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NOTICE OF ALLOWANCE AND FEE(S) DUE

146169 7590 03/22/2022
MIDDLETON & REUTLINGER (Holley)
401 S. 4th Street, Suite 2600
(2600 Brown & Williamson Tower)
LOUISVILLE, KY 40202

EXAMINER

LEE, CHEE-CHONG

ART UNIT

PAPER NUMBER

3752

DATE MAILED: 03/22/2022

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/778,341	01/31/2020	Doug Flynn	ZU569-20178	8909

TITLE OF INVENTION: Fuel Injection Throttle Body

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	06/22/2022

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

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

HOW TO REPLY TO THIS NOTICE:

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

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

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

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

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

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

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

PART B - FEE(S) TRANSMITTAL

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

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

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

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

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

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

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MIDDLETON & REUTLINGER (Holley)
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(2600 Brown & Williamson Tower)
LOUISVILLE, KY 40202

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/778,341	01/31/2020	Doug Flynn	ZU569-20178	8909

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nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	06/22/2022

EXAMINER	ART UNIT	CLASS-SUBCLASS
LEE, CHEE-CHONG	3752	239-005000

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

☐ Change of correspondence address (or Change of Correspondence Address form PTO/AIA/122 or PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

1 _____

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

2 _____

3 _____

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

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

(A) NAME OF ASSIGNEE

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

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

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

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

☐ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

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

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

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

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

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

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

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____



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LOUISVILLE, KY 40202			3752	

DATE MAILED: 03/22/2022

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

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

EX-1002-4

Notice of Allowability	Application No. 16/778,341	Applicant(s) Flynn et al.	
	Examiner CHEE-CHONG LEE	Art Unit 3752	AIA (FITF) Status Yes

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

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to January 10, 2022.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on ____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are 1-9. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

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

Certified copies:

a) ☐ All b) ☐ Some* c) ☐ None of the:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. ____.

3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: ____.

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

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

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

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

Attachment(s)

1. ☐ Notice of References Cited (PTO-892) 2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date <u>1/10/2022</u> . 3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____. 4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____.	5. ☒ Examiner's Amendment/Comment 6. ☒ Examiner's Statement of Reasons for Allowance 7. ☐ Other _____.
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/CHEE-CHONG LEE/
Primary Examiner, Art Unit 3752

DETAILED ACTION

Notice of Pre-AIA or AIA Status

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

Allowable Subject Matter

Claims 1-9 are allowable.

The following is an examiner's statement of reasons for allowance: The prior art of record references fail to teach, disclose, or suggest, either alone or in combination: A fuel injection throttle body for an internal combustion engine, comprising: an air intake extending through said fuel injection throttle body; a fuel port in said fuel injection throttle body; an electronic fuel injector disposed in said fuel injection throttle body, said electronic fuel injector in fluid communication with a fuel supply and with said fuel port; a fuel channel disposed about an inner wall of said air intake; said fuel channel formed by one or both of an annular ring and said inner wall of said air intake, said annular ring disposed within said air intake and along said inner wall of said air intake; a plurality of orifices disposed in said annular ring and in fluid communication with said fuel channel; wherein pressurized fuel is forced through said fuel port, through said fuel channel, and through said plurality of orifices and the rest of the claim limitations as a whole.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHEE-CHONG LEE whose telephone number is (571)270-1916. The examiner can normally be reached on Monday-Friday 8am -5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Arthur O. Hall can be reached on (571)270-1814. 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.

/CHEE-CHONG LEE/
Primary Examiner, Art Unit 3752
March 10, 2022



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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146169	7590	01/11/2022		
MIDDLETON & REUTLINGER (Holley)			EXAMINER	
401 S. 4th Street, Suite 2600			LEE, CHEE-CHONG	
(2600 Brown & Williamson Tower)				
LOUISVILLE, KY 40202				
			ART UNIT	PAPER NUMBER
			3752	
			NOTIFICATION DATE	DELIVERY MODE
			01/11/2022	ELECTRONIC

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

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

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

USPTOmail@middletonlaw.com

USPTOmail@middreut.com

<i>Applicant-Initiated Interview Summary</i>	Application No. 16/778,341	Applicant(s) Flynn et al.		
	Examiner CHEE-CHONG LEE	Art Unit 3752	AIA (First Inventor to File) Status Yes	Page 1 of 1

All Participants (applicant, applicants representative, PTO personnel)	Title	Type
CHEE-CHONG LEE	Primary Examiner	Telephonic
James E. Cole	Attorney of Record	

Date of Interview: 06 January 2022

Issues Discussed:

35 U.S.C. 112

The proposed amendments, see attached, overcome all of the 112(b) rejections.

35 U.S.C. 102

The Examiner and Applicant agreed that Graffman fails to disclose "an electronic fuel injector."

/CHEE-CHONG LEE/ Primary Examiner, Art Unit 3752	
Applicant is reminded that a complete written statement as to the substance of the interview must be made of record in the application file. It is the applicants responsibility to provide the written statement, unless the interview was initiated by the Examiner and the Examiner has indicated that a written summary will be provided. See MPEP 713.04 Please further see: MPEP 713.04 Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews, paragraph (b) 37 CFR § 1.2 Business to be transacted in writing	

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

INTERVIEW AGENDA – NOT FOR PUBLICATION

To: Examiner Lee

Email: Chee-Chong.Lee@USPTO.GOV

Re: Telephone Interview January 6, 2022 at 1:00 p.m.

Application No.: 16/778,341

Title: Fuel Injection Throttle Body

Inventor: Flynn, *et al.*

Points of Discussion

1. Drawing and Specification Objections (CL. 5 Amendment)
2. Double Patenting Rejection
3. 102 Rejection: *Graffman* teaches a carburetor, not an electronic fuel injection (EFI) system;

No injector

No electronic control unit that operates the fuel injector

PROPOSED CLAIM AMENDMENTS – NOT FOR PUBLICATION

1. (Currently Amended) A fuel injection throttle body for an internal combustion engine, comprising:

an air intake extending through said fuel injection throttle body;

a fuel port in said fuel injection throttle body;

a fuel injector disposed in said fuel injection throttle body, said fuel injector in fluid communication with a fuel supply and with said fuel port;

a fuel channel disposed about an inner wall of said air intake;

said fuel channel formed by one or both of an annular ring and said inner wall of said air intake, said annular ring disposed within said air intake and along [[an]]said inner wall of said air intake;

a plurality of orifices disposed in said annular ring and in fluid communication with said fuel channel;

wherein pressurized fuel is forced through said fuel port, through said fuel channel, and through said plurality of orifices in order to mix with air moving through said air intake;

a throttle shaft and throttle plate disposed within said air intake for rotation therein to vary an air flow moving through the air intake; and,

an electronic control unit to control fuel flow ~~to the~~ and air flow through the air intake.

2. (Original) The fuel injection throttle body of Claim 1, said plurality of orifices oriented in one of a radial direction or a non-radial direction.

3. (Original) The fuel injection throttle body of Claim 1, said fuel injection throttle body configured to replace a carburetor.

4. (Original) The fuel injection throttle body of Claim 1, said fuel port having an axis that is substantially perpendicular to said throttle shaft.

5. (Currently Amended) A fuel injection throttle body for an internal combustion engine, comprising:

an air intake extending from ~~one surface~~ an upper side of said fuel injection throttle body to a lower side ~~second surface~~ and defining a flow path for air through said fuel injection throttle body;

a fuel port disposed in said fuel injection throttle body;

a fuel injector disposed in said fuel port of said fuel injection throttle body, said fuel port receiving fuel from said fuel injector;

a fuel channel defined by an inner wall of said air intake, an annular ring, or both;

said annular ring positioned at said inner wall of said air intake;

a plurality of orifices disposed through said annular ring, said plurality of orifices in fluid communication with said fuel channel, said fuel port, and said fuel injector to disperse fuel into said air intake;

an electronic control unit to control the fuel injector ~~and throttle plate~~;

a shaft extending through said air intake and a throttle plate disposed on said shaft, said throttle plate rotatable to vary airflow through said air intake;

~~an electronic control unit to control the fuel injector;~~

said fuel injection throttle body configured to replace a carburetor of an internal combustion engine.

6. (Original) The fuel injection throttle body of Claim 5 wherein said plurality of orifices are either radially oriented or non-radially oriented.

7. (Currently Amended) The fuel injection throttle body of Claim 6 wherein said plurality of orifices are each spaced apart between ~~about~~ 20 and 38 degrees.

8. (Original) The fuel injection throttle body of Claim 5 wherein said fuel is atomized when entering the air intake.

9. (Original) The fuel injection throttle body of Claim 5 wherein said fuel port is oriented at an angle relative to said shaft.

NOT FOR PUBLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	)	Attorney Ref.: ZU569-20178
	)	
Inventor: Doug FLYNN, <i>et al.</i>	)	Examiner: Chee-Chong LEE
	)	
Application No.: 16/778,341	)	Group Art Unit: 3752
	)	
Filed: January 31, 2020	)	Confirmation No.: 8909
	)	
For: Fuel Injection Throttle Body	)	Date Submitted: January 10, 2022

Mail Stop AMENDMENT

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

**REPLY TO NON-FINAL OFFICE ACTION UNDER 37 C.F.R. §1.111
AND REQUEST FOR EXTENSION OF TIME UNDER 37 C.F.R. §1.136**

Dear Examiner:

The following amendments and remarks are submitted in response to the Office Action mailed October 4, 2021, in the above-referenced patent Application. The Applicant thanks the Examiner for the thorough review of the application.

In addition, the Applicant respectfully requests a one-month extension of time under 37 C.F.R. §1.136. Accordingly, a payment, as specified in 37 C.F.R. §1.17(a), of \$220.00 is accompanied with this response.

AMENDMENTS TO THE CLAIMS begins on page 2; and,

REMARKS begin on page 4.

AMENDMENTS TO THE CLAIMS

A listing of the entire set of pending claims is submitted herewith per 37 CFR §1.121. This listing of claims will replace all prior versions, and listings, of claims in the application.

1. **(Currently Amended)** A fuel injection throttle body for an internal combustion engine, comprising:

an air intake extending through said fuel injection throttle body;

a fuel port in said fuel injection throttle body;

an electronic fuel injector disposed in said fuel injection throttle body, said electronic fuel injector in fluid communication with a fuel supply and with said fuel port;

a fuel channel disposed about an inner wall of said air intake;

said fuel channel formed by one or both of an annular ring and said inner wall of said air intake, said annular ring disposed within said air intake and along ~~[[an]]~~said inner wall of said air intake;

a plurality of orifices disposed in said annular ring and in fluid communication with said fuel channel;

wherein pressurized fuel is forced through said fuel port, through said fuel channel, and through said plurality of orifices in order to mix with air moving through said air intake;

a throttle shaft and throttle plate disposed within said air intake for rotation therein to vary an air flow moving through the air intake; and,

an electronic control unit to control fuel flow ~~to the and air flow through the air intake~~from said electronic fuel injector.

