

Office Action Summary**Application No.**

15/974,343

Applicant(s)

Olson et al.

Examiner

AMBER R ORLANDO

Art Unit

1776

AIA (FITF) 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 07/10/2019.

☐ 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) 27-55 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5a) Of the above claim(s) ____ is/are withdrawn from consideration.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) 27-55 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 ____ 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)

3) ☐ Interview Summary (PTO-413)

Paper No(s)/Mail Date ____.

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)

4) ☐ Other: ____.

Paper No(s)/Mail Date ____.

DETAILED ACTION

DETAILED ACTION

Notice of Pre-AIA or AIA Status

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

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 07/17/2019 has been entered.

Double Patenting

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

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on nonstatutory double patenting provided the reference application or patent either is shown to be commonly owned with the examined application,

or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. See MPEP § 717.02 for applications subject to examination under the first inventor to file provisions of the AIA as explained in MPEP § 2159. See MPEP §§ 706.02(I)(1) - 706.02(I)(3) for applications not subject to examination under the first inventor to file provisions of the AIA. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO Internet website contains terminal disclaimer forms which may be used. Please visit www.uspto.gov/patent/patents-forms. The filing date of the application in which the form is filed determines what form (e.g., PTO/SB/25, PTO/SB/26, PTO/AIA/25, or PTO/AIA/26) should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp.

Claims 27-55 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-30 of U.S. Patent No. US 7,435,286 ('286) in view of Felsvang et al. US 5,435,980 and Nelson Jr. US 2004/0003716.

The current claim set corresponds to '286 except for the coal comprises Br₂, HBr, a bromide compound or a combination thereof, or the combustion chamber comprises added Br₂, HBr, a bromide compound or a combination thereof.

Felsvang et al. and Nelson references disclose this limitation as shown previously.

It would have been obvious to one having ordinary skill in the art to have modified the '286 reference to include the coal comprises Br₂, HBr, a bromide compound or a combination thereof, or the combustion chamber comprises added Br₂, HBr, a bromide compound or a combination thereof (Felsvang et al. column 5, 60-65 and column 4, lines 42-45 and Nelson paragraphs [0017] and [0041]) so as to supplement the halogen content of the system so as to increase the mercury sorption capability.

This is a provisional nonstatutory double patenting rejection because the patentably indistinct claims have not in fact been patented.

Claims 27-55 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-25 of U.S. Patent No. US 8,168,147 ('147) in view of Felsvang et al. US 5,435,980 and Nelson Jr. US 2004/0003716.

The current claim set corresponds to '147 except the coal comprises Br₂, HBr, a bromide compound or a combination thereof, or the combustion chamber comprises added Br₂, HBr, a bromide compound or a combination thereof.

Felsvang et al. and Nelson references disclose this limitation as shown previously.

It would have been obvious to one having ordinary skill in the art to have modified the '147 reference to include the coal comprises Br₂, HBr, a bromide compound or a combination thereof, or the combustion chamber comprises added Br₂, HBr, a bromide compound or a combination thereof (Felsvang et al. column 5, 60-65 and column 4, lines 42-45 and Nelson paragraphs [0017] and [0041]) so as to supplement the halogen content of the system so as to increase the mercury sorption capability.

This is a provisional nonstatutory double patenting rejection because the patentably indistinct claims have not in fact been patented.

Claims 27-55 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-60 of U.S. Patent No. US 8,512,655 ('655) in view of Felsvang et al. US 5,435,980 and Nelson Jr. US 2004/0003716.

The current claim set corresponds to '655 except for the coal comprises Br₂, HBr, a bromide compound or a combination thereof, or the combustion chamber comprises added Br₂, HBr, a bromide compound or a combination thereof.

Felsvang et al. and Nelson references disclose this limitation as shown previously.

It would have been obvious to one having ordinary skill in the art to have modified the '655 reference to include the coal comprises Br₂, HBr, a bromide compound or a combination thereof, or the combustion chamber comprises added Br₂, HBr, a bromide compound or a combination thereof (Felsvang et al. column 5, 60-65 and column 4, lines 42-45 and Nelson paragraphs [0017] and [0041]) so as to supplement the halogen content of the system so as to increase the mercury sorption capability.

This is a provisional nonstatutory double patenting rejection because the patentably indistinct claims have not in fact been patented.

Claims 27-55 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-60 of U.S. Patent No. US 8,821,819 ('819) in view of Felsvang et al. US 5,435,980 and Nelson Jr. US 2004/0003716.

The current claim set corresponds to '819 except for the coal comprises Br₂, HBr, a bromide compound or a combination thereof, or the combustion chamber comprises added Br₂, HBr, a bromide compound or a combination thereof.

Felsvang et al. and Nelson references disclose this limitation as shown previously.

It would have been obvious to one having ordinary skill in the art to have modified the '819 reference to include the coal comprises Br₂, HBr, a bromide compound or a combination thereof, or the combustion chamber comprises added Br₂, HBr, a bromide compound or a combination thereof (Felsvang et al. column 5, 60-65 and column 4, lines 42-45 and Nelson paragraphs [0017] and [0041]) so as to supplement the halogen content of the system so as to increase the mercury sorption capability.

This is a provisional nonstatutory double patenting rejection because the patentably indistinct claims have not in fact been patented.

Claims 27-55 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-33 of U.S. Patent No. US 9,757,689 ('689) in view of Felsvang et al. US 5,435,980 and Nelson Jr. US 2004/0003716.

The current claim set corresponds to '689 except the coal comprises Br₂, HBr, a bromide compound or a combination thereof, or the combustion chamber comprises added Br₂, HBr, a bromide compound or a combination thereof.

Felsvang et al. and Nelson references disclose this limitation as shown previously.

It would have been obvious to one having ordinary skill in the art to have modified the '689 reference to include the coal comprises Br₂, HBr, a bromide compound or a combination thereof, or the combustion chamber comprises added Br₂, HBr, a bromide compound or a combination thereof (Felsvang et al. column 5, 60-65 and column 4, lines 42-45 Nelson paragraphs [0017] and [0041]) so as to supplement the halogen content of the system so as to increase the mercury sorption capability.

This is a provisional nonstatutory double patenting rejection because the patentably indistinct claims have not in fact been patented.

Claims 27-55 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-20 of U.S. Patent No. US 9,468,886 ('886) in view of Felsvang et al. US 5,435,980 and Nelson Jr. US 2004/0003716.

The current claim set corresponds to '886 except for the coal comprises Br₂, HBr, a bromide compound or a combination thereof, or the combustion chamber comprises added Br₂, HBr, a bromide compound or a combination thereof.

Felsvang et al. and Nelson references disclose this limitation as shown previously.

It would have been obvious to one having ordinary skill in the art to have modified the '886 reference to include the coal comprises Br₂, HBr, a bromide compound or a combination thereof, or the combustion chamber comprises added Br₂, HBr, a bromide compound or a combination thereof (Felsvang et al. column 5, 60-65 and column 4, lines 42-45 and Nelson paragraphs [0017] and [0041]) so as to supplement the halogen content of the system so as to increase the mercury sorption capability.

This is a provisional nonstatutory double patenting rejection because the patentably indistinct claims have not in fact been patented.

Claims 27-55 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-30 of U.S. Patent No. 8,652,235 ('235) in view of Felsvang et al. US 5,435,980 and Nelson Jr. US 2004/0003716.

The current claim set corresponds to '235 except the coal comprises Br₂, HBr, a bromide compound or a combination thereof, or the combustion chamber comprises added Br₂, HBr, a bromide compound or a combination thereof.

Felsvang et al. and Nelson references disclose this limitation as shown previously.

It would have been obvious to one having ordinary skill in the art to have modified the '235 reference to include the coal comprises Br₂, HBr, a bromide compound or a combination thereof, or the combustion chamber comprises added Br₂, HBr, a bromide compound or a combination thereof (Felsvang et al. column 5, 60-65 and column 4, lines 42-45 and Nelson paragraphs [0017] and [0041]) so as to supplement the halogen content of the system so as to increase the mercury sorption capability.

This is a provisional nonstatutory double patenting rejection because the patentably indistinct claims have not in fact been patented.

Claims 27-55 are provisionally rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-16 of copending Application No. 15/295594 ('594) in view of Felsvang et al. US 5,435,980 and Nelson Jr. US 2004/0003716.

The current claim set corresponds to '594 except for the coal comprises Br₂, HBr, a bromide compound or a combination thereof, or the combustion chamber comprises added Br₂, HBr, a bromide compound or a combination thereof.

Felsvang et al. and Nelson references disclose this limitation as shown previously.

It would have been obvious to one having ordinary skill in the art to have modified the '594 reference to include the coal comprises Br_2 , HBr, a bromide compound or a combination thereof, or the combustion chamber comprises added Br_2 , HBr, a bromide compound or a combination thereof (Felsvang et al. column 5, 60-65 and column 4, lines 42-45 and Nelson paragraphs [0017] and [0041]) so as to supplement the halogen content of the system so as to increase the mercury sorption capability.

This is a provisional nonstatutory double patenting rejection because the patentably indistinct claims have not in fact been patented.

Claims 27-55 are provisionally rejected on the ground of nonstatutory double patenting as being unpatentable over claims 8-20 of copending Application No. 15/589359 ('359).

Although the claims at issue are not identical, they are not patentably distinct from each other because while the current claim set includes different wording the limitations correspond to '359.

This is a provisional nonstatutory double patenting rejection because the patentably indistinct claims have not in fact been patented.

Claims 27-55 are provisionally rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-20 of copending Application No. 15/853029 ('029) in view of Felsvang et al. US 5,435,980 and Nelson Jr. US 2004/0003716.

