

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ACES FUEL INJECTION, INC.

Petitioner,

v.

HOLLEY PERFORMANCE PRODUCTS, INC.

Patent Owner.

IPR CASE No.: [TBD]

U.S. Patent No. 12,203,434

Title: FUEL INJECTION THROTTLE BODY

**DECLARATION OF KENNETH W. FARRELL IN SUPPORT
OF PETITIONER ACES FUEL INJECTION, INC.'S PETITION
FOR *INTER PARTES* REVIEW OF U.S. PATENT NO.
12,203,434**

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I. INTRODUCTION

1. My name is Kenneth W. Farrell. I understand that I am submitting a declaration for Aces Fuel Injection Inc. ("Aces"). I am offering technical opinions in connection with the Inter Partes Review ("IPR") proceeding in the United States Patent and Trademark Office for U.S. Patent No. 12,203,434 ("the '434 Patent"). I have reviewed the references listed in Petitioner's Exhibit List. I make this declaration based on my personal knowledge, experience, and any noted research. I am over the age of 21 and am competent to make this declaration.
2. The statements herein include my opinions and the bases for those opinions. These relate to at least the following documents and references of the pending IPR Petition, which I have reviewed and considered:

<u>EXHIBIT NO.</u>	<u>DESCRIPTION</u>
Ex. 1001	U.S. Patent No. 12,203,434
Ex. 1002	File History for Application No. 17/882,762
Ex. 1003	U.S. Patent No. 7,735,475 ("Farrell")
Ex. 1004	U.S. Patent No. 9,303,578 ("Wittkopf")
Ex. 1005	U.S. Patent No. 9,115,671 ("Benoit")

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3. I previously sold U.S. Patent No. 7,735,475 to Aces pursuant to a Patent Acquisition & License Agreement dated October 31, 2022, and Aces has licensed the patent back to me on a non-exclusive, non-transferable, non-sublicensable basis so that I may continue practicing it. Notwithstanding this relationship, the opinions expressed in this declaration are my own and are based on my independent technical judgment.
4. I have no financial interest in Patent Owner Holley Performance Products, Inc. To the extent my relationship with Aces may be considered a financial interest in this proceeding, I have disclosed it fully above. To the extent any mutual funds or other investments I own have a financial interest in Patent Owner, I am not aware of, nor do I have control over, any such financial interest that would affect or bias my judgment.

II. BACKGROUND AND QUALIFICATIONS

5. I am the named inventor on U.S. Patent No. 7,735,475 (“Farrell”), titled “Fuel Injection Body Sized to Replace Carburetor Body,” which issued on June 15, 2010. I am competent to make this declaration

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based on my personal knowledge and experience in the field of
electronic fuel injection systems.

6. I have been working in the electronic fuel injection (“EFI”) industry since 1997. I began by converting mechanical fuel injection systems to electronic EFI for hot rod and performance vehicle applications.
7. In 2003, I partnered with Injection Logic to develop one of the first self-tuning engine management systems. This work focused on simplifying EFI tuning for end users by developing user-friendly interfaces and self-correcting algorithms.
8. In 2004, I launched Retrotek Speed with Warren Duff, who is currently or was previously an EFI engineer at Holley Performance Products, Inc. (“Patent Owner”), which is the current assignee of the ’434 Patent. Together, we developed and patented the first self-learning throttle body EFI kit, which became the ’475 patent.
9. In 2008, Retrotek Speed was sold to Professional Products, and the technology was released under the name POWERJECTION™. The POWERJECTION™ system won multiple SEMA awards for its cutting edge advancement in EFI technology.

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10. In 2010, I aided in the design of the QFI fuel injection system for Quick Fuel Technologies and served as a consultant for both Quick Fuel Technologies and Professional Products.
11. Since 2013, I have been a partner at FiTech EFI, where we have developed self-learning EFI systems for the aftermarket automotive industry.
12. Throughout my career, I have participated in every aspect of EFI product development, from initial concept to final delivery. I have worked extensively on throttle body fuel injection systems designed to replace carburetors on internal combustion engines.