2. (Original) The fuel injection throttle body of Claim 1, said plurality of orifices oriented in one of a radial direction or a non-radial direction.

3. (Original) The fuel injection throttle body of Claim 1, said fuel injection throttle body configured to replace a carburetor.

4. (Original) The fuel injection throttle body of Claim 1, said fuel port having an axis that is substantially perpendicular to said throttle shaft.

5. **(Currently Amended)** A fuel injection throttle body for an internal combustion engine, comprising:

an air intake extending from ~~one surface~~ an upper side of said fuel injection throttle body to a lower side ~~second surface~~ and defining a flow path for air through said fuel injection throttle body;

a fuel port disposed in said fuel injection throttle body;

an electronic fuel injector disposed in said fuel port of said fuel injection throttle body, said fuel port receiving fuel from said electronic fuel injector;

a fuel channel defined by an inner wall of said air intake, an annular ring, or both;

said annular ring positioned at said inner wall of said air intake;

a plurality of orifices disposed through said annular ring, said plurality of orifices in fluid communication with said fuel channel, said fuel port, and said electronic fuel injector to disperse fuel into said air intake;

an electronic control unit to control the electronic fuel injector ~~and throttle plate~~;

a shaft extending through said air intake and a throttle plate disposed on said shaft, said throttle plate rotatable to vary airflow through said air intake;

~~an electronic control unit to control the fuel injector;~~

said fuel injection throttle body configured to replace a carburetor of an internal combustion engine.

6. (Original) The fuel injection throttle body of Claim 5 wherein said plurality of orifices are either radially oriented or non-radially oriented.

7. **(Currently Amended)** The fuel injection throttle body of Claim 6 wherein said plurality of orifices are each spaced apart between ~~about~~ 20 and 38 degrees.

8. (Original) The fuel injection throttle body of Claim 5 wherein said fuel is atomized when entering the air intake.

9. (Original) The fuel injection throttle body of Claim 5 wherein said fuel port is oriented at an angle relative to said shaft.

REMARKS

These remarks are responsive to the Office Action mailed on October 4, 2021 (“the Office Action”). The Applicant (inclusive of Applicant’s attorney) thanks the Examiner for the examination of the above-referenced Application.

On January 6, 2022, Applicant conducted a telephone interview with Examiner Lee. Applicant thanks the Examiner for his time and consideration. Applicant discussed the amendments provided herein and believes that the Examiner was generally agreeable to such amendments. The Examiner noted he would consider further upon return to the office.

Status of the Claims

At the time of the Office Action, Claims 1-9 were pending, with Claims 1-9 being rejected. Claims 1, 5, and 7 are amended herein. Support for these amendments may be found throughout the Specification.

Drawing and Specification Objections

The drawings are objected to as failing to comply with 37 CFR §1.83(a), which requires that every feature of the invention specified in the claims be shown and 37 CFR 1.75(d)(1) requiring antecedent basis of the claimed subject matter.

Applicant has amended Claim 5 to recite that the air intake is at an upper side of the throttle body and extends to an outlet at the lower side. This is shown throughout Applicant’s figures and at least at FIGS. 1, 4, 5, and 8. Applicant believes the Examiner was agreeable to this amendment per discussion in the interview.

The Applicant respectfully requests that the Office Action’s drawing objections be withdrawn.

Double Patenting

The Examiner has rejected Claims 1, 5 and 7 based on the non-statutory type double patenting rejection over Claims 1, 3, 8, 10, 11, and 16 of U.S. Patent 10,012,197. The Examiner has further rejected Claims 1 and 5 based on the non-statutory type double patenting rejection over Claim 1 of U.S. Patent 10,570,866.

Applicant discussed this issue with the Examiner in the interview. Applicant noted that this application is a continuation of a divisional application. The divisional application did not have a terminal disclaimer per the safe harbor provision of 35 USC 121. A terminal disclaimer is not appropriate for the divisional application. Further, Applicant argued that because this case was a continuation of such divisional, that a terminal disclaimer was not necessary in this instant application from either of the parent or the divisional cases.

Additionally, the Examiner refers to “public policy...to prevent unjustified/improper timewise extension...” However, as the instant is an application claiming priority to the parent patent via the divisional patent, Applicant believe the patent term will be limited to 20 years from the priority parent patent. Accordingly, “unjustified/improper timewise extension” is not possible, indicating no need for the terminal disclaimer.

Finally, Applicant has also amended Claim 1, further changing the claim language from the cited patents.

If the Examiner still disagrees, Applicant requested during the interview that these rejections be held in abeyance until an allowable form of the claims are agreed upon. At such time, if further determination of the need for Terminal Disclaimer is warranted, such discussion can occur. However, as noted, Applicant does not believe such Terminal Disclaimer is warranted.

35 U.S.C. §112 Interpretations

Claims 1-9 currently stand interpreted under 35 U.S.C. §112(b) for allegedly failing to point out and distinctly claim the subject matter.

In an effort to advance prosecution, and without conceding the propriety of the Office Action’s 112(b) rejections, appropriate amendments are made herein. The Applicant respectfully requests that the Office Action’s 112(b) rejections be withdrawn.

35 U.S.C. §102 Rejection

The Examiner has rejected Claims 1-6, 8, and 9 under 35 U.S.C. §102(a)(1) as allegedly being anticipated by *Graffman* (U.S. Patent No. 3,800,769). Applicant respectfully traverses this ground of rejection.

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” M.P.E.P. § 2131. “Every

element of the claimed invention must be literally present, arranged as in the claim.” *Richardson v. Suzuki Motor Co. Ltd.*, 868 F.2d 1226, 1236 (Fed. Cir. 1989). The claims must not be treated as “mere catalogs of separate parts, in disregard of the part-to-part relationships set forth in the claims and that give the claims their meaning.” *Lindemann Maschinenfabrik GMBH v. American Hoist and Derrick Company et al.*, 730 F.2d 1452, 1459 (Fed. Cir. 1984). As a result, a reference that coincidentally lists features of a claim without describing the claimed arrangement, relationship, and organization of such features cannot anticipate.

Applicant has reviewed the *Graffman* reference, which teaches an injector carburetor. An injection carburetor is a hydromechanical device which feeds fuel from a pump to a discharge. The device typically meters fuel according to mass airflow through the throttle body. In most cases a diaphragm moves due to the mass airflow that creates a pressure differential and allows fuel flow, based on the mass airflow.

Likewise, *Graffman* teaches a diaphragm structure with the carburetor. Unfortunately, the *Graffman* reference is unlike Applicant’s throttle body. Applicant teaches and claims an electronic fuel injection system, which is entirely different than a carburetor. One skilled in the art would understand this, so Applicant is confused by the Examiner’s use of this prior art.

Stated alternately, a carburetor system is not an electronic fuel injection system. EFI systems mostly eliminated the use of carburetors in vehicle engines upon their invention, well after carburetors. Applicant additionally noted this distinction from a Google search during the interview – the text coming from Wikipedia:

The primary difference between carburetion and fuel injection is that fuel injection atomizes the fuel through a small nozzle under high pressure, while a carburetor relies on suction created by intake air accelerated through a Venturi tube to draw the fuel into the airstream.

The Examiner agreed that the carburetor was different from an electronic fuel injection system.

One specific claim difference for example is where the Examiner indicates element (43) is an injector. Applicant’s review of the specification and FIG. 3 of *Graffman* indicates that the element (43) is merely a flange. This is not an injector as alleged by the Examiner. Applicant agreed additionally to amend the term to electronic fuel injector throughout the claims. The term has the same scope as the term electromechanical fuel injector that the Examiner noted in the family case.

Moreover, the alleged injector (43) is not an electronic fuel injector as alleged. Thus, again, the 102 rejection fails. The Examiner agreed this would overcome the art of record.

Additionally, *Graffman* fails to teach an electronic control unit (ECU) to control the fuel injector. The Examiner cites the electric generator (5) as the ECU but this is merely a pulse generator which affects diaphragm (26). The generator (5) is not an ECU, but there is no arguing that the reference fails to teach an electronic fuel injector. Instead, as with most carburetors, the diaphragm (26) controls fuel flow mechanically by vacuum (not electronically).

For at least these reasons, Applicant asserts that the anticipation rejection fails. Accordingly, the Applicant respectfully requests reconsideration and withdrawal of the Office Action's current 102 rejection.

35 U.S.C. §103 Rejections

The Examiner has rejected Claim 7 under 35 U.S.C. §103 as being unpatentable over *Graffman*.

In an effort to advance prosecution, and without conceding the propriety of the Office Action's 103 rejections, Applicant asserts that the base 102 rejection fails. Accordingly, the 103 rejection fails.

Accordingly, the Applicant respectfully requests reconsideration and withdrawal of the Office Action's current 103 rejections.

General Comments on Dependent Claims

Since each of the dependent claims depends from a base claim that is believed to be in condition for allowance, Applicant believes that it is unnecessary at this time to argue the allowability of each of the dependent claims individually. Applicant does not however, necessarily concur with the interpretation of any dependent claim, as set forth in the Office Action nor does Applicant concur that the basis for the rejection of any dependent claim is proper. Therefore, Applicant reserves the right to further address the patentability of the dependent claims in the future, if deemed necessary.

Closing Remarks

In responding to this Office Action, Applicant has presented only those arguments or made only those amendments that Applicant believes are warranted. To the extent that Applicant has not, for example, responded to every factual or legal issue raised by the Office, and Applicant has not presented every argument supporting patentability that may be relevant, the decision not to address a factual or legal issue raised or to present a certain argument in support shall not be construed as Applicant's agreement with the Office on such issue or effect a waiver of Applicant's right to address such issues or make such arguments in the future.

CONCLUSION

The Applicant respectfully submits that the application is in condition for allowance, and reconsideration and notice of allowance are respectfully requested. If the Examiner believes that prosecution might be advanced by discussing the application with the Applicant's counsel, in person or over the telephone, the Applicant's counsel would welcome the opportunity to do so.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is an additional fee occasioned by this response, please charge any deficiency to Deposit Account No. 506792.

Respectfully submitted,

MIDDLETON REUTLINGER

Date: January 10, 2022

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

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

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

USPTOmail@middletonlaw.com

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DETAILED ACTION

Notice of Pre-AIA or AIA Status

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

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the air intake extending from one surface of said fuel injection throttle body to a second surface and defining a flow path for air through said fuel injection throttle body as recited in lines 2-3 of claim 5 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New

Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: The disclosure, as originally filed, does not disclose that the air intake extending from one surface of said fuel injection throttle body to a second surface and defining a flow path for air through said fuel injection throttle body as recited in lines 2-3 of claim 5.