The current claim set corresponds to '029 except for the coal comprises Br_2 , HBr, a bromide compound or a combination thereof, or the combustion chamber comprises added Br_2 , HBr, a bromide compound or a combination thereof.

Felsvang et al. and Nelson references disclose this limitation as shown previously.

It would have been obvious to one having ordinary skill in the art to have modified the '029 reference to include the coal comprises Br_2 , HBr, a bromide compound or a combination thereof, or the combustion chamber comprises added Br_2 , HBr, a bromide compound or a combination thereof

(Felsvang et al. column 5, 60-65 and column 4, lines 42-45 and Nelson paragraphs [0017] and [0041]) so as to supplement the halogen content of the system so as to increase the mercury sorption capability.

This is a provisional nonstatutory double patenting rejection because the patentably indistinct claims have not in fact been patented.

Claims 27-55 are provisionally rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-20 of copending Application No. 14/712558 ('558). Although the claims at issue are not identical, they are not patentably distinct from each other because while the current claim set includes different wording the limitations correspond to '558.

This is a provisional nonstatutory double patenting rejection because the patentably indistinct claims have not in fact been patented.

Claims 27-55 are provisionally rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-20 of copending Application No. 15/951970 ('970). Although the claims at issue are not identical, they are not patentably distinct from each other because while the current claim set includes different wording, the limitations correspond to '970.

This is a provisional nonstatutory double patenting rejection because the patentably indistinct claims have not in fact been patented.

Claims 27-55 are provisionally rejected on the ground of nonstatutory double patenting as being unpatentable over 1-20 of copending Application No. 15/382114 ('114) in view of Felsvang et al. US 5,435,980 and Nelson Jr. US 2004/0003716.

The current claim set corresponds to '114 except for the coal comprises Br₂, HBr, a bromide compound or a combination thereof, or the combustion chamber comprises added Br₂, HBr, a bromide compound or a combination thereof.

Felsvang et al. and Nelson references disclose this limitation as shown previously.

It would have been obvious to one having ordinary skill in the art to have modified the '114 reference to include the coal comprises Br₂, HBr, a bromide compound or a combination thereof, or the combustion chamber comprises added Br₂, HBr, a bromide compound or a combination thereof (Felsvang et al. column 5, 60-65 and column 4, lines 42-45 and Nelson paragraphs [0017] and [0041]) so as to supplement the halogen content of the system so as to increase the mercury sorption capability.

This is a provisional nonstatutory double patenting rejection because the patentably indistinct claims have not in fact been patented.

Claims 27-55 are provisionally rejected on the ground of nonstatutory double patenting as being unpatentable over 1-20 of copending Application No. 15/853029 ('029) in view of Felsvang et al. US 5,435,980 and Nelson Jr. US 2004/0003716.

The current claim set corresponds to '029 except for the coal comprises Br₂, HBr, a bromide compound or a combination thereof, or the combustion chamber comprises added Br₂, HBr, a bromide compound or a combination thereof.

Felsvang et al. and Nelson references disclose this limitation as shown previously.

It would have been obvious to one having ordinary skill in the art to have modified the '029 reference to include the coal comprises Br₂, HBr, a bromide compound or a combination thereof, or the combustion chamber comprises added Br₂, HBr, a bromide compound or a combination thereof (Felsvang et al. column 5, 60-65 and column 4, lines 42-45 and Nelson paragraphs [0017] and [0041]) so as to supplement the halogen content of the system so as to increase the mercury sorption capability.

This is a provisional nonstatutory double patenting rejection because the patentably indistinct claims have not in fact been patented.

Claims 27-55 are provisionally rejected on the ground of nonstatutory double patenting as being unpatentable over 1-20 of copending Application No. 15/978,760 ('760) in view of Felsvang et al. US 5,435,980 and Nelson Jr. US 2004/0003716.

The current claim set corresponds to '760 except for the coal comprises Br₂, HBr, a bromide compound or a combination thereof, or the combustion chamber comprises added Br₂, HBr, a bromide compound or a combination thereof.

Felsvang et al. and Nelson references disclose this limitation as shown previously.

It would have been obvious to one having ordinary skill in the art to have modified the '760 reference to include the coal comprises Br₂, HBr, a bromide compound or a combination thereof, or the combustion chamber comprises added Br₂, HBr, a bromide compound or a combination thereof (Felsvang et al. column 5, 60-65 and column 4, lines 42-45 and Nelson paragraphs [0017] and [0041]) so as to supplement the halogen content of the system so as to increase the mercury sorption capability.

This is a provisional nonstatutory double patenting rejection because the patentably indistinct claims have not in fact been patented.

Allowable Subject Matter

The arguments filed 07/10/2019 regarding claims 27-55 with regard to the 103(a) rejections are found to be persuasive. Once the applicant timely files terminal disclaimers to overcome the pending double patenting rejections the claims will be in condition for allowance.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AMBER ROSE ORLANDO whose telephone number is (571)270-3149. The examiner can normally be reached on Monday-Thursday 7:00-5:30.

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, Duane Smith can be reached on (571)272-1166. 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.

AMBER ROSE. ORLANDO
Primary Examiner
Art Unit 1776

/AMBER R ORLANDO/
Primary Examiner, Art Unit 1776

<i>Search Notes</i> 	Application/Control No. 15/974,343	Applicant(s)/Patent Under Reexamination Olson et al.
	Examiner AMBER R ORLANDO	Art Unit 1776

CPC - Searched*		
Symbol	Date	Examiner

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
Text Search (SEE EAST SEARCH HISTORY)	07/23/2018	AO
IDS Search (EAST and DAV)	07/23/2018	AO
Inventor Search (EAST)	07/23/2018	AO
Inventor Search (EAST)	10/24/2018	AO
Text Search (SEE EAST SEARCH HISTORY)	10/24/2018	AO
Text Search (SEE EAST SEARCH HISTORY)	01/07/2019	AO
IDS Search (DAV and EAST)	08/17/2019	AO

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

/AMBER R ORLANDO/ Primary Examiner, Art Unit 1776	
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Doc code: IDS

Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)

Approved for use through 07/31/2012. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)

Application Number	15974343
Filing Date	2018-05-08
First Named Inventor	Edwin S. Olson
Art Unit	1776
Examiner Name	Amber Orlando
Attorney Docket Number	4820.001US9

U.S. PATENTS

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/AMBER R. ORLANDO/

08/17/2019

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number	15974343
Filing Date	2018-05-08
First Named Inventor	Edwin S. Olson
Art Unit	1776
Examiner Name	Amber Orlando
Attorney Docket Number	4820.001US9

1	"Application Serial No. 15 589,359, Response filed 04-30-19 to Final Office Action mailed 03-01-19", 11 pgs.
2	"Application Serial No. 15 589,359, Final Office Action mailed 03-01-19", 10 pgs
3	"Control of Mercury Emissions from Coal Fired Electric Utility Boilers: An Update", US EPA Air Pollution Prevention and Control Division, National Risk Management Research Laboratory, Office of Research and Development, (February 18, 2005), 59 pgs
4	"Sorbent Enhancement Additives for Mercury Control", US DOE Office of Fossil Energy, National Energy Technology Laboratory, (June 2008), 4 pgs
5	"Application Serial No. 15 978,760, Ex Parte Quayle Action mailed 04-19-19", 13 pgs
6	"Application Serial No. 15 295,594, Response filed 4-23-19 to Non Final Office Action mailed 10-23-18", 45 pgs
7	"Application Serial No. 15 978,760, Response filed 4-23-19 to Ex Parte Quayle Action mailed 04-19-19", 15 pgs
8	"Application Serial No. 15 978,760, Notice of Allowance mailed 05-08-19", 7 pgs
9	"Coal Combustion Products (CCPs): Characteristics, Utilization and Beneficiation", Edited by Tom Robl, et al., Woodhead Publishing (Elsevier), (2017), 565 pgs
10	"Application Serial No. 15 589,359, Advisory Action mailed 05-22-19", 3 pgs
11	"Application Serial No. 15 382,114, Response filed 3-12-19 to Non Final Office Action mailed 12-12-18", 24 pgs

/AMBER R ORLANDO/

08/17/2019

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number	15974343
Filing Date	2018-05-08
First Named Inventor	Edwin S. Olson
Art Unit	1776
Examiner Name	Amber Orlando
Attorney Docket Number	4820.001US9

12	"Application Serial No. 15 978,760, Response filed 03-20-19 to Final Office Action mailed 12-26-18", 90 pgs.
13	BENSON, STEVEN A., "JV Task 73 - Mercury Control Technologies for Electric Utilities Burning Subbituminous Coals - Draft Final Report", University of North Dakota Energy and Environmental Research Center, (June 2005), 165 pgs
14	BENSON, STEVEN A., "Pilot-and Full-Scale Demonstration of Advanced Mercury Control Technologies for Lignite-Fired Power Plants", University of North Dakota Energy and Environmental Research Center, (February 2005), 97 pgs
15	BERRY, MARK, "Mercury control evaluation of calcium bromide injection into a PRB-fired furnace with an SCR", Proc. of the Air Quality VI Conference, Arlington, VA, (2007), 9 pgs
16	BROWN, THOMAS D., "Mercury Measurement and Its Control: What We Know, Have Learned, and Need to Further Investigate", Journal of the Air and Waste Management Association, 49(6), (June 1999), 98 pgs
17	FEELEY, THOMAS J., "A Review of DOE NETL's Mercury Control Technology R and D Program for Coal-Fired Power Plants", DOE NETL Hg R and D Program Review, (April 2003), 32 pgs
18	FRENCH, CHARLES L., "Study of Hazardous Air Pollutant Emissions from Electric Utility Steam Generating Units - Final Report to Congress: Volume 1", US EPA Office of Air Quality Planning and Standards, (February 1998), 502 pgs
19	GHORISHI, BEHROOZ S., "In-Flight Capture of Elemental Mercury by Chlorine-Impregnated Activated Carbon", Proc. of the 94th Annual Meeting of the Air and Waste Management Association, Orlando, FL, (June 2001), 14 pgs
20	JONES, ANDREW P., "DOE NETL's Phase II Mercury Control Technology Field Testing Program: Preliminary Economic Analysis of Activated Carbon Injection", Environmental Science and Technology, 41(4), (2007), 7 pgs
21	KEATING, MARTHA H., "Mercury Study Report to Congress Volume 1: Executive Summary", US EPA Office of Air Quality Planning and Standards, (December 1997), 95 pgs
22	KILGROE, JAMES D., "Control of Mercury Emissions from Coal-Fired Electric Utility Boilers: Interim Report", US EPA Office of Research and Development, National Risk Management Laboratory, Air Pollution Prevention and Control Division, (December 2001), 485 pgs

