 under 35 U.S.C. § 102(a)(1)¹ as being anticipated by Thielemans et al. (US 2004/0135482). The rejection is respectfully traversed.

The rejected independent claims recite *an open loop ambient air flow path behind the rear portion of the electronic image assembly* (Claims 1 and 8) and *an open loop ambient air flow path at a rear portion of the electronic image assembly*. In addition to the open loop ambient air flow path, Independent Claim 1 also recites *a closed loop gas circulation path about the electronic image assembly*, and independent Claims 8 and 17 both recite *a closed loop gas circulation path encircling the electronic image assembly*. Thielemans et al. (hereinafter Thielemans) fails to teach – or even suggest – a closed loop (or any) gas circulation path about or encircling an electronic image assembly.

The electronic display arrangements of Thielemans as shown in, e.g., FIGS. 1a-1b, include an LED array (14) separated from associated drive circuitry by some distance so that a cooling channel (34) is formed therebetween. A heat sink (22) is arranged along

¹ It is noted that the present application claims priority – through a series of continuations – to U.S. Provisional Application No. 61/138,736, which has a pre-AIA filing date of December 18, 2008.

a rear surface of the LED array (14) so as to form one wall of the cooling channel (34). A thermal pad (24) may also be interposed between the heat sink (22) and the LED array (14). An air inlet portion (42) and an air outlet portion (44) reside at opposite ends of the cooling channel (34), such that the cooling channel is open to the outside environment at each end. A fan (40) forces outside air into the air inlet portion (42), through the cooling channel (34), and out of the air outlet portion (44) to the outside environment. It is described that in other embodiments, the air flow through the cooling channel may be a closed loop air flow instead of an open loop air flow. It is described that in yet other embodiments, a liquid may be forced through the cooling channel instead of a gas such as air.

While Thielemans may generally describe an open loop ambient air flow path behind or at a rear portion of an electronic image assembly, as is recited in the rejected claims, Thielemans fails to teach a closed loop gas circulation path about or encircling the electronic image assembly. The Examiner cites to, for example, paragraphs [0051]-[0054] of Thielemans for such an alleged disclosure. However, a close reading of said paragraphs reveals that the flow paths described therein are simply the aforementioned open loop or closed loop type air/fluid flow through the cooling channel (34) – not any type of air or fluid circulation path about or around the LED array (14).

Not only does Thielemans fail to teach a closed loop gas circulation path about or encircling the electronic image assembly, Thielemans actually teaches away from such a construction. In addition to the fact that a thermal pad (24) is shown to reside between the heat sink (22) and LED array (14) of the Thielemans flat panel display device, air or fluid passing through the cooling channel (34) is further deliberately prohibited from

leaving the channel and moving toward the LED array (14). More specifically, according to Thielemans, “*the cooling channel 34 is **sealed from both the array 14 and the drive circuitry.***” (See paragraph [0051] at ll. 8-10; emphasis added). It is due to the fact that “*the cooling channel 34 is completely sealed from the drive circuitry 30, the electrical connections 28 and the array 14 of light emitting devices,*” that allows for the possibility of using a liquid instead of air as a cooling fluid within the cooling channel. (See paragraph [0052] at ll. 1-4). Therefore, Thielemans does not and cannot teach a closed loop gas circulation path about or encircling an electronic image assembly, as is asserted by the Examiner.

From the foregoing remarks, it can be understood that there are significant differences between the teachings of Thielemans and the subject matter of the rejected claims. Consequently, it is submitted that Thielemans cannot support a rejection of Claims 1-20 under 35 U.S.C. § 102, and withdrawal of said rejection is accordingly requested.

CONCLUSION

The subject matter of the rejected claims has been distinguished over the teachings of the reference cited as prior art by the Examiner. Therefore, it is respectfully submitted that the application is now in condition for allowance, and such action is earnestly requested. Telephone inquiry to the undersigned in order to clarify or otherwise expedite prosecution of the application is encouraged.

Respectfully submitted,

Date: 01/07/2019

By: /Eric M. Gayan/

Response to Office Action of: 10/05/2018
Response Dated: 01/07/2019
Title: ELECTRONIC DISPLAY WITH COOLING

App. No.: 15/789,331
Inventor: William Dunn et al.
Examiner: Michael A. Matey

Eric M. Gayan
Attorney for Applicants
Registration No. 46,103
Standley Law Group LLP
6300 Riverside Drive
Dublin, Ohio 43017
Telephone: (614) 792-5555
Facsimile: (614) 792-5536
E-mail: egayan@standleyllp.com



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.
15/789,331	10/20/2017	William Dunn	MAN2241-045P	2408
8698	7590	10/05/2018		
STANDLEY LAW GROUP LLP			EXAMINER	
6300 Riverside Drive			MATEY, MICHAEL A	
Dublin, OH 43017				
			ART UNIT	PAPER NUMBER
			2835	
			NOTIFICATION DATE	DELIVERY MODE
			10/05/2018	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):

standleydocketing@standleyllp.com

Office Action Summary	Application No. 15/789,331	Applicant(s) Dunn et al.	
	Examiner MICHAEL A MATEY	Art Unit 2835	AIA Status No

-- 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 10/20/17.
☐ 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) 1-20 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) 1-20 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 10/20/17 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: ____.