While there appears to be basis for these terms in the original specification nonetheless the meaning of every terms, especially terms now used to patentably define over the prior art, used in any of the claims should be apparent from the descriptive portion of the specification with clear disclosure as to its import. The use of a confusing variety of terms for the same thing or the use of same terms to refer a variety of different things should not be permitted.

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 § 2146 *et seq.* 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-1.jsp.

Claims 1, 5 and 7 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1, 3, 8, 10, 11 and 16 of U.S. Patent No. 10,012,197.

Although the claims at issue are not identical, they are not patentably distinct from each other because both inventions have the features of a fuel injection throttle body for an internal combustion engine, comprising an air intake; a fuel port; a fuel injector with a fuel supply; a fuel channel of an annular ring; a plurality of orifices; a throttle shaft and throttle plate; and an electronic control unit.

Application Claims	U.S. Patent No. 10,012,197
1 and 5	1, 3, 10 and 11
7	8 and 16

Claims 1 and 5 are rejected on the ground of nonstatutory double patenting as being unpatentable over claim 1 of U.S. Patent No. 10,570,866. Although the claims at issue are not identical, they are not patentably distinct from each other because both inventions have the features of a fuel injection throttle body for an internal combustion engine, comprising an air intake; a fuel port; a fuel injector with a fuel supply; a fuel channel of an annular ring; a plurality of orifices; a throttle shaft and throttle plate; and an electronic control unit.

Application Claims	U.S. Patent No. 10,570,866
1 and 5	1

Claim Rejections - 35 USC § 112

The following is a quotation of 35 U.S.C. 112(b):

(b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-9 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor (or for applications subject to pre-AIA 35 U.S.C. 112, the applicant), regards as the invention.

In claim 1, line 8, the recitation “an inner wall of said air intake” appears to be a double inclusion of the “inner wall of said air intake” recited in line 6.

Claim 1 recites the limitation "electronic control unit to control fuel flow to the and air flow through the air intake" in lines 17-18. It appears to be idiomatically and/or grammatically incorrect.

Claim 5 recites the limitation "said orifices" in line 9. There is insufficient antecedent basis for this limitation in the claim. The Examiner is unsure if the “said orifices” in line 9 is or is not the “said orifices” from the "plurality of said orifices" recited in line 9 of claim 5. Furthermore, the Examiner is unsure if the “said orifices” in line 9 is all or part (some or subset) of the “said orifices” from the "plurality of said orifices" recited in line 9 of claim 5.

In claim 5, line 15, the recitation “an electronic control unit” appears to be a double inclusion of the “electronic control unit” recited in line 12.

Claim 5 recites the limitation "throttle plate" in line 12. There is insufficient antecedent basis for this limitation in the claim.

In claim 5, line 13, the recitation "a throttle plate" appears to be a double inclusion of the "throttle plate" recited in line 12.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). In the present instance, claim 7 recites the broad recitation "20 and 38 degrees," and the claim also recites "about" which is the narrower statement of the range/limitation. Clearly, "about" is a narrow range within the broader range of 20 and 38 degrees. Furthermore, the term "about" in claim 7 is a relative term which renders the claim indefinite. The term "about" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The acceptable deviation in the amount of angle to meet the claim limitation is not known. The Examiner is unsure if 19-21 is about 20 degrees or 15-25 is about 20 degrees.

The above are just examples of inconsistencies and problematic issues noted by the Examiner. Applicant is advised to carefully review and amend the application to correct other deficiencies. For the purpose of examination, the claims will be examined as best understood by the Examiner.

Claim Rejections - 35 USC § 102

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

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

A person shall be entitled to a patent unless –

(a)(1) the claimed invention was patented, described in a printed publication, or in public use, on sale, or otherwise available to the public before the effective filing date of the claimed invention.

Claims 1-6, 8 and 9 are rejected under 35 U.S.C. 102(a)(1) as being anticipated by Graffman (US 3,800,769).

With respect to claim 1, Graffman discloses a fuel injection throttle body (Figs. 1-4) for an internal combustion engine, comprising:

an air intake (top of 41. Fig. 3) extending through said fuel injection throttle body;
a fuel port (See Fig. 3 with additional annotations below) in said fuel injection throttle body;

a fuel injector (43) disposed in said fuel injection throttle body, said fuel injector in fluid communication with a fuel supply (1. Fig. 2) and with said fuel port;

a fuel channel (44) disposed about an inner wall of said air intake (Fig. 3);

said fuel channel formed by one or both of an annular ring (ring of 43) and said inner wall of said air intake, said annular ring disposed within said air intake and along an inner wall of said air intake;

a plurality of orifices (46) disposed in said annular ring and in fluid communication with said fuel channel;

wherein pressurized fuel (from pump 2) is forced through said fuel port (once 47 is open), through said fuel channel, and through said plurality of orifices in order to mix with air moving through said air intake;

a throttle shaft (shaft of 42) and throttle plate (plate of 42) disposed within said air intake for rotation therein to vary an air flow moving through the air intake; and,

an electronic control unit (electric generator of the car engine) to control fuel flow to the and air flow through the air intake.

With respect to claim 2, Graffman discloses said plurality of orifices oriented in one of a radial direction (Fig. 3) or a non-radial direction.

With respect to claim 3, Graffman discloses said fuel injection throttle body configured to (capable of) replace a carburetor (because the fuel injection throttle body of Graffman is an injector carburetor similar to a device defined by the Applicant's claimed invention).

With respect to claim 4, Graffman discloses said fuel port having an axis that is substantially perpendicular to said throttle shaft (Fig. 3).

With respect to claim 5, Graffman discloses a fuel injection throttle body (Figs. 1-4) for an internal combustion engine, comprising:

an air intake (top of 41. Fig. 3) extending from one (top rim) surface (See Fig. 3 with additional annotations below) of said fuel injection throttle body to a second (inner cylindrical) surface and defining a flow path for air through said fuel injection throttle body;

a fuel port (See Fig. 3 with additional annotations below) disposed in said fuel injection throttle body;

a fuel injector (43) disposed in said fuel port of said fuel injection throttle body, said fuel port receiving fuel from said fuel injector;

a fuel channel (44) defined by an inner wall of said air intake, an annular ring (Fig. 3), or both;

said annular ring positioned at said inner wall of said air intake;

a plurality of orifices (46) disposed through said annular ring, said orifices in fluid communication with said fuel channel, said fuel port, and said fuel injector to disperse fuel into said air intake;

an electronic control unit (electric generator of the car engine) and throttle plate (42);

a shaft (shaft of 42) extending through said air intake and a throttle plate (plate of 42) disposed on said shaft, said throttle plate rotatable to vary airflow through said air intake;

an electronic control unit (electric generator of the car engine) to control the fuel injector;

said fuel injection throttle body configured to (capable of) replace a carburetor of an internal combustion engine (because the fuel injection throttle body of Graffman is an injector carburetor similar to a device defined by the Applicant's claimed invention).

With respect to claim 6, Graffman discloses wherein said plurality of orifices are either radially oriented (Fig. 3) or non-radially oriented.

Claim 8 further defines non-positively recited limitations/elements (the fuel) of claim 5. Alternatively, Graffman discloses wherein said fuel is atomized when entering the air intake (Col. 1, lines 66-67).

With respect to claim 9, Graffman discloses wherein said fuel port is oriented at an angle relative to said shaft (Fig. 3).

Claim Rejections - 35 USC § 103

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

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

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

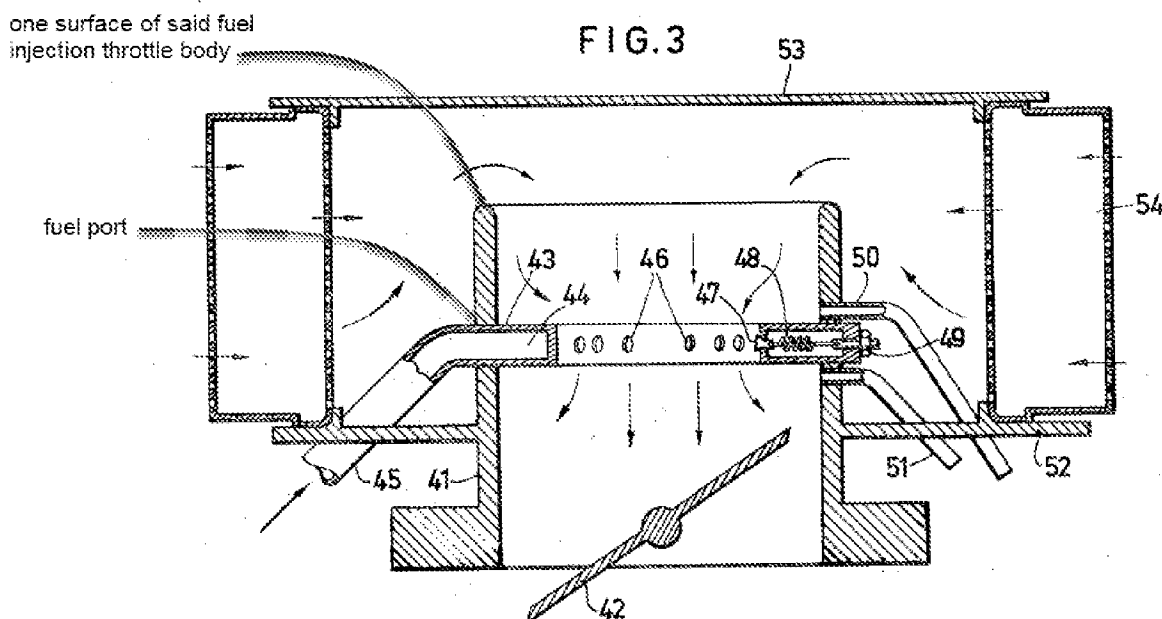
The factual inquiries for establishing a background for determining obviousness under 35 U.S.C. 103 are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 7 is rejected under 35 U.S.C. 103 as being unpatentable over Graffman.

With respect to claim 7, Graffman discloses the fuel injection throttle body of Claim 6 except for wherein said plurality of orifices are each spaced apart between about 20 and 38 degrees.

However, it would have been obvious to one having ordinary skill in the art before the effective filing date of the claimed invention to design said plurality of orifices each spaced apart between about 20 and 38 degrees, since the claimed values are merely an optimum or workable range. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.



Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patents are cited to show the art with respect to a fuel injector: Baverstock, Kopa and Stumpp.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHEE-CHONG LEE whose telephone number is (571)270-1916. The examiner can normally be reached on Monday-Friday 8am -5pm.

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, Arthur O. Hall can be reached on (571)270-1814. 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 <https://ppair-my.uspto.gov/pair/PrivatePair>. 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.

/CHEE-CHONG LEE/
Primary Examiner, Art Unit 3752
September 29, 2021

Electronic Acknowledgement Receipt

EFS ID:	38453665
Application Number:	16778341
International Application Number:	
Confirmation Number:	8909
Title of Invention:	Fuel Injection Throttle Body
First Named Inventor/Applicant Name:	Doug Flynn
Customer Number:	146169
Filer:	James Earl Cole/Tammy Swarens
Filer Authorized By:	James Earl Cole
Attorney Docket Number:	ZU569-20178
Receipt Date:	31-JAN-2020
Filing Date:	
Time Stamp:	13:48:00
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$ 1880
RAM confirmation Number	E20201UD48157003
Deposit Account	506792
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EX. 1002 - 37

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		ZU569-20178-Application.pdf	51017	yes	9
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	Document Description		Start	End	
	Specification		1	6	
	Claims		7	8	
	Abstract		9	9	
Warnings:					
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2	Drawings-only black and white line drawings	ZU569-20178-Figures.pdf	1138127	no	8
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7	Transmittal Letter	ZU569-20178-IDS_TransmittalLetterWithIDS.pdf	19472	no	1
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8	Application Data Sheet	ZU569-20178-ADS.pdf	1260944	no	10
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9	Fee Worksheet (SB06)	fee-info.pdf	36985	no	2
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Information:					
Total Files Size (in bytes):			4982480		

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
ALEXANDRIA, VIRGINIA
UNITED STATES OF AMERICA

UTILITY PATENT APPLICATION
FOR
FUEL INJECTION THROTTLE BODY
BY

DOUG FLYNN

JAMES DRALLE

AMY GIESKE

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COREY SPAINHOWARD

CLAIM TO PRIORITY

[0001] This continuation patent application claims priority to and benefit of, under 35 U.S.C. §120, U.S. Divisional Patent Application Serial Number 15/986,571, filed May 22, 2018, titled “Fuel Injection Throttle Body”, which claims priority, under 35 U.S.C. §121, to U.S. Patent Application Serial Number 14/156,813, filed January 16, 2014, titled “Fuel Injection Throttle Body”, which claims priority to U.S. Provisional Application Serial Number 61/892,706, filed on October 18, 2013, titled “Fuel Injection Throttle Body”, all of which is incorporated by reference herein.

BACKGROUND OF THE INVENTION

[0002] Throttle Body Fuel Injection ("TBI") is a type of Electronic Fuel Injection ("EFI") for internal combustion engines that became main stream in factory

vehicles during the 1980's. TBI Fuel Injection consists of an air metering valve that contains fuel injectors. The air metering valve allows more airflow as driver depresses gas pedal. The fuel injectors add fuel as a function of airflow. The TBI is controlled by an Electronic Control Unit ("ECU").

[0003] Factory car producers moved away from this type of fuel injection as government emissions standards increased in the mid-to-late 1980's. However, the aftermarket automotive parts industry started selling aftermarket TBI fuel injection systems in the late 1980's. These systems were designed to replace the carburetor on older carbureted vehicles from the 1960's to 1980's.

[0004] One of the limitations of many aftermarket fuel injection systems is that the end consumer has to have a significant level of knowledge on tuning the ECU that controlled these systems. Recently, technology has advanced and several companies now offer systems that are "self- tuning", where the end consumer only has to perform basic installation, and the ECU monitors various sensors and automatically tunes itself. This has caused resurgence in people purchasing TBI systems to retrofit older carbureted vehicles. The main benefit of TBI fuel injection is the fact that it can be retrofit fairly easy on older carbureted vehicles, on many different applications, as compared to other types of fuel injection methods such as Multiport EFI, which requires replacement of a multitude of original engine components.

[0005] Factory TBI system designs utilized fuel injectors that sprayed fuel at higher pressure that were placed vertically above the throttle plates of the throttle body. Mostly due to aesthetics, and available fuel injector designs, most aftermarket TBI systems place fuel injectors horizontally (or close to a horizontal position) into the sides of the throttle body. Unlike the factory TBI designs, this horizontal placement requires a throttle body design that redirects the normal fuel injector spray pattern. If fuel is not directed into the throttle body in a way that atomizes the fuel so it can thoroughly mix with the airstream through the throttle body, the engine may not run smoothly, may not make adequate power, and may have poor fuel economy and emissions.

SUMMARY OF THE INVENTION

[0006] In order to overcome the limitations of current aftermarket TBI designs, embodiments of this invention are such, that a conventional high pressure electronically controlled fuel injector sprays into a chamber that is constrained by an annular fuel distribution ring. The annular fuel distribution ring may contain at least one radial channel and orifices coupled to the channel. The orifices allow the fuel to exit into the air stream from several positions around the circumference of an air intake in the throttle body, allowing the fuel to mix with the air and enter the engine in an optimally atomized state.

BRIEF DESCRIPTION OF THE DRAWINGS

- [0007]** FIG. 1 is a front plan view of a throttle body with annular fuel injection according to an embodiment of the invention.
- [0008]** FIG. 2 is cross-section view A-A of the throttle body of FIG. 1.
- [0009]** FIG. 3 is detail view C of the throttle body of FIG. 2.
- [0010]** FIG. 4 is cross-section view B-B of the throttle body of FIG. 1.
- [0011]** FIG. 5 is detail view D of the throttle body of FIG. 4.
- [0012]** FIG. 6 is an isometric bottom view of a throttle body with annular fuel injection according to an embodiment of the invention.
- [0013]** FIG. 7 is detail view E of the throttle body of FIG. 6.
- [0014]** FIG. 8 is an isometric top view of the annular ring element according to an embodiment of the invention.
- [0015]** FIG. 9 is a schematic isometric view showing the fuel injection and air flow according to an embodiment of the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0016] Shown in FIG. 1 is an embodiment of a throttle body 100 having fuel rails 110 aligned horizontally near the bottom surface of the throttle body 100. The fuel rails 110 provide pressurized fuel to the fuel injectors 120, which couple to the throttle body 100 at fuel ports 210 (not shown). In some embodiments the fuel injectors 120 may be aligned horizontally in respect to the throttle body 100. In other embodiments the fuel injectors 120 may be aligned at an angle above or below horizontal in respect to the throttle body 100.

[0017] As shown in FIGS. 2-7, each fuel rail 110 may be coupled to one or more fuel injectors 120. Each fuel injector 120 provides fuel through a fuel port 210 into an annular ring 240 positioned in an air intake 220 of the throttle body 100 below the throttle plate 230. The annular ring 240 includes an annular fuel channel 250 for distributing fuel around the annular ring 240 to a plurality of fuel discharge orifices 260 and 270. The plurality of fuel discharge orifices 260 and 270 are configured to atomize and spray the fuel into the air intake 220 from multiple directions.

[0018] In some embodiments there may be a larger primary fuel discharge orifice 260 aligned in front of the fuel port 210 along with a plurality of smaller secondary fuel discharge orifices 270 aligned radially around the annular ring 240. In various embodiments the secondary fuel discharge orifices 270 may vary in size and shape as desired. In some embodiments the fuel discharge orifices 260 and 270 may be of circular, ovular, elliptical, and/or polygonal shapes.

[0019] In one embodiment the primary fuel discharge orifice 260 may be a 0.25 inch diameter circular orifice. In other embodiments the primary fuel discharge orifice 260 may be a 0.28 to 0.40 inch wide by 0.155 ovular-slot orifice.

[0020] In one embodiment the secondary fuel discharge orifices 270 may be 0.047 to 0.100 inch diameter circular orifices. The secondary fuel discharge orifices 270

may be spaced radially around the annular ring 240 at angular separations of 20 to 38 degrees from adjacent orifices.

[0021] In a preferred embodiment the annular ring 240 includes a 0.28 inch wide by 0.155 inch ovular-slot high primary fuel discharge orifice 260 and thirteen 0.047 inch diameter circular secondary fuel discharge orifices 270 radially spaced at 20-38 degrees apart from adjacent orifices, and centered on the primary fuel discharge orifice 260, as shown in FIG. 8.

[0022] It will be appreciated by those skilled in the art that the primary fuel discharge orifice 260 and the secondary fuel discharge orifices 270 may each be a variety of shapes having close to the same orifice opening areas as those described in the various embodiments of the invention.

[0023] During operation, air enters the throttle body 100 through an air intake 220. The flow rate of the air through the air intake 220 is regulated by the throttle plate 230, which may be controlled electromechanically by an ECU (not shown), or mechanically. Pressurized fuel flows through a fuel rail 110 and into a fuel injector 120 controlled by the ECU, which regulates the amount of fuel flowing through the fuel port 210 into the air intake 220. As shown in FIG. 9, the fuel flow exits the fuel port 210 a portion of the fuel enters the air flow 920 in the air intake 220 through the primary fuel discharge orifice 260 as atomized fuel 910. The remainder of the fuel enters the annular fuel channel 250 and exits the annular fuel channel 250 through the secondary fuel discharge orifices 270 and enters the air flow 920 in the air intake 220 as atomized fuel 910.

[0024] In preferred embodiments of the invention, 40% to 60% of the fuel enters the air intake 220 through the primary fuel discharge orifice 260.

[0025] In various embodiments the throttle body 100 may have one or more air intakes 220 with each air intake 220 including a throttle plate 230, a fuel injector 120, and an annular ring 240.

[0026] In some embodiments of the throttle body 100, the annular fuel channel 250 may be a part of the throttle body 100 rather than of part of the annular ring

240. In other embodiments the throttle body 100 and annular ring 240 may include complimentary portions of the annular fuel channel 250.

[0027] In some embodiments the inner wall air intake 220 may have a larger diameter equal to the outer diameter of the annular ring 240 near the bottom to accommodate the annular ring 240 so the inner wall of the air intake 220 and the annular ring 240 form a smooth continuous surface to aid air flow.

[0028] In some embodiments the annular ring 240 may include an annular groove 410 or other means to aid the installing and/or removing the annular ring 240 from the throttle body 100.

[0029] In various embodiments the annular ring 240 may be coupled to the throttle body 100 by one or more of a press fit, threads, a friction fit, mechanical fasteners, adhesives, and welds.

[0030] In various embodiments the annular ring 240 may be made of aluminum, steel, cast iron, other metals, plastics, composites, or other materials and/or combinations of materials suitable for throttle body applications.