/AMBER R ORLANDO/

08/17/2019

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number	15974343
Filing Date	2018-05-08
First Named Inventor	Edwin S. Olson
Art Unit	1776
Examiner Name	Amber Orlando
Attorney Docket Number	4820.001US9

23	NELSON, SID JR., "How China Can Leapfrog the World in Mercury Emission Reductions", Proc. of the AWMA Intl. Specialty Conference on Leapfrogging Opportunities for Air Quality Improvement, (2010), 24 pgs
24	PAVLISH, JOHN H., "Status review of mercury control options for coal-fired power plants", Fuel Processing Technology, Vol. 82, (2003), 77 pgs
25	YANG, YANG, "Effect of HBr formation on mercury oxidation via CaBr ₂ addition to coal during combustion", RSC Advances, 6(64), (2016), 7 pgs

If you wish to add additional non-patent literature document citation information please click the Add button

EXAMINER SIGNATURE

Examiner Signature	/AMBER R ORLANDO/	Date Considered	08/17/2019
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)

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CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☒ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Nicholas P. Lanzatella/	Date (YYYY-MM-DD)	2019-05-23
Name/Print	Nicholas P. Lanzatella	Registration Number	63,803

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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.**

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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)).
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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	2	"20120100053"	US-PGPUB; USPAT	ADJ	ON	2019/08/17 11:40
L2	1	"20130157845"	US-PGPUB; USPAT	ADJ	ON	2019/08/17 11:40
S1	45	(95/134.ccls. or 95/142.ccls. or 110/345.ccls. or 423/210.ccls.) and activated carbon and promoter	US-PGPUB; USPAT	ADJ	ON	2013/09/09 09:19
S2	0	(95/134.ccls. or 95/142.ccls. or 110/345.ccls. or 423/210.ccls.) and sorben and promoter and activated carbond and mercury	US-PGPUB; USPAT	ADJ	ON	2013/09/09 09:19
S3	0	(95/134.ccls. or 95/142.ccls. or 110/345.ccls. or 423/210.ccls.) and sorbent and promoter and activated carbond and mercury	US-PGPUB; USPAT	ADJ	ON	2013/09/09 09:20
S7	73	("20020150516" "4786483" "5409522" "5505766" "6383981" "6878358" "20020033097" "4530765" "5346674" "6080281" "4708853" "6027551" "6136072" "6258334" "6818043" "20060057044" "20080207443" "20010002387" "3826618" "4814152" "4820318" "4889698" "5891324" "6528030" "20050227146" "5419834" "7942566" "20080134888" "3662523" "3849267" "4196173" "4500327" "6942840" "20020134242" "20030136509" "20050147549" "20060112823" "20080134888" "6471936" "20010003116" "20050019240" "20060048646" "4956162" "5575982" "6372187" "6375909" "7435286" "7514052" "20050074380" "20090081092" "5288306" "1984164" "4101631" "5695726" "6080281" "6848374" "20050000197" "5300137" "5607496" "5672323" "6214304" "6953494" "5245120" "20070168213" "7938571" "20040003716" "20040013589" "3194629" "3786619" "5827352" "20040109800" "20070295347" "5435980" "6136749" "20030206846").PN.	US-PGPUB; USPAT	ADJ	ON	2015/03/17 12:25
S8	13	"11209163"	US-PGPUB; USPAT	ADJ	ON	2015/03/17 12:28
S9	3	"11209163" and non carbon	US-PGPUB; USPAT	ADJ	ON	2015/03/17 12:28
S10	161	(B01D53/64, B01D2257/602, B01D2253/104, B01D2253/10,	US-PGPUB; USPAT	ADJ	ON	2015/03/17 13:49

		B01D53/10).cpc. and (halogen or halide of HBr) with sorbent				
S11	0	(95/134.ccls. or 95/142.ccls. or 110/345.ccls. or 423/210.ccls.) and sorbent and promoter and activated carbond and mercury	US-PGPUB; USPAT	ADJ	ON	2015/03/17 13:50
S12	116	(95/134.ccls. or 95/142.ccls. or 110/345.ccls. or 423/210.ccls.) and (halogen or halide of HBr) with sorbent	US-PGPUB; USPAT	ADJ	ON	2015/03/17 13:50
S13	172	(B01D53/64, B01D2257/602, B01D2253/104, B01D2253/10, B01D53/10).cpc. and (halogen or halide of HBr) with sorbent	US-PGPUB; USPAT	ADJ	ON	2015/08/20 22:04
S14	67	(95/134.ccls. or 95/142.ccls. or 110/345.ccls. or 423/210.ccls.) and activated carbon and promoter	US-PGPUB; USPAT	ADJ	ON	2015/08/20 22:04
S15	67	"6136749"	US-PGPUB; USPAT	ADJ	ON	2016/05/27 09:11
S16	20	"684374"	US-PGPUB; USPAT	ADJ	ON	2016/05/27 09:12
S17	1	"20040003716"	US-PGPUB; USPAT	ADJ	ON	2016/05/27 09:12
S18	68	"6848374"	US-PGPUB; USPAT	ADJ	ON	2016/05/27 09:12
S19	41	"7435286"	US-PGPUB; USPAT	ADJ	ON	2016/05/27 09:13
S20	13	"8168147"	US-PGPUB; USPAT	ADJ	ON	2016/05/27 09:13
S21	69	(95/134.ccls. or 95/142.ccls. or 110/345.ccls. or 423/210.ccls.) and activated carbon and promoter	US-PGPUB; USPAT	ADJ	ON	2016/06/07 09:06
S22	181	(B01D53/64, B01D2257/602, B01D2253/104, B01D2253/10, B01D53/10).cpc. and (halogen or halide of HBr) with sorbent	US-PGPUB; USPAT	ADJ	ON	2016/06/07 09:06
S25	28	"5266280"	US-PGPUB; USPAT	ADJ	ON	2016/06/07 13:41
S26	281	sorbent with mercury and (diameter or size) with ("30" or "40" or "50" or "60" or "70") with (sorbent or carbon)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/09/29 15:01
S27	148	sorbent with mercury and (diameter or size) with ("30" or "40" or "50" or "60" or "70") with (sorbent or carbon) and halogen	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/09/29 15:02
S28	159	sorbent with mercury and (diameter or size) with ("30" or "40" or "50" or "60" or "70") with (sorbent or carbon) and halogen\$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/09/29 16:18

S29	206	(sorbent or activated carbon) with mercury and (diameter or size) with ("30" or "40" or "50" or "60" or "70") with (sorbent or carbon) and halogen\$4 and activated carbon	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/09/29 16:22
S30	195	(B01D53/64, B01D2257/602, B01D2253/104, B01D2253/10, B01D53/10).cpc. and (halogen or halide of HBr) with sorbent	US-PGPUB; USPAT	ADJ	ON	2016/09/30 13:48
S33	6	"20040003719"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/11/16 10:56
S34	49	"2004003716"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/11/16 10:57
S35	81	"6848374"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/11/16 10:58
S36	56	"7435286"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/11/16 11:02
S37	7	olson.in. and ("40" microns).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/11/16 11:04
S38	0	("40" microns and halocarbon sorbent).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/11/16 11:05
S39	0	(halocarbon sorbent).clm. and "40" microns and olson.in.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/11/16 11:05
S40	65	"40" microns and olson.in.	US-PGPUB;	ADJ	ON	2016/11/16

			USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			11:06
S41	3907	("40" microns).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/11/16 11:06
S42	29	("40" microns and sorbent).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/11/16 11:06
S43	1	(halocarbon sorbent).clm. and olson.in.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/11/16 11:08
S44	36	(sorbent).clm. and olson.in.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/11/16 11:08
S45	0	(sorbent).clm. and olson.in. and "40" micron	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/11/16 11:08
S46	17	"11209163"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/11/16 11:09
S47	2	"20110233133"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/11/16 11:27
S48	7	"20110023427"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	ADJ	ON	2016/11/16 11:28