III. LEGAL UNDERSTANDING

13. In formulating my opinions and conclusions in this case, I have been informed of the legal standards applicable to the issues addressed in this declaration and have applied those standards in forming my opinions.

IV. LEVEL OF ORDINARY SKILL IN THE ART

14. The level of ordinary skill in the art is based on factors such as the educational level of the inventor, the educational level of those who

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work in the industry, and the sophistication of technology involved, in addition to the type of problems encountered in the art, prior art solutions to those problems, and the rapidity with which innovations are made in the particular technology.

15. A person of ordinary skill in the art (“POSA”) of the ‘434 Patent at the time of the alleged invention (based on the earliest priority date of October 18, 2013) would have had the following qualifications:

- a.* A bachelor’s degree in mechanical engineering, automotive engineering, or a related field; or
- b.* At least two to three years of experience in the design, development, or testing of fuel injection systems for internal combustion engines; and familiarity with throttle body fuel injection systems, carburetor-to-EFI conversions, air-fuel ratio control, and electronic control unit programming.

16. The field of endeavor is throttle body electronic fuel injection systems designed to replace carburetors on internal combustion engines. This includes aftermarket EFI systems that can be retrofitted onto older carbureted vehicles.

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V. LEGAL STANDARDS

Claim Construction

17. I understand that claim terms generally are interpreted according to their ordinary and customary meaning as that meaning would have been understood by a person of ordinary skill in the art at the relevant time, in view of the patent specification and prosecution history.
18. In forming my opinions, I have considered the claim language, the specification of the '434 Patent, and the prosecution history, as well as how a person of ordinary skill in the art would have understood the claimed subject matter as of October 18, 2013.

Obviousness

19. I understand that a patent claim may be invalid as obvious if the differences between the claimed invention and the prior art would have been obvious to a person of ordinary skill in the art at the time of the alleged invention.
20. I understand that an obviousness analysis may consider whether the prior art discloses the claimed elements, whether a person of ordinary skill in the art would have been motivated to combine or modify the

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prior-art teachings, and whether such a person would have had a reasonable expectation of success in doing so.

21. I understand that obviousness is evaluated from the perspective of a person of ordinary skill in the art at the relevant time and without using impermissible hindsight.

Analogous Art

22. I understand that prior-art references may be considered in an obviousness analysis if they are reasonably related to the same field of endeavor or to the same problems addressed by the claimed invention.

VI. SUMMARY OF OPINION

Ground	'434 Patent Claims	Basis for Challenge
1	1-12	Claims 1-12 of U.S. Patent No. 12,203,434 are unpatentable under 35 U.S.C. § 103 as obvious over Farrell (Ex. 1003) in view of Wittkopf (Ex. 1004) or, alternatively, in view of Benoit (Ex. 1005).

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23. In my opinion, based on my review of the '434 Patent, its prosecution history, and the cited prior-art references, claims 1-12 of the '434 Patent would have been obvious to a person of ordinary skill in the art as of October 18, 2013. The prior-art references collectively disclose all limitations recited in the challenged claims, either expressly or through combinations that would have been obvious to a POSA. Further, a POSA would have been motivated to combine the references and would have had a reasonable expectation of success in doing so.
24. Significantly, Wittkopf does not merely occupy the same technical field as Farrell. Rather, Wittkopf expressly identifies Farrell by patent number as the prior art throttle body platform that Wittkopf seeks to improve and identifies shortcomings associated with injector placement and fuel distribution. In my opinion, Wittkopf effectively teaches a POSA to apply Wittkopf's annular fuel-distribution structure to a throttle body system of the type disclosed in Farrell. This is not a hindsight reconstruction. Instead, the proposed combination is expressly suggested by the prior art itself.

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- 25.** In my experience developing and commercializing these systems, there is no technical incompatibility between Farrell's throttle body platform and either the annular ring structure of Wittkopf or the insert-and-cavity structure of Benoit. A POSA would have had a reasonable expectation of success in combining these known elements. In fact, such modifications would have been well within the routine capabilities of engineers working in the throttle body EFI industry in 2013.
- 26.** In my opinion, Farrell, Wittkopf, and Benoit are all within the same field of endeavor, namely aftermarket throttle body electronic fuel injection systems for internal combustion engines. Each addresses fuel delivery and fuel distribution issues associated with carburetor-replacement EFI systems. Accordingly, a person of ordinary skill in the art would have considered these references together when evaluating fuel-distribution alternatives.