[0031] In the preceding specification, various preferred exemplary embodiments have been described with reference to the accompanying drawings. It will, however, be evident that various modifications and changes may be made thereto, and additional exemplary embodiments may be implemented, without departing from the broader scope of the invention as set forth in the claims that follow. The specification and drawings are accordingly to be regarded in an illustrative rather than restrictive sense.

CLAIMS

1. A fuel injection throttle body for an internal combustion engine, comprising:
 - an air intake extending through said fuel injection throttle body;
 - a fuel port in said fuel injection throttle body;
 - a fuel injector disposed in said fuel injection throttle body, said fuel injector in fluid communication with a fuel supply and with said fuel port;
 - a fuel channel disposed about an inner wall of said air intake;
 - said fuel channel formed by one or both of an annular ring and said inner wall of said air intake, said annular ring disposed within said air intake and along an inner wall of said air intake;
 - a plurality of orifices disposed in said annular ring and in fluid communication with said fuel channel;
 - wherein pressurized fuel is forced through said fuel port, through said fuel channel, and through said plurality of orifices in order to mix with air moving through said air intake;
 - a throttle shaft and throttle plate disposed within said air intake for rotation therein to vary an air flow moving through the air intake; and,
 - an electronic control unit to control fuel flow to the and air flow through the air intake.
2. The fuel injection throttle body of Claim 1, said plurality of orifices oriented in one of a radial direction or a non-radial direction.
3. The fuel injection throttle body of Claim 1, said fuel injection throttle body configured to replace a carburetor.
4. The fuel injection throttle body of Claim 1, said fuel port having an axis that is substantially perpendicular to said throttle shaft.
5. A fuel injection throttle body for an internal combustion engine, comprising:
 - an air intake extending from one surface of said fuel injection throttle body to a second surface and defining a flow path for air through said fuel injection throttle body;
 - a fuel port disposed in said fuel injection throttle body;

a fuel injector disposed in said fuel port of said fuel injection throttle body, said fuel port receiving fuel from said fuel injector;

a fuel channel defined by an inner wall of said air intake, an annular ring, or both;
said annular ring positioned at said inner wall of said air intake;

a plurality of orifices disposed through said annular ring, said orifices in fluid communication with said fuel channel, said fuel port, and said fuel injector to disperse fuel into said air intake;

an electronic control unit and throttle plate;

a shaft extending through said air intake and a throttle plate disposed on said shaft, said throttle plate rotatable to vary airflow through said air intake;

an electronic control unit to control the fuel injector;

said fuel injection throttle body configured to replace a carburetor of an internal combustion engine.

6. The fuel injection throttle body of Claim 5 wherein said plurality of orifices are either radially oriented or non-radially oriented.

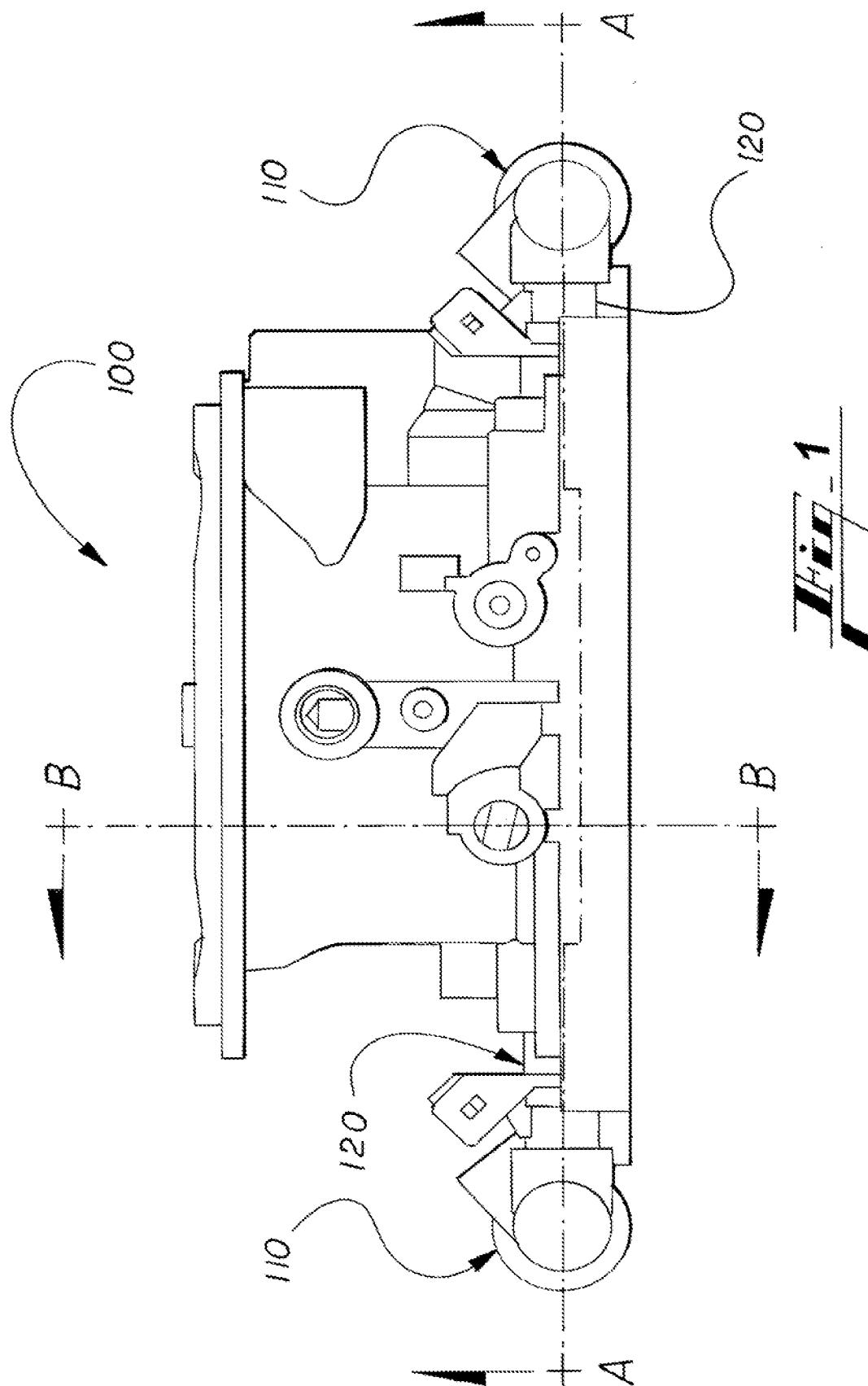
7. The fuel injection throttle body of Claim 6 wherein said plurality of orifices are each spaced apart between about 20 and 38 degrees.

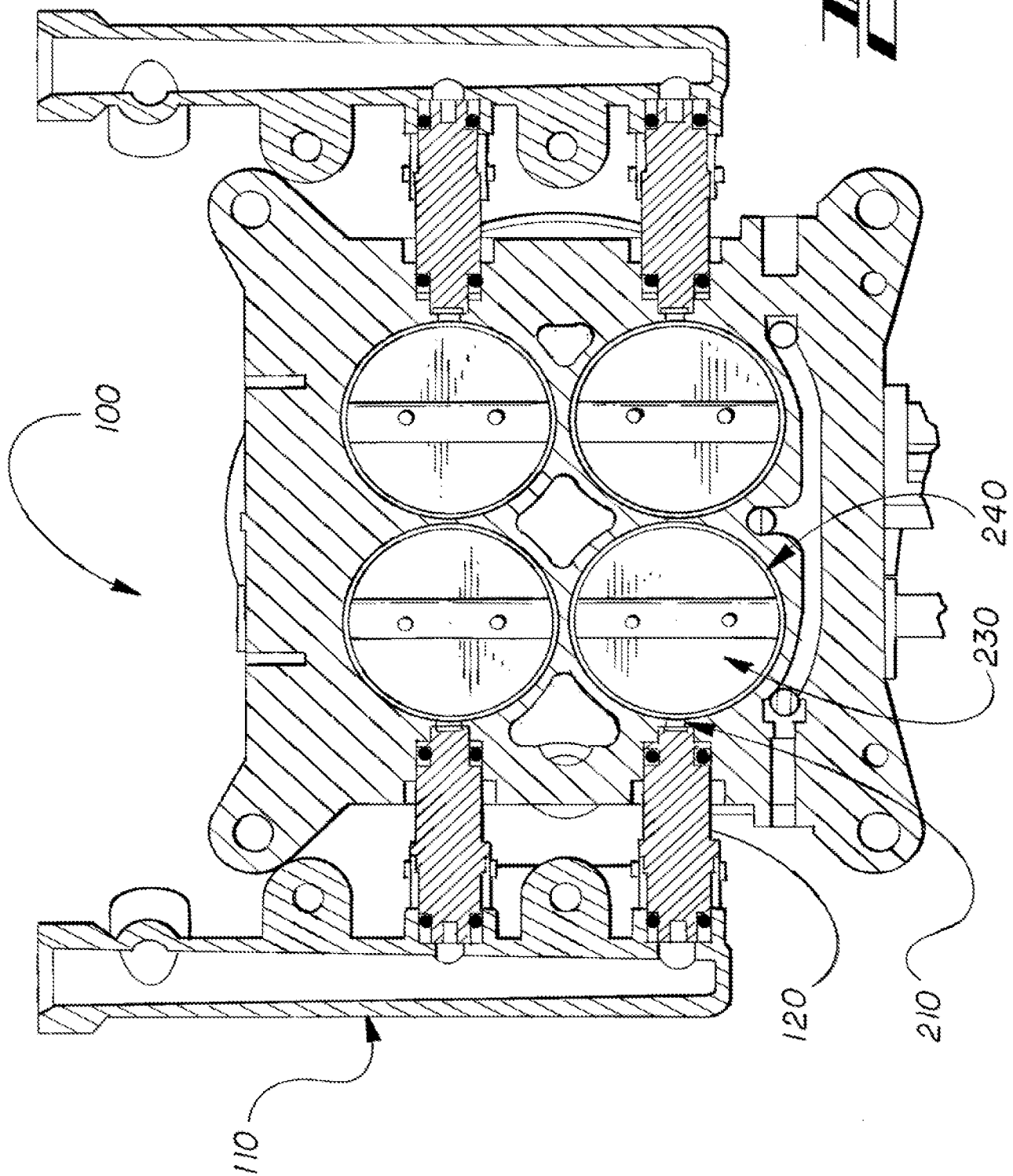
8. The fuel injection throttle body of Claim 5 wherein said fuel is atomized when entering the air intake.