Notice of Pre-AIA or AIA Status

The present application is being examined under the pre-AIA first to invent provisions.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. In the event that the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

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.

Claim(s) 1-20 is/are rejected under 35 U.S.C. 102(a)(1) as being anticipated by Thielemans et al. US2004/0135482.

Per claim 1 Thielemans et al. teaches an electronic display (10, see fig.1a-1b) comprising: an electronic image assembly ((12, 28), (22, 24) & 30, see fig.1a-1b) having a front portion (22 & 24, see fig.1b) and a rear portion (30); an open loop ambient air flow path ((42, 44) & 34) behind the rear portion (see fig.1b, “38 is the behind portion”) of the electronic image assembly ([0051]-[0053] & [0056]); a closed loop gas circulation

path (22 & 34; [0051] & [0052], line 7-9) about the electronic image assembly ([0051]-[0053] & [0054]); a common heat exchanger (22) located in the pathway of both the closed loop gas circulation path and the open loop ambient air flow path ([0051]-[0053]); a gas circulation device positioned to force circulating gas through the common heat exchanger ([0053]); and an air circulation device positioned to force ambient air through the common heat exchanger ([0055]).

Per claim 2 Thielemans et al. teaches the electronic display of claim 1, further comprising: a substantially planar surface (36, “the heat exchange face of the heat sink”) located behind and spaced apart from the rear portion (38) of the electronic image assembly (see fig.1b; [0051]); and a space (34) defined between the rear portion of the electronic image assembly and the substantially planar surface; wherein the space is in gaseous communication with the open loop ambient air flow path ([0051]-[0053] & [0056]).

Per claim 3 Thielemans et al. teaches the electronic display of claim 2, wherein the substantially planar surface is a plate ([0049], “heat transporting plate”).

Per claim 4 Thielemans et al. teaches the electronic display of claim 2, wherein the substantially planar surface is a portion of the heat exchanger ([0049] & [0051]).

Per claim 5 Thielemans et al. teaches the electronic display of claim 1, further comprising: a front display surface (16) spaced apart from the front portion (22 & 24) of the electronic image assembly (see fig.1b); and a front channel (20) defined by the space between the front display surface and the front portion of the electronic image assembly, the front channel forming part of the closed loop gas circulation path ([0049], “discloses a heat sink/heat exchanger and its properties”) [0052], “discloses a closed

loop cooling... preferably being cooled between cycles by for example a heat exchange/heat sink” & [0054], “discloses the properties of a closed loop cooling arrangement).

Per claim 6 Thielemans et al. teaches the electronic display of claim 1, further comprising at least one electronic component ([0051], “LED”) located in the pathway of the closed loop gas circulation path, the at least one electronic component selected from the group consisting of transformers, circuit boards, resistors, capacitors, batteries, power modules, motors, inductors, illumination devices ([0014], LED), wiring, wiring harnesses, lights, thermo-electric devices, and switches.

Per claim 7 Thielemans et al. teaches the electronic display of claim 1, further comprising a cooling device (40) placed near an entrance (42) to the open loop ambient air flow path for reducing the temperature of ambient air entering the open loop ambient air flow path ([0044]).

Per claim 8 Thielemans et al. teaches an electronic display (10, see fig.1a-1b) comprising: an electronic image assembly ((12, 28), (22, 24) & 30, see fig.1a-1b) having a front portion (22, see fig.1b) and a rear portion (30); a closed loop gas circulation path (22 & 34; [0051] & [0052], line 7-9) encircling the electronic image assembly ([0051]-[0053] & [0054]); an open loop ambient air flow path ((42, 44) & 34) behind the rear portion (see fig.1b, “38 is the behind portion”) of the electronic image assembly ([0051]-[0053] & [0056]); a substantially planar surface (36, “the heat exchange face of the heat sink”) located behind and spaced apart from the rear portion of the electronic image assembly (See fig.1b), the space between the substantially planar surface (36) and the rear portion (38) of the electronic image assembly defining a rear channel (34); a

common heat exchanger (22) in gaseous communication with both the closed loop gas circulation path and the open loop ambient air flow path (see fig.1b); at least one fan (40) positioned to force circulating gas through the closed loop gas circulation path; at least one fan positioned to force ambient air through the open loop ambient air flow path ([0055]).

Per claim 9 Thielemans et al. teaches the electronic display of claim 8, wherein the open loop ambient air flow path is also in gaseous communication with the rear channel ([0051]-[0053]).

Per claim 10 Thielemans et al. teaches the electronic display of claim 8, further comprising a second open loop ambient air flow path in gaseous communication with the rear channel ([0056], see fig.1b).

