

Expert Declaration of Eric S. Winkel, Ph.D., P.E. In Support of Petition for Inter Partes Review of U.S. Patent No. 11,905,896

**Generac Power Systems, Inc., et al. v. Champion Power
Equipment, Inc.**

DRE Project Number: EW-241204

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Date

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GENERAC POWER SYSTEMS, INC.,
HARBOR FREIGHT TOOLS USA, INC., and
MWE INVESTMENTS, LLC

Petitioners,

- vs. -

CHAMPION POWER EQUIPMENT, INC.

Patent Owner.

Case No: IPR2025-01228

U.S. Patent No. 11,905,896

EXPERT DECLARATION OF ERIC S. WINKEL, PH.D., P.E.
IN SUPPORT OF PETITION FOR *INTER PARTES*
REVIEW OF U.S. PATENT NO. 11,905,896

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TABLE OF ABBREVIATIONS

Applicant	Champion Engine Technology, LLC (Applicant for the '101 Patent), or Champion Power Equipment, Inc. (Applicant for the '896 Patent)
Challenged Claims	Claims 1-38 of U.S. Patent No. 11,905,896
Czarnecki	U.S. Patent No. 8,040,663
DeVries	U.S. Patent No. 7,481,087
DuroMax	DuroMax XP4400EH Operator's Manual
Fujisawa	JP2005330867
Generac	Generac Power Systems, Inc.
Hallberg	U.S. Patent No. 4,492,207
Holzapfel	U.S. Patent No. 1,931,698
ICE	Internal Combustion Engine
IPR	<i>Inter Partes</i> Review
LPG	Liquified Petroleum Gas
Mott	U.S. Patent No. 3,696,333
Nakafushi	JPS61283734A
Olmr	U.S. Patent No. 5,301,644
Patent Owner	Champion Power Equipment, Inc.
Petitioners	Generac Power Systems, Inc., Harbor Freight Tools USA, Inc., and MWE Investments, LLC
Poehlman	U.S. Patent No. 4,489,699
POSA	Person of Ordinary Skill in the Art
PTAB	U.S. Patent Trials and Appeals Board
Sturm	U.S. Patent No. 1,827,214
Sugimoto	U.S. Patent Application Publication No. 2007/0137591
Tharman	U.S. Patent Application Publication No. 2004/0246118
The '101 Patent	U.S. Patent No. 10,598,101
The '273 Patent	U.S. Patent No. 9,435,273
The '281 Litigation	<i>Champion Power Equipment, Inc. v. Generac Power Systems, Inc.</i> , No. 24-cv-1281-LA (E.D. Wis.)
The '390 Patent	U.S. Patent No. 11,761,390
The '667 Patent	U.S. Patent No. 11,306,667

The '896 Patent	U.S. Patent No. 11,905,896
The Related Litigations	<i>Champion Power Equipment Inc. v. Generac Power Systems Inc.</i> , 24-cv-01281-LA (E.D. Wis.); <i>Harbor Freight Tools USA, Inc. v. Champion Power Equipment, Inc.</i> , 24-cv-08722-SVW-AS (C.D. Cal.); <i>Champion Power Equipment Inc. v. Harbor Freight Tools USA Inc.</i> , 24-cv-01302-PP (E.D. Wis.); and <i>Champion Power Equipment Inc. v. Westinghouse Elec. Corp.</i> , 25-cv-00844 (D. Nev.)
USPTO	United States Patent and Trademark Office

I. INTRODUCTION

1. I have been retained by Merchant & Gould P.C., Foley & Lardner LLP, and Ice Miller LLP to serve as an expert on behalf of Generac Power Systems, Inc., Harbor Freight Tools USA, Inc., and MWE Investments, LLC (“Petitioners”) in the above-referenced matter to provide my technical review, analysis, and opinions concerning the validity of the ’896 Patent entitled “Dual Fuel Selector Switch.” Mark J. Sarder is named as the first named inventor and the ’896 Patent is assigned to Champion Power Equipment, Inc.

2. I currently hold the title of Senior Engineering Consultant at Design Research Engineering (DRE). I am a trained Professional Engineer (P.E.) licensed in the State of Michigan, and I have been a mechanical engineer for approximately twenty years. I hold three degrees in Mechanical Engineering from the University of Michigan in Ann Arbor, a Bachelor of Science, a Master of Science, and a Doctor of Philosophy (Ph.D.).

3. My undergraduate and graduate research related generally to fluid mechanics and involved the use of various fluids handling equipment including pumps, motors, compressors, valves, and flow/pressure regulation systems. I am familiar with many different types of valves and flow control systems and have utilized them in various capacities during my university research and my professional career.

4. Specifically, as both an undergraduate and graduate student, my studies focused on the topics of fluid mechanics, acoustics, and dynamics and vibrations. I spent considerable time working in research facilities at the University of Michigan, including the Marine Hydrodynamics Laboratory, and at government research facilities, including the U.S. Navy's William B. Morgan Large Cavitation Channel.

5. As part of my university education, I had both classroom training and research experience in the principles and practices of marine engineering and naval architecture. I have taken multiple courses offered through the Naval Architecture and Marine Engineering department at the University of Michigan, both as an undergraduate and graduate student, including courses related to watercraft dynamics and water wave mechanics. For more than five years, as an undergraduate and as a graduate student, I conducted research funded by the Office of Naval Research and the Defense Advanced Research Projects Agency related to marine hydrodynamics, fluid mechanics, turbulent flows, multi-phase flows, drag-reduction, and underwater acoustics.

6. I began my professional career at Design Research Engineering (DRE), an engineering consulting firm located in Novi, Michigan, where I was employed for more than fifteen years. I started at DRE in 2007 as a Project Engineer and in 2010 I was promoted to Senior Project Engineer at DRE. I left DRE in 2022 and spent more than two years providing engineering consulting services through Winkel

Consulting Services, PLLC, and through another employer, Engineering Systems, Inc. In 2024, I returned to DRE and was promoted to Senior Engineering Consultant.

7. During my career as an engineer, I have worked extensively with internal combustion engines (ICEs) in a variety of different products and different applications. I have worked on fuel systems for a variety of internal combustion engines and their control systems. I have worked with ICEs that operate using different fuels. I have worked with engine performance testing in various capacities. I have worked with engine power distribution systems, such as PTOs and hydraulic pumps, and I have worked with electrical generation systems driven by combustion engines. In general, my involvement with ICEs has been primarily from a design analysis and failure investigation standpoint, but I have also been involved in the front-end design work involving ICEs, recreational products, and controls. Specific examples of the various technical fields where I have worked in a professional capacity involving ICEs are provided herein.

8. As a forensic engineer, I have investigated various engine failures and engine malfunctions. I have worked with engine cooling systems, including radiators, raw water pumps, and heat exchangers. For example, I performed an investigation related to class-action litigation about alleged ICE exhaust system failures. These alleged failures would result in breaches of the exhaust system,

allowing water ingress and the eventual flooding and swamping of specific watercraft.

9. As a forensic engineer who works as a fire/explosion investigator, I have had extensive exposure to ICE engines, their fuel systems, and their components. I have investigated dozens of fires and explosions involving ICEs and their fuel systems. In the process, I have tested and evaluated the design, configuration, and performance characteristics of the fuel systems, components, and engines of products involved in fires and explosions. I have evaluated their designs, specifications, and intended operating conditions in the context of failures and deviations from the intended conditions leading to fires and/or explosions. Oftentimes, these fire and explosion incidents relate to a failure in the fuel system, engine, and/or one of its components that yields a combustible environment and ignition. In this context, I have conducted laboratory testing and analysis of various fuel system components including pumps, conduits, and valve systems. I have worked on fire and explosion investigations involving both carbureted and fuel-injected engines, and I have analyzed alleged design flaws and failures of both types of systems.

10. I have worked on projects related to performance testing of small ICEs, specifically power-rating test procedures of internal combustion engines such as

those use in lawn and garden equipment. I have analyzed the test procedures and data collection techniques used in various classification and reporting systems.

11. I have conducted testing regarding the performance characteristics of numerous ICE-powered watercraft during my career. I have also been involved in testing the performance characteristics of many wheeled recreational vehicles including ATVs, side-by-side vehicles, and motorcycles.

12. As another example, during my tenure at DRE, I worked for more than two years with a designer and manufacturer of amphibious vehicles, Gibbs Sports Amphibians. With Gibbs, I assisted in the design, development, safety, hazard communication, and regulatory matters to help a manufacturer bring a novel amphibious vehicle to the recreational motorsports market. During my time consulting with Gibbs, I specifically worked on the power distribution and automated engine control features of that product.

13. In the marine space, I have also worked on engine control technologies for jet-propelled watercraft, including automated throttle control systems to assist in maneuverability (off-throttle steering). I have performed extensive on-water testing of these engine control systems which rely on various onboard data to automatically re-apply a controlled amount of throttle in specific situations.

14. Another area where I have been involved with ICEs during my career relates to engine vibration. I have investigated, tested, and analyzed the vibration

characteristics of ICEs in different environments and circumstances. Products that I have been involved with vibration testing include: automotive engines, diesel tractor trucks, outboard motors on boats, electrical generator engines, and large ship diesel engines.

15. I have been involved in the acoustic aspects of ICEs during my professional career and have been involved in sound emission testing of different engines, air intakes, and exhaust systems. I have evaluated various ICE products for acoustic emissions in the field and in the laboratory environment. Also, in the field of acoustics (and combustion), I have investigated malfunctions and abnormal operating conditions with ICEs that have resulted in backfire and afterfire events, allegedly causing damage and injuries.

16. Another area where I have been involved with ICEs on a professional level relates to exhaust emissions. I have investigated and evaluated the exhaust emissions from ICEs and have performed exhaust emissions testing with automotive and marine engines. I have performed ICE emission testing related to EPA regulations and compliance as well as product- and environment-specific testing related to alleged incidents and injuries resulting from exposure to exhaust emissions from ICEs. Some of this testing has been specifically related to ICE/electrical generator combinations (“gen-sets”). I have studied and investigated the effects of

exhaust aftertreatments (catalysts) and various engine control strategies on ICE emissions.

17. During my career, I have developed remote control systems for ICEs such that the engines and some of the control systems for wheeled off-road vehicles and watercraft could be controlled wirelessly. ICEs that I have modified to be controlled remotely include outboard motor-powered boats, cabin cruisers, personal watercraft (PWC), and ATVs.

18. As a member of the American Boat and Yacht Council (ABYC), I have training specifically related to ICEs and their fuel systems. I am an ABYC certified master technician, and specifically related to engines, I have completed ABYC training and am an ABYC certified technician on the topics of diesel engines, electrical, and marine systems (fuel).

19. I routinely take continuing education courses to expand on my knowledge base and to stay current with new developments in mechanical and marine engineering fields. A list of such continuing education and professional development activities is provided in my curriculum vitae. Appendix B. In addition, I have authored more than 30 technical publications in technical journals and conference symposia on topics related to mechanical engineering. A list of technical publications is provided in my curriculum vitae, which I understand is being

appended hereto. My curriculum vitae also contains a list of all other cases in which, during the previous 4 years, I testified as an expert at trial or by deposition.

20. My efforts on this case are being billed at a rate of \$295.00 per hour, with reimbursement for expenses incurred. I have no financial interest in the dispute between Petitioners and Champion Power Equipment, Inc., and my compensation is not contingent upon the outcome of this IPR.

II. SUMMARY OF OPINIONS

21. It is my opinion that claims 1-38 of the '896 Patent are invalid as anticipated and/or obvious over the prior art. Specifically, it is my opinion that:

22. Claims 7-11, 14-20, and 30-35 of the '896 Patent are unpatentable as obvious over DuroMax in view of DeVries. DuroMax teaches a dual fuel generator configured to selectively operate on either gasoline or LPG fuel. DeVries teaches an interlocking fluid conduit and valve assembly system. Specifically, the interlocked valve assembly of DeVries utilizes safety systems unlocked with a key, such that only one of the two valves can be opened at a given time. Prior to the claimed priority date of the '896 Patent, POSAs would have been motivated to combine the dual fuel generator of DuroMax with the interlocked fluid conduit and valve assembly of DeVries because it would eliminate the possibility of user error resulting in both fuels being supplied to the DuroMax engine of the dual fuel generator. Specifically, DuroMax warns against supplying LPG when the gasoline fuel is on, and vice versa.

A POSA would have been motivated to combine DuroMax and DeVries because it would prevent a period of rough operation when switching between fuels and would prevent a potentially hazardous scenario where two fuels are delivered to the engine simultaneously.

23. Claims 1-38 of the '896 Patent are unpatentable as obvious over DuroMax in view of DeVries in further view of Nakafushi and Olmr. DuroMax teaches a dual fuel generator, and DeVries teaches an interlocked fluid valve system. Nakafushi and Olmr each teaches a switch-controlled solenoid valve that is used to open and close a fuel conduit on the carburetor outlet to allow or prevent the flow of gasoline fuel from the carburetor to the engine. Prior to the claimed priority date of the '896 Patent, POSAs would have been motivated to combine a carburetor solenoid valve to the dual fuel generator of DuroMax and the valve assembly of DeVries because of the benefits provided by a carburetor solenoid valve. Specifically, a POSA would have been motivated to add a carburetor solenoid valve to the dual fuel generator because the solenoid valve would improve performance by preventing gasoline fuel from being drawn from the carburetor to the engine when the engine is operating on LPG.

24. Claims 7-11, 15-20, and 30-35 of the '896 Patent are unpatentable as anticipated by Fujisawa. Fujisawa teaches a fuel supply switching device that is

designed to selectively supply one of two fuels to a dual fuel generator (“internal combustion engine 1 for a power generator”). EX1005, ¶¶[0007]-[0012].

25. Claims 7-11, 14-20, and 30-35 are unpatentable as obvious over Fujisawa in view of DuroMax. DuroMax teaches a dual fuel generator configured to selectively operate on either gasoline or LPG fuel. Fujisawa teaches a fuel supply switching device to selectively supply one of two fuels to a dual fuel generator. Prior to the claimed priority date of the '896 Patent, a POSA would have been motivated to configure the fuel selector and generator of Fujisawa, in view of the teachings of DuroMax, to selectively operate on LPG fuel and gasoline fuel because of the benefits provided by gasoline fuel, specifically its energy density and widespread availability.

26. Claims 1-5 and 7-38 are unpatentable as obvious over Fujisawa in view of DuroMax in further view of Nakafushi and Olmr. DuroMax teaches a dual fuel generator, and Fujisawa teaches a fuel selector system and dual fuel generator. Nakafushi and Olmr each teaches a switch-controlled solenoid valve that is used to open and close a fuel conduit on the carburetor outlet to allow or prevent the flow of gasoline fuel from the carburetor to the engine. Prior to the claimed priority date of the '896 Patent, POSAs would have been motivated to combine a carburetor solenoid valve to the dual fuel generator of Fujisawa (modified to operate on gasoline and LPG in view of the teachings of DuroMax), because of the benefits

provided by a carburetor solenoid valve. Specifically, a POSA would have been motivated to add a carburetor solenoid valve to the dual fuel generator because the solenoid valve would improve performance by preventing gasoline fuel from being drawn from the carburetor to the engine when the engine is operating on LPG.

III. LEGAL PRINCIPLES

27. I am not an attorney. My understanding of patent law and the applicable legal principles and standards comes from explanations provided to me by counsel.

A. Invalidity by Anticipation

28. I understand that an invention is anticipated if a single prior art reference discloses each of the elements of the claimed invention. I understand that each element must be present and that if a single element of a claimed invention is missing from the prior art reference, that reference does not anticipate the claim. I understand that a reference may anticipate inherently if a claim limitation that is not expressly disclosed is necessarily present or inherent in the single anticipating reference. I understand that prior art may come in different forms such as a physical device or system, patent or patent application, or another publication.

29. I understand that for the purposes of this IPR proceeding, only prior art consisting of patents or printed publications may form the basis of unpatentability of the claims of the '896 Patent. I understand that printed publications include documents that have been disseminated or otherwise made available to the extent

that persons interested and ordinarily skilled in the subject matter or art, exercising reasonable diligence, can locate it. I understand that while a physical device or system may not be used as prior art in this proceeding, teachings about a physical device or a system provided in a patent or printed publication may be considered as a basis for unpatentability.

30. I understand that prior art does not necessarily need to use the exact same words and language as the claim, but all the features of the claim must be disclosed. Prior art references are to be viewed and interpreted from the perspective of a POSA.

31. I understand that the recitation of a new intended use for an old product does not make a claim to that old product patentable. Thus, a reference may be from an entirely different field of endeavor than that of the claimed invention, however, it will still anticipate the claimed invention if the reference explicitly or inherently discloses every element recited in the claims.

B. Invalidity by Obviousness

32. I understand that “[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.” 35 U.S.C. §103. This is the test I applied in my analysis and opinions related to obviousness.

33. I understand that the framework for applying the statutory language of 35 U.S.C. §103 involves: determining the scope and content of the prior art; ascertaining the differences between the prior art and the claims at issue; and resolving the level of ordinary skill in the pertinent art. I understand that against this background, the obviousness or non-obviousness of the subject matter is determined.

34. I understand that obviousness is analyzed from the perspective of a POSA. I also understand that a POSA is presumed to have been aware of all pertinent prior art at the time of the alleged invention.

35. I understand that an obviousness analysis involves comparing a claim to the prior art to determine whether the claimed invention, as a whole, would have been obvious to a POSA in view of the prior art, and in light of the general knowledge in the art at the time the invention was made. I also understand that the invention may be deemed obvious when a POSA would have reached the claimed invention through routine experimentation.

36. I understand that obviousness can be established by combining or modifying the disclosures of the prior art to achieve the claimed invention. I also understand that where there is a reason to modify or combine the prior art to achieve

the claimed invention and there is a reasonable expectation of success, the claimed invention is rendered obvious. I understand that the reason to combine prior art references can come from a variety of sources, not just the prior art itself or the specific problem the patentee was trying to solve. I also understand that the references themselves need not provide a specific hint or suggestion of the alteration needed to arrive at the claimed invention. Rather, the analysis may include recourse to logic, judgment, and common sense available to a POSA. The sources of information for an obviousness inquiry may include teachings in prior art references; market forces; design incentives; any need or problem known in the field of endeavor at the time of invention and addressed by the patent; and the background knowledge, creativity, and common sense of a POSA. I understand that when there is some recognized reason to solve a problem, and there are a finite number of identified, predictable solutions, a POSA has good reason to pursue those solutions within his or her technical grasp. If such an approach leads to the expected success, it is likely the result not of innovation but of ordinary skill and common sense. In such a circumstance, when a patent simply combines, arranges, or rearranges elements of prior art with each performing the same function it had been known to perform and the combination yielding the results a POSA would expect from such an arrangement, the combination is obvious.

37. I understand that when considering the obviousness of an invention, one should also consider whether there are any objective indicia that support the non-obviousness of the invention. I further understand that objective indicia of non-obviousness include failure of others, copying, unexpected results, information that “teaches away” from the claimed subject matter, perception in the industry, commercial success, and long-felt but unmet need. I also understand that for objective indicia of non-obviousness to be applicable, a nexus must exist between the indicia and the subject matter in the claim that was not known in the art. I understand that this nexus requires a factual connection between the patentable subject matter of the claim and the objective indicia alleged.

38. I understand that similar products meeting the claims developed contemporaneously to and independently of the claimed invention are evidence that the claimed invention is the result of the ordinary skill and judgment of a POSA rather than innovation. Simultaneous innovations are evidence of the knowledge and skill of a POSA at the time and evidence that the claimed invention was the product of ordinary technical tools and/or engineering skills of a POSA. Simultaneous innovations are evidence that POSAs were motivated to solve the same (or similar) problems by combining known elements of prior art in predictable ways with reasonable expectations of success.

39. Finally, I understand that patent examiners at the USPTO rely upon certain exemplary rationales in reviewing patent applications to determine whether the subject matter of the claims is obvious. I understand that the following is the list of exemplary rationales suggested by the Supreme Court's decision in *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398 (2007), and currently relied upon by patent examiners at the USPTO:

- (A) Combining prior art elements according to known methods to yield predictable results;
- (B) Simple substitution of one known element for another to obtain predictable results;
- (C) Use of a known technique to improve similar devices (methods, or products) in the same way;
- (D) Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;
- (E) "Obvious to try" – choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;
- (F) Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives

or other market forces if the variations are predictable to one of ordinary skill in the art; and

- (G) Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

MPEP §2142-2143.

C. Interpreting Claims Before the Patent Office

40. I understand that an IPR is a proceeding before the USPTO for evaluating the validity of issued patent claims. I understand that, in an IPR, a claim term is interpreted in a manner consistent with the standard used in patent litigation (the *Phillips* standard), as set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (*en banc*).

41. I understand that generally, the *Phillips* standard involves construing the claims according to their “ordinary and customary” meaning to a POSA at the time the claimed invention was made. I understand that in determining the “ordinary and customary meaning,” it is proper to look to sources available to the public that show what a POSA would have understood the claim language to mean. Those sources include the words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art.

42. I understand that a patent’s “specification” includes all the figures, discussion, and claims within the patent. I understand that the USPTO will look to the specification and prosecution history to see if a special definition for a given claim term is provided. If not, the USPTO will apply the ordinary and customary meaning from the perspective of a POSA at the time in which the alleged invention was made. *Phillips*, 415 F.3d at 1316. I understand that when multiple patents derive from the same initial application, the prosecution history regarding a claim limitation in any patent that has issued applies with equal force to subsequently issued patents that contain the same claim limitation.

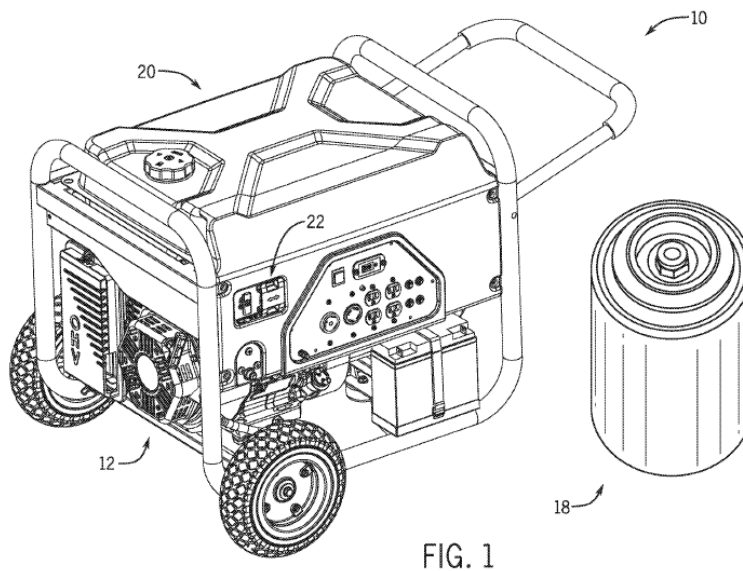
43. I also understand that extrinsic evidence, while less significant than the intrinsic record, is relevant to consider when determining the meaning of claim language. Extrinsic evidence may consist of, for example, references from prior art products, dictionary definitions, treatises, manuals, patents, technical manuscripts, textbooks, expert testimony, and other references that may provide evidence to the “ordinary and customary” meaning of the claim terms at the time of the invention.

D. Materials Considered in Forming My Opinions

44. In forming the opinions expressed in this declaration, I have relied on my own knowledge, experience, and expertise, as well as the knowledge of a POSA in the relevant timeframe. In addition, I have reviewed and relied upon all documents referenced in this declaration and the list of materials provided in Appendix A.

IV. THE '896 PATENT

45. The '896 Patent, titled “Dual Fuel Selector Switch,” was filed on June 7, 2023 and issued on February 20, 2024. EX1001, 1. The '896 Patent names Mark J. Sarder as the first inventor and Champion Power Equipment, Inc. as the assignee. The '896 Patent is a member of a larger patent family, all sharing a common specification and being generally related to and similarly titled “Dual Fuel Selector Switch.” An image of the dual fuel generator of the '896 Patent is provided in FIG. 1, reproduced below.



Id., FIG. 1.

A. Claimed Priority Date

46. For the purposes of this declaration, I have analyzed the prior art and concluded that the '896 Patent is invalid even if it is afforded a priority date of November 1, 2013, the filing date of the earliest application to which the '896 Patent claims priority.

B. Specification

47. The '896 Patent relates to a “selector switch” for use on a dual fuel generator. EX1001, 1:20-24. Dual fuel generators are selectively fueled by one of two available fuel sources. *Id.*, 1:38-41. The user can selectively switch between fuel sources. *Id.*, 1:41-46. The '896 Patent provides that “[t]ypical” prior art dual fuel generators contained a separately actuatable valve for each fuel source. *Id.*, 1:46-52. According to the '896 Patent, this “typical” configuration allows the user to turn both fuel supplies on at the same time, resulting in fuel mixing and resulting in a potentially unsafe condition. *Id.*, 1:52-55.

48. The solution proposed by the '896 Patent was to include a “selector switch” on a dual fuel generator that would “prohibit the mixing” of two different types of fuels and would “inhibit positioning/actuation of the valves” such that the valve for the first fuel source cannot be “on” when the valve for the second fuel source is “on,” and vice versa. EX1001, 1:56-62. The '896 Patent does not mention any existing prior art dual fuel engines or fuel systems that offer solutions to the

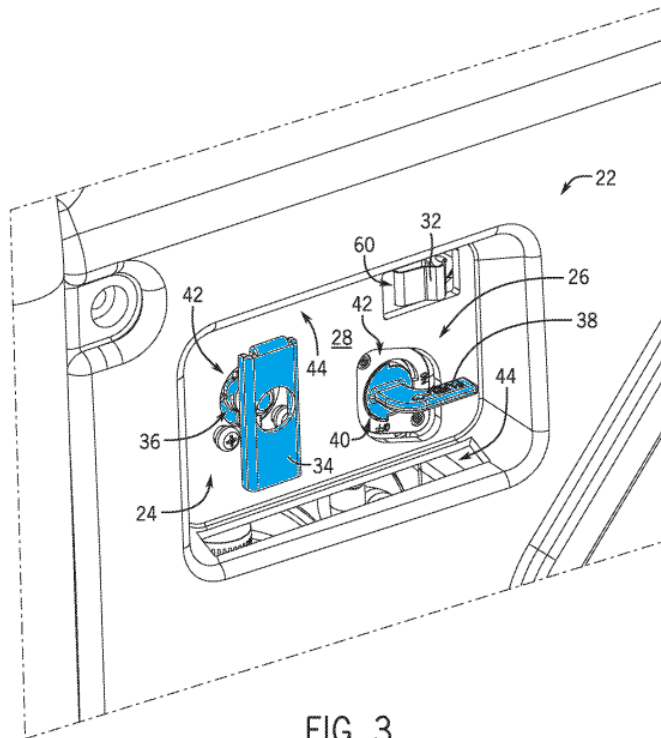
same problem and “prohibit the mixing” of fuels, such as Fujisawa, DeVries, Nakafushi, or Holzapfel. *Infra* Section VII.B-D.