9. The fuel injection throttle body of Claim 5 wherein said fuel port is oriented at an angle relative to said shaft.

ABSTRACT

A throttle body fuel injection system including a throttle body with at least one air intake, a fuel injector coupled to the throttle body at a fuel port and an annular ring coupled to the cylindrical inner wall of the air intake. The annular ring includes a primary fuel discharge orifice adjacent to the fuel port and a plurality of secondary fuel discharge orifices arranged radially around the annular ring for spraying atomized fuel into the air intake.





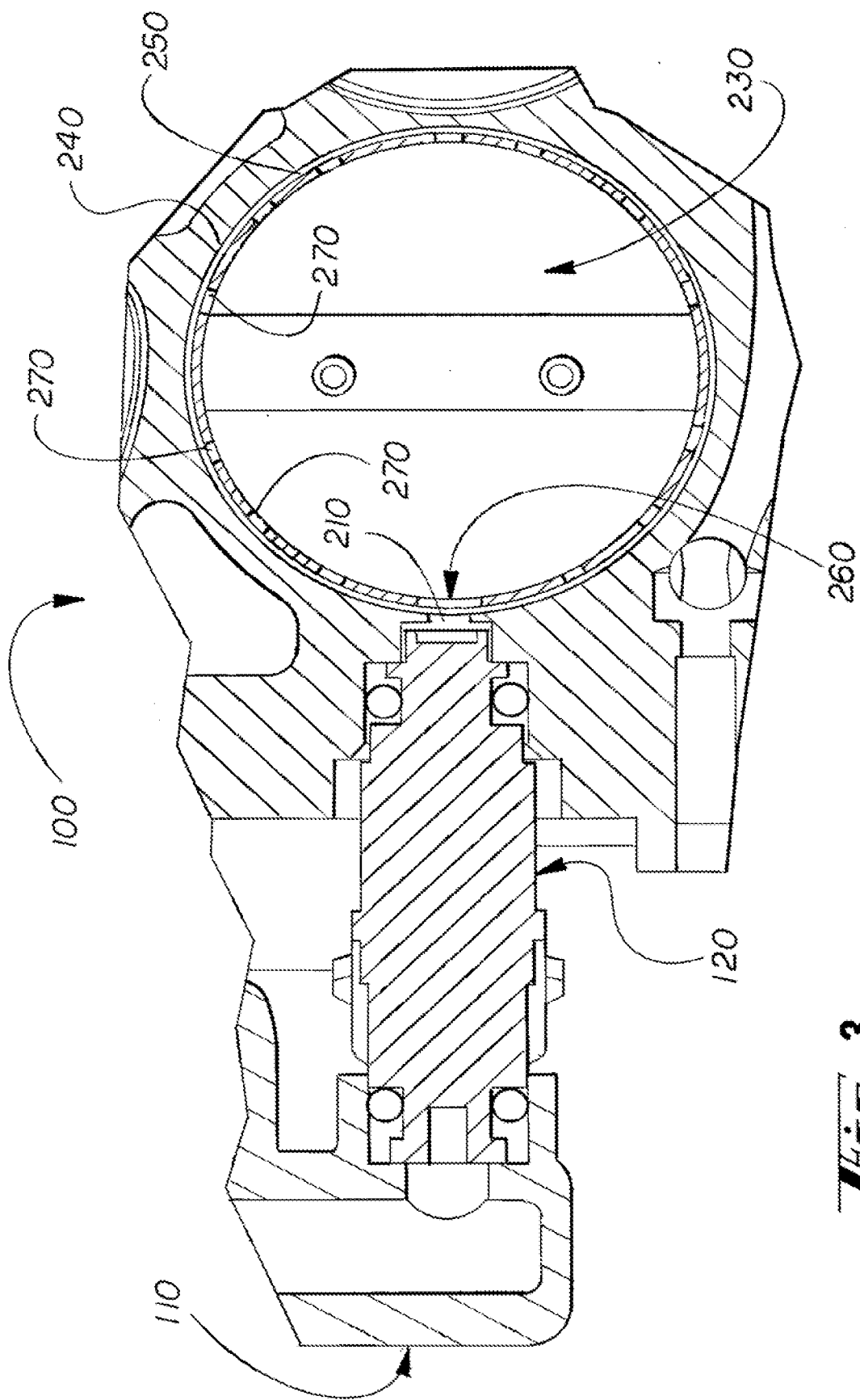
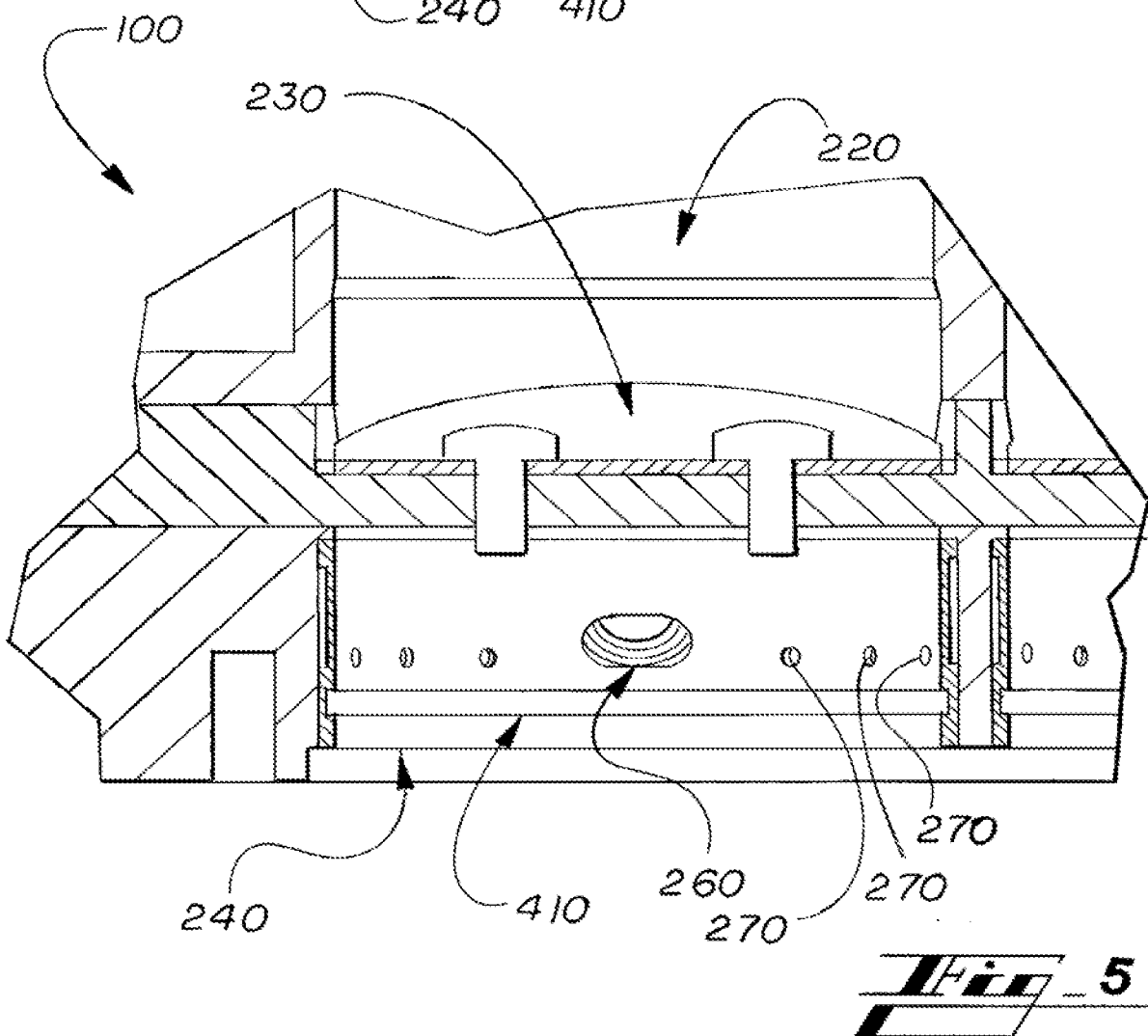
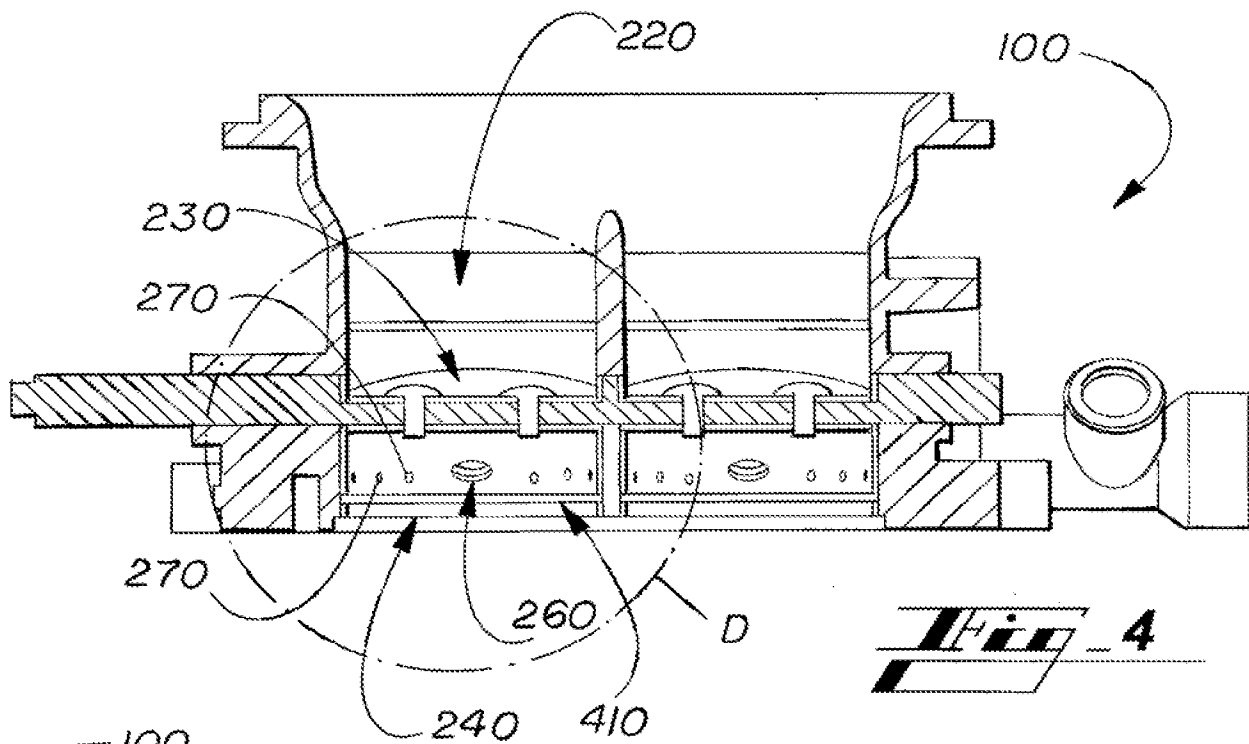