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VII. PATENTABILITY ANALYSIS – CHALLENGED CLAIMS

27. Based on my review of the '434 Patent, its prosecution history, and the prior art references identified above, it is my opinion that claims 1–12 of the '434 Patent are unpatentable as obvious under 35 U.S.C. § 103 over Farrell in view of Wittkopf or, alternatively, in view of Benoit. In reaching these conclusions, I independently reviewed the challenged claims, the cited prior art references, and the prosecution history of the '434 Patent. It is my opinion that each challenged claim is taught by the cited references and that a POSA would have been motivated to combine the references with a reasonable expectation of success.

28. In October 2013, aftermarket throttle body EFI systems constituted a mature and well-developed field. Engineers working in that field were familiar with throttle body assemblies having vertically extending air passages, throttle plates, electronic fuel injectors, electronic control systems, and various methods of introducing fuel into intake airflow. A POSA would therefore have viewed the incorporation of known

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annular fuel-distribution arrangements into known throttle body
EFI architectures as a routine design choice directed toward
improving fuel distribution, atomization, and mixture
preparation.

- 29.** Farrell discloses substantially all of the foundational throttle
body architecture recited in claims 1-12. Farrell teaches a fuel
injection body specifically designed to replace a carburetor and
configured for use on an internal combustion engine. Farrell
further teaches multiple air passages extending vertically
through the throttle body, throttle shafts and throttle plates for
controlling airflow through those passages, electronic fuel
injectors mounted to the throttle body, fuel supply passages in
fluid communication with those injectors, and an electronic
control unit that controls fuel injection timing and fuel quantity.
From the perspective of a POSA, Farrell therefore provides the
conventional throttle body EFI platform onto which other
known fuel-distribution improvements could readily be
incorporated.

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- 30.** Wittkopf teaches an annular fuel-distribution structure that includes a fuel injector, a fuel injection conduit, a circumferential fuel channel, and multiple outlet openings arranged around the circumference of the air intake. Fuel is routed from the injector through the conduit into the circumferential channel and thereafter discharged through multiple circumferentially distributed outlets into the intake airflow. In my opinion, a POSA would immediately recognize Wittkopf's circumferential groove and outlet structure as corresponding to the claimed fuel channel and annularly arranged plurality of orifices recited in the challenged claims. Wittkopf expressly explains that this structure improves fuel distribution and fuel-air mixing within throttle body injection systems.
- 31.** Benoit likewise teaches an annular fuel-distribution arrangement. Benoit discloses annular cavities supplied with pressurized fuel from electronic fuel injectors and a plurality of apertures distributed around the circumference of an insert positioned within the bore through which intake air flows. Fuel

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exits those apertures and enters the airstream around the perimeter of the intake passage to improve mixing and atomization. In my opinion, a POSA would have understood Benoit's annular cavity and circumferential aperture arrangement to satisfy the same fuel-channel and annular-orifice concepts recited in the challenged claims.

- 32.** During the period leading up to October 2013, engineers developing aftermarket throttle body EFI systems routinely evaluated methods for improving fuel distribution and atomization within throttle bores. From my own experience developing carburetor-replacement EFI systems, improved fuel distribution was a recognized design objective because poor fuel distribution could lead to uneven cylinder fueling, drivability issues, reduced power, and poorer emissions performance. A POSA would therefore have viewed Wittkopf's annular fuel-distribution ring as an attractive modification to the throttle body system disclosed in Farrell because Wittkopf discloses an annular fuel-distribution structure specifically

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intended to improve fuel distribution while otherwise maintaining a conventional throttle body EFI architecture.