49. The '896 Patent explains that the claimed fuel selector includes: (1) first and second valve assemblies actuatable by a user to “selectively control” their corresponding fuel flows; and (2) a selector switch that “enable[s] positioning of only one of the first fuel valve assembly and the second fuel valve assembly in the ON position at a given time.” EX1001, Abstract. The specification also describes a solenoid switch coupled to the selector switch. *Id.*, 6:50-7:3.

i. Valve Assembly

50. The specification provides a description of the valve assemblies which function to control the flow of fuel. The '896 Patent provides that “[t]he first valve assembly 24 and the second valve assembly 26 are attached, respectively, to first fuel source 18 and second fuel source 20 to selectively control a flow of fuel from the fuel sources to the engine 12.” EX1001, 4:28-32. The specification discloses that each valve assembly includes a valve handle. Specifically, the “[f]irst valve assembly 24 includes a first fuel valve handle 34 that is operatively connected to a first fuel valve 36 to control an opening and closing of the first fuel valve. Similarly, second valve assembly 26 includes a second fuel valve handle 38 that is operatively connected to a second fuel valve 40 to control an opening and closing of the second

fuel valve.” EX1001, 4:32-38. The valve assemblies, including their respective valve handles (blue), are illustrated in FIG. 3.



Id., FIG. 3 (annotated).

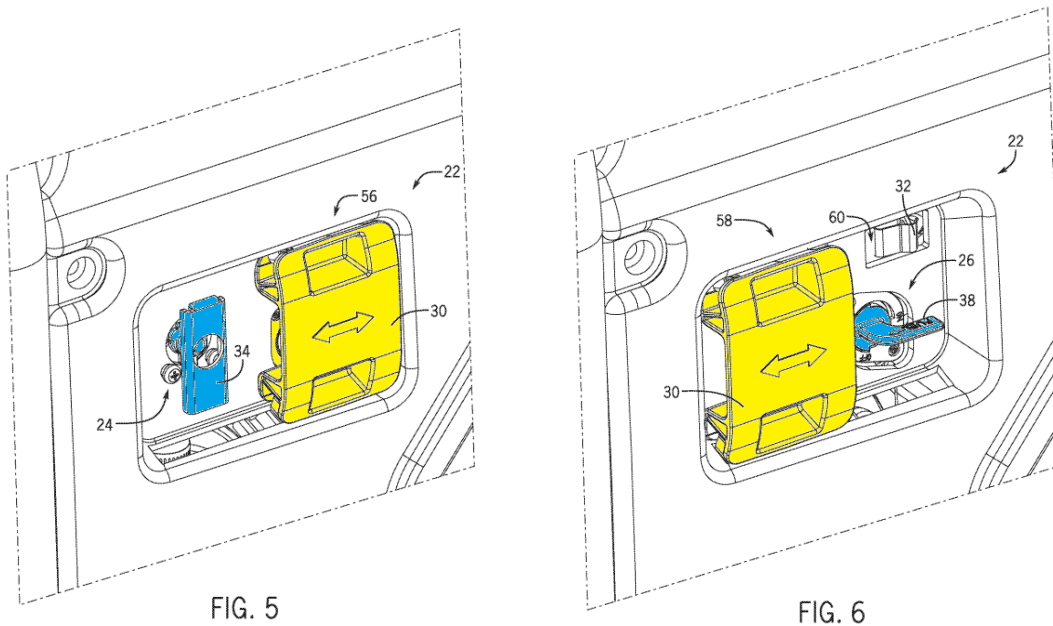
51. The '896 Patent discloses that the fuel flow is controlled by the one or more valve assemblies. EX1001, 4:28-38. The '896 Patent teaches that each valve assembly is in the ON position when the handle is in the vertical orientation and in the OFF position when the fuel valve handle is in the horizontal orientation. *Id.*, 4:58-66. The '896 Patent explains that the “first and second fuel valve handles 34, 38 ... may be actuated by an operator of the generator 10 in order to open/close their

respective valves 36, 40.” *Id.*, 5:17-20. A POSA would have understood that the claimed valve assemblies of the ’896 Patent function in the same way and are of similar design to the valves utilized in the “typical” prior art dual fuel engines described in the Background. *See id.*, 1:47-55.

ii. Selector Switch

52. The ’896 Patent discloses a “selector switch” which “enable[s] positioning of only one of the first fuel valve assembly and the second fuel valve assembly in the ON position at a given time, such that the first and second fuel valve assemblies cannot be in the ON position concurrently.” EX1001, Abstract. The ’896 Patent discloses that the selector switch is configured such that it mates with the selector plate and that the selector switch has finger-holds which an operator can use to slide the selector switch. *Id.*, 5:30-43. The “back surface 52 of the selector switch 30 includes a groove or channel 54 formed therein having a width and depth sufficient to receive the first and second fuel valve handles 34, 38 therein when in their horizontal position (i.e., the OFF position).” *Id.*, 5:43-47. The ’896 Patent further explains that the “groove 54 is further sized and configured such that the first and second fuel valve handles 34, 38 will not fit therein when in their vertical position (i.e., the ON position).” *Id.*, 5:47-50. The selector switch (yellow) is illustrated in FIGS. 5 and 6 reproduced below. The selector switch is shown in the

first position (FIG. 5) and the second position (FIG. 6) to selectively restrict actuation of the fuel valve handles. *Id.*, 5:59-63.

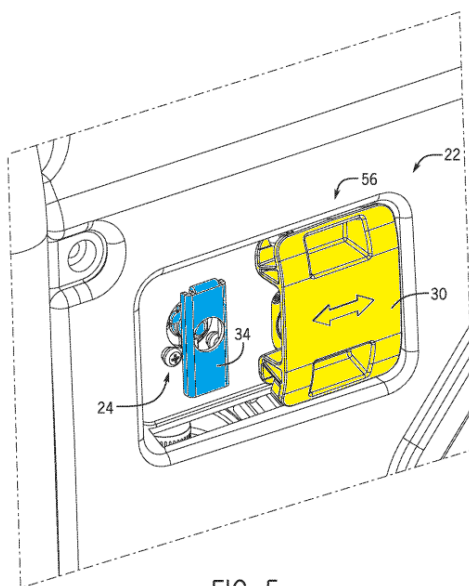


Id., FIGS. 5 and 6 (annotated).

53. The selector switch functions by creating interference with the valve handle rotation, such that one of the fuel valves must always be in the OFF position. In effect, as a POSA would have understood from the '896 Patent, the selector switch is a sliding interference device that “interlocks” the valves in such a manner that only one fuel valve can be open (i.e., the ON position) at any given time. The '896 Patent teaches that the selector switch alternately covers the first or second valve handle, and when covered by the selector switch the valve handle is locked in an OFF position, while the uncovered valve handle is able to rotate freely between the ON and OFF positions. EX1001, 5:51-6:49.

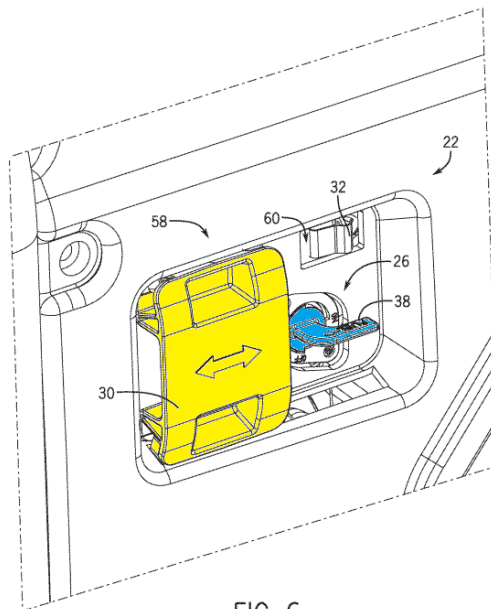
54. The '896 Patent explains that “[p]ositioning of the selector switch in the first position causes the selector switch to cover the second fuel valve handle so as to prevent the second fuel valve handle from moving to the open position and positioning of the selector switch in the second position causes the selector switch to cover the first fuel valve handle so as to prevent the first fuel valve handle from moving to the open position.” EX1001, 2:60-67.

55. Specifically, “[w]hen selector switch 30 is in first position 56, selector switch 30 covers second fuel valve handle 38, and groove 54 formed on the back surface 52 of the fuel selector switch 30 locks second fuel valve handle 38 in an OFF position, so as to prohibit the second valve assembly 26 from moving to the ON position.” EX1001, 6:5-10. The selector switch is shown in its first position in FIG. 5, reproduced below. In this position, the second valve handle (gasoline fuel) is covered by the selector switch and locked in the OFF position and the first valve handle (LPG fuel) is uncovered and can rotate freely between the ON and OFF positions.



Id., FIG. 5 (annotated).

56. Alternately, “when selector switch 30 is moved from first position 56 into second position 58, first fuel valve handle 34 slides into groove 54 formed in selector switch 30. Therefore, when selector switch 30 is in second position 58, first fuel valve handle 34 is unable to move, as it is locked in place by groove 54, and first valve assembly 24 is locked in the OFF position, with movement from the OFF position to the ON position being prohibited.” EX1001, 6:42-49. The selector switch is shown in its second position in FIG. 6, reproduced below. In this position, the first valve handle (LPG fuel) is covered by the selector switch and locked in the OFF position and the second valve handle (gasoline fuel) is uncovered and can rotate freely between the ON and OFF positions.

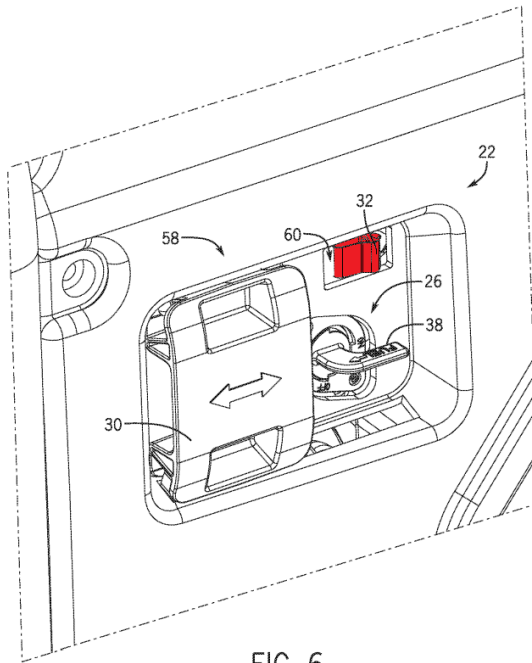


Id., FIG. 6 (annotated).

57. The '896 Patent describes the function of the selector switch, providing that the “interaction of the selector switch 30 with the first and second fuel valve assemblies 24, 26—with the selector switch 30 sliding back and forth to selectively cover/engage first and second fuel valve assemblies 24, 26—prohibits both valve assemblies from being in the ‘ON’ position at the same time.” EX1001, 7:7-12. This function is described as being important for safety considerations because, with “typical” prior art dual fuel systems, “it is possible for both valves to be in the ‘on’ position, which can lead to a potentially unsafe condition resulting from the mixture of the fuels.” *Id.*, 1:47-55. “The selector switch 30 is thus a foolproof device that prevents the mixing of fuels so as to provide additional safety to the usage of dual fuel generators.” *Id.*, 7:12-15.

iii. Solenoid Switch

58. The '896 Patent discloses that the fuel selector may include a carburetor solenoid switch (red) which is positioned on the selector plate and located adjacent to the second valve assembly, as shown in FIG. 6, reproduced below. EX1001, 6:50-7:3. As carburetor solenoids were well known, there is no detail provided on implementing the carburetor solenoid. *Id.* The '896 Patent explains that the solenoid switch interacts with the selector switch and operates a fuel cut off solenoid (valve) on the carburetor. The '896 Patent provides that “selector switch 30 covers and triggers solenoid switch 32 when slid from the second position 58 to the first position 56—by depressing the solenoid switch 32 as it comes in contact therewith. When solenoid switch 32 is triggered, a carburetor shutoff solenoid operatively connected to the solenoid switch 32 is activated and shuts off the flow of gasoline to the carburetor 16 (FIG. 2).” *Id.*, 6:58-66.



Id., FIG. 6.

C. The Claims of the '896 Patent

59. The '896 Patent is comprised of 38 claims, five independent claims and 33 dependent claims. The five independent claims of the '896 Patent, Claims 1, 7, 15, 21, and 30, are reproduced below.

Element	Claim Language
Claim 1	
[1.0]	A dual fuel generator comprising:
[1.1]	an internal combustion engine couplable to a first fuel source and a second fuel source to selectively receive fuel therefrom; and
[1.2]	a fuel selector configured to control a flow of fuel to the internal combustion engine, the fuel selector comprising:
[1.3]	a selector plate;

[1.4]	a first fuel valve assembly positioned adjacent to the selector plate and including a first fuel valve and a first fuel valve handle, the first fuel valve handle being actuatable between an ON position and an OFF position to selectively open and close the first fuel valve; a second fuel valve assembly positioned adjacent to the selector plate and including a second fuel valve and a second fuel valve handle, the second fuel valve handle being actuatable between an ON position and an OFF position to selectively open and close the second fuel valve;
[1.5]	a selector switch slidably coupled to the selector plate so as to be movable between: a first position in which the selector switch covers the second fuel valve handle so as to prevent actuation of the second valve handle to the ON position; and a second position in which the selector switch covers the first valve handle so as to prevent actuation of the first valve handle to the ON position; and
[1.6]	a carburetor fuel shutoff solenoid that is activated when the selector switch is in the first position.
Claim 7	
[7.0]	A fuel selector for use with a dual fuel generator, the fuel selector comprising:
[7.1]	a valve assembly fluidly couplable to each of a first fuel source and a second fuel source and operable to selectively control a first fuel flow and a second fuel flow from the first fuel source and the second fuel source, respectively, to an engine of the dual fuel generator, the valve assembly comprising:
[7.2]	a first mechanical fuel valve having open and closed positions to selectively control the first fuel flow to the engine; and a second mechanical fuel valve having open and closed positions to selectively control the second fuel flow to the engine; and

[7.3]	a selector switch movable with respect to the valve assembly to allow a user to manually select the first fuel flow or the second fuel flow.
Claim 15	
[15.0]	A fuel selector for use with a dual fuel generator, the fuel selector comprising:
[15.1]	a valve assembly fluidly couplable to each of a first fuel source and a second fuel source and operable to selectively control a first fuel flow and a second fuel flow from the first fuel source and the second fuel source, respectively, to an engine of the dual fuel generator, the valve assembly comprising:
[15.2]	a first fuel valve having open and closed positions to selectively control the first fuel flow to the engine; and a second fuel valve having open and closed positions to selectively control the second fuel flow to the engine; and
[15.3]	at least one valve handle mechanically coupled to the first fuel valve and the second fuel valve to selectively open and close the first fuel valve and the second fuel valve responsive to actuation thereof so as to enable the first fuel flow to the engine or the second fuel flow to the engine.
Claim 21	
[21.0]	A fuel selector of a dual fuel generator comprising:
[21.1]	a valve assembly fluidly couplable to each of a first fuel source and a second fuel source and operable to selectively control a first fuel flow and a second fuel flow from the first fuel source and the second fuel source, respectively, to an engine of the dual fuel generator;
[21.2]	a selector switch having a first fuel mode and a second fuel mode;
[21.3]	a fuel solenoid having open and closed positions; and
[21.4]	a solenoid switch having open and closed positions;
[21.5]	wherein, when the selector switch is in the first fuel mode, the solenoid switch and the fuel solenoid are in the closed positions; wherein, when the selector switch is in the second fuel mode, the solenoid switch and the fuel solenoid are in the open positions; and

[21.6]	wherein positioning of the selector switch in the first fuel mode and the second fuel mode enables a selection of the first fuel flow or the second fuel flow.
Claim 30	
[30.0]	A fuel selector for use with a dual fuel generator, the fuel selector comprising:
[30.1]	a valve assembly fluidly couplable to each of a first fuel source and a second fuel source and operable to selectively control a first fuel flow and a second fuel flow from the first fuel source and the second fuel source, respectively, to an engine of the dual fuel generator, the valve assembly comprising:
[30.2]	two fuel inputs comprising: a first fuel input couplable to the first fuel source; and a second fuel input couplable to the second fuel source; and two fuel outputs configured to selectively supply fuel to the engine from the first fuel source or the second fuel source; and
[30.3]	a selector switch positioned on the valve assembly to allow a user to manually select the first fuel flow or the second fuel flow.

60. Claims 2-6 depend from claim 1, either directly or in combination with one or more dependent claims. Claims 8-14 depend from claim 7, either directly or in combination with one or more dependent claims. Claims 16-20 depend from claim 15, either directly or in combination with one or more dependent claims. Claims 22-29 depend from claim 21, either directly or in combination with one or more dependent claims. Claims 31-38 depend from claim 30, either directly or in combination with one or more dependent claims. The dependent claims of the '896 Patent add further limitations including, for example, manual actuation of the fuel

valves, a carburetor solenoid switch, and specific fuel (LPG and gasoline) configurations. The dependent claims are addressed individually in the anticipation and obvious analysis provided in latter sections of this declaration. *Infra* Sections VIII-XII.

D. The Prosecution History

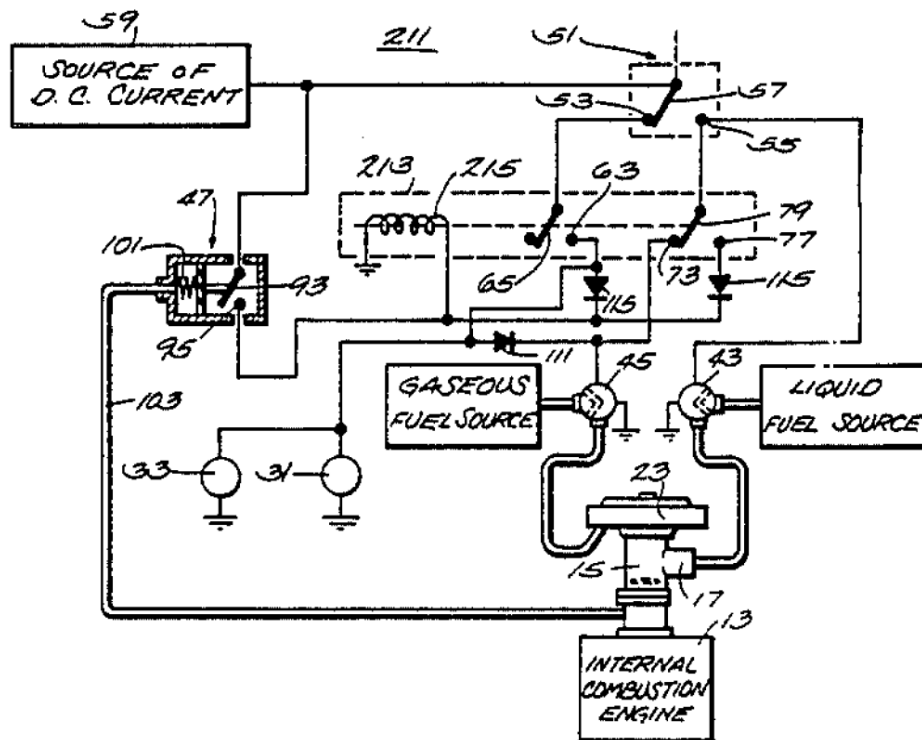
61. I understand that the '896 Patent was filed on June 7, 2023. The '896 Patent is a continuation of the '390 Patent (which was filed on February 16, 2022), which is a continuation of the '667 Patent (which was filed on February 13, 2020), which is a continuation of the '101 Patent (which was filed on February 4, 2016), which is a continuation of the '273 Patent, which was filed on November 1, 2013. EX1001, 1:6-16. Each independent claim of the '273 Patent describes the structural and functional relationship between the “selector switch” and the valve assembly. EX1013, Claims 1, 9, 14, and 19. Most of the '101, '667, '390, and '896 Patent claims cover the same embodiment as the '273 Patent but were broadened to remove any such structural definition around these components.

62. During the over four years of prosecution of the earlier '101 Patent, the Examiner initially rejected the claims over U.S. Patent No. 4,489,669 (“Poehlman”) and later rejected the claims over U.S. Publication No. 2007/0137591 (“Sugimoto”). See EX1028, 142-154, 212-227, 259-271. During prosecution of the '101 Patent,

Applicant amended some of the claim language and argued that the claims distinguished from the prior art raised by the Examiner in the following manner:

i. Distinguishing Poehlman's Fuel Switching Mechanism

63. The Examiner initially rejected Claim 1 of the '101 Patent as obvious over Poehlman on the grounds that Poehlman disclosed a dual fuel engine with a “selector switch” and a “valve assembly.” EX1028, 212-227. The Examiner defined the valve assembly as “all the components that are necessary ... to switch from the different fuels[.]” *Id.*, 223. An embodiment of Poehlman is reproduced below, illustrating an internal combustion engine, a liquid fuel source, a gaseous fuel source, and the switching mechanism for selecting one of the two fuel sources.



EX1048, FIG. 2.

64. The Examiner further reasoned that Poehlman's electrical switch 57, which made up part of the valve assembly, disclosed the claimed "selector switch." EX1028, 217. Indeed, Poehlman teaches that the electrical switch 57 is "movable between a first position energizing the liquid fuel terminal 55 and a second position energizing the gaseous fuel terminal 53." EX1048, 5:4-6.

65. In response to the Examiner's rejection over Poehlman, Applicant filed an appeal brief. In the appeal brief, to distinguish its claims from Poehlman, Applicant argued that Poehlman does not include a "valve assembly" as defined in the '896 Patent Specification. Specifically, Applicant argued that the claimed valve assembly is comprised of:

[O]ne or more of first valve assembly 24 and second valve assembly 26 – with the first valve assembly 24 including a first fuel valve handle 34 that is operatively connected to a first fuel valve 36 to control an opening and closing of the first fuel valve and the second valve assembly 26 including a second fuel valve handle 38 that is operatively connected to a second fuel valve 40 to control an opening and closing of the second fuel valve.

EX1028, 177-178.

66. Applicant previously explained that these valve handle(s) "provide a specific benefit" that solves the stated problem because the handles "inhibit positioning/actuation of the valves in such a manner that the valve for a first fuel source is prevented from being 'on' when the valve for a second fuel source is 'on',

and vice versa.” *Id.*, 252-253. Thus, based on this description in the specification, Applicant argued that the valve assembly of Poehlman, which disclosed electrical valves, as opposed to valves having a valve handle to control actuation, failed to meet the requirements of the claimed “valved assembly.” *Id.*, 177-178.

67. Applicant also argued that the Examiner incorrectly asserted that the electrical fuel selector switch 51 of Poehlman forms both part of the “valve assembly” and the “selector switch.” Specifically, Applicant argued that the valve assembly and selector switch are separate and distinct structures:

[C]laim 1 distinctly calls for a valve assembly and a selector switch as two separate elements/structures – with claim 1 clearly and separately defining each of these elements and setting forth a relationship therebetween. These elements should not be confused with one another, as the Examiner has attempted to do.

EX1028, 178-179 (emphasis in original).

68. Thus, because Poehlman disclosed a fuel selector 51 that the Examiner also identified as being a component of the valve assembly, Applicant argued that Poehlman failed to disclose the “valve assembly” and “selector switch” as separate structures. *Id.*

69. Finally, to distinguish its claims from Poehlman, Applicant argued that Poehlman “fails to disclose a fuel selector switch that is positioned on a valve assembly to allow a user to manually select one of the first fuel flow and the second fuel flow, as called for in claim 1.” *Id.*, 179 (emphasis in original). Applicant argued

that “[t]here is no manual selection of a first or second fuel flow in Poehlman because it relies on electronic control of valves 43, 45 via fuel selector switch 51.” *Id.*, 181.

70. In response to the arguments made by Applicant in the appeal brief, the Examiner withdrew the rejections over Poehlman and raised a new ground of rejection over Sugimoto. *Id.*, 152.

ii. Distinguishing Sugimoto’s Switching Mechanism

71. The Examiner asserted that Sugimoto disclosed a dual fuel generator having a fuel selector having a valve assembly 12, used to select between a first fuel source and a second fuel source, and a solenoid switch 74 which operates a fuel solenoid 63. EX1028, 147-149.

72. In response to the rejection of claims 1 and 10 of the ’101 Patent, Applicant amended its claims to further require that the valve assembly comprises a first and second mechanical fuel valve, each having open and closed positions to control fuel flow to the engine. *Id.*, 119-121. To distinguish from Sugimoto, Applicant argued that Sugimoto only disclosed a single selector valve 12 for selecting between a first fuel source and a second fuel source. *Id.*, 126. Applicant further argued that the single fuel system selector valve 12 of Sugimoto does not teach separate first and second fuel valves each having open and closed positions, as called for in claim 1 of the ’101 Patent, and therefore Sugimoto failed to disclose all the elements of the amended claims. *Id.*

73. Applicant also argued that the amended claims were not obvious over Sugimoto in view of Poehlman because Poehlman's valves are electrical—not mechanical. Even though Poehlman teaches two separate valves for selecting between two different fuel sources, Applicant argued that Poehlman teaches away from the first and second mechanical valves, called for in claim 1, because the liquid fuel control valve and gaseous fuel control valve are “energized” or “deenergized” via actuation/operation of a fuel selector switch. *Id.*

74. Finally, with respect to Examiner's rejection of claim 18 of the '101 Patent, Applicant argued that because Sugimoto's solenoid valve was not directly coupled to actuation of selector valve 12, Sugimoto failed to anticipate claim 18. EX1028, 127-128. Specifically, Applicant claimed that “Sugimoto explicitly discloses that the opening/closing of fuel cutoff valve 63 is not controlled by the position of the fuel system selector valve 12, but that instead the ‘fuel cutoff valve 63 is a normally-open solenoid valve which closes when energized, with ECU 89 controlling the fuel cutoff valve 63 on the basis of the pressure of the first fuel gas[.]’” *Id.*, 128.

75. In response to Applicant's arguments, the Examiner issued a notice of allowance, in which the Examiner allowed claims 1 and 10 of the '101 Patent and further amended claim 18 of the '101 Patent to specify that the fuel selector switch

triggers the solenoid switch to move between an opened and closed position. EX1028, 9-18.

iii. The '896 Patent Prosecution History

76. The '896 Patent received a first-office-action notice of allowance, subject to terminal disclaimers for each claim of the '896 Patent. EX1002, 14-21. The Examiner stated that “[t]he reasons for allowance are given in the previous parent patents.” *Id.*, 19.

77. Specifically, claims 7-14 of the '896 Patent were rejected on the grounds of non-statutory double patenting over claims 1-18 of the '101 Patent. EX1002, 18. Claims 15-20 of the '896 Patent were rejected on the grounds of non-statutory double patenting over claims 10-15 of the '101 Patent. *Id.*, 18-19. Claims 21-29 of the '896 Patent were rejected on the grounds of non-statutory double patenting over claims 1-2, 4-7, and 9 of the '390 Patent (*id.*, 19), which were rejected on the grounds of non-statutory double patenting over claims 1-2, 6, 8-10, 16, and 18-19 of the '101 Patent (EX1053, 110). Claims 30-38 of the '896 Patent were rejected on the grounds of non-statutory double patenting over claims 1-8 of the '667 Patent (EX1002, 19), which were rejected on the grounds of non-statutory double patenting over claims 1-2, 8, 17-19 of the '101 Patent (Application No. 15/015205) (EX1052, 106).