Fig. 3



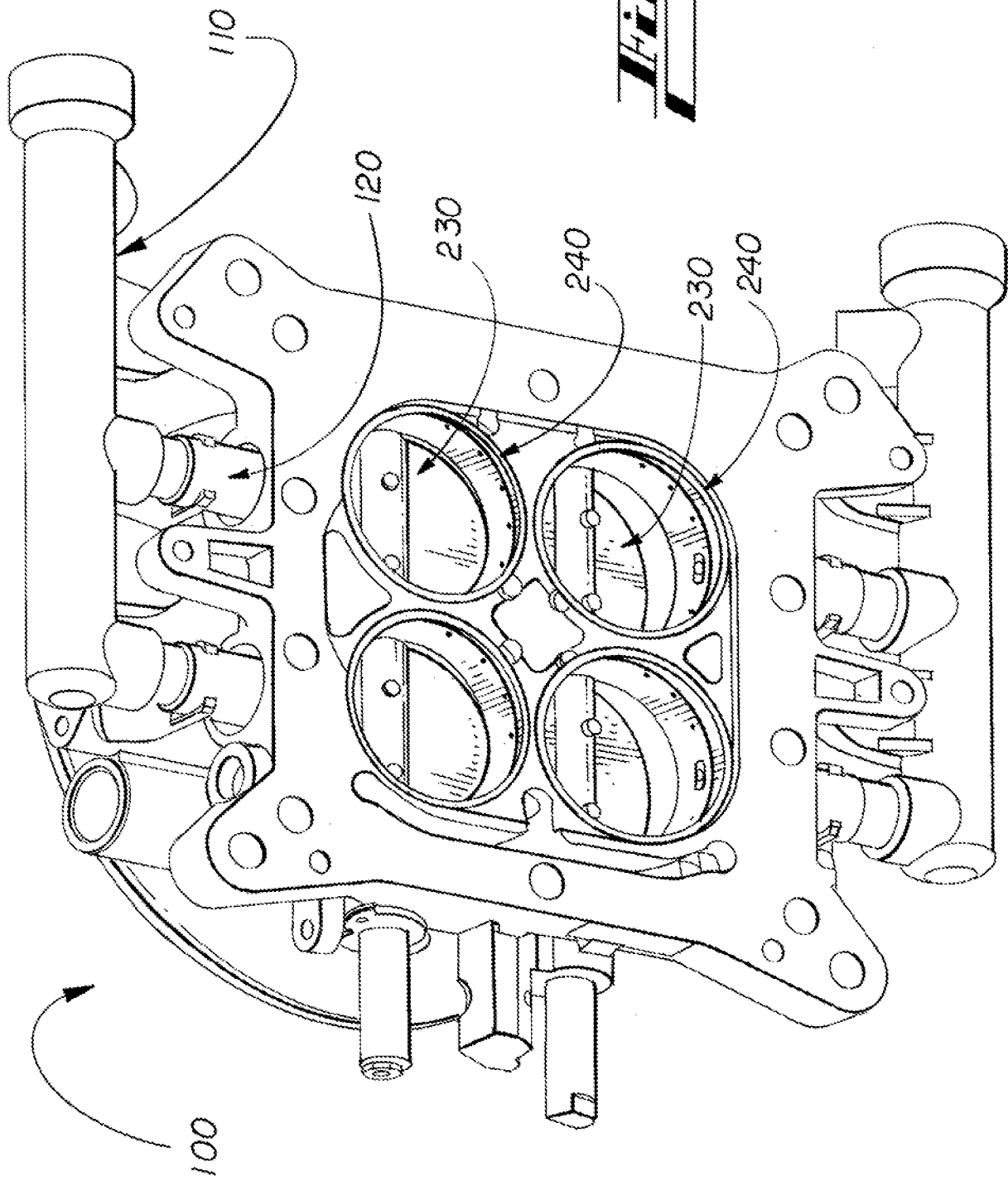
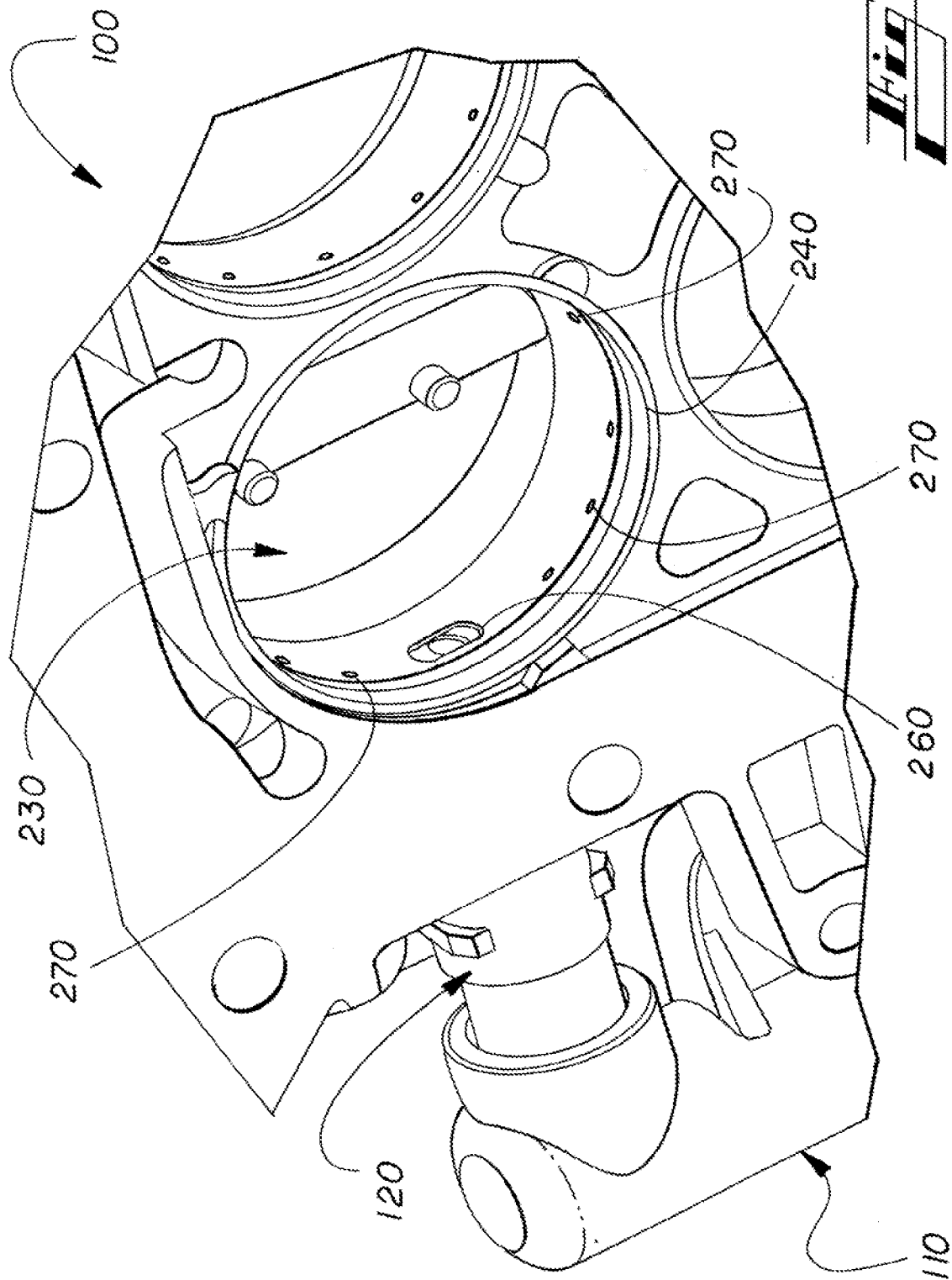
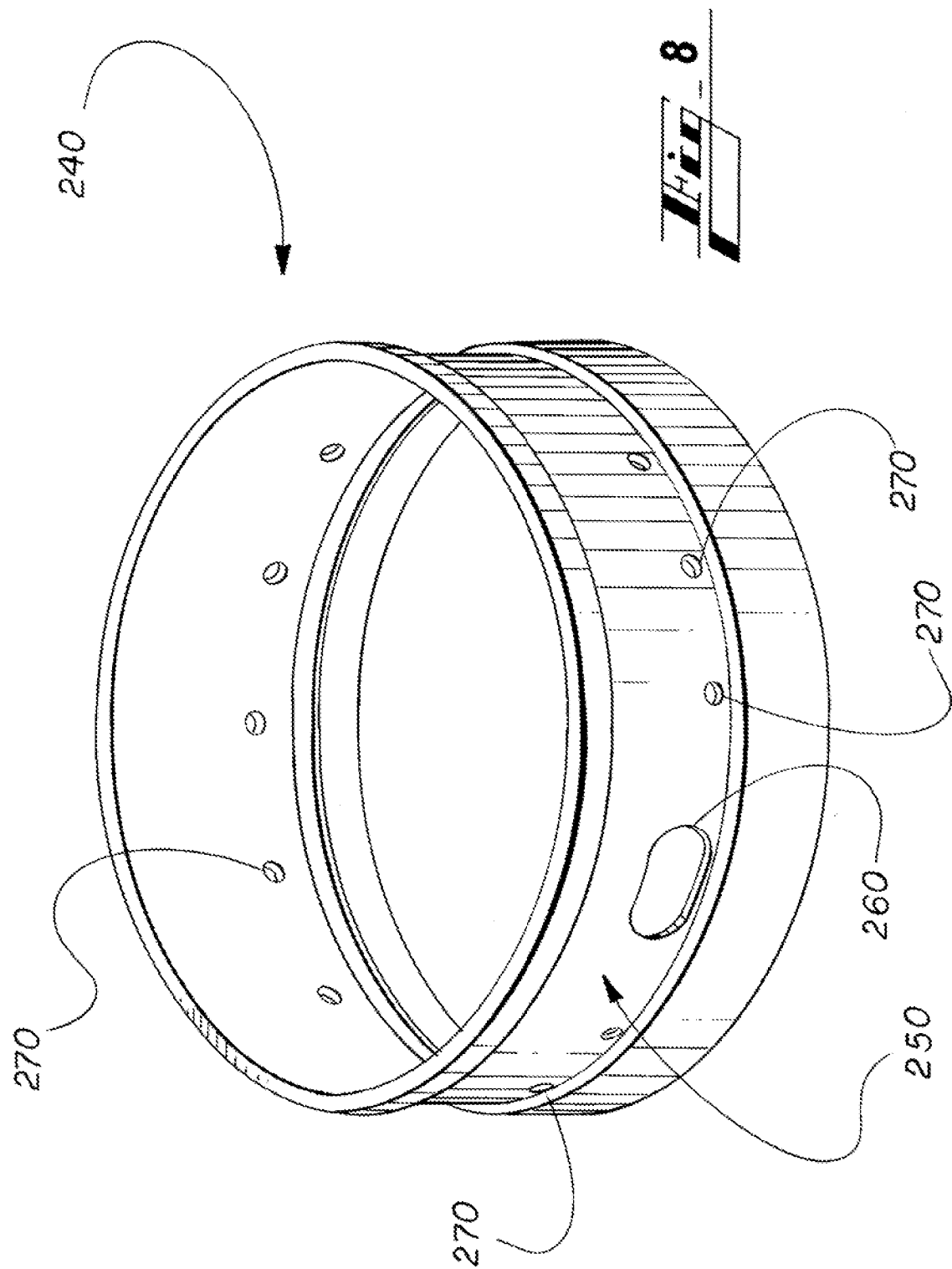
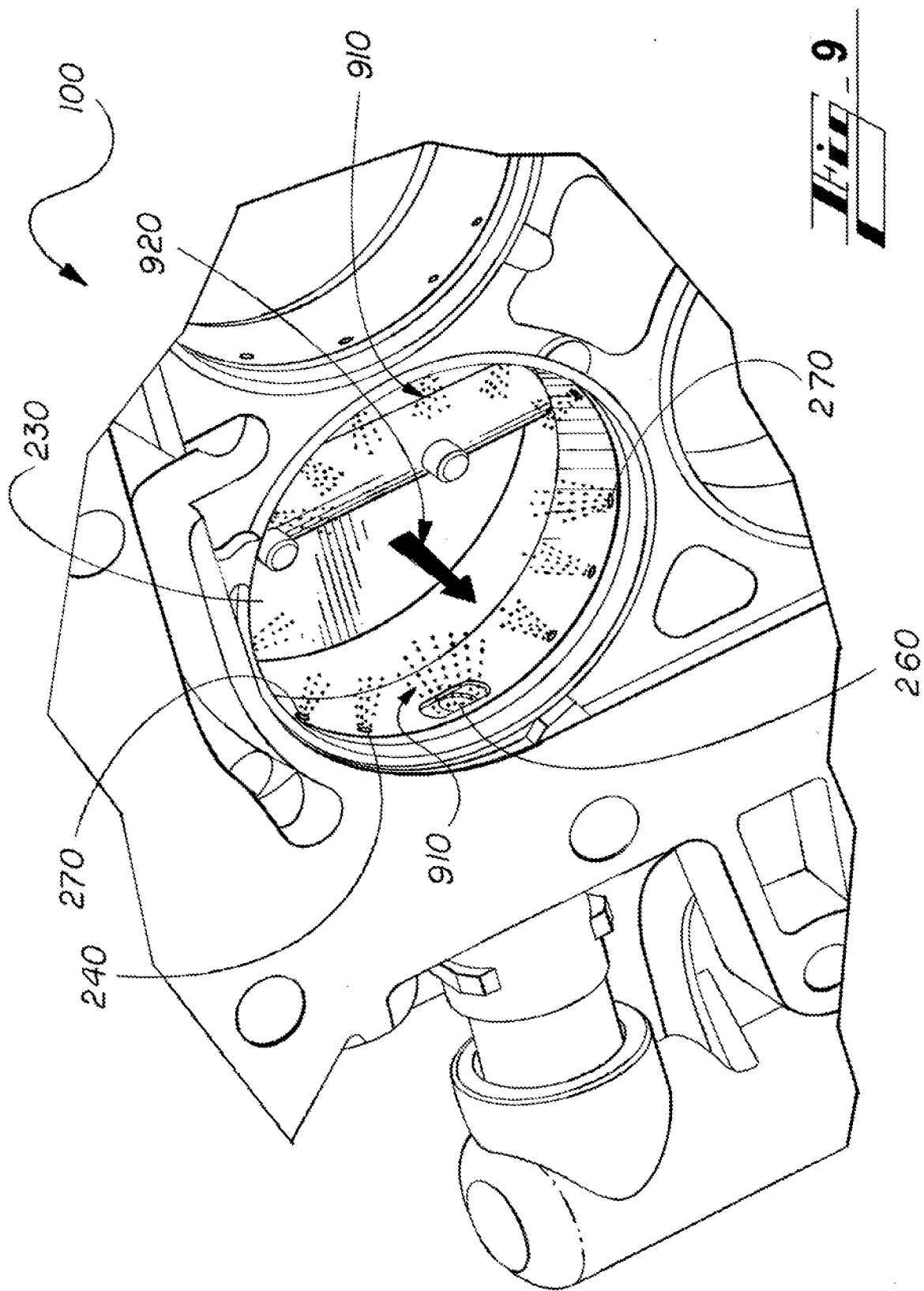