			IBM_TDB			
S49	15	"2004025274"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/11/16 11:32
S50	11	"20040025274"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/11/16 11:32
S51	15	"2004025274"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/11/16 11:33
S52	40	"6312489"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/11/16 11:33
S53	30	("20030024872" "20050045553" "20050144916" "4008060" "4640779" "4655921" "4673503" "4738778" "4746432" "4799944" "5043000" "5051118" "5120296" "5174896" "5320657" "5512075" "5674302" "6152979" "6312489" "6315130" "6336946" "6398836" "6585793" "6598749" "7648546").PN. OR ("7931723").URPN.	US-PGPUB; USPAT; USOCR	ADJ	ON	2016/11/16 11:36
S54	33	("4200444" "4640779" "5968215" "6059851").PN. OR ("6312489").URPN.	US-PGPUB; USPAT; USOCR	ADJ	ON	2016/11/16 11:40
S55	5	"8518142"	US-PGPUB; USPAT; USOCR	ADJ	ON	2016/11/16 11:54
S56	4	"8747505"	US-PGPUB; USPAT; USOCR	ADJ	ON	2016/11/16 11:57
S57	2	"14318270"	US-PGPUB; USPAT; USOCR	ADJ	ON	2016/11/16 12:06
S58	13	pac with size with sorbent	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2016/11/16 12:13
S59	197	(B01D53/64, B01D2257/602, B01D2253/104, B01D2253/10,	US-PGPUB; USPAT	ADJ	ON	2016/11/16 15:23

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S61	10	"4198388"	US-PGPUB; USPAT	ADJ	ON	2016/11/17 12:39
S62	0	"2010083696"	US-PGPUB; USPAT	ADJ	ON	2016/11/17 13:32
S63	2	"20100083696"	US-PGPUB; USPAT	ADJ	ON	2016/11/17 13:32
S64	2	absorp\$5 with mea with methanol with acid	US-PGPUB; USPAT	ADJ	ON	2016/11/17 13:36
S65	2	"20070283813"	US-PGPUB; USPAT	ADJ	ON	2016/11/17 13:39
S66	21	"4469596"	US-PGPUB; USPAT	ADJ	ON	2016/11/21 08:29
S67	4	"2003229245"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2017/05/10 10:36
S68	2	"20030229245"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2017/05/10 10:36
S69	45	"5,338,458"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2017/05/10 10:38
S70	45	"5338458"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2017/05/10 10:38
S71	213	(B01D53/64, B01D2257/602, B01D2253/104, B01D2253/10, B01D53/10).cpc. and (halogen or halide of HBr) with sorbent	US-PGPUB; USPAT	ADJ	ON	2017/05/10 11:02
S72	64	("1786483" "1984164" "2317857" "20010002387" "20010003116" "20020134242" "20020150516" "20030136509" "20040003716" "20040013589" "20050019240" "20060048646" "20060191835" "20090062119" "20100047146" "20120183458" "20140056787" "3194629" "3662523" "3786619"	US-PGPUB; USPAT	ADJ	ON	2017/05/10 11:20

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S73	3	("20090235848" "20110076210" "20150246315").PN.	US-PGPUB; USPAT	ADJ	ON	2017/05/10 11:31
S79	3	("20090235848" "20110076210" "20140224121").PN.	US-PGPUB; USPAT	ADJ	ON	2017/06/27 09:36
S80	96	("1984164" "2317857" "20010002387" "20010003116" "20020043496" "20020134242" "20020150516" "20030104937" "20030136509" "20040003716" "20040013589" "20040076570" "20050019240" "20060048646" "20060191835" "20080182747" "20080292512" "20090062119" "20090136401" "20090320678" "20100047146" "20110168018" "20120183458" "20130280156" "20140056787" "20140255279" "20140308188" "20150098878" "3194629" "3662523" "3786619" "3826618" "3849267" "3876393" "4094777" "4101631" "4196173" "4338896" "4500327" "4708853" "4786483" "4814152" "4820318" "4889698" "4956162" "5300137" "5336835" "5409522" "5462908" "5505766" "5575982" "5607496" "5672323" "5695726" "5827352" "5891324" "6027551" "6080281" "6136072" "6136749" "6214304" "6258334" "6372187" "6375909" "6383981" "6471936" "6528030" "6638485" "6808692" "6818043" "6848374" "6878358" "6942840" "6953494" "6960329" "7081434" "7211707" "7435286" "7479263" "7514052" "7521032" "7544338" "7563311" "7611564" "7622092" "7722843" "7767174" "7780765" "8007749" "8168147" "8168149" "8216535" "8512655" "8652235" "8821819" "9011805").PN.	US-PGPUB; USPAT	ADJ	ON	2017/06/27 09:41
S81	593	honeycomb with plug\$4 and plug\$4 with length	US-PGPUB; USPAT	ADJ	ON	2017/06/27 14:45
S82	0	honeycomb with plug\$4 and plug\$4 with length with less than with "5"	US-PGPUB; USPAT	ADJ	ON	2017/06/27 14:45
S83	0	honeycomb with plug\$4 and plug\$4 with length with less than	US-PGPUB; USPAT	ADJ	ON	2017/06/27 14:45
S84	127	honeycomb with plug\$4 and plug\$4 with	US-PGPUB;	ADJ	ON	2017/06/27

		length with "5"	USPAT			14:46
S85	241	honeycomb with plug\$4 and plug\$4 with length with mm	US-PGPUB; USPAT	ADJ	ON	2017/06/27 14:47
S86	41	honeycomb with plug\$4 and plug\$4 with length with "3 mm "	US-PGPUB; USPAT	ADJ	ON	2017/06/27 14:49
S87	28	honeycomb with plug\$4 and plug\$4 with length with "3 mm " and plug\$4 with porosity	US-PGPUB; USPAT	ADJ	ON	2017/06/27 14:52
S88	28	honeycomb and plug\$4 with length with "3 mm " and plug\$4 with porosity	US-PGPUB; USPAT	ADJ	ON	2017/06/27 14:53
S89	43	honeycomb and plug\$4 with porosity with "100"	US-PGPUB; USPAT	ADJ	ON	2017/06/27 15:06
S90	20	honeycomb and plug\$4 with pore (size or diameter) with "100"	US-PGPUB; USPAT	ADJ	ON	2017/06/27 15:07
S91	8	saw with honeycomb with filter	US-PGPUB; USPAT	ADJ	ON	2017/06/29 13:31
S92	230	(B01D53/64, B01D2257/602, B01D2253/104, B01D2253/10, B01D53/10).cpc. and (halogen or halide of HBr) with sorbent	US-PGPUB; USPAT	ADJ	ON	2017/12/01 14:36
S93	2	"20060260468"	US-PGPUB; USPAT	ADJ	ON	2018/07/03 10:34
S94	19	engine with air with inlet with filter\$4 with cone	US-PGPUB; USPAT	ADJ	ON	2018/07/03 15:26
S95	36	engine with air with inlet with filter\$4 with (cone or conical or (diameter with (increas\$4 or decreas\$4)))	US-PGPUB; USPAT	ADJ	ON	2018/07/03 15:27
S96	24	("3771638" "3870495" "3872012" "4157902" "4702754" "5125940" "5522909" "5549724" "5632793").PN. OR ("5888260").URPN.	US-PGPUB; USPAT; USOCR	ADJ	ON	2018/07/03 15:31
S97	41	("0153535" "0439091" "1398685" "1530163" "1887052" "2087688" "4003836" "4018580" "4032455" "4039308" "4065276" "4261710" "4410341" "4414110" "4699715" "5106397" "5178656" "5522909" "5549722" "5549724" "5888260" "6397842" "6508052" "D401597" "D401942" "D403414" "D403416").PN. OR ("6808552").URPN.	US-PGPUB; USPAT; USOCR	ADJ	ON	2018/07/03 15:31
S98	15	("D403416").URPN.	USPAT	ADJ	ON	2018/07/03 15:33
S99	0	"20030089233"	USPAT	ADJ	ON	2018/07/04 12:29
S100	3	"20030089233"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/07/04 12:29
S101	26	"6833023"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/07/04 12:29
S102	2	"20070168213"	US-PGPUB; USPAT;	ADJ	ON	2018/07/09 13:08

			USOCR; FPRS; EPO; JPO			
S103	14	carbocations with sorbent with bromine	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/07/09 13:14
S104	0	a side forming a cross sectional shape of each of the first	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/07/09 13:47
S105	0	non of side forming	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/07/09 13:56
S106	0	none of side forming	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/07/09 13:56
S107	0	none of sides forming	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/07/09 13:56
S109	13	olson.in. and (alkali and promoter and earth).clm.	US-PGPUB; USPAT	ADJ	ON	2018/07/17 16:22
S110	0	olson.in. and (alkali and promoter and earth with vapor).clm.	US-PGPUB; USPAT	ADJ	ON	2018/07/17 16:22
S111	10	olson.in. and (alkali and promoter with vapor).clm.	US-PGPUB; USPAT	ADJ	ON	2018/07/17 16:22
S112	0	"2015008283"	US-PGPUB; USPAT	ADJ	ON	2018/07/23 06:26
S113	2	"20150082833"	US-PGPUB; USPAT	ADJ	ON	2018/07/23 06:26
S114	24	olson.in. and liquid.clm. and promoted	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/07/23 07:50
S115	75	remov\$4 with mercury and (br or bromine) with liquid with carbon	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/07/23 07:54
S116	0	separating greater than "70" wt% of the mercury	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/07/23 09:17
S117	0	((separating greater) with (of the mercury)).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/07/23 09:17