V. CLAIM CONSTRUCTION

78. I understand that claims should be given their ordinary and customary meaning as understood by a POSA, viewing the claim terms in the context of the entire patent. I understand that the context of the patent includes the words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art. I understand that if the intrinsic evidence does not establish the meaning of a claim, then extrinsic evidence may be considered.

79. Here, I understand that the parties appear to dispute the meaning of the terms “selector switch” and “valve assembly.”

80. It is my opinion that the proper construction of the term “selector switch” is: a movable component whose positioning enables subsequent user selection of only one fuel source. It is also my opinion that the proper construction of the valve assembly requires that the valve assembly: (1) be separate from the selector switch, and (2) comprises at least one valve operatively connected to at least one valve handle.

A. “Selector Switch” Means a Movable Component Whose Positioning Enables Subsequent User Selection of Only One Fuel Source

81. I understand that where the specification uses a claim term in a way that differs from the meaning it would otherwise normally possess, then the inventor’s

lexicography governs the meaning of that claim term. Here, because the specification uses the term “selector switch” in a way that is inconsistent with its commonly understood meaning to a POSA, the “selector switch” is properly construed as “a movable component whose positioning enables subsequent user selection of only one fuel source.”

i. The term “selector switch” does not employ the ordinary and customary meaning of “switch.”

82. A POSA would have understood that the claim term “selector switch” in the ’896 Patent is inconsistent with the ordinary and customary meaning of “switch.” As shown in various dictionary definitions, a POSA would have understood that the ordinary meaning of “switch” is “a device for making, breaking, or changing the connections in an electrical circuit.” EX1014; EX1015; *see also* EX1016, EX1017; EX1018; EX1044. As a device, a POSA would have understood that “switch” specifically refers to an electrical circuit component for altering the state of an electrical system. Indeed, mechanical engineering dictionaries either omit the term “switch” entirely (*see, e.g.*, EX1019; EX1020; EX1021) or use the electrical engineering definition (*see, e.g.*, EX1022).

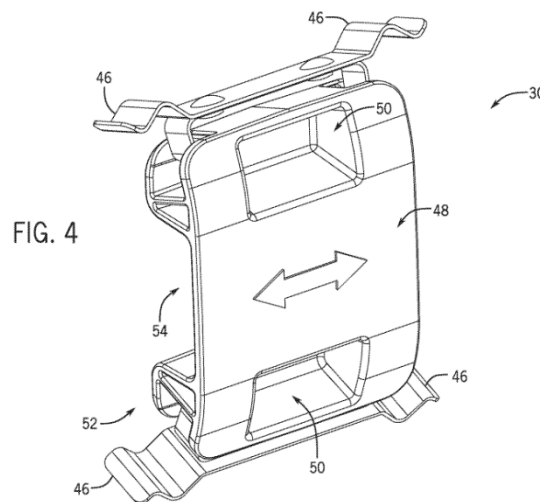
83. A POSA would have understood that the “selector switch” described in the ’896 Patent does not make, break, or change the connection of an electrical circuit. Rather, the “selector switch” taught by the ’896 Patent is a mechanical

structure manually positioned to physically enable or inhibit the subsequent actuation of the only one valve handle while the other valve handle remains locked in the off position. EX1001, 6:19-49; *see also* EX1028, 181-182 (Applicant arguing that it would not be obvious to relocate the electrical switch of Poehlman because the claimed positioning of the “selector switch” allows a user to manually select the flow of the first or second fuel and there would be no motivation to position the electrical switch of Poehlman on the valve assembly).

84. Even if a POSA understood the plain and ordinary meaning of “switch” to include movable mechanical components, which are not associated with any electrical circuit, a POSA still would not have understood the “selector switch” taught by the ’896 Patent to be a “switch” within the plain and ordinary meaning of that term. Moving the “selector switch” between first and second positions does not make, break, or otherwise alter the condition of anything other than its own position. Specifically, moving the selector switch does not alter which of the two fuel sources is supplied to the dual fuel engine. Rather, moving the switch from one position to the other merely provides physical access such that the user can select a fuel flow, for example by manually moving the uncovered valve handle to its open position. EX1001, 4:12-53.

ii. The selector switch comprises “a movable component whose positioning enables subsequent user selection of only one fuel source.”

85. Because the “selector switch” disclosed in the ’896 Patent is inconsistent with the plain and ordinary meaning of “switch,” a POSA would have looked to the intrinsic evidence of the ’896 Patent for the definition of “selector switch.” The specification clearly defines the “general structure of [the] selector switch.” EX1001, 5:30-50, FIG. 4.



Id., FIG. 4.

86. As taught by the ’896 Patent, the “selector switch” is a manually moveable mechanical component. The selector switch contains structure, such as finger-holds, “by which the operator can operate (i.e., slide) the selector switch.” EX1001, 5:38-43.

87. A POSA would have understood that the selective positioning of the selector switch enables subsequent user selection of only one fuel source while locking the other in the off position. The '896 Patent teaches the function of the selector switch: “selector switch 30 is translatable in a horizontal motion ... to selectively restrict actuation of the first and second fuel valve handles.” EX1001, 5:59-63. “The interaction of the selector switch 30 with the first and second valve assemblies 24, 26—with selector switch 30 sliding back and forth to selectively cover/engage first and second valve assemblies 24, 26—prohibits both valve assemblies from being in the ‘ON’ position at the same time.” *Id.*, 7:7-12. The positioning of the selector switch “selectively restricts the selection of a fuel source so as to enable the use of only one fuel at a time.” *Id.*, 4:4-8.

88. In sum, in view of the '896 Patent's unique use of the term “selector switch” which is inconsistent with the plain-and-ordinary meaning of the term “switch,” a POSA would have looked to the intrinsic evidence for the special definition and the general structure of a “selector switch.” A POSA would have understood the claim term “selector switch” as used in the '896 Patent to comprise “a movable component whose positioning enables subsequent user selection of only one fuel source.”

B. The Claimed “Valve Assembly” is a Separate Structure from the Selector Switch that Comprises At Least One Fuel Valve and Corresponding Valve Handle

89. I understand that during prosecution of the '101 Patent, Applicant filed an appeal brief where it defined the “valve assembly” as: (1) having at least one fuel valve and corresponding valve handle; and (2) being a separate and distinct structure from the selector switch. EX1028, 177-178. Based on these structural requirements, Applicant argued that the prior art valve assembly of Poehlman failed to teach the requirements of the “claimed ‘valve assembly[.]’” *Id.* I understand that the '896 Patent and '101 Patent share a specification, and that “valve assembly” is used in the same way in the claims of the '896 Patent and '101 Patent. *Compare* EX1001, Claim 7, *with* EX1027, Claim 1. As confirmed by Applicant’s own arguments, a POSA would have understood the “valve assembly” taught by the '896 Patent as “having at least one fuel valve and corresponding valve handle” and “being a separate structure from the selector switch.”

i. The valve assembly comprises at least one fuel valve and corresponding valve handle.

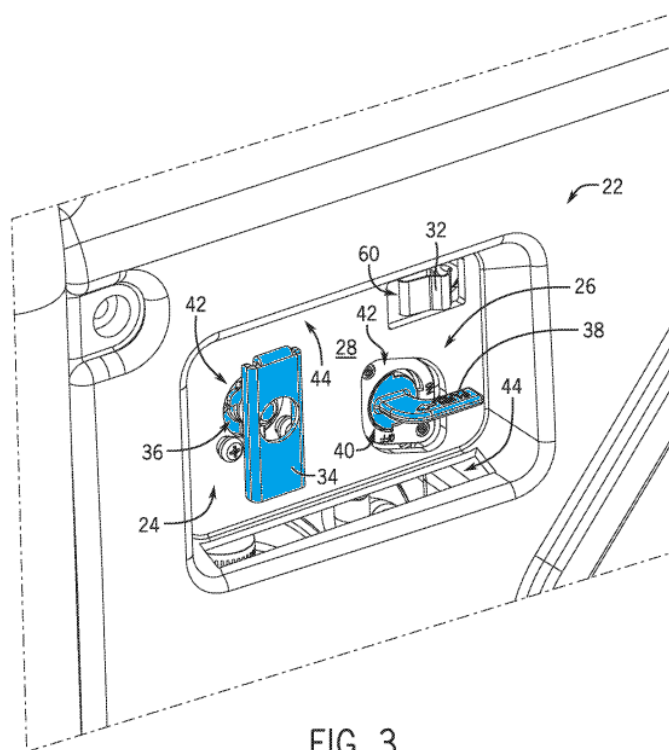
90. Claim 1 of the '896 Patent expressly requires a first and second valve assembly, each comprising a fuel valve and fuel handle. EX1001, Claim 1. A POSA would have understood that the claim term “valve assembly” used in independent claims 7, 15, 21, and 38 likewise includes at least one fuel valve and at least one

valve handle. I understand that Applicant for the '101 Patent specifically described the claimed valve assembly in its appeal brief:

[T]he claimed 'valve assembly' is comprised of one or more of the first valve assembly 24 and second valve assembly 26 – with the first valve assembly 24 including a first fuel valve handle 34 that is operatively connected to a first fuel valve 36 to control an opening and closing of the first fuel valve and the second valve assembly 26 including a second fuel valve handle 38 that is operatively connected to a second fuel valve 40 to control an opening and closing of the second fuel valve.

EX1028, 177-178 (citing EX1027, ¶[0022], FIG. 3).

91. The '896 Patent specification defines the valve assembly consistently with Applicant's arguments. The specification teaches that the "[f]irst fuel valve assembly 24 includes a first fuel valve handle 34" and the "second valve assembly 26 includes a second valve fuel handle 38." EX1001, 4:32-38. Specifically, the specification states that the valve handle is "operatively connected" to the fuel valve to "control an opening and closing" of the valve. *Id.* Thus, a POSA would have understood that the valve assembly must comprise a valve handle so that the valve assembly is "operable to selectively control" the fuel flow. Figure 3 depicts the valve assembly (blue), comprised of fuel valve handles 34, 38 operatively connected to valves 36, 40.



Id., FIG. 3 (annotated).

92. Indeed, a POSA would have understood that the valve handles are an essential and necessary component for the selector switch disclosed by the '896 Patent to function. The '896 Patent teaches that the selector switch moves back and forth to selectively restrict actuation of the first and second fuel valve handles, thus supplying only one of the first fuel and the second fuel to the engine. *Supra* Section V.A.ii.

93. Thus, based on the intrinsic evidence and the explicit teachings of the '896 Patent, supported by Applicant's appeal brief arguments, it is my opinion

that the “valve assembly” is properly construed to include “at least one fuel valve and corresponding valve handle.”

ii. The selector switch and the valve assembly are separate and distinct structures.

94. During prosecution of the '101 Patent, Applicant argued in its appeal brief that the selector switch and valve assembly are separate and distinct structures to overcome a rejection based on Poehlman:

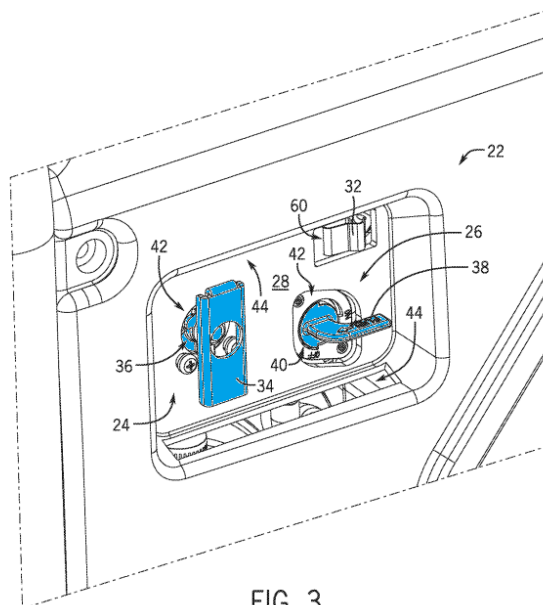
[C]laim 1 distinctly calls for a valve assembly and a selector switch as two separate elements/structures – with claim 1 clearly and separately defining each of these elements and setting forth a relationship therebetween. These elements should not be confused with one another, as the Examiner has attempted to do. The Examiner has stretched and distorted the teachings of Poehlman in an attempt to satisfy the elements called for in claim 1 by asserting that an individual structure disclosed in Poehlman (i.e., fuel selector switch 51) discloses different, distinct elements of claim 1. Such a categorization of the electrical fuel selector switch 51 as being both a “selector switch” and part of a “valve assembly” distorts the teachings of Poehlman....

EX1028, 178-179 (emphasis in original).

95. Applicant’s arguments in its appeal brief regarding the selector switch and valve assembly are consistent with the '896 Patent specification which teaches that the selector switch and valve assembly are separate and distinct structures that have separate functions. A POSA would have understood from the teachings of the '896 Patent that the selector switch functions by providing or restricting access to “allow[] a user to manually select the first fuel flow or the second fuel flow.”

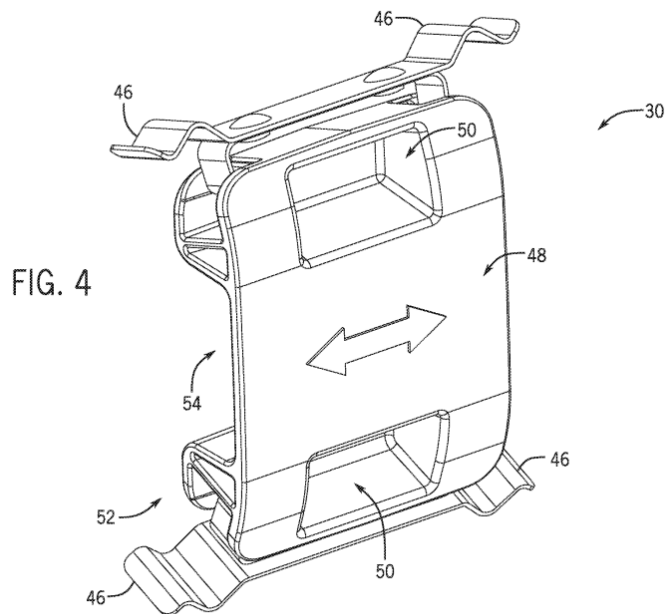
EX1001, Claim 7. Separately, a POSA would have understood that the valve assembly is a structure that through which the user “selectively control[s] a first fuel flow and a second fuel flow.” *Id.*

96. Consistent with Applicant’s arguments, the ’896 Patent teaches that the valve assembly and selector switch are separate and distinct structures. The specification teaches that the “fuel selector 22 includes a first valve assembly 24, a second valve assembly 26, a selector plate 28, a selector switch 30, and a carburetor solenoid switch 32.” EX1001, 4:14-17. Figure 3 depicts fuel selector 22 “with selector switch 30 removed therefrom, so as to best illustrate the construction of the first valve assembly 24 and the second valve assembly 26.” *Id.*, 4:25-28; FIG. 3. Figure 3 depicts the valve assembly (blue), comprised of fuel valve handles 34, 38 operatively connected to valves 36, 40.



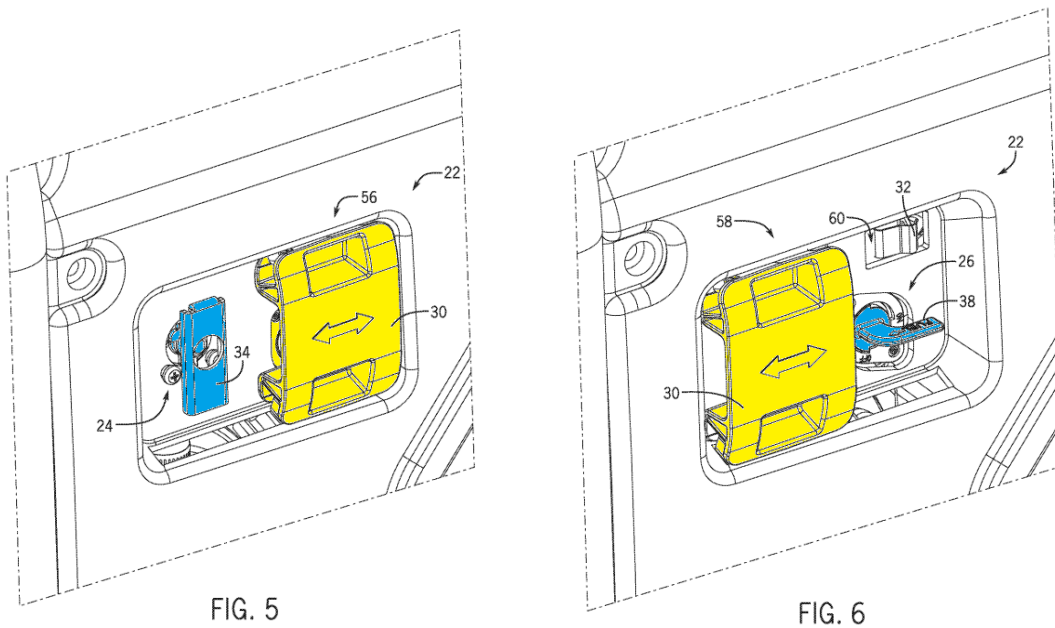
Id., FIG. 3 (annotated).

97. The separate and distinct selector switch is shown in Figure 4. EX1001, 3:18-20, 5:31-33, FIG. 4.



Id., FIG. 4.

98. Figures 5 and 6 show the structural interaction between the selector switch (yellow) and valve assembly (blue). In Figure 5, the selector switch is positioned such that it restricts access to one of the valve handles while providing access to another valve handle on the valve assembly. In Figure 6, the selector switch is positioned such that it restricts access to the other valve handle while providing access to a different valve handle on the valve assembly.



Id., FIGS. 5, 6 (annotated).

99. Thus, based on the intrinsic evidence and explicit teachings of the '896 Patent, supported by Applicant's appeal brief arguments, it is my opinion that the claimed "valve assembly" is properly construed as being a "separate structure from the selector switch."

C. Patent Owner Construes Selector Switch and/or Valve Assembly Incorrectly in the Related Litigations

100. I understand that Patent Owner has filed several patent infringement actions alleging that its competitors infringe the '896 Patent. For example, Patent Owner alleged that Generac's dual fuel generator models PM4500DF, PM7500DF, GP7500E, DF3500E, and DF7500E infringe the '896 Patent. EX1023.

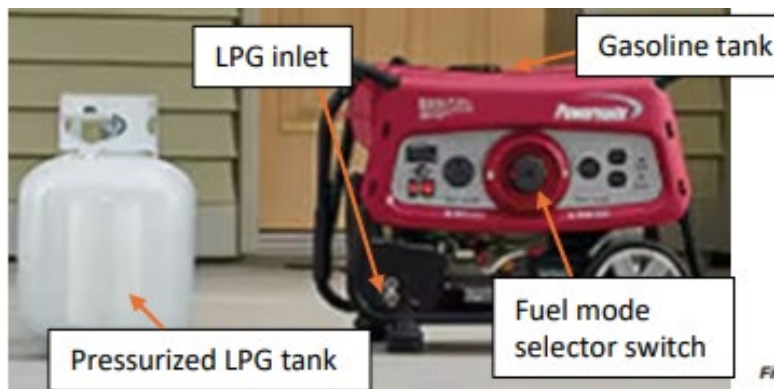
101. As shown in the example image of the DF3500E generator, below, the only structure on the accused generators that changes the fuel source is a single dial (circled in green):



EX1024, 1 (annotated).

102. Patent Owner served infringement contentions in the '281 Litigation regarding certain claims of the '896 Patent. EX1051.

103. In its infringement contentions, Patent Owner asserted that the dial shown above is the selector switch. *Id.*, 4-6.



Id., 5.

104. In its infringement contentions, Patent Owner argued that “the selector switch has LPG and Gasoline Modes to manually select one of an LPG fuel flow and a gasoline fuel flow. ***The selector switch is a valve handle*** mechanically coupled to the LPG and gasoline valves....” *Id.*, 10 (emphasis added).

105. Based on Patent Owner’s infringement allegations in its claim charts, Patent Owner appears to construe “selector switch” to include dials or knobs that are affixed to and comprise part of the valve assembly. Patent Owner appears to construe “selector switch” to include a valve handle that directly actuate the valves, contrary to the teachings of the ’896 Patent. I disagree because a POSA would not have understood that the “selector switch” of the ’896 Patent to encompass a valve handle. A POSA would have understood from the teachings of the ’896 Patent that valve handles are part of the valve assembly rather than the selector switch, and that the valve assemblies are separate structures from the selector switch.

106. Furthermore, Patent Owner appears to construe “selector switch” and “valve assembly” such that the valve assembly does not contain a valve handle and/or the selector switch is a part of the valve assembly. This apparent construction is opposite that taken by Applicant during prosecution where it argued that the selector switch and valve assembly are “two separate and distinct elements/structures” and that these “elements [selector switch and valve assembly]

should not be confused with one another, as the Examiner has attempted to do.” EX1028, 178-179; *see also supra* Section IV.D.i. A POSA would have understood that the selector switch is not a valve handle, because the selector switch functions to restrict valve operation by selectively restricting actuation of the valve handles. *Supra* Sections IV.B.i-ii.

VI. STATE OF THE ART AT THE TIME OF THE '896 PATENT

A. Person of Ordinary Skill in the Art

107. Describing the technical field, the '896 Patent explains that the “[e]mbodiments of the invention relate generally to dual fuel generators and, more particularly, to a selector switch for use on a dual fuel generator that is configured to ensure that only one type of fuel may be in use at a given time in the generator.” EX1001, 1:20-24. The fuel selector of the '896 Patent includes: a selector plate, first and second fuel valves positioned adjacent the selector plate, and a selector switch coupled to the selector plate and translatable from a first position to a second position. EX1001, 1:66-2:17; *supra* Section IV.B.

108. As of November 1, 2013, a POSA would have a college degree in mechanical engineering, physics, or related fields, and three years of work experience in combustion engines operating on various fuel sources. Additional higher graduate education could substitute for work experience, and additional work experience/training could substitute for formal education.

B. Prior Art – Dual Fuel Engines

109. ICEs that can operate using more than one type of fuel have been known in the art since at least the early 1900s. In many instances the same ICE can operate on a mixture of two or more fuels simultaneously at different proportions depending on the operating conditions. In other instances, the same ICE can operate selectively using one type of fuel or another type of fuel. For the purposes of this declaration, and consistent with the '896 Patent, the term “dual fuel” will refer specifically to engines that operate selectively on one type of fuel or another, but are not intended to operate using both fuels simultaneously. There are numerous examples of dual fuel engines in the prior art that selectively run on a variety of different fuel combinations, including two different gaseous fuels, one gaseous fuel and one liquid fuel, or two different liquid fuels. EX1005, EX1006, EX1031.

110. There are many examples of ICEs in the prior art that provide for the selective use of a liquid fuel (such as gasoline) and a gaseous fuel (such as LPG). Dual fuel engines were used in automotive applications at least a decade prior to claimed priority date of the '896 Patent. For example, Ford Motor Company produced a “bi-fuel” F-150 pickup truck, which selectively operated on LPG or gasoline fuels. The 2004 Ford Bi-Fuel Manual describes an “ALT/GAS” switch and light that “permits the driver to select which fuel the vehicle will operate on.” EX1032. The Ford Bi-Fuel Manual similarly explains that “[w]hen the selector

switch is placed in the GAS position, the engine will operate in the unleaded gasoline mode.” *Id.*

111. Prior art dual fuel engines typically include a carburetor to mix the fuel with air. *See, e.g.*, EX1012, 1:6-18. A carburetor is a device that supplies an air-fuel mixture to a spark-ignition engine. Although car engines have largely replaced carburetors with fuel injectors to meet emissions standards, many generators still use carburetors. *See, e.g.*, EX1006.

C. Prior Art – Interlock Mechanisms

112. Interlock mechanisms are generally devices that are used for coupling or otherwise connecting and coordinating the function of different components or devices. For example, an interlock commonly encountered in everyday life involves the brake pedal and gear selector in an automobile. The interlock device requires that the brake pedal be depressed by the operator prior to moving the gear selector out of the park position.

113. Interlock systems are found in a variety of appliances and products that are encountered in everyday life. For example, the power supply to a microwave oven’s cooking element is interlocked such that power is interrupted if the door is opened. In other words, power to the cooking element is locked out unless the switch mechanism in the door assembly is in the correct position.

114. Other interlock systems are found in electrical lockout systems, such as a circuit breaker interlock system in an electrical panel that prevents two power sources from being simultaneously engaged. Such systems may be used to ensure safe switching between main and backup power. One example of such an electrical lockout system is provided by Czarnecki (EX1039). Czarnecki teaches a pair of slidable lockouts for switching the configuration of breakers in an electrical panel. Czarnecki teaches lockouts that prohibit incorrect switching of the circuits that supply power from either the electrical grid (“utility side”) or from an auxiliary electrical generator (“generator side”). *Id.*, Abstract.