Per claim 11 Thielemans et al. teaches the electronic display of claim 8, wherein: the common heat exchanger includes first and second gas pathways (see fig.1b), the first and second gas pathways being isolated from each other; where the first gas pathway is in gaseous communication with the open loop ambient air flow path (see fig.1b, bottom portion of 34"); and where the second gas pathway is in gaseous communication with the closed loop gas circulation path (see fig.1b, "top portion of 34").

Per claim 12 Thielemans et al. teaches the electronic display of claim 11, wherein the first gas pathway is also in gaseous communication with the rear channel (see fig.1b).

Per claim 13 Thielemans et al. teaches the electronic display of claim 8, wherein the substantially planar surface is a plate ([0049], "heat transporting plate").

Per claim 14 Thielemans et al. teaches the electronic display of claim 8, wherein the substantially planar surface is a portion of the heat exchanger ([0049] & [0051]).

Per claim 15 Thielemans et al. teaches the electronic display of claim 8, further comprising: a front display surface (16) spaced apart from the front portion (22 & 24) of the electronic image assembly; and a front channel (20) defined by a space between the front display surface and the front portion of the electronic image assembly, the front channel forming part of the closed loop gas circulation path ([0049], “discloses a heat sink/heat exchanger and its properties”) [0052], “discloses a closed loop cooling... preferably being cooled between cycles by for example a heat exchange/heat sink” & [0054], “discloses the properties of a closed loop cooling arrangement).

Per claim 16 Thielemans et al. teaches the electronic display of claim 8, further comprising at least one electronic component ([0051], “LED”) located in the pathway of the closed loop gas circulation path, the at least one electronic component selected from the group consisting of transformers, circuit boards, resistors, capacitors, batteries, power modules, motors, inductors, illumination devices ([0014], LED), wiring, wiring harnesses, lights, thermo-electric devices, and switches.

Per claim 17 Thielemans et al. teaches a cooling system for an electronic image assembly ((12, 28), (22, 24) & 30, see fig.1a-1b; [0001]), comprising: an open loop ambient air flow path ((42, 44) & 34) at a rear portion (see fig.1b, “38 is the behind portion”) of the electronic image assembly ([0051]-[0053] & [0056]); a closed loop gas circulation path (22 & 34; [0051] & [0052], line 7-9) encircling the electronic image assembly ([0051]-[0053] & [0054]); a common heat exchanger (22) in gaseous communication with both the closed loop gas circulation path and the open loop

ambient air flow path ([0051]-[0053]); a front channel (20) defined by a space between a front portion (22 & 24) of the electronic image assembly and a front display surface (16) located forward of and spaced apart from the front portion of the electronic image assembly (see fig.1b), the front channel forming a part of the closed loop gas circulation path ([0049], “discloses a heat sink/heat exchanger and its properties”) [0052], “discloses a closed loop cooling... preferably being cooled between cycles by for example a heat exchange/heat sink” & [0054], “discloses the properties of a closed loop cooling arrangement); a rear channel (34) defined by a space between the rear portion (see fig.1b, “38”) of the electronic image assembly and a substantially planar surface (36, “the heat exchange face of the heat sink”) located behind and spaced apart from the rear portion of the electronic image assembly (see fig.1b), the rear channel forming a part of the open loop ambient air flow path (see fig.1b); at least one fan (40) positioned to force circulating gas through the closed loop gas circulation path (22 & 34, see fig.1b) and the common heat exchanger (22); and at least one fan (40) positioned to force ambient air through the open loop ambient air flow path ((42, 44) & 34) and the common heat exchanger ([0055]).

Per claim 18 Thielemans et al. teaches the cooling system of claim 17, wherein the substantially planar surface is a plate ([0049], “heat transporting plate”).

Per claim 19 Thielemans et al. teaches the cooling system of claim 17, wherein the substantially planar surface is a portion of the common heat exchanger ([0049] & [0051]).

Per claim 20 Thielemans et al. teaches the cooling system of claim 17, further comprising at least one electronic component ([0051], “LED”) located in the pathway of

the closed loop gas circulation path, the at least one electronic component selected from the group consisting of transformers, circuit boards, resistors, capacitors, batteries, power modules, motors, inductors, illumination devices ([0014], LED), wiring, wiring harnesses, lights, thermo-electric devices, and switches.

Email Communication

2. Applicant is encouraged to authorize the Examiner to communicate via email by filing form PTO/SB/439 either via USPS, Central Fax, or EFS-Web. See MPEP 502.01, 502, 502.05.

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Applicants are directed to consider additional pertinent prior art included on the Notice of References Cited (PTOL 892) attached herewith. The Examiner has pointed out particular references contained in the prior art of record within the body of this action for the convenience of the Applicant. Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply. Applicant, in preparing the response, should consider fully the entire reference as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL A MATEY whose telephone number is

(571)270-5648. The examiner can normally be reached on Monday-Friday 9AM-6PM EST.

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, JAYPRAKASH GANDHI can be reached on 5712723740. 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.

/M.M/
Examiner, Art Unit 2835

Application/Control Number: 15/789,331
Art Unit: 2835

Page 10

/JAMES WU/
Primary Examiner, Art Unit 2835