S118	20	"11209163"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/07/23 09:43
S119	40	(during with after with mercury with sorbent)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/01 17:38
S120	304	sorbent with mercury and sorbent with boiler	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/01 17:39
S121	2	"20070168213"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/01 17:41
S122	18	before with burn\$4 with coal with sorbent	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/01 17:42
S123	204	("0174348" "0202092" "0208011" "0224649" "0229159" "0298727" "0346765" "0347078" "0367014" "0537926" "0537998" "0541025" "0625754" "0647622" "0685719" "0688782" "0700888" "0744908" "0846338" "0894110" "0896876" "0911960" "0945331" "0945846" "1112547" "1167471" "1167472" "1183445" "1788466" "1984164" "20020065581" "20020114749" "20020184817" "20030088370" "20030103882" "20040003716" "20040013589" "20040086439" "20040219083" "20050039598" "20060047526" "20060210463" "2016821" "2059388" "2089599" "2511288" "3194629" "3288576" "3437476" "3599610" "3662523" "3725530" "3764496" "3823676" "3838190" "3849267" "3849537" "3956458" "3961020" "3974254" "4040802" "4075282" "4094777" "4101631" "4115518" "4148613" "4174373" "4196173" "4226601" "4233274" "4272250" "4280817" "4305726" "4322218" "4377599" "4387653" "4394354" "4440100" "4472278" "4474896" "4519807" "4519995" "4555392" "4582936" "4602918" "4629721" "4693731" "4716137" "4741278" "4758418" "4764219" "4786483" "4804521" "4807542" "4824441" "4830829" "4873930" "4886519" "4892567" "4915818" "4933158" "4936047" "4964889" "5013358" "5024171"	US-PGPUB; USPAT; USOCR	ADJ	ON	2018/10/01 17:42

		"5049163" "5116793" "5126300" "5137854" "5162598" "5190566" "5238488" "5350728" "5368617" "5409522" "5435980" "5447703" "5460643" "5505746" "5505766" "5571490").PN. OR ("5587003" "5618508" "5635150" "5659100" "5670122" "5733516" "5738834" "5787823" "5810910" "5897688" "5910292" "5989506" "6024931" "6083289" "6240859" "6258334" "6372187" "6375909" "6475451" "6521021" "6528030" "6533842" "6558454" "6610263" "6613110" "6719828" "6732055" "6737031" "6746531" "6790420" "6808692" "6848374" "6878358" "6942840" "6953494" "6962617" "6974564" "6975975" "7468170" "7507083" "7674442" "7758827" "7776301").PN.				
S124	1	"15573128"	US-PGPUB; USPAT; USOCR	ADJ	ON	2018/10/02 12:07
S125	2	"20110207597"	US-PGPUB; USPAT; USOCR	ADJ	ON	2018/10/02 12:08
S126	2	"20070168213"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/02 17:30
S127	71	sorbent with before with coal and remov\$4 with mercury	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/02 17:30
S128	234	"6953494"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/02 17:38
S129	121	"5435980"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/02 17:40
S130	35	promoter with sorbent and "30" g	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/02 22:19
S131	28	promoter with sorbent with mercury and "30" g	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/02 22:19
S132	4	promoter with sorbent with mercury and ("30" g).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/02 22:20

S133	4	promot\$4 with sorbent with mercury and ("30" g).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/02 22:23
S134	4	promot\$4 with sorbent with mercury and pre.clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/02 22:41
S135	2	promot\$4 with sorbent with mercury and pre-heater	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/02 22:42
S136	2	promot\$4 with sorbent with mercury and pre heater	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/03 08:36
S137	57	promot\$4 with sorbent with mercury and pre	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/03 08:36
S138	24	sorbent with preheat\$4 with coal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/03 08:39
S139	121	"5435980"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/03 08:47
S140	23	"11209163"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/03 11:28
S141	5	"14102896"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/03 11:48
S142	7	"12429058"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/03 12:09
S143	4	"12202595"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/03 12:23
S144	20	"12201595"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/03 12:24

S145	3	"14564860"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/03 12:27
S146	1	"15978760"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/03 12:28
S147	1	"15589359"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/03 12:32
S148	1	"15853029"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/03 12:37
S149	8	"15997091"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/03 12:42
S150	6	"14712558"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/03 12:42
S151	2	"15951970"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/03 15:18
S152	4	"15382114"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/03 15:47
S153	1	"15853029"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/03 15:51
S154	2	"20070168213"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/03 18:18
S155	69	"4279873"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/03 18:42
S156	75	"7435286"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/04 07:59

S157	4	"15295594"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/04 08:08
S158	1	("20180257030").PN.	US-PGPUB; USPAT	ADJ	ON	2018/10/04 09:31
S159	86	"5569436"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/04 09:32
S160	6	"5785935"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/04 09:33
S161	8	"6475471"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/04 09:33
S162	53	"6103205"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/04 11:46
S163	0	pyrolysis with char with mercury with activated	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/04 11:49
S164	17	pyrolysis with char with mercury	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/04 11:49
S165	121	pyrolysis with char with activated carbon	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/04 11:50
S166	0	pyrolysis with char with activated carbon with mercury with sorbent	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/04 11:50
S167	43	pyrolysis with char with activated carbon and mercury with sorbent	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/04 11:50
S168	118	pyrolysis with char with tire	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/04 12:04
S169	58	pyrolysis with char with activated carbon and mercury	US-PGPUB; USPAT; USOCR;	ADJ	ON	2018/10/04 12:04

			FPRS; EPO; JPO			
S170	8	"20040081724"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/04 15:07
S171	4	"14128179"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/04 15:10
S172	84	activat\$4 carbon with boiler with coal and remov\$4 with mercury	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/15 13:27
S173	88	activat\$4 carbon with boiler with coal and (remov\$4 or filter\$4 or absorb\$4 or adsorb\$4) with mercury	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/15 13:27
S174	0	mercury with stabiliz\$4 with sulfur dioxide	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/15 14:23
S175	75	"7435286"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/15 15:07
S176	6	"9468886"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/16 06:48
S177	17	"8821819"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/16 06:51
S178	15	"8652235"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/16 06:55
S179	93	"6136749"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/24 09:08
S180	4	"9757689"	US-PGPUB; USPAT	ADJ	ON	2018/10/24 12:37
S181	9	"8939388"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/29 09:59

S182	669	urea with inject\$4 with filter\$4 with exhaust	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/29 10:15
S183	2	urea with inject\$4 with filter\$4 with exhaust and urea with quench\$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/29 10:16
S184	13	"3615165"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/29 10:35
S185	136	urea with quench\$4 with remov\$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/29 10:39
S186	48	urea dust with scrub\$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/29 11:25
S187	38	"6221155"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/29 12:04
S188	6	"9468886"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/10/29 14:12
S189	773	ammonium with remov\$4 with mercury	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/12/03 14:14
S190	108	ammonium with salt with remov\$4 with mercury	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/12/03 14:15
S191	45	ammonium with salt with remov\$4 with mercury and activated carbon	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/12/03 14:15
S192	42	"5556447"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/12/03 14:21
S193	174	"4500327"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/12/03 14:21

S194	72	"4500327" and ammonium	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/12/03 14:23
S195	3	anionic couterion	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/12/03 14:32
S196	3480	anionic counterion	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/12/03 14:32
S197	2422	anionic counterion and ammonium with salt	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/12/03 14:32
S198	9	anionic counterion and ammonium with salt and remov\$4 with mercury	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/12/03 14:32
S199	52	"6960329"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/12/03 14:50
S200	4	"20040003716"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2018/12/06 11:23
S201	1	"45219176".FMID.	US-PGPUB; USPAT; FPRS	ADJ	ON	2018/12/06 13:32
S202	0	pyrolysis with char with activated carbon with mercury with sorbent	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2019/01/07 09:41
S203	284	(sorbent or activated carbon) with mercury and (diameter or size) with ("30" or "40" or "50" or "60" or "70") with (sorbent or carbon) and halogen\$4 and activated carbon	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2019/04/15 14:29
S204	88	activat\$4 carbon with boiler with coal and (remov\$4 or filter\$4 or absorb\$4 or adsorb\$4) with mercury	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2019/04/15 14:29
S205	42	"6132790"	US-PGPUB; USPAT	ADJ	ON	2019/06/12 16:06
S206	19	remov\$4 with mercury and calcium nitrate with sorbent	US-PGPUB; USPAT	ADJ	ON	2019/06/12 16:55

S207	1	remov\$4 with mercury with calcium nitrate	US-PGPUB; USPAT	ADJ	ON	2019/06/12 16:57
S208	1	"20040146613"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2019/06/13 12:59
S209	71	("6372187").URPN.	USPAT	ADJ	ON	2019/06/18 10:24
S210	48	("6372187").URPN. and (iodide or HI)	USPAT	ADJ	ON	2019/06/18 10:25
S211	61	(iodide or HI) with inject\$4 and mercury with remov\$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2019/06/18 10:30
S212	85	(iodide or HI) with coal and mercury with remov\$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2019/06/18 10:35
S213	131	"6558454"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2019/06/18 10:41
S214	5	"15295594"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2019/07/30 12:48
S215	82	"7435286"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2019/07/30 16:29
S216	65	"4013516"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2019/07/30 21:01
S217	24	"4699896"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2019/07/30 21:01

8/ 17/ 2019 11:41:28 AM

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Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)	<i>Complete if Known</i>	
	Application Number	15/974,343
	Filing Date	May 8, 2018
	First Named Inventor	Edwin S. Olson
	Group Art Unit	1776
	Examiner Name	Amber Orlando
Sheet 1 of 1	Attorney Docket No: 4820.001US9	

US PATENT DOCUMENTS			
Examiner Initial *	USP Document Number	Publication Date	Name of Patentee or Applicant of cited Document
	US-10,343,114	7/9/2019	Olson, Edwin S, et al.
	US-20120100053A1	4/26/2012	Durham, Michael D, et al.
	US-20130157845A1	6/20/2013	Nalepa, Christopher J, et al.

FOREIGN PATENT DOCUMENTS			
Examiner Initial *	Foreign Document Number	Publication Date	Name of Patentee or Applicant of cited Document
	WO-2012030560A1	3/8/2012	Nalepa, Christopher J, et al.