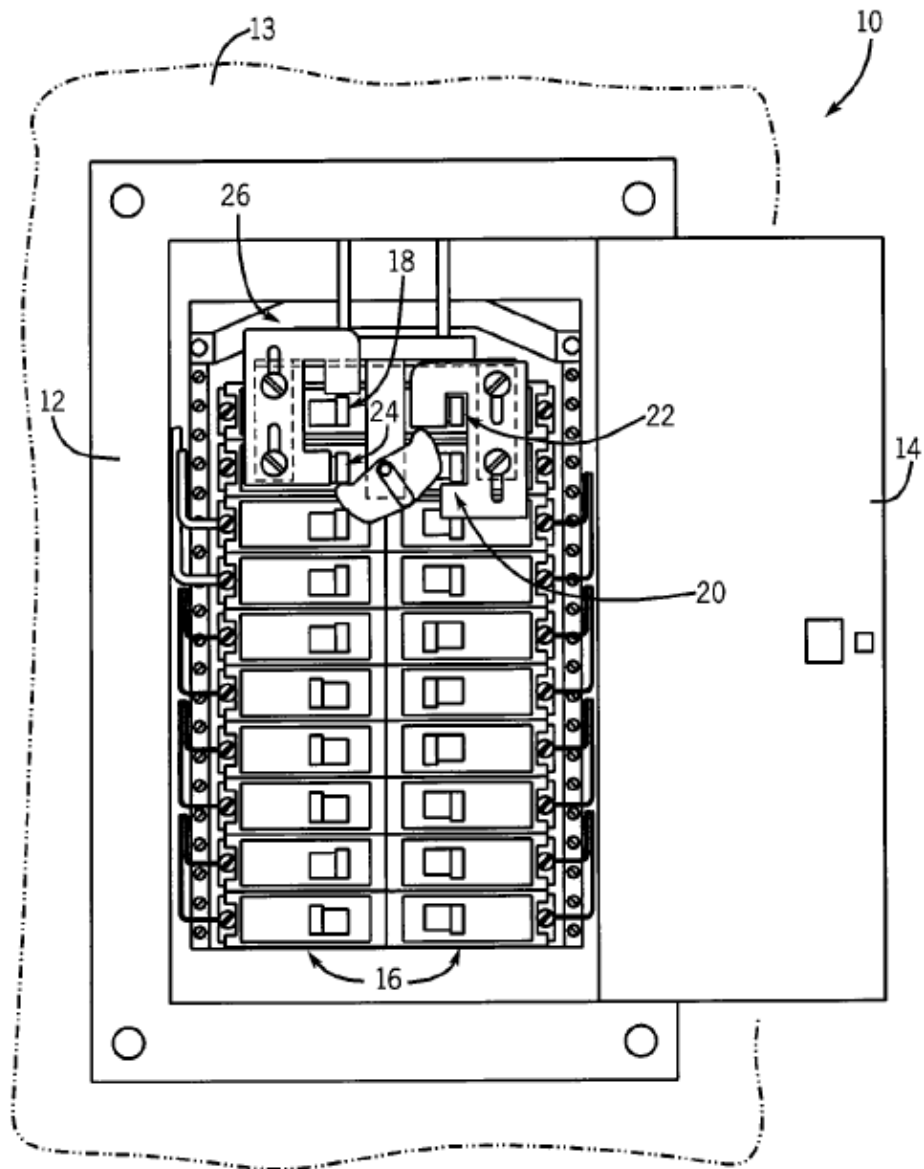


FIG. 1

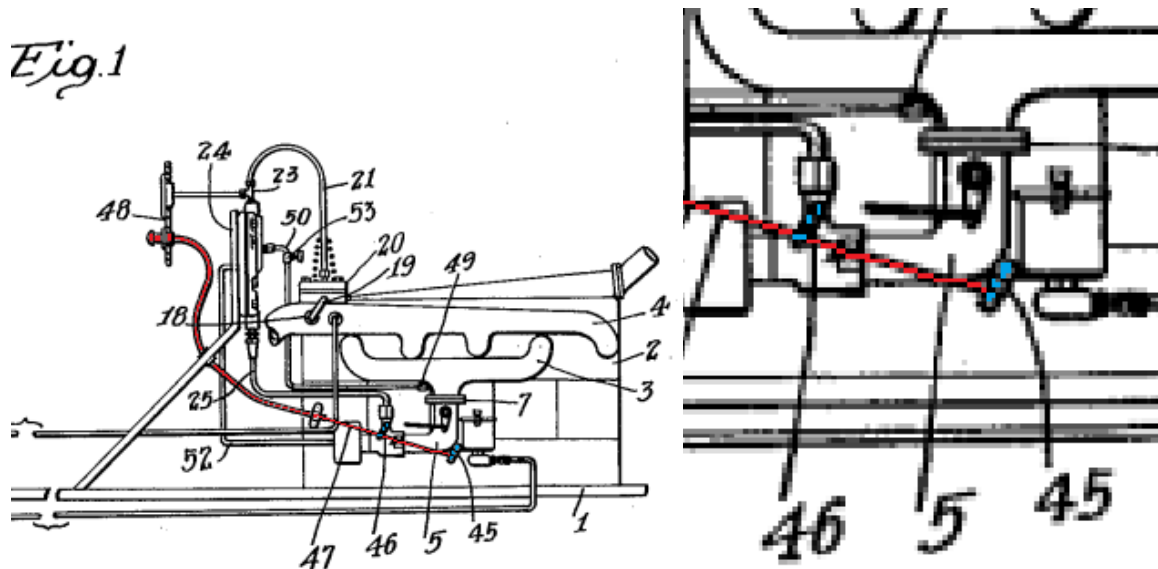
EX1039, FIG. 1.

D. Prior Art – Fuel Selection Mechanisms and Fuel Interlocks

115. The problem that the '896 Patent allegedly solves is the potentially dangerous condition that can occur if two fuels are allowed to mix or are otherwise

delivered to the engine simultaneously. Several solutions existed in the prior art for selecting between different fuel sources. Many of these fuel selection devices known in the art are configured such that only one fuel can be supplied to the engine at any given time. As demonstrated with specific examples herein, prior art fuel systems offered solutions for the specific problem the '896 Patent claims to have solved: the dangerous condition created if two fuels are delivered to the engine simultaneously.

116. Holzapfel is a prior art patent that issued in 1933 related to a dual fuel engine operating alternately on liquid fuel or gaseous fuel. Holzapfel discloses a “fuel system embodying the supply of liquid fuel and gaseous fuel to an engine in alternation at will.” EX1012, 1:1-5. Holzapfel discloses a liquid fuel valve 14 and gaseous fuel valve 39. *Id.*, 1:104-2:2, 2:86-90. Holzapfel discloses a wire 47 (red) coupled to operating levers 45 and 46 (blue), which can simultaneously control and actuate valves 14 and 39 such that only one fuel line is connected at a given time. *Id.*, 2:100-123, FIG. 1. For example, Holzapfel teaches that “[o]perating the rod or wire 47 will reverse the valves 14 and 39 so that the gaseous fuel supply is cut off and the liquid fuel supply connected to feed the carburetor.” *Id.*, 2:120-123.

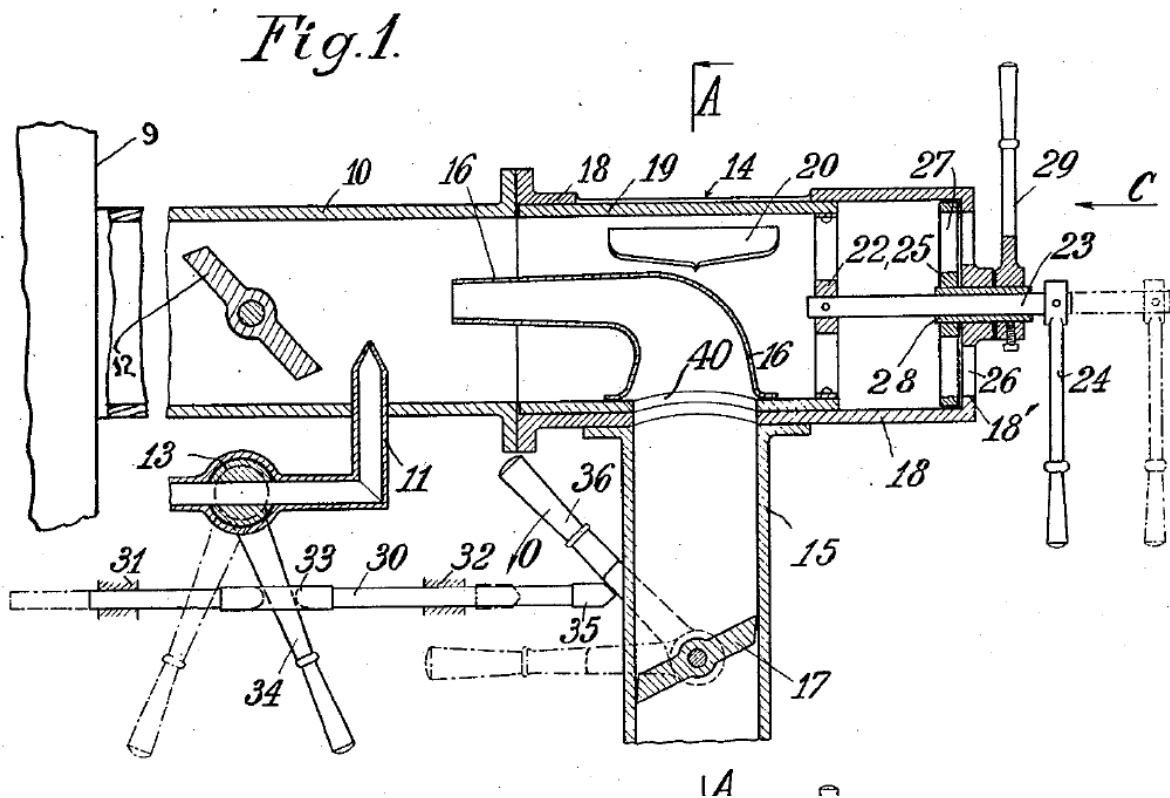


Id., FIG. 1 (annotated).

117. The coupling of the two valves together with the wire is a type of interlock mechanism which constrains the possible configurations of the two separate fuel valves. Thus, Holzapfel teaches a fuel selection system for a dual fuel engine that provides for the selective use of liquid or gaseous fuel and prevents the liquid and gaseous fuels from being delivered to the engine at the same time.

118. Sturm is another prior art patent that issued in 1931 titled “Carburetor for Internal Combustion Engines.” EX1033. Sturm is another example of a dual fuel system for an internal combustion engine; Sturm is “made for the purpose of alternately feeding the motor with gasoline or with a fuel gas.” *Id.*, 1:50-53. Sturm teaches “closing up elements” which may “be connected with each other in such

manner that opening of one of them causes a locking of the other, or vice versa.” *Id.*, 1:66-71. As shown in FIG. 1, reproduced below, Sturm includes a valve for the gaseous fuel feed 17 and a customary cock 13 in the gasoline pipe. Sturm utilizes a shifting rod 30 which interacts with control levers 34 and 36 for the gasoline and gaseous fuels, respectively. *Id.*, 2:42-57.



Id., FIG. 1.

119. Sturm explains that “if the gasoline valve 13 is open the rod locks the control lever 36 and thereby prevents its movement in the direction of the arrow O. Consequently the gas throttle valve 17 must remain in closed position. Only when the gasoline valve 13 of the carburetor is in closed position, can the handle 36 be

free to turn and thus open the gas valve 17.” *Id.*, 2:49-57. Sturm further explains that “[t]his locking device in any well known manner may be so developed as to lock also lever 34 in closed position, so long as lever 36 rests in open position.” *Id.*, 2:58-61. Thus, Sturm teaches another fuel selection system for a dual fuel engine with an [inter]-locking device that would prevent both liquid and gaseous fuels from being delivered to the engine at the same time.

120. In summary, fuel selection mechanisms, including those with interlocking devices, were known for use with dual fuel engines which prevent the simultaneous delivery of alternate fuels to the engine. These interlocking fuel selection mechanisms already solved the same problem that was allegedly solved by the '896 Patent, specifically a fuel selection mechanism that “would prohibit the mixing of two different types of fuels.” EX1001, 1:56-58.

E. Prior Art – Carburetors

121. A carburetor is a device that is generally used to mix air and fuel before it is delivered to the combustion chamber of a spark-ignition engine. The diagram below shows a carburetor’s basic elements.

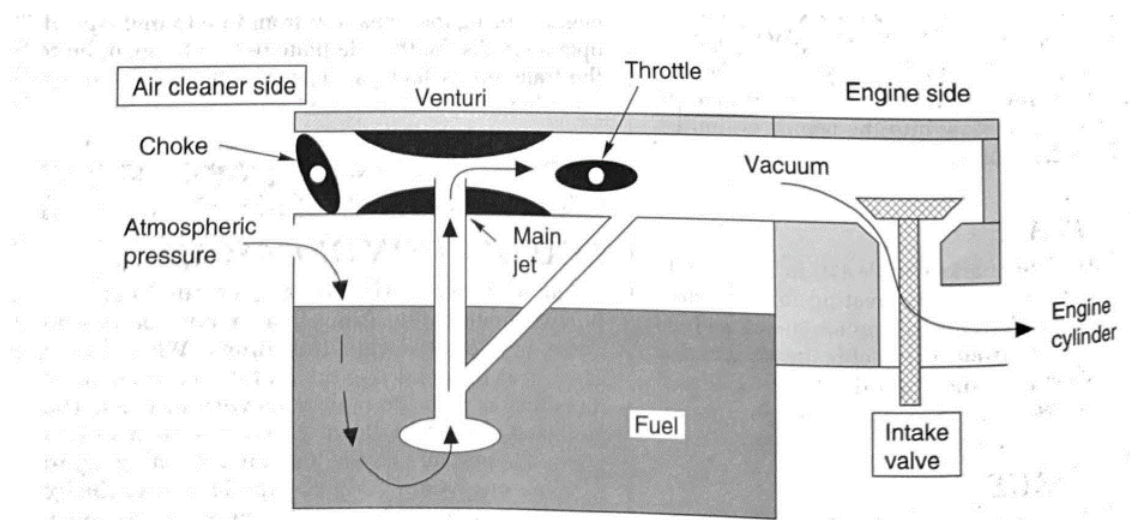


Fig. 4-7 Choke system. (Courtesy of William A. Schuster)

EX1040, 8.

122. A carburetor is a device that is commonly used to control the mixture of fuel and air delivered to an engine. A carburetor induces air flow through a venturi, which comprises a shape that is wider at the ends and narrower in the middle. When air flows through the venturi, the velocity increases and the pressure decreases in the narrow portion (due to the “Venturi effect”), which pulls fuel from the carburetor float bowl/chamber and mixes it with the flowing air. The in-flow of air through the venturi is controlled by the choke, while outflow of the air/fuel mixture to the engine is controlled with the throttle. The choke and throttle allow for the control of the air-fuel ratio and the total amount of air and fuel that flow to the engine.

F. Solenoid Valves and Switches

123. A solenoid valve is a generic type of valve that is used for regulating fluid flow, which is actuated via an electrical circuit, typically controlled through an

electrical switch. A solenoid valve is an electro-mechanical valve which generates a magnetic field when current is passed through a coil. The magnetic field acts on a plunger inside the valve body causing it to move into either an opened or closed position. Solenoid valves are typically configured with a spring device, such that when electrical current is stopped, the spring returns the plunger to its normal position, either opening or closing the valve. Solenoid valves are widely used in a range of fluid control applications, including the control of fuel to internal combustion engines. *See, e.g.*, EX1009, EX1010.

124. Specifically, in carbureted engines, solenoid valves were known in the art and used on the output of the carburetor's fuel reservoir (i.e., float bowl chamber) to cut off the flow of gasoline fuel. Examples of a fuel cut-off solenoid installed on the outlet of a carburetor float bowl are found in Nakafushi and Olmr. EX1009; EX1010.

VII. PRIOR ART USED IN ANTICIPATION AND OBVIOUS ANALYSIS

A. DuroMax

125. One example of a prior art dual fuel generator that uses a dual fuel engine is DuroMax. EX1006. I understand that DuroMax was published/publicly available at least by November 1, 2012, before the filing date of the earliest application to which the '896 Patent claims priority (i.e. Nov. 1, 2013). EX1007,

¶¶3-4. I understand that DuroMax is thus prior art to the '896 Patent under 35 U.S.C. §102(a).

126. DuroMax discloses the XP4400EH dual fuel generator—a dual fuel generator that runs alternatively using gasoline or liquid propane gas (LPG). EX1006, 2. DuroMax discloses that the generator includes a gasoline tank with a gasoline fuel shutoff valve having a valve handle. EX1006, 11-12, 20.

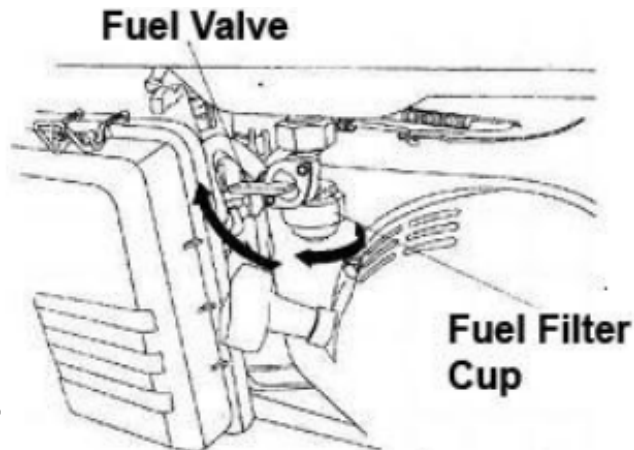


Figure 19 –Removing the Fuel Filter Cup

EX1006, 20.

127. DuroMax further discloses that the generator includes an LPG intake hose to connect to an LPG gas supply. The generator includes a regulator and pressure release valve for providing a regulated LPG fuel supply to the engine. EX1006, 12.

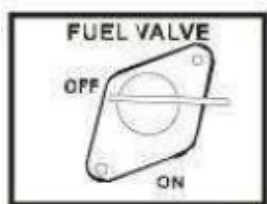


Figure A - Fuel Valve in the "OFF" position



Figure C-Connect Valve



Figure B - Connect the Hose



Figure D -Button on Presssure Release Valve



Figure F - Start with LPG(Liquid Propane Gas)

EX1006, 12.

128. Despite having the capability of operating selectively on two alternative fuel sources, DuroMax relies on the user to configure the fuel supply such that only gasoline or LPG is supplied to the engine at a given time. DuroMax relies on warnings to stress the importance of shutting off each of the fuel sources when switching to use the other fuel:



CAUTION:

**When using gasoline, LPG must be shut off! When using LPG,
gasoline must be shut off!**

EX1006, 11.

B. Fujisawa

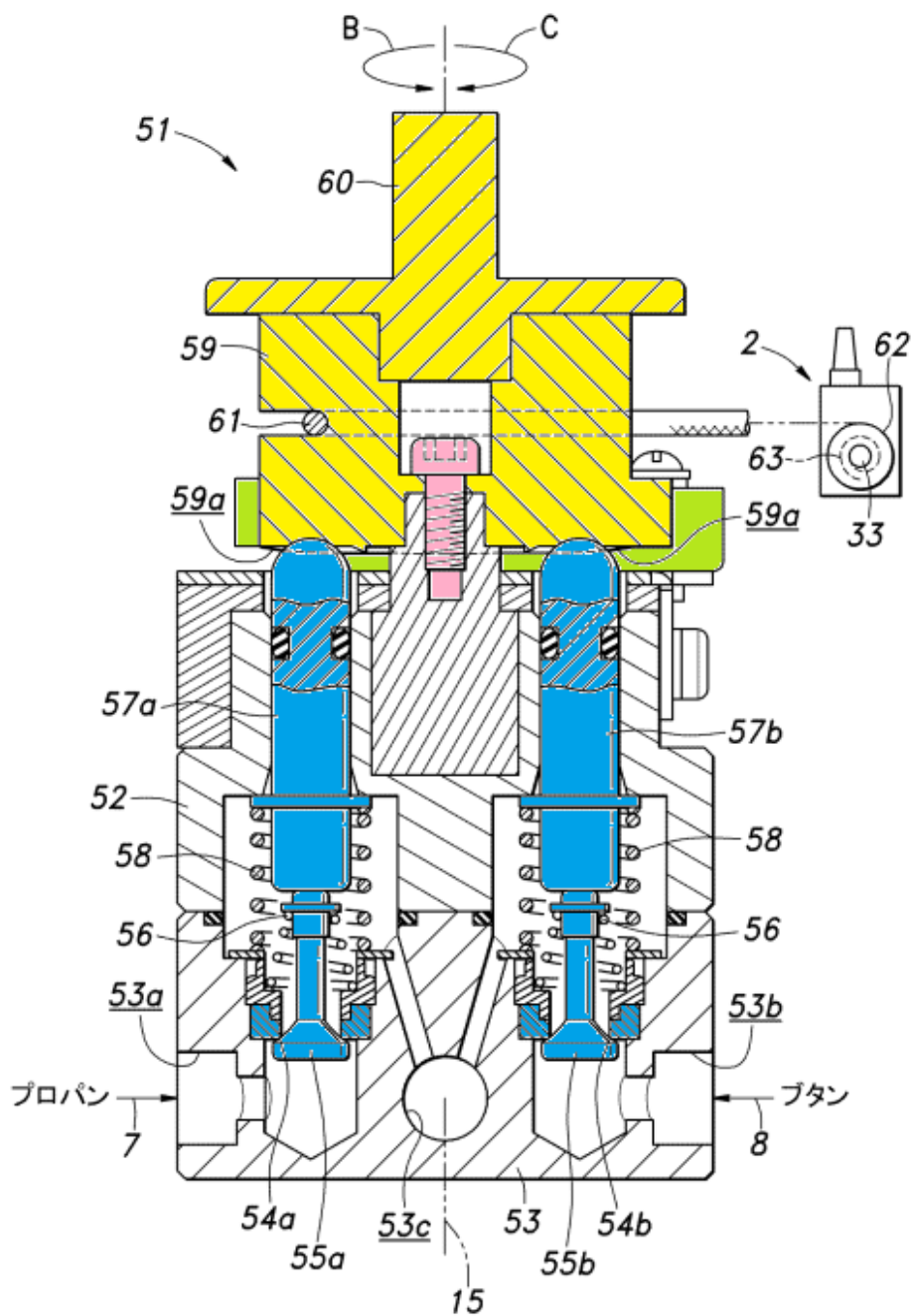
129. Another example of a prior art dual fuel generator is Fujisawa (EX1004 (original), EX1005 (translation)). I understand that Fujisawa was published on December 2, 2005. I understand that Fujisawa is thus prior art to the '896 Patent under 35 U.S.C. §102(a).

130. Fujisawa is directed to a “fuel switching means for switching the fuel supplied to the engine” of a “power generator.” EX1005, ¶¶[0010]-[0012]. Fujisawa teaches that fuel supply switching can involve complicated operation sequences that can be simplified by coupling operational steps. *Id.*, ¶¶[0007]-[0010]. Fujisawa teaches a fuel switching means which is shown as a fuel switching cock 51 in Figure 5. *Id.*, ¶[0031].

131. Fujisawa shows that the fuel switching cock 51 includes a rotary knob 60 and cam body 59 (yellow). Fujisawa explains that cam surface 59a is constructed to selectively control the position of cam followers 57a and 57b to open and close the valves. *Id.*, ¶[0035]. When the knob is turned in one direction, one of the cam followers is pushed in to open one of the fuel valves, and when turned in the other direction, the other fuel valve is opened. *Id.*, ¶¶[0035]-[0039].

132. Fujisawa discloses a valve assembly comprising at least valve seats 54a and 54b, valve bodies 55a and 55b, and cam followers 57a and 57b. *Id.*, ¶[0037]. The cam followers 57a and 57b (blue) are moved up and down by the cam body 59 and rotary knob 60 (yellow) to open and close the valve bodies 55a, 55b (blue). Thus, a POSA would have understood that Fujisawa discloses a dual fuel engine for an electrical generator with a fuel selection mechanism in which only one of the first and second fuel sources can be selected at a given time.

【圖 5】

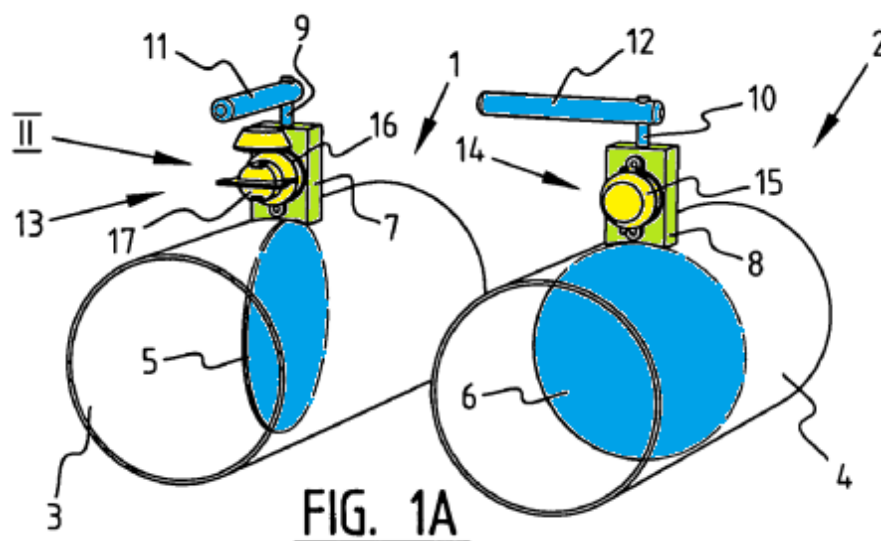


EX1004, FIG. 5 (annotated).

C. DeVries

133. I understand that DeVries issued on January 27, 2009. I understand that DeVries is thus prior art to the '896 Patent under 35 U.S.C. §102(a). DeVries relates to “a safety interlock system for mechanically securing an industrial process or appliance.” EX1011, 1:12-13. DeVries recognizes that many industrial processes or appliances require a specific sequence of operations which can be ensured by means of a number of locks. *Id.*, 1:17-20. DeVries also recognizes that interlock systems were known in the art and that by “providing closing valves with an interlock, undesired operation thereof can be prevented. It is also possible, using the locking mechanism on a number of different closing valves, to ensure a correct, predetermined sequence ... to prevent hazardous situations.” *Id.*, 1:55-60.

134. DeVries teaches an interlocked valve system for fluid conduits (“liquid and/or gas pipelines”) that can be implemented to prevent certain configurations, specifically preventing one or more valves from being on (open) at the same time. EX1011. In a specific embodiment related to two fluid conduits, FIGS. 1A-1C, DeVries discloses a valve assembly comprising at least valves 5 and 6, rotation shafts 9 and 10, and valve handles 11 and 12 (blue).



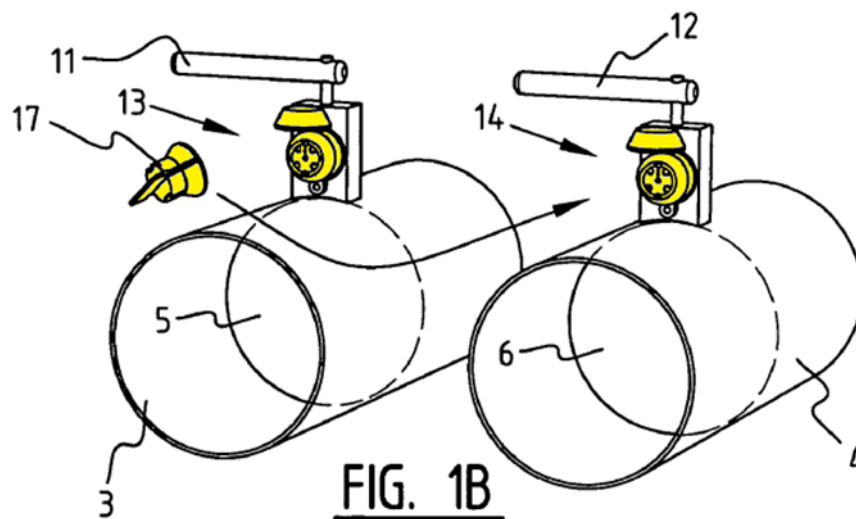
Id., FIG. 1A (annotated).

135. DeVries discloses that valves 5 and 6 are “mounted rotatably on pipeline[s] 3 [and 4]” through supports 7 and 8 and rotation shafts 9 and 10. *Id.*, 5:27-39. DeVries further teaches that discloses that valves 5 and 6 are “operated manually” using handles 11 and 12. *Id.*

136. DeVries discloses that the interlocked valve system is comprised of a left-hand and right-hand safety system 13 and 14 and a key 17 (yellow), as illustrated in FIG. 1B. DeVries discloses that the safety systems can be used to lock/unlock the valves in either their opened or closed position. *Id.*, 5:63-6:4. When no key is inserted, both the left-hand valve and the right-hand valve are locked in the closed position. *Id.* 5:45-48. In the specific embodiment, DeVries explains that when the key is inserted into the left-hand safety device, the left-hand valve is unlocked and

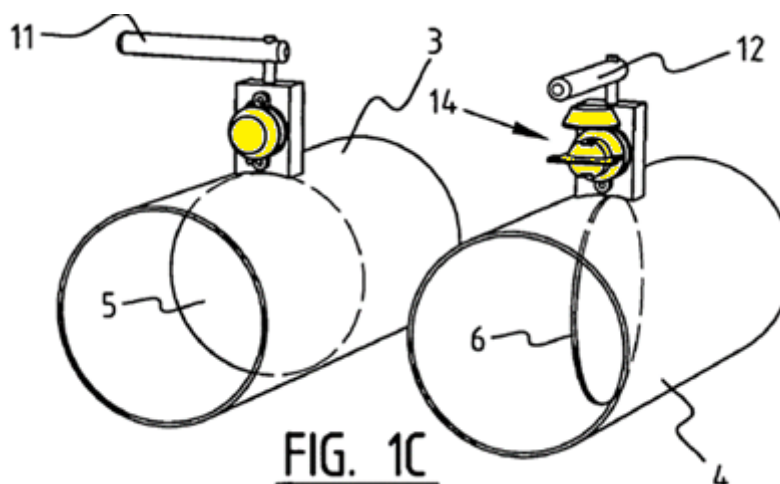
the handle can be rotated and the left-hand valve can be opened or closed, as shown in FIG. 1A. *Id.*, 5:48-54.