Fig. 6







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

Application Number		
Filing Date		
First Named Inventor	Flynn, Doug	
Art Unit	TBD	
Examiner Name	TBD	
Attorney Docket Number	ZU569-20178	

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Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
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	10	20080110435		2008-05-15	Baasch et al.	
	11	20080302326		2008-12-11	Grant	
	12	20090101104		2009-04-23	Baasch et al.	

**INFORMATION DISCLOSURE
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Application Number		
Filing Date		
First Named Inventor	Flynn, Doug	
Art Unit	TBD	
Examiner Name	TBD	
Attorney Docket Number	ZU569-20178	

	13	20020043238		2002-04-18	McMaster	
	14	20120198852		2012-08-09	Hernandez	
	15	20150108256		2015-04-23	Flynn et al.	

FOREIGN PATENT DOCUMENTS								
Examiner Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ²ⁱ	Kind Coded	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T5
	1	2391589	CA		2001-05-25	Calvin		
	2	101568711	CN		2013-04-10	Baash et al.		
	3	2409239	GB		2012-10-24	Baash et al.		
	4	0040445	WO		2000-07-13	Fouts		
	5	0133185	WO		2001-05-10	Young et al.		
	6	0136804	WO		2001-05-25	Calvin		

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Filing Date		
First Named Inventor	Flynn, Doug	
Art Unit	TBD	
Examiner Name	TBD	
Attorney Docket Number	ZU569-20178	

	7	03027476	WO		2003-04-03	Baash et al.		
	8	2008061065	WO		2008-05-22	Baash et al.		
	9	2007014165	WO		2007-11-15	Baasch		

NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No	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, pages(s), volume-issue number(s), publisher, city and/or country where published.	T ⁵
	1	Transmittal Letter of Related Applications.	

EXAMINER SIGNATURE

Examiner Signature		Date Considered	
*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 Standard ST.3). ³ For Japanese Kind of document by the English language translation

Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office patent documents, the indication of the year of the reign of the Emperor appropriate symbols as indicated on the document under WIPO Standard is attached.

that issued the document, by the two-letter code (WIPO must precede the serial number of the patent document. ST.16 if possible. ⁵ Applicant is to place a check mark here if

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

Application Number	
Filing Date	
First Named Inventor	Flynn, Doug
Art Unit	TBD
Examiner Name	TBD
Attorney Docket Number	ZU569-20178

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

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☐ 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	/James E. Cole/	Date (YYYY-MM-DD)	2020-01-31
Name/Print	James E. Cole	Registration Number	50530

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TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA/82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	
Filing Date	
First Named Inventor	Doug Flynn
Title	Fuel Injection Throttle Body
Art Unit	TBD
Examiner Name	TBD
Attorney Docket Number	ZU569-20178

SIGNATURE of Applicant or Patent Practitioner

Signature	/James E. Cole/	Date (Optional)	
Name	James E. Cole	Registration Number	50530
Title (if Applicant is a juristic entity)	Attorney for Applicant		
Applicant Name (if Applicant is a juristic entity)	Holley Performance Products, Inc.		

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

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*Total of _____ forms are submitted.

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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

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☒ 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:

146169

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 or the boxes above to:

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OR

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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):

Holley Performance Products, Inc.

- ☐ 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

David J. Clement

Date (Optional)

Name

David J. Clement

Title

General Counsel and Corporate Secretary

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.

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EX: 1002-72

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		
	Filing Date		
	First Named Inventor	Flynn, Doug	
	Art Unit	TBD	
	Examiner Name	TBD	
	Attorney Docket Number	ZU569-20178	

U.S. PATENTS						Remove
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
	1	4246875	A	1981-01-27	Bier	
	2	D645058		2011-09-13	Benoit	
	3	D543555		2007-05-29	Braswell	
	4	D555668		2007-11-20	Benoit	
	5	D760804		2016-07-05	Shehan et al	
	6	D721389		2015-01-20	Gieske et al	
	7	10012197		2018-07-03	Flynn et al	
	8	10094353		2018-10-09	Bennett et al	

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Application Number		
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First Named Inventor	Flynn, Doug	
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Examiner Name	TBD	
Attorney Docket Number	ZU569-20178	

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Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	
	1	20180119656		2018-05-03	Shehan et al		

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	1	339157	AU		2011-10-25	Tipton et al		
	2	341133	AU		2012-02-23	Shehan et al		
	3	348732	AU		2013-05-23	Jeneckes et al		
	4	348733	AU		2013-05-23	Jeneckes et al		
	5	348734	AU		2013-05-23	Jeneckes et al		
	6	356762	AU		2014-08-05	Shehan et al		
	7	201710470	AU		2017-02-16	Flynn et al		

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First Named Inventor	Flynn, Doug	
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Examiner Name	TBD	
Attorney Docket Number	ZU569-20178	

8	201710471	AU		2017-02-16	Flynn et al		
9	3729599	EU		2017-01-30	Shehan et al		
10	201813353	AU		2018-08-27	Shehan et al		
11	201815034	AU		2018-09-21	Shehan et al		
12	201813355	AU		2018-08-27	Shehan et al		
13	201815036	AU		2018-09-21	Shehan et al		
14	201816624	AU		2018-12-05	Bell et al		
15	201816623	AU		2018-12-05	Whittle		

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NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No	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, pages(s), volume-issue number(s), publisher, city and/or country where published.	T ⁵
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Application Number	
Filing Date	
First Named Inventor	Flynn, Doug
Art Unit	TBD
Examiner Name	TBD
Attorney Docket Number	ZU569-20178

EXAMINER SIGNATURE

Examiner Signature		Date Considered	
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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.

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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

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Signature	/James E. Cole/	Date (YYYY-MM-DD)	2020-01-31
Name/Print	James E. Cole	Registration Number	50530

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2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
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