OTHER DOCUMENTS – NON PATENT LITERATURE DOCUMENTS			
Examiner Initial *	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.		T 1
	"Application Serial No. 15/382,114, Final Office Action mailed 06-21-19", 31 pgs		
	"Application Serial No. 15/589,359, Non Final Office Action mailed 06-21-19", 7 pgs		
	"Application Serial No. 15/978,760, Notice of Allowability mailed 05-30-19", 3 pgs		

EXAMINER

/AMBER R ORLANDO/

DATE CONSIDERED

08/17/2019

* 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. 1 Applicant is to place a check mark here if English language Translation is attached

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.R.O/

Exhibit 2044

Page 614

S/N 15/974,343PATENTIN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Edwin S. Olson et al. Examiner: Amber Orlando
Serial No.: 15/974,343 Group Art Unit: 1776
Filed: May 8, 2018 Docket: 4820.001US9
Customer No.: 21186 Confirmation No.: 1072
Title: SORBENTS FOR THE OXIDATION AND REMOVAL OF MERCURY

COMMUNICATION CONCERNING PRIOR OR COPENDING APPLICATION(S)

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

Pursuant to the guidance of MPEP §§ 2001.06(b) and 2004(9), Applicant would like to bring the following additional application(s) to the Examiner's attention. The identification of these applications is not intended to suggest that the subject matter claimed in any listed application is, or has been, substantially similar to any claim or claims in the present application.

<u>Serial No./</u> <u>Patent No.</u>	<u>Filing Date</u>	<u>Attorney Docket</u>	<u>Title</u>
15/997,091	June 4, 2018	4820.001U10	SORBENTS FOR THE OXIDATION AND REMOVAL OF MERCURY
16/130,670	September 13, 2018	4820.005US2	SORBENT COMPRISING CARBON AND NITROGEN AND METHODS OF USING THE SAME

Respectfully submitted,

SCHWEGMAN LUNDBERG & WOESSNER, P.A.
P.O. Box 2938
Minneapolis, MN 55402
(612) 349-9580

Date 02/26/2019

By



Nicholas P. Lanzatella
Reg. No. 63,803

/AMBER R ORLANDO/

08/17/2019

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.R.O/

Exhibit 2044
Page 615

S/N 15/974,343

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Edwin S. Olson et al.

Examiner: Amber Orlando

Serial No.: 15/974,343

Group Art Unit: 1776

Filed: May 8, 2018

Docket No.: 4820.001US9

Customer No.: 21186

Confirmation No.: 1072

Title: SORBENTS FOR THE OXIDATION AND REMOVAL OF MERCURY

AMENDMENT & RESPONSE UNDER 37 C.F.R. § 1.111

Mail Stop Amendment

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

In response to the Office dated January 14, 2019, please amend the application as follows:

IN THE CLAIMS

Please amend the claims as follows:

- 1-26. (Canceled)
27. (Previously Presented) A method of separating mercury from a mercury-containing gas, the method comprising:
- combusting coal in a combustion chamber, to provide the mercury-containing gas, wherein
 - the coal comprises added Br₂, HBr, a bromide compound, or a combination thereof, added to the coal before the coal enters the combustion chamber, or
 - the combustion chamber comprises added Br₂, HBr, a bromide compound, or a combination thereof, or
 - a combination thereof;
 - injecting a sorbent comprising activated carbon into the mercury-containing gas downstream of the combustion chamber;
 - contacting mercury in the mercury-containing gas with the sorbent; and
 - separating the sorbent contacted with the mercury from the mercury-containing gas.
28. (Previously Presented) The method of claim 27, wherein the coal comprises the added Br₂, HBr, the bromide compound, or a combination thereof, added to the coal before the coal enters the combustion chamber.
29. (Previously Presented) The method of claim 27, wherein the combustion chamber comprises the added Br₂, HBr, the bromide compound, or a combination thereof.
30. (Previously Presented) The method of claim 27, wherein the coal is combusted in the combustion chamber at a coal-combustion facility, wherein the Br₂, HBr, bromide compound, or combination thereof, is added to the coal before the coal enters the combustion chamber, wherein

the addition of the Br₂, HBr, bromide compound, or combination thereof, to the coal is performed at the coal-combustion facility.

31. (Previously Presented) The method of claim 27, wherein the coal is combusted in the combustion chamber at a coal-combustion facility, wherein the Br₂, HBr, bromide compound, or combination thereof, is added to the coal before the coal enters the combustion chamber, wherein the addition of the Br₂, HBr, bromide compound, or combination thereof, to the coal is performed at a site other than the coal-combustion facility.

32. (Previously Presented) The method of claim 27, wherein the combustion chamber is an electric utility coal combustion chamber.

33. (Previously Presented) The method of claim 27, wherein the combustion chamber is a coal combustion furnace.

34. (Previously Presented) The method of claim 27, wherein the coal comprises a subbituminous coal.

35. (Previously Presented) The method of claim 27, wherein the coal comprises a lignite coal.

36. (Previously Presented) The method of claim 27, further comprising measuring the mercury content of the mercury-containing gas; and modifying, in response to the measured mercury content of the mercury-containing gas, an injection rate of injecting the sorbent into the mercury-containing gas, an amount of the Br₂, HBr, the bromide compound, or a combination thereof, added to the coal or the combustion chamber, or a combination thereof.

37. (Previously Presented) The method of claim 36, wherein the measuring of the mercury content comprises continuous measurement.
38. (Previously Presented) The method of claim 27, further comprising:
modifying, in response to a measured mercury content,
an injection rate of injecting the sorbent into the mercury-containing gas,
an amount of the Br₂, HBr, the bromide compound, or a combination thereof,
added to the coal or the combustion chamber, or
a combination thereof.
39. (Previously Presented) The method of claim 27, wherein the mercury-containing gas comprises about 1 g to about 30 g of the element bromine per 100 g of the sorbent.
40. (Previously Presented) The method of claim 27, wherein the sorbent contacted with the mercury comprises the element bromine and mercury.
41. (Previously Presented) The method of claim 27, comprising removing greater than 70 wt% of the mercury in the mercury-containing gas.
42. (Previously Presented) The method of claim 27, comprising removing greater than 70 wt% of the mercury in the mercury-containing gas with the sorbent.
43. (Previously Presented) The method of claim 27, wherein the sorbent in the mercury-containing gas comprises about 1 g to about 30 g of the added Br₂, HBr, the bromide compound, or a combination thereof, per 100 g of the sorbent.
44. (Previously Presented) The method of claim 27, wherein the Br₂, HBr, or the bromide compound is contacted with the sorbent in vapor form, gaseous form, liquid form, or in an organic solvent.

45. (Previously Presented) The method of claim 27, wherein the activated carbon comprises powdered activated carbon, granular activated carbon, or a combination thereof.
46. (Previously Presented) The method of claim 27, wherein the sorbent injected into the mercury-containing gas is a sorbent obtained by contacting a sorbent with a halogen or halide promoter prior to the injection of the sorbent into the mercury-containing gas.
47. (Previously Presented) The method of claim 27, wherein the sorbent injected into the mercury-containing gas is free of contact with a halogen or halide promoter prior to injection of the sorbent into the mercury-containing gas.
48. (Previously Presented) The method of claim 27, wherein the combustion chamber comprises a boiler.
49. (Previously Presented) The method of claim 27, wherein the mercury-containing gas is a flue gas.
50. (Previously Presented) The method of claim 27, wherein the injection of the sorbent into the mercury-containing gas occurs upstream of a particulate separator, a scrubber, or a combination thereof.
51. (Previously Presented) The method of claim 50, wherein the particulate separator comprises a baghouse, a an electrostatic precipitator, a fabric filter, or a combination thereof.
52. (Previously Presented) The method of claim 27, wherein a halide sorbent enhancement additive comprises the added Br_2 , HBr , bromide compound, or combination thereof.
53. (Previously Presented) The method of claim 52, wherein the sorbent enhancement additive comprises the bromide compound.

54. (Previously Presented) A method of separating mercury from a mercury-containing gas, the method comprising:

combusting coal in a combustion chamber, to provide the mercury-containing gas, wherein the mercury-containing gas comprises a halogen or halide promoter comprising HBr, Br⁻, or a combination thereof, wherein

the coal comprises added Br₂, HBr, a bromide compound, or a combination thereof, added to the coal before the coal enters the combustion chamber, or

the combustion chamber comprises added Br₂, HBr, a bromide compound, or a combination thereof, or

a combination thereof;

injecting a sorbent comprising activated carbon into the mercury-containing gas downstream of the combustion chamber;

contacting mercury in the mercury-containing gas with the sorbent; and

separating the sorbent contacted with the mercury from the mercury-containing gas.

55. (Previously Presented) A method of separating mercury from a mercury-containing gas, the method comprising:

combusting coal in a combustion chamber, to provide the mercury-containing gas, wherein the mercury-containing gas comprises a halogen or halide promoter comprising HBr, Br⁻, or a combination thereof, wherein

the coal comprises added Br₂, HBr, a bromide compound, or a combination thereof, added to the coal before the coal enters the combustion chamber, or

the combustion chamber comprises added Br₂, HBr, a bromide compound, or a combination thereof, or

a combination thereof;

injecting a sorbent comprising activated carbon into the mercury-containing gas downstream of the combustion chamber such that the activated carbon reacts with the halogen or halide promoter in the mercury-containing gas to form a promoted sorbent;

contacting mercury in the mercury-containing gas with the promoted sorbent;

separating the promoted sorbent contacted with the mercury from the mercury-containing gas;

measuring the mercury content of the mercury-containing gas; and

modifying, in response to the measured mercury content,

- an injection rate of injecting the sorbent into the mercury-containing gas,
- an amount of the Br₂, HBr, the bromide compound, or a combination thereof,

added to the coal or the combustion chamber, or

- a combination thereof.