137. DeVries teaches that only after the left-hand safety system valve 5 is locked in the closed position, is the key able to be removed from the left-hand safety system, as shown in FIG. 1B. *Id.*, 5:63-6:4.



Id., FIG. 1B (annotated).

138. Finally, DeVries teaches that the same key 17 can be used to unlock the second safety system, making it possible to operate (open) the right-hand valve 6 by operating the handle 12, as shown in FIG. 1C, reproduced below. *Id.*, 5:53-55.



Id., FIG. 1C (annotated).

139. A POSA would have understood that DeVries teaches a valve interlocking system that can be used with liquid and gas fluid pipelines to ensure operation in a predetermined sequence to prevent undesired and potentially hazardous situations. A POSA would have understood that moving the locking device (key) from a first position to a second position allows for the selective opening and/or closing of interlocked valves. As illustrated with the specific example above, DeVries teaches an interlocking valve system for two valve assemblies on two fluid conduits, wherein an interlock device is used to prevent dangerous situations, “for instance by opening valve 6 before valve 5 is closed, whereby undesired or even dangerous situations could result.” *Id.*, 5:60-62. Further, as described in DeVries, a POSA would have understood that interlock systems for

controlling the safe sequence of operations, including fluid valve and conduit systems, were well known in industrial processes and appliances.

D. Nakafushi

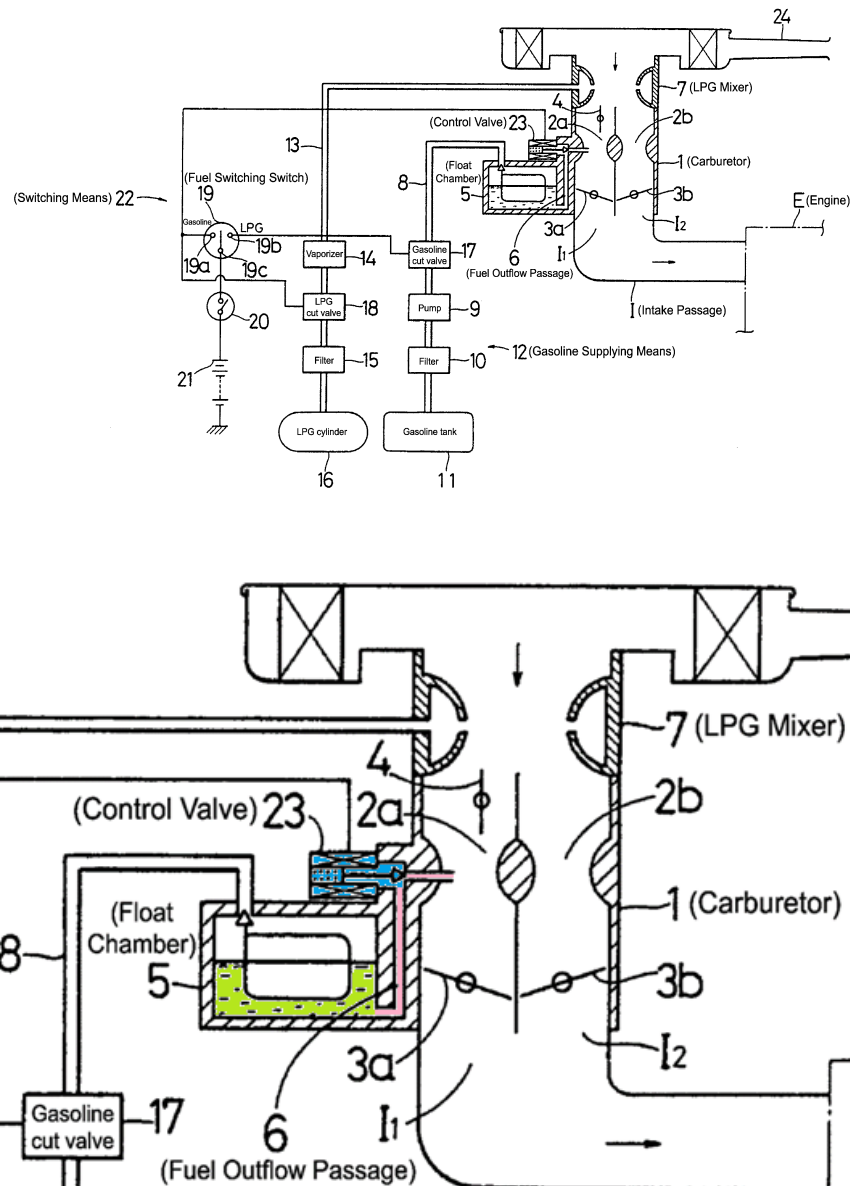
140. Nakafushi (EX1008 (original); EX1009 (certified translation)) relates to a “gasoline-LPG combined engine configured to selectively use gasoline or LPG as a fuel.” EX1009, ¶[0001]. I understand that Nakafushi was published on December 13, 1986. I understand that Nakafushi is thus prior art to the ’896 Patent under 35 U.S.C. §102(a).

141. Nakafushi identifies two problems associated with dual fuel engines, specifically when transitioning between fuel sources with carbureted engines, that are solved by the present invention. First, Nakafushi identifies that when an engine operating on gasoline is switched to LPG, a residual amount of gasoline fuel remains in the carburetor and is sucked into the engine and mixed with the LPG fuel and air, thus resulting in over-rich air-to-fuel ratio. *Id.*, ¶¶[0003]-[0004]. Second, because the residual gasoline is drained from carburetor during this switching operation, when the engine is switched back to gasoline fuel mode, gasoline delivery is delayed until the level of gasoline in the carburetor float chamber recovers. *Id.*, ¶[0004]. During this delay, the air-to-fuel ratio becomes over-lean. *Id.*

142. Nakafushi solves these problems by including a control valve 23 (blue) configured to allow or block the suctioning of gasoline from the float chamber

(green) to the carburetor intake passage (pink). Nakafushi explains that the control valve is configured to operate when the LPG fuel supply is selected by the switching means. *Id.*, ¶[0007]. The control valve 23 is illustrated in FIG. 1 where it is positioned between the carburetor float bowl and the intake passage I to the engine E.

FIG. 1



EX1009, FIG. 1 (annotated).

143. In general, Nakafushi includes separate cut valves for the gasoline and the LPG fuel supplies, in addition to the control valve in the carburetor, all of which are controlled by a single electrical switch. Specifically, Nakafushi discloses a carburetor 1 through which gasoline in a gasoline tank 11 flows. EX1009, ¶[0012]. Gasoline cut valve 17 opens and closes the gasoline flow to the carburetor 1. *Id.*, ¶[0013]. Control valve 23 is positioned within the carburetor 1 and controls the gasoline flow from the carburetor to the engine. *Id.*, ¶[0014]. Separately, LPG is stored in cylinder 16 and the flow of LPG is controlled by LPG cut valve 18. *Id.*, ¶[0013].

144. Nakafushi discloses a fuel switching switch 19 that controls which fuel, gasoline or LPG, is fed to the engine. *Id.*, ¶¶[0013]-[0014]. When switch 19 is set to the gasoline side contact 19a: (1) a cut signal is sent to the LPG cut valve 18 to block the flow of LPG; (2) gasoline cut valve 17 opens to allow the flow of gasoline from the gasoline tank 11 to the carburetor; and (3) control valve 23 in the carburetor opens to allow gasoline to flow from the carburetor float chamber to the engine. *Id.*

145. Conversely, when the switch 19 is set to the LPG side contact 19b: (1) a cut signal is sent to the gasoline cut valve 17 to block the flow of gasoline from tank 11 to the carburetor; (2) control valve 23 is closed, thereby blocking gasoline flow from the carburetor float chamber to the engine; and (3) the LPG cut valve 18 is opened, allowing LPG to flow to the engine. *Id.*

146. Closing control valve 23 in the carburetor prevents residual gasoline from the carburetor from flowing to the engine when switching from gasoline to LPG operation. *Id.*, ¶[0014], FIG. 1. Conversely, because the control valve 23 stops the flow of fuel from the carburetor when switching to LPG, the float chamber remains full of gasoline which is then more readily available to flow to the engine upon switching back from LPG to gasoline operation. *Id.*

147. A POSA would have understood that Nakafushi teaches a dual fuel engine capable of operating selectively on either a gaseous fuel (LPG) or a liquid fuel (gasoline). Nakafushi teaches a single fuel switching switch that controls fuel cut valves to selectively supply one of two possible fuels. Nakafushi is configured such that only one fuel can be provided to the engine at a given time and prevents the mixing of fuels. Nakafushi utilizes a control valve in the carburetor to prevent mixing of fuels and to prevent undesirable too-rich or too-lean operating conditions when transitioning between fuel sources.

E. Olmr

148. Olmr (EX1010) was filed on June 16, 1993, and issued on April 12, 1994. I understand that Olmr is thus prior art to the '896 Patent under 35 U.S.C. §102(a). Olmr relates to internal combustion engines and more particularly to mechanisms for stopping the flow of fuel when the engine is stopped in carbureted engines. EX1010, 1:6-12.

149. Olmr teaches a mechanism for cutting off fuel when the engine is stopped which prevents unburnt fuel from being expelled from the engine. *Id.* 1:33-37. Olmr accomplishes this by placing a solenoid valve in the fuel line between the fuel supply and the engine cylinder, preferably in the bowl of the carburetor. *Id.*, 1:39-41.

VIII. GROUND 1: CLAIMS 7-11, 14-20 AND 30-35 ARE UNPATENTABLE AS OBVIOUS OVER DUROMAX IN VIEW OF DEVRIES

A. Motivation to Combine DuroMax and DeVries

150. As explained herein, a POSA would have been motivated to combine DuroMax and DeVries because of the performance and safety benefits it would provide. DuroMax discloses a dual fuel generator configured to operate using either one of an LPG fuel supply or a gasoline fuel supply. *Supra* Section VII.A. DuroMax includes a gasoline fuel supply with a fuel valve that either blocks gasoline from being fed to the engine when it is configured to run on LPG fuel or allows the flow of gasoline to the engine when configured to run on gasoline fuel. EX1006, 11-12.

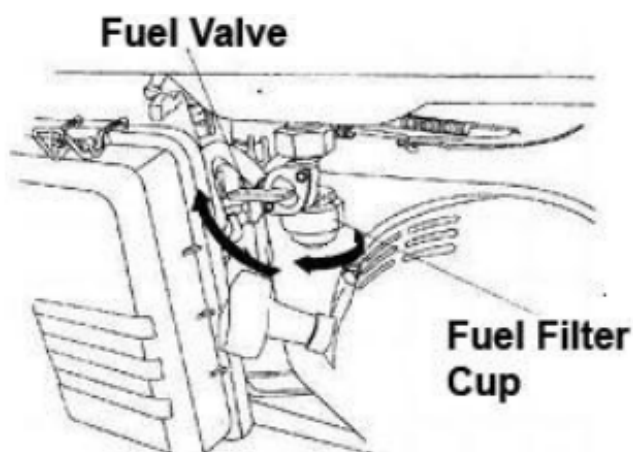


Figure 19 –Removing the Fuel Filter Cup

Id., 20.

151. DuroMax also includes an inlet for LPG fuel which includes a connector for a propane gas supply, which connects an external LPG tank to provide gaseous fuel to the engine when configured to operate on LPG fuel. When operating in LPG mode, the gasoline fuel valve is intended to be in the OFF position such that only one fuel is provided at a time. *Id.*, 11-12.

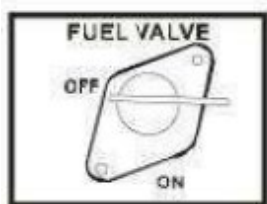


Figure A - Fuel Valve in the "OFF" position



Figure C-Connect Valve



Figure B - Connect the Hose



Figure D -Button on Presssure Release Valve



Figure F - Start with LPG(Liquid Propane Gas)

Id., 12.

152. Although DuroMax is designed to operate using either gasoline fuel or LPG fuel, DuroMax is not intended to run on both fuels simultaneously and consequently, DuroMax provides cautionary warnings in the manual instructing the user that they need to shut off LPG when using gasoline and conversely, shut off gasoline when using LPG. *Id.*, 11-12. In other words, a POSA would have understood that DuroMax relied on the operator to configure the fuel system

according to the instructions to prevent a warned-against scenario where both fuels are supplied to the engine at the same time.

 **CAUTION:**
**When using gasoline, LPG must be shut off! When using LPG,
gasoline must be shut off!**

Id., 11.

153. The '896 Patent provides some background on “typical” prior art generators, explaining that “dual fuel generators utilize separate valves for each fuel type, such as an LPG valve and a gasoline valve, to control flow of the respective fuels to the engine.” EX1001, 1:47-50. The '896 Patent further provides that with “typical” prior art dual fuel generators, “there is nothing to prevent both valves from being ‘on’ at the same time. As such, it is possible for both valves to be in the ‘on’ position, which can lead to a potentially unsafe condition resulting from the mixture of the fuels.” *Id.*, 1:50-55.

154. DeVries teaches an interlocking safety system that functions to interlock fluid valves in industrial processes and appliances, such that they can only be operated in a specific order. EX1011, Abstract. DeVries notes that industrial processes require a specific sequence of operations to function as intended and to function safely. *Id.*, 1:17-20. DeVries explains that valve assemblies often require a “correct, predetermined sequence of closing or opening of the closing valves, for instance so as to prevent hazardous situations.” *Id.*, 1:55-60. DeVries teaches an

arrangement of fluid valves and conduits assembled in a pair with a “safety interlock system” to prevent “undesired or even dangerous situations” by ensuring correct order of operations. *Id.*, 5:58-62, 10:53-55. Specifically, DeVries discloses a configuration of the “safety interlock system” where only one of the valves in the valve assembly can be positioned in the opened position at a given time. *Id.*, 5:41-63. A POSA would have understood that the safety interlock system of DeVries could be configured in many different arrangements requiring many different sequences. *Id.*, 2:22-26 (discussing how interlock systems “are supplied independently of the process or appliance to be controlled”). Likewise, a POSA would have understood that DeVries could be configured such that valves are locked in the normally open position or the normally closed position. A POSA would have also understood from the embodiment explicitly taught by DeVries, that it could be implemented on a two-conduit system, using two valve assemblies interlocked to selectively supply one of two fluids to the system at a given time.

155. Trapped key interlock systems such as DeVries have been used for over 100 years to reduce human error when performing sequential operations on machinery. EX1029; EX1030 at [0:13]. Prior to 2013, trapped key interlocks were widely used in “virtually every industry” in Europe and were required by law in the United Kingdom for certain applications. EX1029; EX1030, [0:26], [1:09], [2:57].

Statistics demonstrate that trapped key interlocks reduce injuries from human error during machine operation. EX1029; EX1030 at [0:49]-[1:24].

156. A POSA would have been motivated to implement the valve assembly and safety interlock of DeVries into the dual fuel generator of DuroMax to prevent the undesired and potentially dangerous condition of supplying both fuels to the generator simultaneously. Replacing the gasoline fuel shutoff valve of DuroMax with a first valve of DeVries and adding a second fuel valve of DeVries in the LPG conduit of DuroMax would prevent a scenario where both fuels are supplied to the engine simultaneously by only allowing one valve to be open at a given time. A POSA would have understood that this would eliminate a potentially dangerous condition where operator error and/or ignorance of proper procedures leads to a user connecting the LPG supply while leaving the gasoline supply valve in the on position. As DeVries explicitly teaches, interlock systems were an engineering tool used to eliminate/reduce the potential for user error, and a POSA would have been motivated to implement that system on the fuel conduits of DuroMax to ensure that it is operated as intended and make it impossible to supply both fuels at once.

B. Reasonable Expectation of Success in Combining DuroMax and DeVries

157. A POSA would have had a reasonable expectation of success in implementing the DeVries safety system in the fuel supply conduits of the DuroMax

dual fuel generator. DeVries notes that the interlocked safety system can be used to control the flow of gaseous or liquid fluids in industrial processes and appliances. EX1011, 5:25-6:23. A POSA would have understood that the conduits and valve systems used in industrial processes and appliances would handle gaseous and liquid fuels, such as those used in the DuroMax dual fuel generator. DeVries teaches that the valve and interlock assembly can be used in many applications and DeVries does not put any constraints on the types or characteristics of the fluids which its valve system can handle. Accordingly, a POSA would have understood the valve and interlock assembly of DeVries was configured and designed to function in appliances like the dual fuel generator of DuroMax.

C. Claim 7

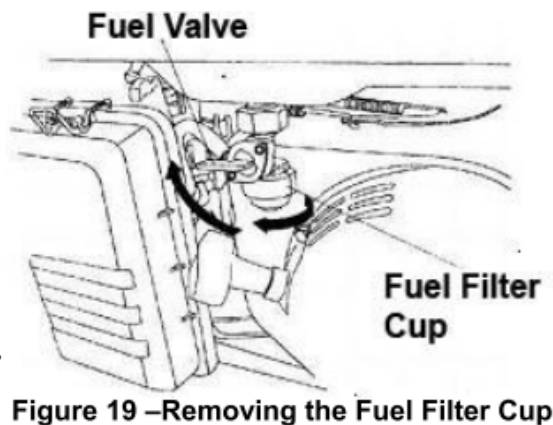
[7.0] A fuel selector for use with a dual fuel generator, the fuel selector comprising:

158. The combination of DuroMax and DeVries renders claim element [7.0] obvious. DeVries teaches an interlocked valve system which allows the user to selectively supply either one of two fluids flowing through two separate conduits. DuroMax teaches a dual fuel generator with a combustion engine configured to operate on either gasoline or LPG fuel. A POSA would have understood that adding the interlocked valve system of DeVries to the fuel supply conduits of DuroMax would prevent unintended and potentially unsafe operating conditions, specifically,

eliminating the chance of operator error resulting in both fuels being supplied simultaneously.

[7.1] a valve assembly fluidly couplable to each of a first fuel source and a second fuel source and operable to selectively control a first fuel flow and a second fuel flow from the first fuel source and the second fuel source, respectively, to an engine of the dual fuel generator, the valve assembly comprising:

159. The combination of DuroMax and DeVries renders claim element [7.1] obvious. DuroMax describes a dual fuel generator which is fluidly couplable to a first fuel source and a second fuel source. DuroMax teaches that the generator is configured to operate on either gasoline fuel or LPG fuel and includes an LPG supply connection and a gasoline supply which includes a shutoff valve. EX1006, 11-12, 20.



EX1006, 12, 20.

160. DeVries teaches a valve assembly that includes two valves (5, 6), rotation shafts (9, 10), and valve handles (11, 12). EX1011, 5:27-39. A POSA would

have understood from the teachings of DeVries that the valves depicted are “butterfly” type valves which are a type of mechanical valve. *Id.*, FIGS. 1A-1C. Butterfly valves, such as shown in DeVries, are typically configured with a quarter-turn rotary disk; the rotatable disk in a butterfly valve rotates from open to closed positions to either allow or block fluid flow. DeVries teaches that the valve assembly is fluidly connected to two fluid conduits, “liquid and/or gas” pipelines. *Id.*, 5:25-27.

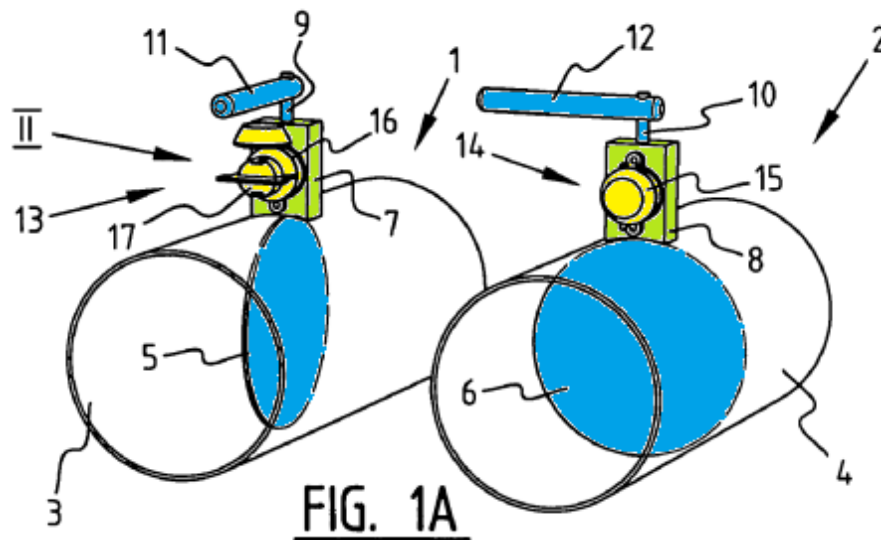
161. A POSA would have been motivated to combine the valve interlock system of DeVries with the DuroMax generator fuel system such that the interlocked valve assembly selectively supplies gasoline or LPG fuel to the engine. *Supra* Section VIII.A. Specifically, a POSA would have been motivated to route the LPG conduit of DuroMax through one of the valves of the valve assembly of DeVries and the substitute the gasoline fuel valve of DuroMax with the other valve in the DeVries valve assembly. *Supra* Section VIII.A. This would result in an interlocked valve assembly where the DeVries two-conduit, two-valve assembly would allow for the selective supply of either the first fuel flow or the second fuel flow to the dual-fuel DuroMax generator.

[7.2] a first mechanical fuel valve having open and closed positions to selectively control the first fuel flow to the engine; and

a second mechanical fuel valve having open and closed positions to selectively control the second fuel flow to the engine; and

162. The combination of DuroMax and DeVries renders claim element [7.2] obvious. DeVries teaches a valve assembly comprising two mechanical butterfly valves with open and closed positions. *Supra* Section VIII.C, Element [7.1]. When implemented with the DuroMax fuel system, the DeVries valve assembly would include a first mechanical fuel valve and a second mechanical fuel valve. DeVries teaches that the valve rotation shafts “can be operated manually using a handle....” EX1011, 5:32-33. Accordingly, a POSA would have understood that the butterfly valves of DeVries are non-solenoid, mechanical valves that are manually operated by a user by rotating the handle, shaft, and valve.

163. A POSA would have been motivated to implement the valve interlock system of DeVries with the dual fuel generator of DuroMax such that the two valves selectively control the flow of the first fuel source and the second fuel source to the engine of the dual fuel generator. *Supra* Section VIII.A.



Id., FIG. 1A (annotated).

[7.3] a selector switch movable with respect to the valve assembly to allow a user to manually select the first fuel flow or the second fuel flow.

164. The combination of DuroMax and DeVries renders claim element [7.3] obvious. DeVries teaches a keyed safety system including a “selector switch” which is comprised of safety systems 13 and 14 and a key 17. EX1011, 5:45-47. Key 17 is movable with respect to the valve assembly. *Id.*, 5:45-62. By interlocking the two fluid valves such that only one can be in the ON position at a given time, the selector switch allows the user to manually select which one of the two valves can be opened (i.e., selecting which fluid fuel is supplied to the engine) by moving the key 17. *Id.*, 5:32-39, 7:36-39. A POSA would have understood that the interlocked valve system of DeVries allows the user to manually select one of two flows because DeVries explicitly teaches interlocked valve handles which can be used to open and close the valves after the key 17 is inserted into one of the safety systems 13, 14. *Id.*, 5:41-6:4.

165. A POSA would have been motivated to implement the selector switch of DeVries in the dual fuel generator of DuroMax because it would prevent the potential for operator error during fuel selection and would require that the fuel conduits are only opened and closed in the intended configurations by requiring the correct order of operations. *Supra* Section VIII.A.

D. Claim 8

[8] The fuel selector of claim 7 wherein the selector switch provides for manual actuation of the first fuel valve and the second fuel valve between the open and closed positions.

166. The combination of DuroMax and DeVries renders claim 8 obvious. DeVries describes that the valve assemblies “can be operated manually using a handle....” EX1011, 5:32-33. A POSA would have understood that the mechanical butterfly valves of DeVries are rotatable between open and closed positions. Implemented with the dual fuel generator of DuroMax, the DeVries selector switch provides for the manual actuation of the first and second fuel valves by selectively unlocking only one of the two valve rotation shafts. *Id.*, 5:41-64.

E. Claim 9

[9] The fuel selector of claim 8 further comprising:

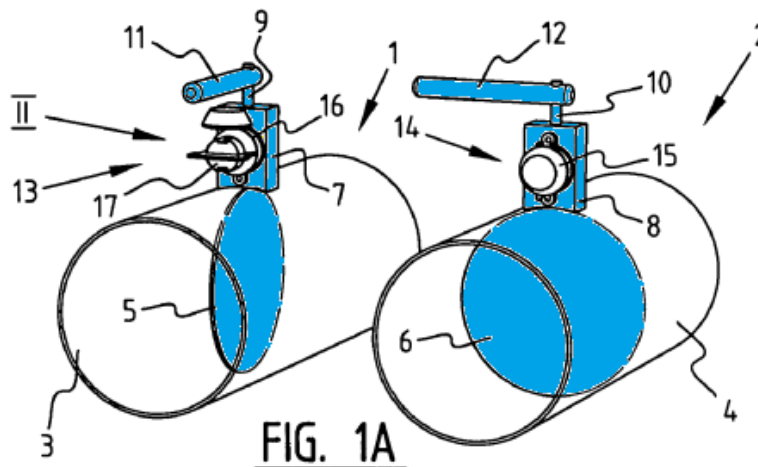
a first valve handle coupled to the first fuel valve and actuatable between an ON position and an OFF position to selectively actuate the first fuel valve between the open position and the closed position, respectively; and

a second valve handle coupled to the second fuel valve and actuatable between an ON position and an OFF position to selectively actuate the second fuel valve between the open position and the closed position, respectively;

wherein the selector switch is positioned relative to the first and second valve handles so as to provide for only one of the first and second valve handles to be in the ON position at a given time.

167. The combination of DuroMax and DeVries renders claim 9 obvious. DeVries teaches a first valve handle 11 coupled to a first fuel valve 5 which is actuatable between an ON position (parallel to conduit, left handle in FIG. 1A) and an OFF position (perpendicular to conduit, right handle in FIG. 1A) to selectively open and close the first valve. *Id.*, 5:41-64.

168. DeVries teaches a second valve handle 12 coupled to a second fuel valve 6 and which is actuatable between an ON position (parallel to conduit, left handle in FIG. 1A) and an OFF position (perpendicular to conduit, right handle in FIG. 1A) to selectively open and close the second valve. *Id.*



Id., FIG. 1A (annotated).