33. In my experience, EFI engineers frequently evaluated alternative fuel-delivery arrangements that could improve mixture preparation while preserving compatibility with existing throttle body platforms. Benoit teaches a circumferential fuel-distribution arrangement that introduces fuel around the perimeter of the intake passage. An engineer familiar with the Farrell system would have immediately recognized that such a distribution arrangement could be incorporated into the existing throttle body structure while retaining the overall operation of the EFI system. The expected result would have been improved fuel distribution, improved atomization, and improved fuel-air mixing, all of which were recognized engineering objectives in aftermarket throttle body EFI systems.

34. In my opinion, a POSA would have had a reasonable expectation of success in either proposed combination. Nothing in Farrell, Wittkopf, or Benoit suggests any incompatibility

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among their disclosed structures. Each reference employs conventional throttle body fuel injection components, including throttle bores, throttle plates, electronic fuel injectors, fuel passages, and electronic control systems. The proposed modifications would involve only the incorporation of a known annular fuel-distribution structure into an existing throttle body assembly. Such an implementation would have constituted a routine engineering modification well within the ordinary skill of engineers working in the throttle body EFI field in 2013.

- 35.** As the named inventor of the Farrell patent, I am personally familiar with the design objectives underlying that system. The Farrell design was intended to provide a carburetor-replacement EFI platform capable of incorporating ongoing improvements in fuel delivery, atomization, electronic control, and drivability. Nothing about the Farrell design would have discouraged incorporation of an annular fuel-distribution structure such as those disclosed in Wittkopf or Benoit. To the contrary, engineers working with the Farrell platform would naturally

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have considered such modifications when seeking to improve fuel distribution and mixture quality.

36. I reviewed the prosecution history of the '434 Patent. From a technical standpoint, Farrell, Wittkopf, and Benoit are all directed to electronic fuel injection technology rather than carburetion. Each utilizes electronically controlled fuel injectors and electronic control systems to provide fuel to an internal combustion engine. A POSA would therefore have understood each of these references to disclose electronic fuel injection systems for non-carbureted internal combustion engines and to fall within the same technological field as the challenged claims.

37. I independently compared the challenged claims of the '434 Patent to the disclosures of Farrell, Wittkopf, and Benoit. It is my opinion that Farrell in combination with Wittkopf teaches or renders obvious every limitation of claims 1-12 and that Farrell in combination with Benoit likewise teaches every limitation of claims 1-12. To the extent a particular limitation is not expressly disclosed in Farrell alone, that limitation is disclosed

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by Wittkopf or Benoit, and a POSA would have found it obvious to incorporate those teachings into the Farrell throttle body platform. In my opinion, such modifications would have produced the predictable results described in Wittkopf and Benoit and therefore would have been obvious to a POSA. Those combinations would have represented nothing more than the predictable use of prior-art elements according to their established function.

- 38.** I am unaware of any technical reason why a POSA would have avoided the proposed combinations, nor am I aware of any teaching in Farrell, Wittkopf, or Benoit discouraging their use together. To the contrary, the references collectively teach the desirability of improving fuel distribution, atomization, and mixture preparation within throttle body EFI systems and point in the same general technological direction. Each reference addresses fuel-delivery concerns associated with throttle body EFI systems and provides known structures for achieving improved fuel distribution. Accordingly, it is my opinion that claims 1-12 of the '434 Patent would have been obvious under

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35 U.S.C. § 103 over Farrell in view of Wittkopf or,
alternatively, over Farrell in view of Benoit.

- 39.** I have not performed an independent analysis of any alleged secondary considerations, including commercial success, industry praise, copying, long-felt need, or any other objective indicia of non-obviousness. Based on the information currently available to me, none of those matters alters the opinions expressed in this declaration. If additional evidence is presented, I reserve the right to evaluate it and determine whether it affects my opinions.

VIII. CONCLUSION

- 40.** I may modify or supplement my opinions, if necessary, based on further review and analysis of evidence in this case, including review and analysis of any information that may be provided to me subsequent to the filing of this Declaration. I am prepared to testify about these opinions.

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IX. CERTIFICATIONS

41. I hereby certify and declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful and false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Dated: 7/21/2026

Respectfully submitted,

DocuSigned by:

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Kenneth W. Farrell