REMARKS

This responds to the Office Action dated January 14, 2019.

No claims are amended, no claims are canceled, and no claims are added; as a result, claims 27-55 are now pending in this application.

Allowable Subject Matter

The Office Action states:

The arguments filed 07/10/2019 regarding claims 27-55 with regard to the 103(a) rejections are found to be persuasive. Once the applicant timely files terminal disclaimers to overcome the pending double patenting rejections the claims will be in condition for allowance.

Applicant thanks the Examiner for indicating allowable subject matter. Terminal disclaimers are submitted herewith to obviate the double patenting rejections, as explained below.

Double Patenting Rejections

I. Double patenting rejections.

V(A). The Office Action rejected claims 27-55 on the ground of nonstatutory double patenting over claims 1-30 of U.S. patent no. 7,435,286 in view of U.S. patent no. 5,435,980 ("Felsvang") and U.S. patent publication no. 2004/0003716 ("Nelson").

This rejection is respectfully traversed. Applicant does not admit that claims 27-55 are obvious over claims 1-30 of U.S. patent no. 7,435,286 in view of Felsvang and Nelson. However, merely to expedite prosecution, a Terminal Disclaimer in compliance with 37 C.F.R. § 1.321 is enclosed herewith to obviate these rejections.

Applicant therefore respectfully requests reconsideration and withdrawal of the double patenting rejection.

V(B). The Office Action rejected claims 27-55 on the ground of nonstatutory double patenting over claims 1-25 of U.S. patent no. 8,168,147 in view of U.S. patent no. 5,435,980 ("Felsvang") and U.S. patent publication no. 2004/0003716 ("Nelson").

This rejection is respectfully traversed. Applicant does not admit that claims 27-55 are obvious over claims 1-25 of U.S. patent no. 8,168,147 in view of Felsvang and Nelson. However, merely to expedite prosecution, a Terminal Disclaimer in compliance with 37 C.F.R. § 1.321 is enclosed herewith to obviate these rejections.

Applicant therefore respectfully requests reconsideration and withdrawal of the double patenting rejection.

V(C). The Office Action rejected claims 27-55 on the ground of nonstatutory double patenting over claims 1-60 of U.S. patent no. 8,512,655 in view of U.S. patent no. 5,435,980 ("Felsvang") and U.S. patent publication no. 2004/0003716 ("Nelson").

This rejection is respectfully traversed. Applicant does not admit that claims 27-55 are obvious over claims 1-60 of U.S. patent no. 8,512,655 in view of Felsvang and Nelson. However, merely to expedite prosecution, a Terminal Disclaimer in compliance with 37 C.F.R. § 1.321 is enclosed herewith to obviate these rejections.

Applicant therefore respectfully requests reconsideration and withdrawal of the double patenting rejection.

V(D). The Office Action rejected claims 27-55 on the ground of nonstatutory double patenting over claims 1-60 of U.S. patent no. 8,821,819 in view of U.S. patent no. 5,435,980 ("Felsvang") and U.S. patent publication no. 2004/0003716 ("Nelson").

This rejection is respectfully traversed. Applicant does not admit that claims 27-55 are obvious over claims 1-60 of U.S. patent no. 8,821,819 in view of Felsvang and Nelson. However, merely to expedite prosecution, a Terminal Disclaimer in compliance with 37 C.F.R. § 1.321 is enclosed herewith to obviate these rejections.

Applicant therefore respectfully requests reconsideration and withdrawal of the double patenting rejection.

V(E). The Office Action rejected claims 27-55 on the ground of nonstatutory double patenting over claims 1-33 of U.S. patent no. 9,757,689 in view of U.S. patent no. 5,435,980 ("Felsvang") and U.S. patent publication no. 2004/0003716 ("Nelson").

This rejection is respectfully traversed. Applicant does not admit that claims 27-55 are obvious over claims 1-33 of U.S. patent no. 9,757,689 in view of Felsvang and Nelson. However, merely to expedite prosecution, a Terminal Disclaimer in compliance with 37 C.F.R. § 1.321 is enclosed herewith to obviate these rejections.

Applicant therefore respectfully requests reconsideration and withdrawal of the double patenting rejection.

V(F). The Office Action rejected claims 27-55 on the ground of nonstatutory double patenting over claims 1-20 of U.S. patent no. 9,468,886 in view of U.S. patent no. 5,435,980 ("Felsvang") and U.S. patent publication no. 2004/0003716 ("Nelson").

This rejection is respectfully traversed. Applicant does not admit that claims 27-55 are obvious over claims 1-20 of U.S. patent no. 9,468,886 in view of Felsvang and Nelson. However, merely to expedite prosecution, a Terminal Disclaimer in compliance with 37 C.F.R. § 1.321 is enclosed herewith to obviate these rejections.

Applicant therefore respectfully requests reconsideration and withdrawal of the double patenting rejection.

V(G). The Office Action rejected claims 27-55 on the ground of nonstatutory double patenting over claims 1-30 of U.S. patent no. 8,652,235 in view of U.S. patent no. 5,435,980 ("Felsvang") and U.S. patent publication no. 2004/0003716 ("Nelson").

This rejection is respectfully traversed. Applicant does not admit that claims 27-55 are obvious over claims 1-30 of U.S. patent no. 8,652,235 in view of Felsvang and Nelson. However, merely to expedite prosecution, a Terminal Disclaimer in compliance with 37 C.F.R. § 1.321 is enclosed herewith to obviate these rejections.

Applicant therefore respectfully requests reconsideration and withdrawal of the double patenting rejection.

V(H). The Office Action provisionally rejected claims 27-55 on the ground of nonstatutory double patenting over claims 1-16 of copending application no. 15/295,594 in view of ("Felsvang") and U.S. patent publication no. 2004/0003716 ("Nelson").

This rejection is respectfully traversed. Applicant does not admit that claims 27-55 are obvious over claims 1-16 of copending application no. 15/295,594 in view of Felsvang and Nelson. However, merely to expedite prosecution, a Terminal Disclaimer in compliance with 37 C.F.R. § 1.321 is enclosed herewith to obviate these rejections.

Applicant therefore respectfully requests reconsideration and withdrawal of the double patenting rejection.

V(I). The Office Action provisionally rejected claims 27-55 on the ground of nonstatutory double patenting over claims 8-20 of copending application no. 15/589,359.

This rejection is respectfully traversed. Applicant does not admit that claims 27-55 are obvious over claims 8-20 of copending application no. 15/589,359. However, merely to expedite prosecution, a Terminal Disclaimer in compliance with 37 C.F.R. § 1.321 is enclosed herewith to obviate these rejections.

Applicant therefore respectfully requests reconsideration and withdrawal of the double patenting rejection.

V(J). The Office Action provisionally rejected claims 27-55 on the ground of nonstatutory double patenting over claims 1-20 of copending application no. 15/853,029 in view of ("Felsvang") and U.S. patent publication no. 2004/0003716 ("Nelson").

This rejection is respectfully traversed. Applicant does not admit that claims 27-55 are obvious over claims 1-20 of copending application no. 15/853,029 in view of Felsvang and Nelson. However, merely to expedite prosecution, a Terminal Disclaimer in compliance with 37 C.F.R. § 1.321 is enclosed herewith to obviate these rejections.

Applicant therefore respectfully requests reconsideration and withdrawal of the double patenting rejection.

V(K). The Office Action provisionally rejected claims 27-55 on the ground of nonstatutory double patenting over claims 1-20 of copending application no. 14/712,558.

This rejection is respectfully traversed. Applicant does not admit that claims 27-55 are obvious over claims 1-20 of copending application no. 14/712,558. However, merely to expedite

prosecution, a Terminal Disclaimer in compliance with 37 C.F.R. § 1.321 is enclosed herewith to obviate these rejections.

Applicant therefore respectfully requests reconsideration and withdrawal of the double patenting rejection.

V(L). The Office Action provisionally rejected claims 27-55 on the ground of nonstatutory double patenting over claims 1-20 of copending application no. 15/951,970.

This rejection is respectfully traversed. Applicant does not admit that claims 27-55 are obvious over claims 1-20 of copending application no. 15/951,970. However, merely to expedite prosecution, a Terminal Disclaimer in compliance with 37 C.F.R. § 1.321 is enclosed herewith to obviate these rejections.

Applicant therefore respectfully requests reconsideration and withdrawal of the double patenting rejection.

V(M). The Office Action provisionally rejected claims 27-55 on the ground of nonstatutory double patenting over claims 1-20 of copending application no. 15/382,114 in view of ("Felsvang") and U.S. patent publication no. 2004/0003716 ("Nelson").

This rejection is respectfully traversed. Applicant does not admit that claims 27-55 are obvious over claims 1-20 of copending application no. 15/382,114 in view of Felsvang and Nelson. However, merely to expedite prosecution, a Terminal Disclaimer in compliance with 37 C.F.R. § 1.321 is enclosed herewith to obviate these rejections.

Applicant therefore respectfully requests reconsideration and withdrawal of the double patenting rejection.

V(N). The Office Action provisionally rejected claims 27-55 on the ground of nonstatutory double patenting over claims 1-20 of copending application no. 15/853,029 in view of ("Felsvang") and U.S. patent publication no. 2004/0003716 ("Nelson").