169. The selector switch of DeVries includes the safety systems 13 and 14 and the key 17 which are positioned on supports 7 and 8 adjacent to the valve handles and rotation shafts. *Id.*, 5:33-39. A POSA would have understood that because the single key 17 cannot be removed from a safety system unless the corresponding valve handle is in the OFF position, only one valve handle can be manually actuated and moved to the ON position at any given time. *Id.*, 5:63-6:4.

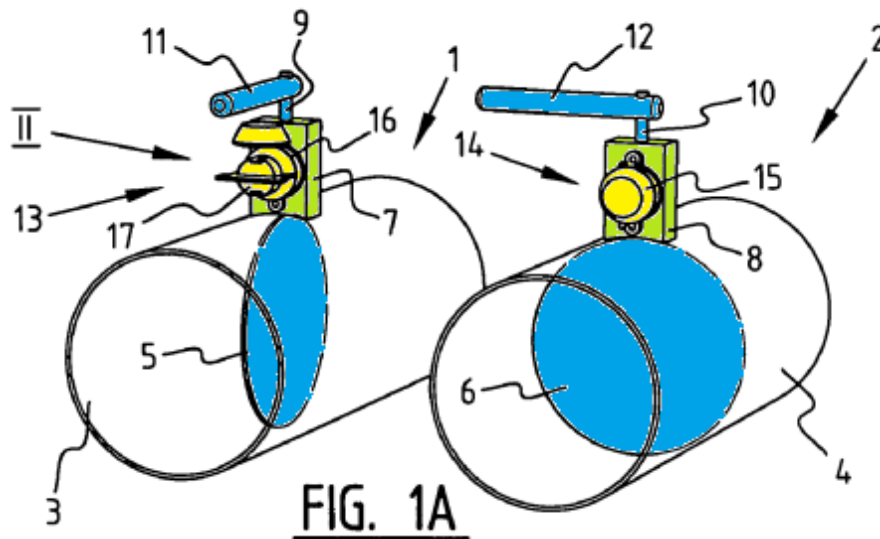
F. Claim 10

[10] The fuel selector of claim 9 further comprising a selector plate positioned adjacent to the first and second valve handles;

wherein the selector switch is coupled to the selector plate so as to be movable between a first position and a second position, with movement of the selector switch between the first and second positions enabling positioning of only one of the first and second valve handles in the ON position at a given time.

170. The combination of DuroMax and DeVries renders claim 10 obvious. DeVries describes a selector plate comprised of supports 7 and 8 (green) which are positioned adjacent to valve handles and valve rotation shafts (blue), wherein the selector switch comprised of safety systems 13 and 14 and key 17 (yellow) is coupled to the selector plate. EX1011, 5:31-39. The key of the selector switch is movable from a first position (engaged with safety system 13) and a second position (engaged with safety system 14). *Id.*, 5:63-6:4. Because the valve handles can only

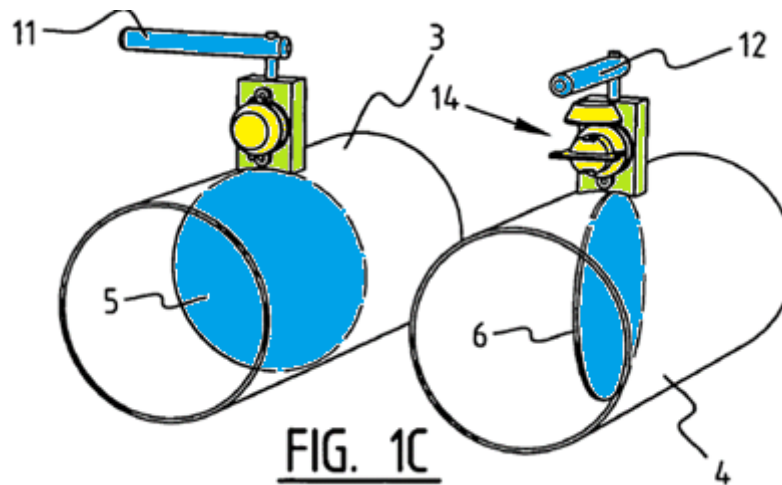
13. When the selector switch is in the first position, rotation shaft 9 is unlocked such that (first) valve handle 11 is actuatable between the ON and OFF positions. *Id.*, 7:36-39. Rotation shaft 10 is locked with (second) valve handle 12 in the OFF position. *Id.* With the key installed on safety system 13 (and not installed on safety system 14), the (second) valve handle 12 is prohibited from being in the ON position and is locked in the OFF position because the selector switch is in the first position. *Id.*, 5:41-52.



Id., FIG. 1A (annotated).

172. FIG. 1C depicts the selector switch in the second position, on safety system 14. A POSA would have understood that moving the selector switch from the first position to the second position would first require that the first valve assembly be rotated to the OFF position. When the selector switch is in the second position, rotation shaft 10 is unlocked such that the (second) valve handle 12 is

actuatable between the ON and OFF positions. *Id.*, 7:36-39. When the selector switch is in the second position, shaft 9 and valve handle 11 are locked in the OFF position. *Id.* With the key installed on safety system 14 (and not installed on safety system 13), the (first) valve handle 11 is prohibited from being in the ON position and is locked in the OFF position because the selector switch is in the second position. *Id.*, 5:52-58.



Id., FIG. 1C (annotated).

H. Claim 14

[14] The fuel selector of claim 7 wherein:

the first fuel valve is couplable to a liquefied petroleum gas (LPG) fuel source; and

the second fuel valve is couplable to a gasoline source.

173. The combination of DuroMax and DeVries renders claim 14 obvious. DeVries teaches that the conduits and valve assemblies are used with fluids,

generally, “liquid and/or gas.” *Id.*, 5:25-27. DuroMax teaches that its dual fuel generator is configured to selectively run on either “LPG or Gasoline.” EX1006, 2. A POSA would have been motivated to implement the interlocked valve assembly of DeVries with the DuroMax fuel system to eliminate the potential for user error and to prevent undesirable and potentially hazardous operating conditions, and a POSA would have had a reasonable expectation of success in doing so. *Supra* Section VIII.A-B. The combination would have resulted in a configuration where the first fuel valve is attached to an LPG fuel supply and the second fuel valve is attached to a gasoline fuel supply.

I. Claim 15

[15.0] A fuel selector for use with a dual fuel generator, the fuel selector comprising:

[15.1] a valve assembly fluidly couplable to each of a first fuel source and a second fuel source and operable to selectively control a first fuel flow and a second fuel flow from the first fuel source and the second fuel source, respectively, to an engine of the dual fuel generator, the valve assembly comprising:

[15.2] a first fuel valve having open and closed positions to selectively control the first fuel flow to the engine; and

a second fuel valve having open and closed positions to selectively control the second fuel flow to the engine; and

174. The combination of DuroMax and DeVries renders claim elements [15.0]-[15.2] obvious. *Supra* Section VIII.C, Elements [7.0]-[7.2].

[15.3] at least one valve handle mechanically coupled to the first fuel valve and the second fuel valve to selectively open and close the first fuel valve and the second fuel valve responsive to actuation thereof so as to enable the first fuel flow to the engine or the second fuel flow to the engine.

175. DeVries discloses a valve assembly comprising two butterfly valves, each of which includes a valve handle to adjust the position of the valve. EX1011, 5:25-39. Each valve handle is mechanically coupled to the respective valve through a rotation shaft to selectively open and close each of the first fuel valve and the second fuel valve. *Id.* Rotating the valve handle causes the butterfly valve to rotate between open and closed positions, thus enabling the corresponding fuel flow to the engine. *Id.*

176. A POSA would have been motivated to implement the interlocked valve assembly of DeVries, including valve handles 11 and 12, with the DuroMax fuel system to eliminate the potential for user error and to prevent undesirable and potentially hazardous operating conditions, and a POSA would have had a reasonable expectation of success in doing so. *Supra* Section VIII.A-B.

J. Claim 16

[16] The fuel selector of claim 15 wherein the at least one valve handle enables only one of the first and second fuel flows to the engine at a given time.

177. The combination of DuroMax and DeVries renders claim 16 obvious. As explained above, DeVries discloses that valve handles 11, 12 are a part of an

interlock system that enables only one of the first and second fuel flows to the engine at a given time. *Supra* Section VIII.E.

K. Claims 17-18

[17] The fuel selector of claim 15 wherein the at least one valve handle comprises:

a first valve handle coupled to the first fuel valve and actuatable between an ON position and an OFF position to selectively actuate the first fuel valve between the open position and the closed position, respectively; and

a second valve handle coupled to the second fuel valve and actuatable between an ON position and an OFF position to selectively actuate the second fuel valve between the open position and the closed position, respectively.

[18] The fuel selector of claim 17 further comprising a selector switch positioned relative to the first and second valve handles so as to provide for only one of the first and second valve handles to be in the ON position at a given time.

178. The combination of DuroMax and DeVries renders claims 17-18 obvious. *Supra* Section VIII.E.

L. Claim 19

[19] The fuel selector of claim 18 further comprising a selector plate positioned adjacent to the first and second valve handles;

wherein the selector switch is coupled to the selector plate so as to be movable between a first position to a second position, with movement of the selector switch between the first and second positions enabling positioning of only one of the first and the second valve handles in the ON position at a given time.

179. The combination of DuroMax and DeVries renders claim 19 obvious.

Supra Section VIII.F.

M. Claim 20

[20] The fuel selector of claim 19 wherein:

when the selector switch is in the first position, the first valve handle is actuatable between the ON position and the OFF position, and the second valve handle is prohibited from being in the ON position; and

when the selector switch is in the second position, the first valve handle is prohibited from being in the ON position, and the second valve handle is actuatable between the ON position and the OFF position.

180. The combination of DuroMax and DeVries renders claim 20 obvious.

Supra Section VIII.G.

N. Claim 30

[30.0] A fuel selector for use with a dual fuel generator, the fuel selector comprising:

[30.1] a valve assembly fluidly couplable to each of a first fuel source and a second fuel source and operable to selectively control a first fuel flow and a second fuel flow from the first fuel source and the second fuel source, respectively, to an engine of the dual fuel generator, the valve assembly comprising:

181. The combination of DuroMax and DeVries renders claim elements

[30.0]-[30.1] obvious. *Supra* Section VIII.C, Elements [7.0]-[7.1].

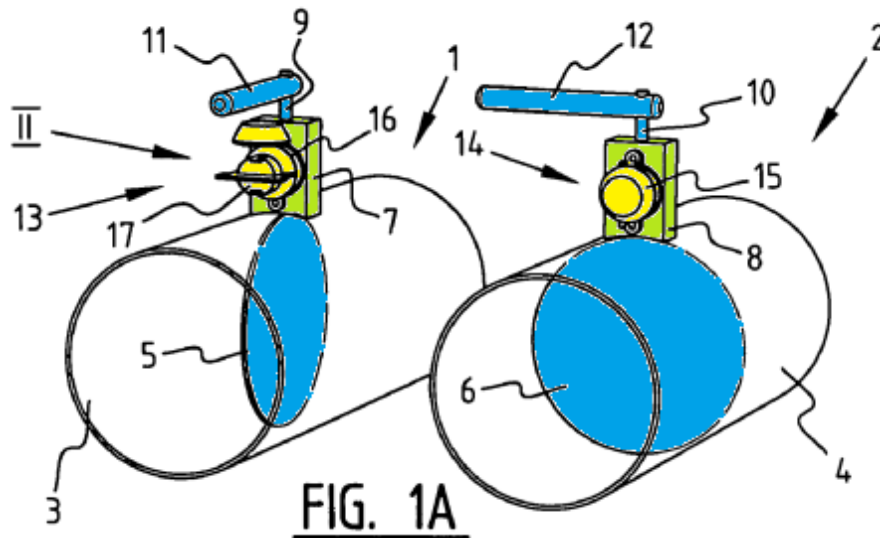
[30.2] two fuel inputs comprising:

a first fuel input couplable to the first fuel source; and

a second fuel input couplable to the second fuel source; and

two fuel outputs configured to selectively supply fuel to the engine from the first fuel source or the second fuel source; and

182. The combination of DuroMax and DeVries renders claim element [30.2] obvious. DeVries discloses that the butterfly valves of the valve interlock system are installed on two fluid conduits 3 and 4 (“pipelines”). EX1011, 5:29-35. Each conduit has an input side and an output side. Each of the respective inputs and the outputs are separated by the valves 5 and 6. *Id.*, 5:25-27.



Id., FIG. 1A (annotated).

183. A POSA would have been motivated to combine the interlocked valve assembly of DeVries with the dual fuel generator of DuroMax and would have had a reasonable expectation of success. *Supra* Sections VIII.A-B. This combination would have resulted in the claimed valve assembly having an LPG conduit and a

gasoline conduit each with its own valve having an input side couplable to its respective fuel source and an output side to selectively supply fuel to the engine from its respective fuel source.

[30.3] a selector switch positioned on the valve assembly to allow a user to manually select the first fuel flow or the second fuel flow.

184. The combination of DuroMax and DeVries renders claim element [30.3] obvious. DeVries teaches a keyed safety system including a “selector switch” which is comprised of safety systems 13 and 14 and a key 17. EX1011, 5:45-47. The selector switch is positioned on the valve assembly and, by interlocking the two fluid valves such that only one can be in the ON position at a given time, allows the user to manually select which one of the two valves can be opened (i.e., selecting which fluid fuel is supplied to the engine) by moving the key 17. *Id.*, 5:32-39, 7:36-39. A POSA would have understood that the interlocked valve system of DeVries allows the user to manually select one of two flows because DeVries explicitly teaches interlocked valve handles which can be used to open and close the valves after the key 17 is inserted into one of the safety systems 13, 14. *Id.*, 5:41-6:4.

185. A POSA would have been motivated to implement the selector switch of DeVries in the dual fuel generator of DuroMax because it would prevent the potential for operator error during fuel selection and would require that the fuel

conduits are only opened and closed in the intended configurations by requiring the correct order of operations. *Supra* Section VIII.A.

O. Claim 31

[31] The fuel selector of claim 30 wherein the two fuel outputs are configured to selectively supply fuel to the engine from only one of the first and second fuel sources responsive to selection of the first fuel flow or the second fuel flow via the selector switch and a corresponding operation of the valve assembly.

186. The combination of DuroMax and DeVries renders claim 31 obvious. DeVries teaches a keyed safety system including a “selector switch” which is comprised of safety systems 13 and 14 and a key 17. EX1011, 5:32-62. As taught by DeVries and illustrated in FIGS. 1A-1C, the interlock system allows for only one valve to be opened (in the ON position) at a given time, thus supplying fuel from only one of the first and second fuel sources. *Id.*, 5:41-6:4. To select a fuel flow, the user must unlock the selected valve handle with key 17 and then operate the corresponding valve handle. *Id.* Implemented with the dual fuel generator of DuroMax, the DeVries selector switch provides for the selective supply of fuel to the engine from only one of the fuel sources by selectively unlocking only one of the two valve rotation shafts and allowing actuation of the respective valve. *Id.*

P. Claim 32

[32] The fuel selector of claim 30 wherein the valve assembly comprises:

a first fuel valve having open and closed positions to selectively control the first fuel flow to the engine; and

a second fuel valve having open and closed positions to selectively control the second fuel flow to the engine.

187. The combination of DuroMax and DeVries renders claim 32 obvious.

Supra Section VIII.C, Element [7.2].

Q. Claim 33

[33] The fuel selector of claim 32 further comprising:

a first valve handle coupled to the first fuel valve and actuatable between an ON position and an OFF position to selectively actuate the first fuel valve between the open position and the closed position, respectively; and

a second valve handle coupled to the second fuel valve and actuatable between an ON position and an OFF position to selectively actuate the second fuel valve between the open position and the closed position, respectively.

188. The combination of DuroMax and DeVries renders claim 33 obvious.

Supra Section VIII.E.

R. Claim 34

[34] The fuel selector of claim 32 wherein the first fuel valve and the second fuel valve are non-solenoid, mechanical valves.

189. The combination of DuroMax and DeVries renders claim 34 obvious.

DeVries teaches a valve assembly comprising two butterfly valves. The butterfly valves are non-solenoid mechanical valves that rotate with the rotating shaft and handle. *Supra* Section VIII.C, Element [7.2].

S. Claim 35

[35] The fuel selector of claim 32 wherein the selector switch provides for manual actuation of the first fuel valve and the second fuel valve between the open and closed positions.

190. The combination of DuroMax and DeVries renders claim 35 obvious.

Supra Section VIII.D.

IX. GROUND 2: CLAIMS 1-38 ARE UNPATENTABLE AS OBVIOUS OVER DUROMAX IN VIEW OF DEVRIES IN FURTHER VIEW OF NAKAFUSHI IN VIEW OF OLMR

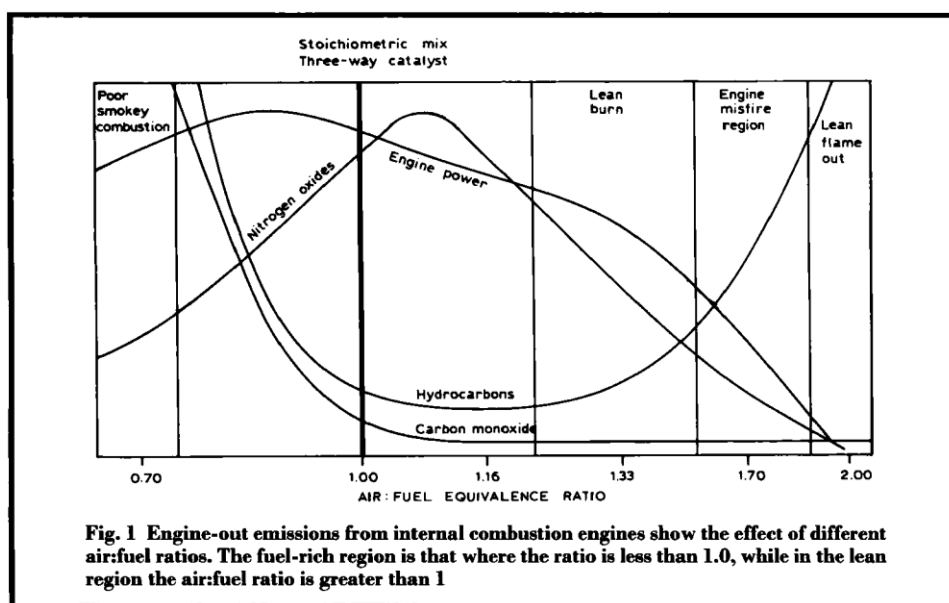
A. Motivation to Combine DuroMax, DeVries, Nakafushi, and Olmr

191. It would have been obvious to a POSA to combine the interlocked valve assembly of DeVries with the dual fuel generator of DuroMax, and a POSA would have had clear motivation to do so and would have had a reasonable expectation of success. *Supra* Section VIII.A-B.

192. DuroMax teaches that gasoline fuel is supplied to the engine through the carburetor. EX1006, 13. DuroMax also teaches that when starting the generator on LPG fuel, the engine performance will be impacted for a period of time. (“There may be remnant gasoline in the carburetor; this can cause unsteady engine performance for several minutes[.]”) *Id.*, 13. A POSA would have understood that the unsteady engine operation is caused by leftover gasoline in the carburetor bowl being delivered to the engine while in LPG mode, until the reservoir in the carburetor is depleted. In this scenario, with gasoline being supplied to the engine while LPG

is simultaneously being supplied to the engine, a fuel-rich air-to-fuel ratio can result, thus creating a sub-optimal, and potentially even dangerous operating condition. *Id.*, 3, 11-13.

193. A POSA would have understood that improper fuel mixtures, specifically overly rich mixtures, increase the risk of injury to an operator. Specifically, overly rich fuel mixtures increase exhaust emissions of carbon monoxide, a toxic gas harmful to humans, and overly rich fuel mixtures can result in backfire and afterfire events which are known to result in human injury and to cause fires. Portable electric generators have been associated with injuries and deaths resulting from exposure to exhaust emissions, specifically carbon monoxide (CO) poisoning. EX1041, 2. A POSA would have similarly understood that carbon monoxide emissions are increased with overly rich fuel mixtures, as illustrated in the image below. EX1042, 2-3. Thus, a POSA would have understood that increased CO emissions when running in a fuel-rich condition would increase the risk of CO poisoning injuries and deaths to generator users and would have been motivated to avoid fuel-rich conditions.



EX1042, 2.

194. A POSA would have understood that overly rich fuel mixtures can result in backfire and afterfire events. EX1045; EX1046; EX1047. A POSA would have understood that it would be beneficial to prevent such incidents because explosions can cause fires outside of the engine and can cause injuries to those around the engine when backfires and afterfires occur. EX1043, 4, 51-53. In addition to the performance benefits, a POSA would have been motivated to use the interlocked valve system of DeVries to prevent the potential dangers associated with supplying both fuels simultaneously to the engine of DuroMax, specifically to prevent injuries and fires from backfire/afterfire events and to prevent injuries and deaths from increased CO emissions in a fuel-rich condition.

195. Nakafushi addresses the very problem disclosed by DuroMax related to unsteady operation when transitioning between fuel sources. Nakafushi identifies two problems associated with dual fuel engines when transitioning between fuel sources with carbureted engines. First, Nakafushi identifies that when an engine operating on gasoline is switched to LPG, a residual amount of gasoline remains in the carburetor, and is sucked into the engine and mixed with the LPG fuel. EX1009, ¶¶[0003]-[0004]. A POSA would have understood that supplying both fuels and mixing them with the same amount of air would result in an over-rich air-to-fuel ratio. Second, because the residual gasoline is drained from carburetor during the gasoline-to-LPG switching operation, when the engine is switched from LPG to gasoline, gasoline fuel will be delayed until the level of gasoline in carburetor bowl recovers. *Id.*, ¶[0004]. A POSA would have understood that during this delay LPG fuel would be cut off from the engine and the gasoline fuel supply would be delayed or reduced until the carburetor chamber refills, resulting in an over-lean air-to-fuel ratio. A POSA would have understood that over-lean air-to-fuel ratios can also cause afterfires. EX1045; EX1046, [1:52]-[2:06].

196. Nakafushi solves these problems by including a control valve 23 configured to allow or block the suctioning of gasoline from the float chamber to the carburetor intake passage. Nakafushi explains that the control valve is configured to operate when the LPG fuel supply is selected by the switching means. EX1009,

¶[0007]. The control valve 23 is illustrated in FIG. 1 where it is positioned between the carburetor float bowl and the intake passage I to the engine E. *Supra* Section VII.D.

197. A POSA would have been motivated to combine the control valve of Nakafushi with the dual fuel engine of the DuroMax generator to solve the problem related to transitioning between fuels. Specifically, the problem of unsteady engine operation when transitioning from a gasoline fuel to an LPG fuel. A POSA would have understood that this is the same problem recognized by Nakafushi which is created by the simultaneous supply of gasoline and LPG to the engine thus creating a fuel-rich air-fuel ratio, or the delay in supply of gasoline to the engine, thus creating a fuel-lean air-fuel ratio. A POSA would have similarly understood that the addition of Nakafushi's control valve on the outlet of the DuroMax carburetor chamber solves the specific problem DuroMax identifies.

198. A POSA would have understood from the plain language and figures of Nakafushi that the control valve 23 is a solenoid valve. A POSA would have understood this to be a solenoid valve because the control valve is connected to and operated by a fuel switching switch 19 and that the control valve is turned ON or OFF in response to a cut signal that comes from the positioning of an electrical switch. EX1009, ¶¶[0014]-[0016]. A POSA would have understood that a valve that operates in response to an electrical signal from a switch is a solenoid valve.

199. While it is my opinion that a POSA would have clearly understood Nakafushi to teach a solenoid valve, Nakafushi does not explicitly use the words “solenoid valve” to describe its carburetor control valve 23. However, Olmr explicitly teaches a solenoid valve used in the same application as Nakafushi, to cut off fuel from a carburetor. Olmr teaches a solenoid (valve 42) for cutting off the flow of gasoline 31 from the carburetor bowl 30 when the engine is turned off. EX1010, 2:30-56; *see also id.*, 1:33-36, FIG. 2. Olmr teaches, more explicitly, a solenoid valve similarly positioned to the Nakafushi control valve and performing the same function, cutting the flow from the carburetor’s fuel reservoir. A POSA would have been motivated to implement Olmr’s solenoid valve to accomplish the same goals as the control valve of Nakafushi, cutting off the flow of fuel from the carburetor to improve engine performance.

B. Reasonable Expectation of Success in Combining DuroMax, DeVries, Nakafushi, and Olmr

200. A POSA would have had a reasonable expectation of success in combining Nakafushi’s carburetor control valve with the dual fuel generator of DuroMax and fluid valve interlock system DeVries. Both DuroMax and Nakafushi disclose dual fuel engines with carburetors for the liquid (gasoline) fuel supply. DuroMax identifies the same problem that is identified and solved by Nakafushi related to remnant fuel being drawn from the carburetor when transitioning between

fuels. Therefore, a POSA would have had a reasonable expectation of success in combining the switch-actuated carburetor control valve of Nakafushi with the generator of DuroMax given that they are both dual-fuel carbureted internal combustion engines with similarly configured fuel delivery systems for gasoline and LPG.

201. A POSA would have had a reasonable expectation of success in combining the carburetor control valve and switch of Nakafushi with the interlocked valve assembly of DeVries. Nakafushi discloses that the control valve 23 is coupled to the fuel switching switch 19, such that the carburetor control valve is activated with the selection of LPG fuel. A POSA would have understood it to be obvious to couple the control valve 23 of Nakafushi to the valve interlock system of DeVries. Coupling the control switch of Nakafushi to function in concert with the interlocked valve assembly of DeVries would have been a simple problem solved with the ordinary skills of a POSA.

202. Indeed, DeVries teaches that its safety systems 13, 14 may be coupled to an electric switch for controlling various operations. EX1011, 7:32-48. Given that DeVries already teaches that its interlock safety system can be implemented with electrical switches as well as valves, it would have been an ordinary and straightforward matter to configure DeVries such that moving the interlock key 17 to one of the two positions on the valve assembly would also actuate an electrical switch to

control the carburetor solenoid of Nakafushi. Therefore, a POSA would have had a reasonable expectation of success in combining the control valve and switch of Nakafushi with the interlocked valve system of DeVries using the electric switch of DeVries.

203. A POSA would have had a reasonable expectation of success in substituting the control valve of Nakafushi with the explicitly taught solenoid valve of Olmr. At the time of the invention, the use of solenoid valves to cut off the flow of fuel to an engine was known in the art, with Olmr being just one example. *See, e.g.,* EX1034, 4:39-42; EX1035, 2:27-39; EX1036, 4:25-33. Furthermore, Nakafushi discloses an electrical circuit to open and close the control valve 23. EX1009, ¶¶[0013]-[0014], FIG. 1. A POSA would have understood that the simple electrical circuit taught by Nakafushi would function to control the solenoid valve 42 taught by Olmr, to open and close the valve on the outlet from the carburetor bowl. Indeed, Olmr teaches an electrical circuit for operating its solenoid valve. EX1010, 2:57-4:27, FIGS. 2-3. Therefore, a POSA would have had a reasonable expectation of success in substituting the control valve 23 of Nakafushi with the solenoid valve of Olmr and controlling it with the same electrical switch of Nakafushi. This would achieve the intended function of cutting off the supply of gasoline fuel from the carburetor bowl to the engine intake.

C. Claim 1

[1.0] A dual fuel generator comprising:

204. The combination of DuroMax, DeVries, Nakafushi, and Olmr renders claim element [1.0] obvious. DuroMax teaches a dual fuel generator. EX1006, 2, 7.

[1.1] an internal combustion engine couplable to a first fuel source and a second fuel source to selectively receive fuel therefrom; and

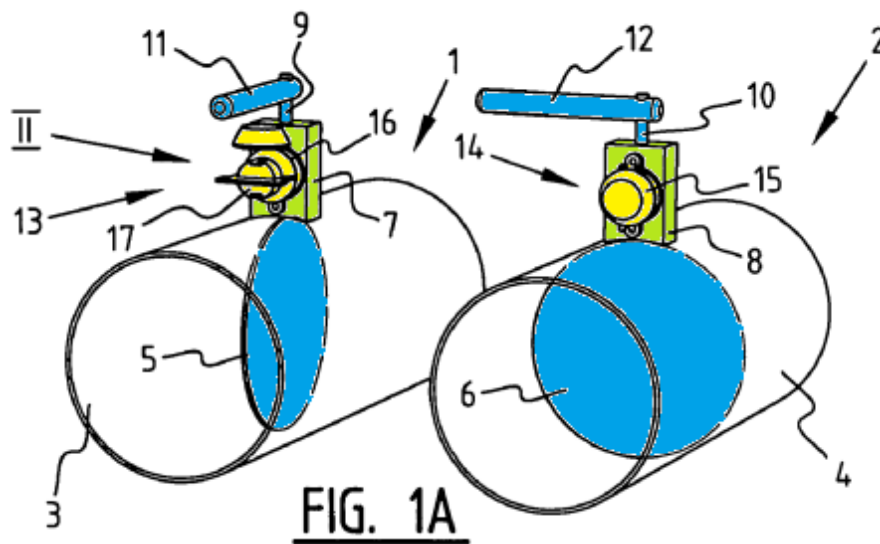
205. The combination of DuroMax, DeVries, Nakafushi, and Olmr renders claim element [1.1] obvious. DuroMax teaches a “4-stroke OHV single cylinder” internal combustion engine. EX1006, 22. The engine is couplable to a gasoline tank and an LPG tank to selectively receive fuel therefrom. *Id.*, 11-13.

[1.2] a fuel selector configured to control a flow of fuel to the internal combustion engine, the fuel selector comprising:

206. The combination of DuroMax, DeVries, Nakafushi, and Olmr renders claim element [1.2] obvious. DeVries teaches an interlocked valve system which allows the user to selectively supply either one of two fluids flowing through two separate conduits. DuroMax teaches a dual fuel generator with a combustion engine configured to operate on either gasoline or LPG fuel. A POSA would have understood that adding the interlocked valve system of DeVries to the fuel supply conduits of DuroMax would prevent unintended and potentially unsafe operating conditions, specifically, eliminating the chance of operator error resulting in both fuels being supplied simultaneously.

[1.3] a selector plate;

207. The combination of DuroMax, DeVries, Nakafushi, and Olmr renders claim element [1.3] obvious. DeVries teaches a selector plate formed on supports 7 and 8 (green). EX1011, 5:31-39.



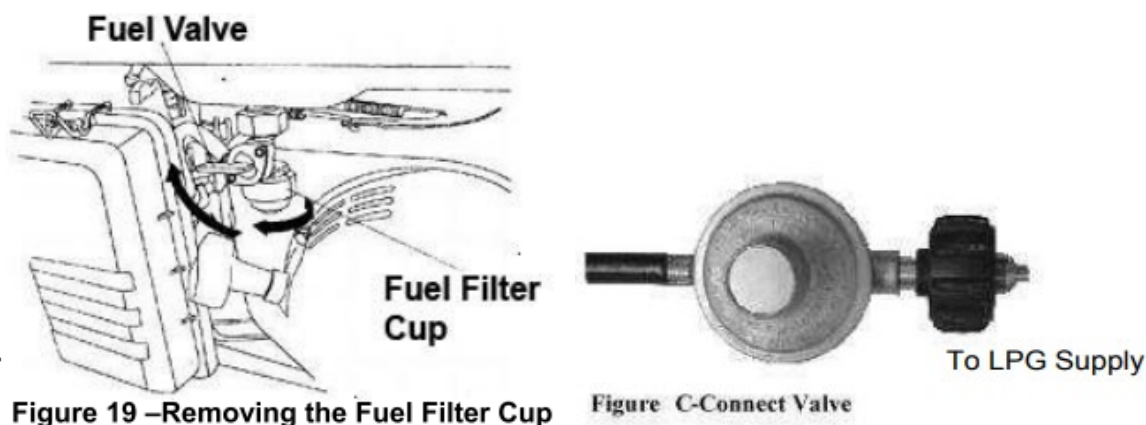
Id., FIG. 1A (annotated).

[1.4] a first fuel valve assembly positioned adjacent to the selector plate and including a first fuel valve and a first fuel valve handle, the first fuel valve handle being actuable between an ON position and an OFF position to selectively open and close the first fuel valve;

a second fuel valve assembly positioned adjacent to the selector plate and including a second fuel valve and a second fuel valve handle, the second fuel valve handle being actuable between an ON position and an OFF position to selectively open and close the second fuel valve;

208. The combination of DuroMax, DeVries, Nakafushi, and Olmr renders claim element [1.4] obvious. DuroMax teaches a dual fuel generator with an LPG

intake and a gasoline fuel shutoff valve actuatable by a handle at a gasoline fuel intake. EX1006, 2, 7.

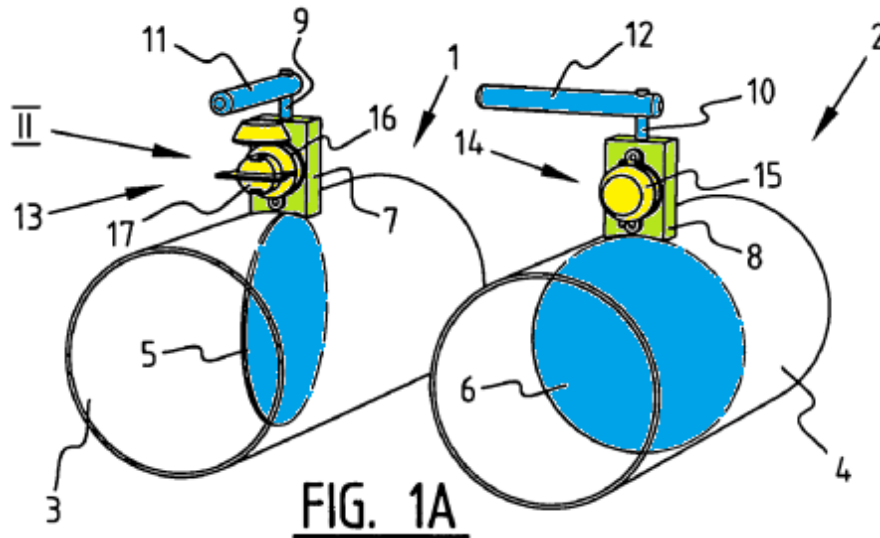


EX1006, 12, 20.

209. DeVries teaches a first fuel valve assembly comprising butterfly valve 5, rotation shaft 9, and first fuel valve handle 11. EX1011, 5:25-40. The valve handle is actuatable between an ON position (handle parallel to pipeline, left side of FIG. 1A) and OFF position (handle orthogonal to pipeline, right side of FIG. 1A) to selectively actuate valve 5 between open and closed positions. *Id.*, 5:41-64.

210. DeVries teaches a second fuel valve assembly comprising butterfly valve 6, rotation shaft 10, and first fuel valve handle 12. *Id.*, 5:25-40. The valve handle is actuatable between an ON position (handle parallel to pipeline, left side of FIG. 1A) and OFF position (handle orthogonal to pipeline, right side of FIG. 1A) to selectively actuate valve 5 between open and closed positions. *Id.*, 5:41-64.

211. The valve handles 11 and 12 (blue) are positioned adjacent to the selector plate (green). *Id.*, 5:31-39.



Id., FIG. 1A (annotated).

212. A POSA would have been motivated to combine the valve interlock system of DeVries with the DuroMax generator fuel system such that the interlocked valve assembly selectively supplies gasoline or LPG fuel to the engine. *Supra* Section VIII.A. Specifically, a POSA would have been motivated to route the LPG conduit of DuroMax through the first valve assembly of DeVries and the substitute the gasoline fuel valve of DuroMax with the second valve assembly of the DeVries. *Supra* Section VIII.A. This would result in interlocked valve assemblies where the DeVries two-conduit, two-valve interlocked valve assemblies would allow for the selective supply of either the first fuel flow or the second fuel flow to the dual-fuel DuroMax generator.

[1.5] a selector switch slidably coupled to the selector plate so as to be movable between:

a first position in which the selector switch covers the second fuel valve handle so as to prevent actuation of the second valve handle to the ON position; and

a second position in which the selector switch covers the first valve handle so as to prevent actuation of the first valve handle to the ON position; and

213. The combination of DuroMax, DeVries, Nakafushi, and Olmr renders claim element [1.5] obvious. DeVries teaches a selector switch comprising safety systems 13 and 14 and key 17. Key 17 of the selector switch is movable between a first position (engaged with and unlocking safety system 13) and second position (engaged with and unlocking safety system 14). *Id.*, 5:63-6:4.

214. The selector switch is slidably coupled to the selector plate because key 17 turns in the plane of the selector plate to lock and unlock the safety systems. EX1011, 3:65-66, 7:4-7. Likewise, the selector switch is slidably coupled to the selector plate because key 17 slides into and out of the safety systems 13, 14 (thereby sliding with respect to the selector plate 7, 8 when coupled thereto) to lock and unlock the safety systems. *Id.*

215. When the selector switch is in the first position, safety system 14 covers and locks the rotation shaft of the second fuel valve handle 12 so as to prevent actuation thereof to the ON position. Likewise, when the selector switch is in the second position, safety system 14 covers and locks the rotation shaft of the second

fuel valve handle 12 so as to prevent actuation thereof to the ON position. *Id.*, 5:40-62.

216. A POSA would have been motivated to implement the selector switch of DeVries in in a dual fuel generator such as DuroMax to interlock the valves and ensure correct order of operation, and would have a reasonable expectation of success. *Supra* Sections VIII.A-B.

[1.6] a carburetor fuel shutoff solenoid that is activated when the selector switch is in the first position.

217. The combination of DuroMax, DeVries, Nakafushi, and Olmr renders claim element [1.6] obvious. Nakafushi discloses a control valve 23 that is controlled by an electrical switching switch 19. To the extent it is not readily apparent that valve 23 of Nakafushi is a solenoid valve, Olmr explicitly teaches a carburetor shutoff valve that is a solenoid valve. EX1010, 2:30-56; *see also id.*, 1:33-36, FIG. 2.

218. A POSA would have been motivated by the teachings of DeVries, which discloses a switching means to safely sequence the switching operation, and the teachings of Nakafushi and Olmr, which disclose a carburetor shutoff solenoid coupled to the switching means, to modify the generator of DuroMax to include a carburetor with a carburetor shutoff solenoid coupled to the switching means of DeVries. A POSA would have been motivated to couple the solenoid circuitry to the selector switch of DeVries such that when the key is inserted into the first safety

system (“first position” for LPG), the key actuates the carburetor solenoid switch and activates the carburetor solenoid to shut off fuel flow. *Supra* Section IX.A. A POSA would have had a reasonable expectation of success, given that the selection mechanism of Nakafushi is configured to couple the solenoid circuit to the switching means. *Supra* Section IX.B.

D. Claim 2

[2] The dual fuel generator of claim 1 wherein:

the first fuel valve assembly is configured to couple to a liquefied petroleum gas (LPG) fuel source; and

the second fuel valve assembly is configured to couple to a gasoline source.

219. The combination of DuroMax, DeVries, Nakafushi, and Olmr renders claim 2 obvious. Implementing the interlocked valve assemblies of DeVries onto the dual fuel generator of DuroMax would have resulted in the first fuel valve assembly being couplable to an LPG fuel source and a second fuel valve assembly being couplable to a gasoline fuel source. *Supra* Section VIII.H.

E. Claim 3

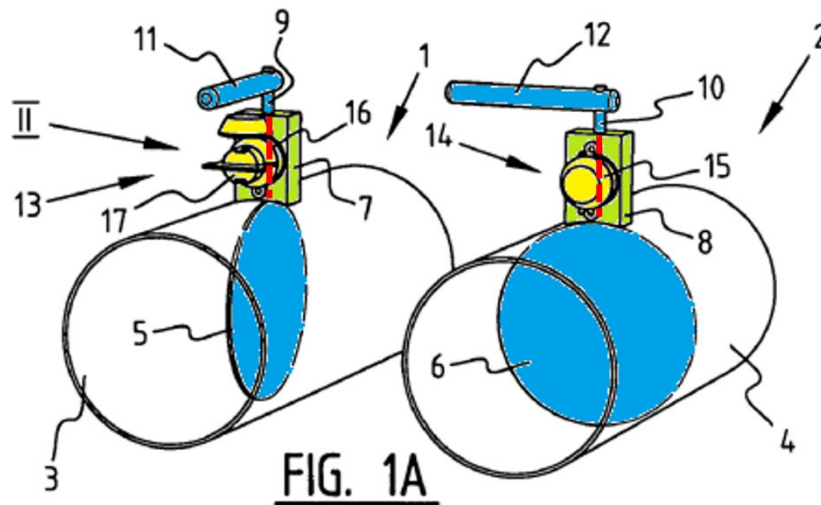
[3] The dual fuel generator of claim 1 wherein:

the selector plate comprises first and second openings;

the first valve assembly extends through the first opening of the selector plate; and

the second valve assembly extends through the second opening of the selector plate.

220. The combination of DuroMax, DeVries, Nakafushi, and Olmr renders claim 3 obvious. Rotation shafts 9 and 10 (blue) of the first and second valve assemblies “protrude[]” through first and second openings (red lines), respectively, of the selector plate (green). EX1011, 5:31-32.



Id., FIG. 1A (annotated).

F. Claim 4

[4] The dual fuel generator of claim 1 wherein the selector switch comprises:

a front side;

a back side; and

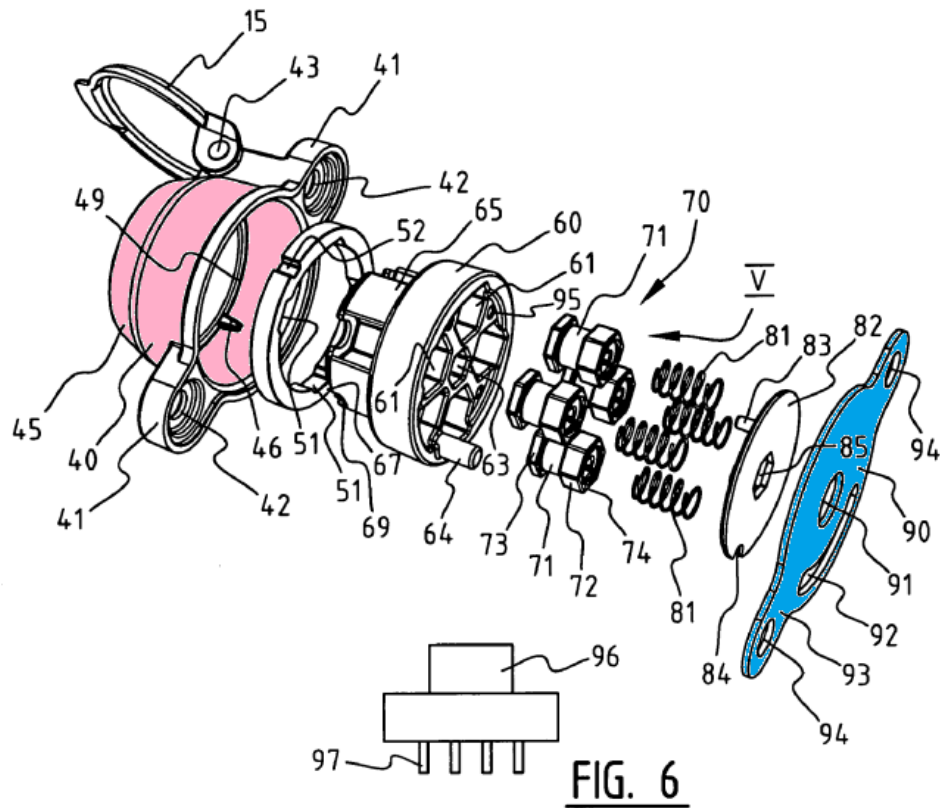
a groove located on the back side and configured to:

prohibit actuation of the first fuel valve handle to the ON position when the selector switch is in the second position; and

prohibit actuation of the second fuel valve handle to the ON position when the selector switch is in the first position.

221. The combination of DuroMax, DeVries, Nakafushi, and Olmr renders claim 4 obvious. The safety systems 13, 14 of the selector switch contain a front side (outer housing 40) and a back side (base plate 90). *Id.*, 6:59-60, 8:22-27.

222. The base plate 90 of DeVries has a groove 92 that provides for rotation of an operating shaft. *Id.*, 8:28-31. The operating shaft is coupled to a locking mechanism which locks the respective rotation shafts 9, 10 of the valve handles. *Id.*, 7:32-39. The groove 92 is configured to allow for “rotating movement of pin holder 60” and the operating shaft to lock and unlock the rotation shafts 9, 10, such that valve handle 11 is locked in OFF position when the selector switch is in second position and valve handle 12 is locked in OFF position when the selector switch is in first position. *Id.*, 5:40-62, 8:28-35; *supra* Section IX.C, Element [1.5].



Id., FIG. 6 (annotated).

G. Claim 5

[5] The dual fuel generator of claim 4 wherein the groove is configured to prevent movement of the selector switch from the first position to the second position and from the second position to the first position unless the first and second fuel valve handles are both in the OFF position.

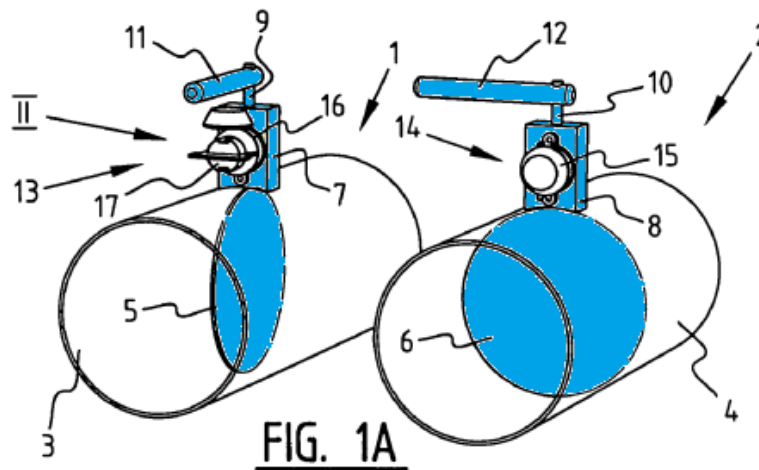
223. The combination of DuroMax, DeVries, Nakafushi, and Olmr renders claim 5 obvious. The groove 92 is configured to provide for rotational movement of the key 17 such that key 17 can only be removed from a safety system when the corresponding handle is in the OFF position. *Id.*, 5:63-6:4. Thus, key 17 can only be

moved from between first and second positions when both fuel handles are in the OFF position (as shown in FIG. 1B).

H. Claim 6

[6] The dual fuel generator of claim 1 wherein the first and second valve handles are in the ON position when positioned vertically and in the OFF position when positioned horizontally.

224. The combination of DuroMax, DeVries, Nakafushi, and Olmr renders claim 6 obvious. A POSA would have understood that the relative orientation of the pipelines and valve handles is arbitrary. The valve handles rotate ninety degrees such that, orienting the pipes vertically, the valve handles are in the ON position when positioned vertically (handle parallel to pipeline, left side of FIG. 1A) and in the OFF position when positioned horizontally (handle orthogonal to pipeline, right side of FIG. 1A). EX1011, 5:41-64, FIG. 1. Alternatively, a POSA would have considered it obvious to change the angle of the handle relative to the butterfly valve body such that the valve handle is positioned vertically when in the ON position even if the pipe is not oriented vertically. In such a configuration, the OFF position would correspond to a horizontally positioned valve handle.



Id., FIG. 1A (annotated).

I. Claims 7-11

225. The combination of DuroMax, DeVries, Nakafushi, and Olmr renders claims 7-11 obvious. *Supra* Sections VIII.C-G.

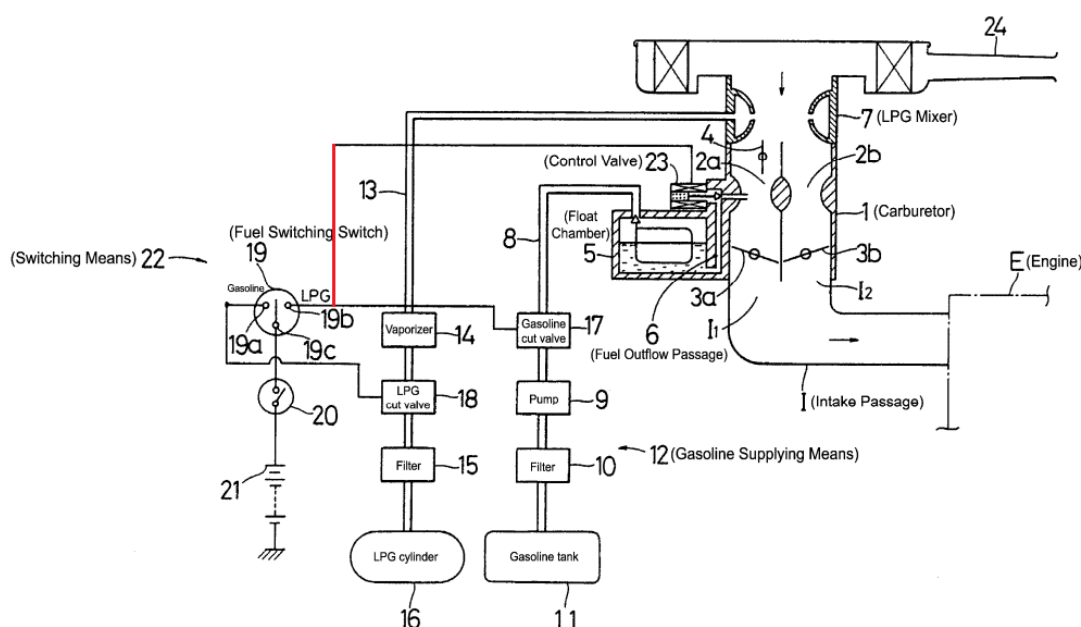
J. Claims 12-13

[12] The fuel selector of claim 10 further comprising a carburetor solenoid switch extending through an opening in a front surface of the selector plate and comprising a depressible switch configured to activate an associated solenoid when depressed.

[13] The fuel selector of claim 12 wherein, when the selector switch is in the first position and prohibiting the second valve handle from being in the ON position, the selector switch depresses the carburetor solenoid switch so as to activate the carburetor solenoid and prohibit the second fuel flow to the engine.

226. The combination of DuroMax, DeVries, Nakafushi, and Olmr renders claims 12 and 13 obvious. Nakafushi discloses a carburetor control valve 23 and carburetor solenoid switch 19, which a POSA would have understood to be an

electrically operated solenoid valve. EX1009, ¶¶[0013]-[0014]. To the extent it is not readily apparent that valve 23 is a solenoid valve, Olmr explicitly discloses a carburetor shutoff valve that is a solenoid valve. EX1010, 2:30-56; *see also id.*, 1:33-36, FIG. 2. A POSA would have understood that both normally open and normally closed solenoid valves were known in the art and readily available, and that choosing between a normally open and normally closed valve is a simple design choice. *Compare* EX1009 *with* EX1010. A POSA would be motivated to pursue both options using the ordinary skill of a POSA. A POSA would have understood that using the normally open solenoid of Olmr in place of the normally closed control valve of Nakafushi would involve connecting the solenoid downstream of contact point 19b instead of 19a, shown below.



EX1009, FIG. 1 (modified).

227. DeVries teaches a selector switch with a first position in which key 17 is inserted into the first safety system and a second position in which key 17 is inserted into the second safety system. *Supra* Section VIII.C, Element [1.2].

228. A POSA would have been motivated to modify the generator of DuroMax to include a normally open carburetor shutoff valve of Nakafushi and Olmr, coupled to the selector switch of DeVries because of the operational and potential safety benefits it provides. A POSA would have been motivated to combine the LPG/gasoline generator of DuroMax with the interlocked fluid valve system of DeVries and add the carburetor shut off solenoids taught by Nakafushi and Olmr because of the known benefits provided. *Supra* Section IX.A.

229. Nakafushi does not explicitly state any specific type of switch for its fuel selecting switch 19, nor does Nakafushi explicitly describe how a user is expected to physically interact with and manipulate the switch. A POSA would have understood that various types of electrical switches were known in the art that were configured to perform the simple switching function outlined in Nakafushi. A POSA would have further understood that depressible switches had long been used to perform electrical switching functions. *See, e.g.*, EX1037. The '896 Patent notes that more than one type of switch can be used to control a solenoid and explains that the solenoid control could be a “depressible switch” or “another type of switch.”

EX1001, 6:65-7:3. A POSA would have been motivated to add a depressible electrical switch to the selector switch of DeVries to control the carburetor solenoid valve. A POSA would have had a reasonable expectation of success in implementing a depressible electrical switch on the selector switch of DeVries, because DeVries explicitly teaches that its interlocked safety systems are intended for use with electrical circuits as well as fluid valves. *Supra* Sections IX.A-B. Furthermore, it would be a routine exercise for a POSA to position a depressible switch such that it was actuated when the interlock key of DeVries was moved to a specific position.

230. Specifically, given that a key is inserted into the safety systems of DeVries, a depressible switch would be a suitable and easily implemented option for combining the control switch for the carburetor shutoff solenoid of Nakafushi or Olmr with the selector switch of DeVries. Given that the carburetor shut off solenoid is only activated (valve closed) when operating on LPG, it would be a natural choice to position the depressible solenoid switch adjacent to the safety system coupled to the LPG conduit so that it extends through the selector plate. When the key is inserted into the LPG safety system (gasoline valve locked OFF), it would depress the solenoid switch and thus cut the supply of fuel from the carburetor when switched to LPG operation. A POSA would have understood that the geometry of the body of the key of DeVries could be made of various shapes, and that the shape of the key could be easily modified such that it contacts a simple carburetor solenoid

switch when the key is inserted, thus activating the carburetor solenoid before the LPG valve can be opened. A POSA would have had a reasonable expectation of success in implementing a depressible electrical switch on the selector switch of DeVries, because DeVries discloses that the safety systems 13, 14 may be coupled to an electric switch for controlling various operations. *Supra* Sections IX.A-B.

K. Claims 14-20

231. The combination of DuroMax, DeVries, Nakafushi, and Olmr renders claims 14-20 obvious. *Supra* Sections VIII.H-M.

L. Claim 21

[21.0] A fuel selector of a dual fuel generator comprising:

[21.1] a valve assembly fluidly couplable to each of a first fuel source and a second fuel source and operable to selectively control a first fuel flow and a second fuel flow from the first fuel source and the second fuel source, respectively, to an engine of the dual fuel generator;

232. The combination of DuroMax, DeVries, Nakafushi, and Olmr renders claim elements [21.0]-[21.1] obvious. *Supra* Section VIII.C, Elements [7.0]-[7.1].