This rejection is respectfully traversed. Applicant does not admit that claims 27-55 are obvious over claims 1-20 of copending application no. 15/853,029 in view of Felsvang and Nelson. This rejection appears to be a duplicate of the rejection listed herein at **V(J)**. However,

merely to expedite prosecution, a Terminal Disclaimer in compliance with 37 C.F.R. § 1.321 is enclosed herewith to obviate these rejections.

Applicant therefore respectfully requests reconsideration and withdrawal of the double patenting rejection.

V(O). The Office Action provisionally rejected claims 27-55 on the ground of nonstatutory double patenting over claims 1-20 of copending application no. 15/978,760 in view of ("Felsvang") and U.S. patent publication no. 2004/0003716 ("Nelson").

This rejection is respectfully traversed. Applicant does not admit that claims 27-55 are obvious over claims 1-20 of copending application no. 15/978,760 in view of Felsvang and Nelson. However, merely to expedite prosecution, a Terminal Disclaimer in compliance with 37 C.F.R. § 1.321 is enclosed herewith to obviate these rejections.

Applicant therefore respectfully requests reconsideration and withdrawal of the double patenting rejection.

CONCLUSION

Applicant respectfully submit that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone the undersigned at (612) 349-9580 to facilitate prosecution of this application.

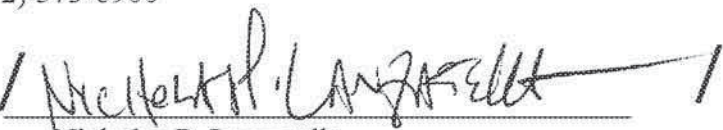
If necessary, please charge any additional fees or deficiencies, or credit any overpayments to Deposit Account No. 19-0743.

Respectfully submitted,

SCHWEGMAN LUNDBERG & WOESSNER, P.A.
P.O. Box 2938
Minneapolis, Minnesota 55402
(612) 373-6900

Date August 28, 2019

By



Nicholas P. Lanzatella
Reg. No. 63,803

S/N 15/974,343

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s):	Edwin S. Olson et al.	Examiner:	Amber Orlando
Serial No.:	15/974,343	Group Art Unit:	1776
Filed:	May 8, 2018	Docket:	4820.001US9
Customer No.:	21186	Confirmation No.:	1072
Title:	SORBENTS FOR THE OXIDATION AND REMOVAL OF MERCURY		

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

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

In compliance with the duty imposed by 37 C.F.R. § 1.56, and in accordance with 37 C.F.R. §§ 1.97 *et. seq.*, the enclosed materials are brought to the attention of the Examiner for consideration in connection with the above-identified patent application. Applicant respectfully requests that this Information Disclosure Statement be entered and the documents listed on the attached PTO 1449 Form be considered by the Examiner and made of record. Pursuant to the provisions of MPEP 609, Applicant requests that a copy of the PTO 1449 Form, initialed as being considered by the Examiner, be returned to the Applicant with the next official communication.

Pursuant to 37 C.F.R. § 1.97(c)(2), Applicant hereby authorizes the Commissioner to charge the fee of \$240.00 as set forth in 37 C.F.R. § 1.17(p), to Deposit Account No. 19-0743. Please charge any additional fees or deficiencies, or credit any overpayment to Deposit Account No. 19-0743.

Pursuant to 37 C.F.R. § 1.98(a)(2), copies of cited U.S. Patents and Published Applications, and Non-Published Applications identifiable by USPTO Serial Number, are no longer required to be provided to the Office. Applicant acknowledges the requirement to submit copies of foreign patent documents and non-patent literature in accordance with 37 C.F.R. § 1.98(a)(2).

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Serial Number: 15/974,343

Filing Date: May 8, 2018

Title: SORBENTS FOR THE OXIDATION AND REMOVAL OF MERCURY

Page 2

Dkt. 4820,001US9

The Examiner is invited to contact the undersigned at the telephone number indicated if there are any questions regarding this communication.

Respectfully submitted,

SCHWEGMAN LUNDBERG & WOESSNER, P.A.

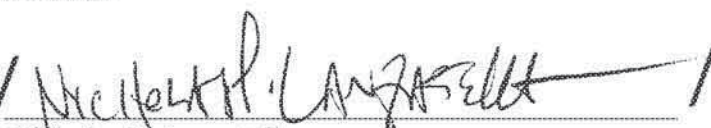
P.O. Box 2938

Minneapolis, MN 55402

(612) 349-9580

Date August 28, 2019

By



Nicholas P. Lanzatella

Reg. No. 63,803

NPL:bam

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)	<i>Complete if Known</i>	
	Application Number	15/974,343
	Filing Date	May 8, 2018
	First Named Inventor	Edwin S. Olson
	Group Art Unit	1776
	Examiner Name	Amber Orlando
Sheet 1 of 1	Attorney Docket No: 4820.001US9	

US PATENT DOCUMENTS			
Examiner Initial *	USP Document Number	Publication Date	Name of Patentee or Applicant of cited Document

FOREIGN PATENT DOCUMENTS				
Examiner Initial *	Foreign Document Number	Publication Date	Name of Patentee or Applicant of cited Document	T 1

OTHER DOCUMENTS – NON PATENT LITERATURE DOCUMENTS				
Examiner Initial *	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.			T 1
	"Application Serial No. 14/712,558, Response filed 07-10-19 to Final Office Action mailed - 1-11-19", 57 pgs.			
	"Application Serial No. 15/295,594, Final Office Action mailed 08-02-19", 18 pgs			
	"Application Serial No. 15/589,359, Notice of Allowance mailed 07-31-19", 7 pgs			
	"Application Serial No. 15/589,359, Response filed 07-16-19 to Non Final Office Action mailed 06-21-19", 7 pgs.			
	"Application Serial No. 15/997,091, Non Final Office Action mailed 08-23-19", 14 pgs			
	"Application Serial No. 15/997,091, Response filed 07-10-19 to Final Office Action mailed 01-11-19", 80 pgs.			

EXAMINER

DATE CONSIDERED

* 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. 1 Applicant is to place a check mark here if English language Translation is attached

TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT

Docket Number

4820.001US9

In re Application of: Edwin S. Olson et al.

Application No.: 15/974,343

Filed: May 8, 2018

For: SORBENTS FOR THE OXIDATION AND REMOVAL OF MERCURY

The applicant, Midwest Energy Emissions Corp, owner of the entire interest 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 No.(s)/prior Application No.(s)** 7,435,286; 8,168,147, 8,512,655, 8,821,819, 9,757,689, 9,468,886, 8,652,235, 15/295,594, 15/589,359, 15/853,029, 14/712,558, 15/951,970, 15/382,114, 15/978,760, as the term of said **prior patent(s)/prior Application No.(s)** is presently shortened by any terminal disclaimer. The applicant 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(s)** 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 applicant 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(s)**, "as the term of said **prior patent(s)** is presently shortened by any terminal disclaimer," in the event that said **prior patent(s)** later:

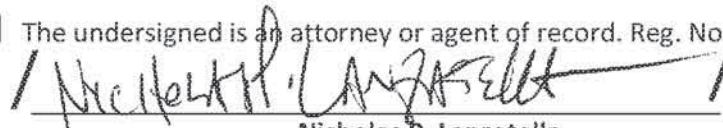
- expires for failure to pay a maintenance fee;
- is held unenforceable;
- is found invalid by a court of competent jurisdiction;
- is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
- has all claims canceled by a reexamination certificate;
- is reissued; or
- is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

Check either box 1 or 2 below, if appropriate.

1. ☐ The undersigned is the applicant. If the applicant is an assignee, the undersigned is authorized to act on behalf of the assignee.

I hereby acknowledge that any willful false statements made are punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

2. ☒ The undersigned is an attorney or agent of record. Reg. No. 63,803



Nicholas P. Lanzatella

August 28, 2019

Date

Attorney

612-359-9580

Title

Telephone Number

- ☒ Terminal disclaimer fee under 37 CFR 1.20(d) included.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number

Filing Date

- ☒ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above: **21186**

OR

- ☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter to:

- ☒ The address associated with the above mentioned Customer Number.

OR

- ☐ The address associated with Customer Number:

OR

☐ Firm or
Individual Name

Address

City

State

Zip

Country

Telephone

Email

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

Midwest Energy Emissions Corp.

- ☐ Inventor or Joint Inventor (title not required below)
- ☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)
- ☒ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)
- ☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature

Date

(Optional)

Name

Title

Chief Technology Officer

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

- ☒ *Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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.

STATEMENT UNDER 37 CFR 3.73(c)Applicant/Patent Owner: Midwest Energy Emissions CorpApplication No./Patent No.: 15/974,343Filed/Issue Date: May 8, 2018Titled: SORBENTS FOR THE OXIDATION AND REMOVAL OF MERCURYMidwest Energy Emissions Corp a Corporation

(Name of Assignee)

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

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

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

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

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

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

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

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

- A. ☒ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel 042647, Frame 0351-0359, or for which a copy thereof is attached.
- B. ☐ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

2. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

[Page 1 of 2]

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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STATEMENT UNDER 37 CFR 3.73(c)

3. From: _____ To: _____

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 Reel _____, Frame _____, or for which a copy thereof is attached.

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6. From: _____ To: _____

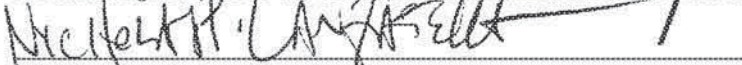
The document was recorded in the United States Patent and Trademark Office at
 Reel _____, Frame _____, or for which a copy thereof is attached.

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

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

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

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


 Signature

August 28, 2019
 Date

Nicholas P. Lanzatella
 Printed or Typed Name

USPTO Reg. No. 63,803
 Title or Registration Number