[21.2] a selector switch having a first fuel mode and a second fuel mode;

233. The combination of DuroMax, DeVries, Nakafushi, and Olmr renders claim element [21.2] obvious. DeVries teaches an interlocking selector switch comprised of two safety systems and a key. *Supra* Section VIII.C, Element [7.3]. When the key is inserted into the first safety system (“first fuel mode”), the first fuel can be supplied to the generator, and when the key is moved to the second safety

system (“second fuel mode”), the second fuel can be supplied to the generator. EX1011, 5:63-6:4.

[21.3] a fuel solenoid having open and closed positions; and

234. The combination of DuroMax, DeVries, Nakafushi, and Olmr renders claim element [21.3] obvious. Nakafushi discloses a control valve 23 that is controlled by an electrical switching switch 19. Nakafushi explicitly teaches that the fuel solenoid (control valve), can be turned ON or OFF. EX1009, ¶¶[0014]-[0016]. A POSA would have understood that ON and OFF refer to open and closed positions. Similarly, Olmr teaches that the solenoid valve is normally in the open position and actuatable to a closed position. EX1010, 1:42-45. Further, a POSA would have understood that the basic function of a fuel solenoid valve is to open or close to allow or prevent the flow of fuel. Therefore, a POSA would have inherently understood that fuel solenoid valves, like those of Nakafushi and Olmr, have open and closed positions.

235. To the extent it is not readily apparent that valve 23 of Nakafushi is a solenoid valve, Olmr explicitly teaches a carburetor shutoff valve that is a solenoid valve. EX1010, 2:30-56; *see also id.*, 1:33-36, FIG. 2. POSA would have been motivated by the teachings of DuroMax, which teaches a carbureted dual-fuel generator, and the teachings of Nakafushi and Olmr, which disclose electrically-switched carburetor shutoff solenoids, to improve the function and safety of

DuroMax by adding a carburetor solenoid. *Supra* Section IX.A. A POSA would have a reasonable expectation of success given that the solenoid valve of Olmr is similarly controlled by an electrical circuit, like the control valve switch of Nakafushi. *Supra* Section IX.B.

[21.4] a solenoid switch having open and closed positions;

236. The combination of DuroMax, DeVries, Nakafushi, and Olmr renders claim element [21.4] obvious because the combination comprises a solenoid switch with open and closed positions. Specifically, Nakafushi discloses a switch 19 that operates the control valve 23, which a POSA would have recognized to be an electrical solenoid switch. Nakafushi teaches that switch 19 has a closed position in which it is switched to contact point 19b to close the LPG circuit, and an open position in which it disconnected from contact point 19b. EX1009, ¶[0014].

237. To the extent it is not readily apparent that valve 23 of Nakafushi is a solenoid valve, Olmr explicitly teaches a solenoid carburetor shutoff valve. EX1010, 2:30-56; *see also id.*, 1:33-36, FIG. 2. A POSA would have been motivated by the teachings of DuroMax, which teaches a carbureted dual-fuel generator, and the teachings of Nakafushi and Olmr, which disclose electrically-switched carburetor shutoff solenoids, to improve the function and safety of DuroMax by adding a carburetor solenoid. *Supra* Section IX.A. A POSA would have had a reasonable expectation of success given that the solenoid valve of Olmr is similarly controlled

by an electrical circuit, like the control valve switch of Nakafushi. *Supra* Section IX.B.

238. Further, aside from the explicit teachings of Nakafushi and Olmr, a POSA would have understood that a typical solenoid valve is controlled with an electrical switch, which is typically configured with on and off positions, to selectively energize or deenergize the solenoid valve. Therefore, a POSA would have inherently understood that fuel solenoids, like those of Nakafushi and Olmr, are typically controlled with switches that have open and closed positions.

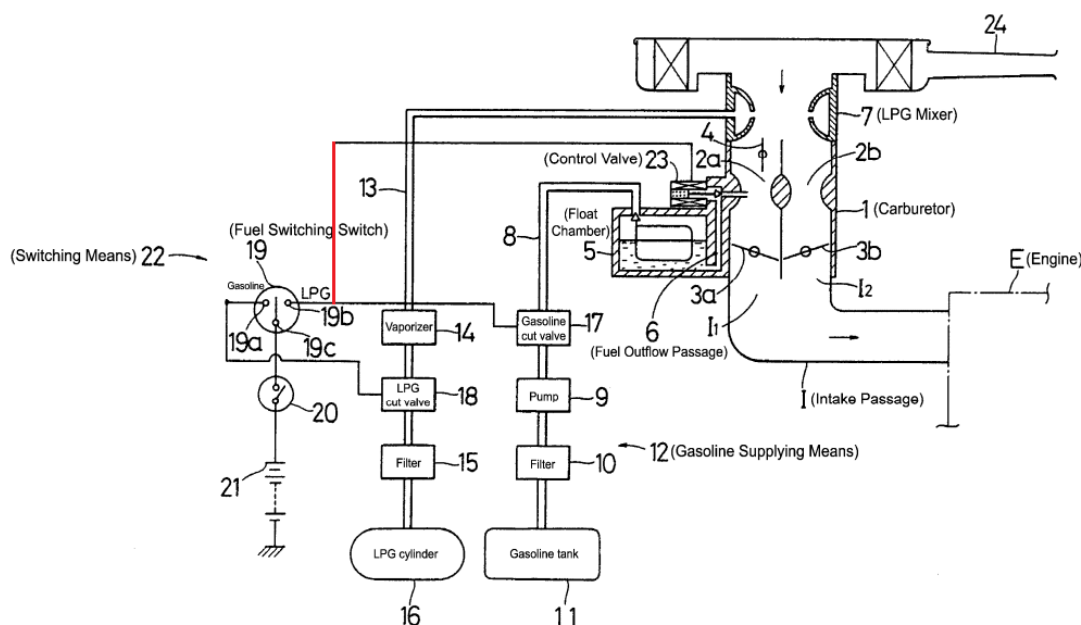
[21.5] wherein, when the selector switch is in the first fuel mode, the solenoid switch and the fuel solenoid are in the closed positions;

wherein, when the selector switch is in the second fuel mode, the solenoid switch and the fuel solenoid are in the open positions; and,

239. The combination of DuroMax, DeVries, Nakafushi, and Olmr renders claim element [21.5] obvious. Nakafushi describes a fuel selector switch which includes a first fuel mode in which switch 19 connects to contact point 19b and a second fuel mode in which switch 19 instead connects to contact point 19a. EX1009, ¶¶[0013]-[0014]. Nakafushi teaches that in the first fuel mode (LPG), the solenoid control valve 23 is OFF (i.e., in a closed position). *Id.*, ¶[0014]. Nakafushi teaches that the solenoid control valve is “turned OFF by not receiving a cut signal to close the fuel outflow passage.” *Id.* Nakafushi teaches that in the second fuel mode (gasoline), the solenoid control valve 23 is ON (i.e., in an open position). *Id.* The

solenoid is “turned ON upon receiving a cut signal to open the fuel outflow passage.” *Id.*

240. To the extent that it is not readily apparent that Nakafushi discloses a solenoid switch and solenoid valve with open and closed positions, Olmr teaches that the carburetor solenoid valve is normally open when the circuit is not energized (i.e., the circuit is open and no current is flowing and the solenoid fuel valve is also open allowing fuel to pass). EX1010, 1:43-44. Olmr teaches that the solenoid valve closes in response to a switch closure and cuts off the flow of gas to the venturi (contraction in the throat of the carburetor). *Id.*, 4:11-27. Typical solenoid valves are either normally open or normally closed when unpowered. A POSA would have understood that using the normally open solenoid of Olmr in place of the normally closed control valve of Nakafushi could be accomplished in simple and straightforward ways. One approach would involve connecting the normally open solenoid valve of Olmr in the circuit connected to point 19b instead of 19a, as shown below, so that the solenoid valve blocks the fuel outflow of gasoline fuel when in the first fuel mode (LPG). A POSA would have understood that both normally open and normally closed solenoid valves were known in the art and readily available, and that choosing between a normally open and normally closed valve is a simple design choice. *Compare* EX1009 *with* EX1010. A POSA would be motivated to pursue both options using the ordinary skill of a POSA.



EX1009, FIG. 1 (modified).

241. A POSA would have been motivated by the teachings of DuroMax, which teaches a carbureted dual-fuel generator, and the teachings of Nakafushi and Olmr, which disclose electrically-switched carburetor shutoff solenoids, to improve the function and safety of DuroMax by adding a normally open carburetor solenoid. *Supra* Section IX.A. Specifically, a POSA would have been motivated to couple the solenoid circuitry of Nakafushi and Olmr to the selector switch of DeVries such that the solenoid switch and fuel solenoid are closed in the first fuel mode and open in the second fuel mode so that the liquid fuel flow through the carburetor is blocked in the first fuel mode. *Supra* Section IX.A. A POSA would have a reasonable expectation of success, given that the selection mechanism of Nakafushi is

configured to couple the solenoid circuit to the switching means. *Supra* Section IX.B.

[21.6] wherein positioning of the selector switch in the first fuel mode and the second fuel mode enables a selection of the first fuel flow or the second fuel flow.

242. The combination of DuroMax, DeVries, Nakafushi, and Olmr renders claim element [21.6] obvious. DeVries teaches that inserting key 17 into safety system 13 allows selection of a first fuel flow by unlocking valve handle 11 in a first fuel mode. EX1011, 5:31-33, 5:63-6:4. DeVries teaches that alternately inserting key 17 into safety system 14 allows selection of a second fuel flow by unlocking valve handle 12 in a second fuel mode. EX1011, 5:38-40, 5:63-6:4.

M. Claim 22

[22] The fuel selector of claim 21 wherein:

positioning the selector switch in the first fuel mode enables the selection of the first fuel flow; and

positioning the selector switch in the second fuel mode enables the selection of the second fuel flow.

243. The combination of DuroMax, DeVries, Nakafushi, and Olmr renders claim 22 obvious. *Supra* Section IX.L, Element [21.6]. Inserting key 17 into safety system 13 enables the selection of the first fuel flow, and inserting key 17 into safety system 14 enables the selection of the second fuel flow. EX1011, 5:63-6:4.

N. Claim 23

[23] The fuel selector of claim 21 wherein the selector switch triggers the solenoid switch when changed from the second fuel mode to the first fuel mode so as to cause the solenoid switch and the fuel solenoid to operate in the closed positions.

244. The combination of DuroMax, DeVries, Nakafushi, and Olmr renders claim 23 obvious. When changing from the second fuel mode (gasoline) to the first fuel mode (LPG), positioning the key of DeVries on the LPG valve safety system would trigger a switch, closing the switch and triggering the carburetor fuel solenoid to close. A POSA would have been motivated to combine the carburetor solenoid switch 19 of Nakafushi with the selector switch of DeVries to simplify operation of the generator. *Supra* Section IX.J.

245. A POSA would have understood that the geometry of the body of the key of DeVries could be made of various shapes, and that the shape of the key could be easily modified such that it contacts a depressible carburetor solenoid switch when the key is inserted, thus activating the carburetor solenoid before the LPG valve can be opened. A POSA would have had a reasonable expectation of success in implementing a depressible electrical switch on the selector switch of DeVries, because DeVries teaches that its interlock safety system is intended to be used with electrical switches in addition to fluid valves and conduits. *Supra* Sections IX.A-B.

O. Claim 24

[24] The fuel selector of claim 21 wherein the fuel solenoid is a carburetor shutoff solenoid.

246. The combination of DuroMax, DeVries, Nakafushi, and Olmr renders claim 24 obvious. The fuel solenoids of Nakafushi and Olmr selectively shut off fuel flow in the carburetor. *Supra* Section IX.L, Element [21.3].

P. Claim 25

[25] The fuel selector of claim 21 wherein the selector switch is positioned adjacent to the valve assembly.

247. The combination of DuroMax, DeVries, Nakafushi, and Olmr renders claim 25 obvious. The safety systems 13, 14 of the selector switch are positioned adjacent to the rotation shafts 9 and 10 of the valve assembly. EX1011, 5:32-40.

Q. Claim 26

[26] The fuel selector of claim 21 wherein the valve assembly comprises:

two fuel inputs comprising:

a first fuel input couplable to the first fuel source; and

a second fuel input couplable to the second fuel source; and

two fuel outputs for selectively supplying fuel to the engine from the first fuel source or the second fuel source.

248. The combination of DuroMax, DeVries, Nakafushi, and Olmr renders claim 26 obvious. *Supra* Section VIII.N, Element [30.2].

R. Claim 27

[27] The fuel selector of claim 26 wherein the two fuel outputs selectively supply fuel to the engine from only one of the first and second fuel sources responsive to selection of the first fuel flow or the second fuel flow via the selector switch and a corresponding operation of the valve assembly.

249. The combination of DuroMax, DeVries, Nakafushi, and Olmr renders claim 27 obvious. *Supra* Section VIII.O.

S. Claim 28

[28] The fuel selector of claim 26 wherein the valve assembly comprises:

a first fuel valve having open and closed positions to selectively control the first fuel flow to the engine; and

a second fuel valve having open and closed positions to selectively control the second fuel flow to the engine.

250. The combination of DuroMax, DeVries, Nakafushi, and Olmr renders claim 28 obvious. *Supra* Section VIII.C, Element [7.2].

T. Claim 29

[29] The fuel selector of claim 28 further comprising:

a first valve handle coupled to the first fuel valve and actuatable between an ON position and an OFF position to selectively actuate the first fuel valve between the open position and the closed position, respectively; and

a second valve handle coupled to the second fuel valve and actuatable between an ON position and an OFF position to selectively actuate the second fuel valve between the open position and the closed position, respectively.

251. The combination of DuroMax, DeVries, Nakafushi, and Olmr renders claim 29 obvious. *Supra* Section VIII.E.

U. Claims 30-35

252. The combination of DuroMax, DeVries, Nakafushi, and Olmr renders claims 30-35 obvious. *Supra* Sections VIII.N-S.

V. Claims 36-38

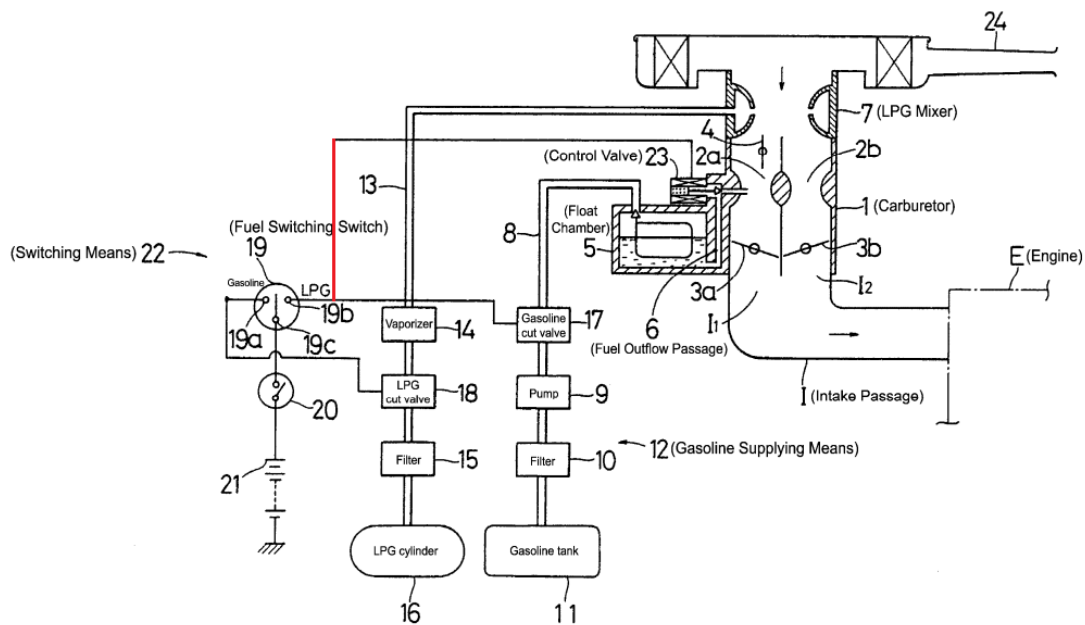
[36] The fuel selector of claim 30 further comprising a carburetor solenoid switch configured to activate an associated carburetor solenoid when actuated.

[37] The fuel selector of claim 36 wherein, when the selector switch is in a first position, the selector switch actuates the carburetor solenoid switch so as to activate the carburetor solenoid and prohibit the second fuel flow to the engine.

[38] The fuel selector of claim 37 wherein, when the selector switch is in a second position, the carburetor solenoid allows the second fuel flow to the engine.

253. The combination of DuroMax, DeVries, Nakafushi, and Olmr renders claims 36-38 obvious. Nakafushi discloses a carburetor control valve 23 and carburetor solenoid switch 19, which a POSA would have understood to be an electrically operated solenoid valve. EX1009, ¶[0013]-[0014]. To the extent it is not readily apparent that valve 23 is a solenoid valve, Olmr explicitly discloses a carburetor shutoff valve that is a normally open solenoid valve. EX1010, 2:30-56; *see also id.*, 1:33-36, FIG. 2. A POSA would have understood that both normally

open and normally closed solenoid valves were known in the art and readily available, and that choosing between a normally open and normally closed valve is a simple design choice. *Compare* EX1009 with EX1010. A POSA would be motivated to pursue both options using the ordinary skill of a POSA. A POSA would have understood that using the normally open solenoid of Olmr in place of the normally closed control valve of Nakafushi would involve connecting the solenoid downstream of contact point 19b instead of 19a, shown below.



EX1009, FIG. 1 (modified).

254. DeVries teaches a selector switch with a first position in which key 17 is inserted into the first safety system and a second position in which key 17 is inserted into the second safety system. *Supra* Section VIII.C, Element [7.3].

255. A POSA would have been motivated to modify the generator of DuroMax to include a normally open carburetor shutoff valve of Nakafushi and Olmr, coupled to the selector switch of DeVries because of the operational and potential safety benefits it provides. A POSA would have been motivated to combine the LPG/gasoline generator of DuroMax with the interlocked fluid valve system of DeVries and add the carburetor shut off solenoids taught by Nakafushi and Olmr because of the known benefits provided. *Supra* Section IX.A.

256. A POSA would have been motivated to couple the selector switch of DeVries to the normally open solenoid valve of Olmr using the carburetor solenoid switch of Nakafushi because DeVries teaches that its safety systems 13, 14 may also be coupled to electrical switches for controlling various operations of the appliance. *Supra* Section IX.A. An electrical switch (i.e., a “carburetor solenoid switch”) would be a logical mechanism for coupling of the carburetor shutoff solenoid of Nakafushi and Olmr to the selection mechanism of the first and second fuel flows. A POSA would have understood that the carburetor solenoid could be actuated (either energizing or de-energizing the carburetor solenoid switch) using a selector switch.

257. A POSA would have a reasonable expectation of success because DeVries discloses an embodiment in which the safety systems 13, 14 are coupled to an electric switch for controlling various operations of the appliance. *Supra* Section IX.B. This would have resulted in a configuration where key 17 of DeVries actuates

the carburetor solenoid switch of Nakafushi and Olmr when inserted into the first safety system (LPG mode) in the “first position” of the selector switch to activate and close the carburetor solenoid and stop the second fuel flow to the engine. When key 17 is inserted into the second safety system (gasoline mode) in the “second position” of the selector switch, the carburetor solenoid would be deactivated and allow the second fuel flow to the engine.

258. Specifically, given that a key is inserted into the safety systems of DeVries, a depressible switch would be a suitable and easily implemented option for combining the control switch for the carburetor shutoff solenoid of Nakafushi and Olmr with the selector switch of DeVries. Given that the carburetor shut off solenoid is only activated (valve closed) when operating on LPG, it would be a natural choice to position the depressible solenoid switch adjacent to the safety system coupled to the LPG conduit. When the key was inserted into the LPG safety system (gasoline valve locked OFF), it would depress the solenoid switch and thus cut the supply of gasoline fuel from the carburetor when switched to LPG operation. A POSA would have understood that the geometry of the body of the key of DeVries could be made of various shapes, and that the shape of the key could be easily modified such that it contacts a simple carburetor solenoid switch when the key is inserted, thus activating the carburetor solenoid before the LPG valve can be opened.

X. GROUND 3: CLAIMS 7-11, 15-20, AND 30-35 ARE UNPATENTABLE AS ANTICIPATED BY FUJISAWA

259. Under Petitioner’s proposed construction of “selector switch” (*supra* Section V.A), Fujisawa lacks a “selector switch.” However, under Patent Owner’s apparent construction of “selector switch” (*supra* Section V.C), which is presented here in the alternative for Grounds 3-5, and under either party’s construction of “valve assembly,” Fujisawa anticipates claims 7-11, 15-20, and 30-35.

A. Claim 7

260. Fujisawa anticipates Claim 7 because, under Patent Owner’s apparent construction of “selector switch,” Fujisawa teaches each of the claim 7 elements as follows:

[7.0] A fuel selector for use with a dual fuel generator, the fuel selector comprising:

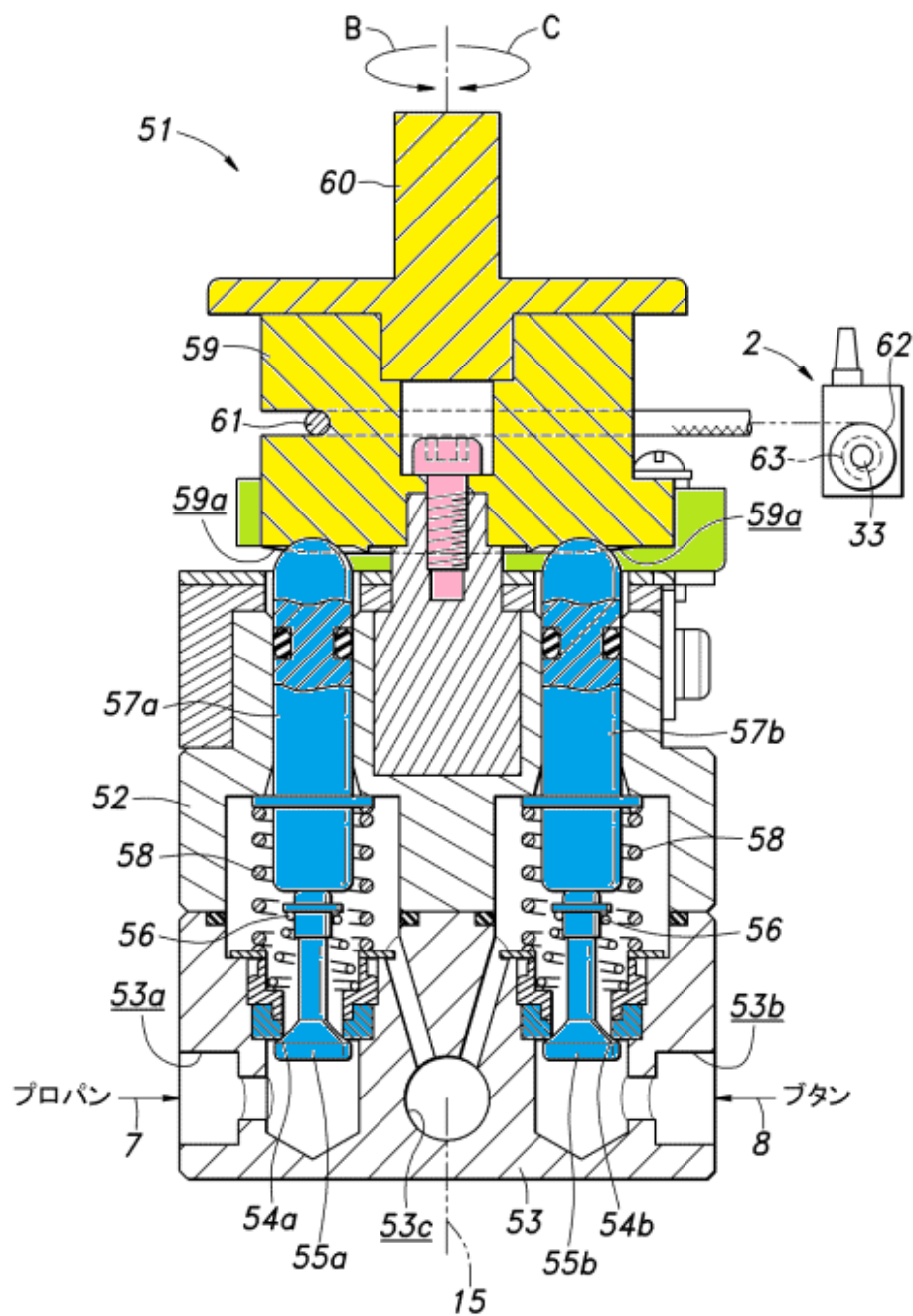
261. Fujisawa anticipates claim element [7.0] because Fujisawa teaches a fuel selector (“supply switching device”) for alternately supplying different fuels to the combustion engine of a dual fuel power generator. EX1005, ¶¶[0001], [0012].

[7.1] a valve assembly fluidly couplable to each of a first fuel source and a second fuel source and operable to selectively control a first fuel flow and a second fuel flow from the first fuel source and the second fuel source, respectively, to an engine of the dual fuel generator, the valve assembly comprising:

262. Fujisawa anticipates claim element [7.1] because Fujisawa teaches a valve assembly couplable to first and second fuel sources, which selectively controls

the first fuel flow and the second fuel flow to the generator. Fujisawa teaches a valve assembly comprising valve seats (54a and 54b, blue) which are selectively positioned in open and closed positions over valve bodies (55a and 55b, blue). The valve assembly includes cam follower rods (57a and 57b, blue) which move the valve bodies up and down between open and closed positions as the cam follower rods move up and down. EX1005, ¶¶[0032]-[0033]. The cam follower rods are moved up and down by the contours of the lower cam surface (59a, yellow) of a cam body (59, yellow) as the cam body is rotated over the cam follower rods by rotary knob (60, yellow). *Id.*, ¶¶[0034]-[0035].

【図 5】



EX1004, FIG. 5 (annotated).

263. Fujisawa teaches that the valve assembly is fluidly couplable to a first fuel source 4 via fuel pipe 7 and a second fuel source 5 via fuel pipe 8. EX1005, ¶[0013]. A user can operate the valve assembly using the rotary knob and cam body to selectively control a first fuel flow and a second fuel flow from the fuel sources. *Id.*, ¶¶[0037]-[0038]. One of the first fuel and the second fuel then flows to the engine of the dual fuel generator. *Id.*, ¶¶[0012], [0037]-[0038].

264. Under the proper construction of “valve assembly,” the cam follower rods 57a and 57b are valve handles that control the opening and closing of the valves.

265. Alternatively, under Patent Owner’s apparent construction of “valve assembly,” the cam body 59 and rotary knob 60 can also be a valve handle of the valve assembly. EX1005, ¶[0034]. Under either proposed construction of “valve assembly,” claim element [7.1] is anticipated by Fujisawa.

[7.2] a first mechanical fuel valve having open and closed positions to selectively control the first fuel flow to the engine; and

a second mechanical fuel valve having open and closed positions to selectively control the second fuel flow to the engine; and

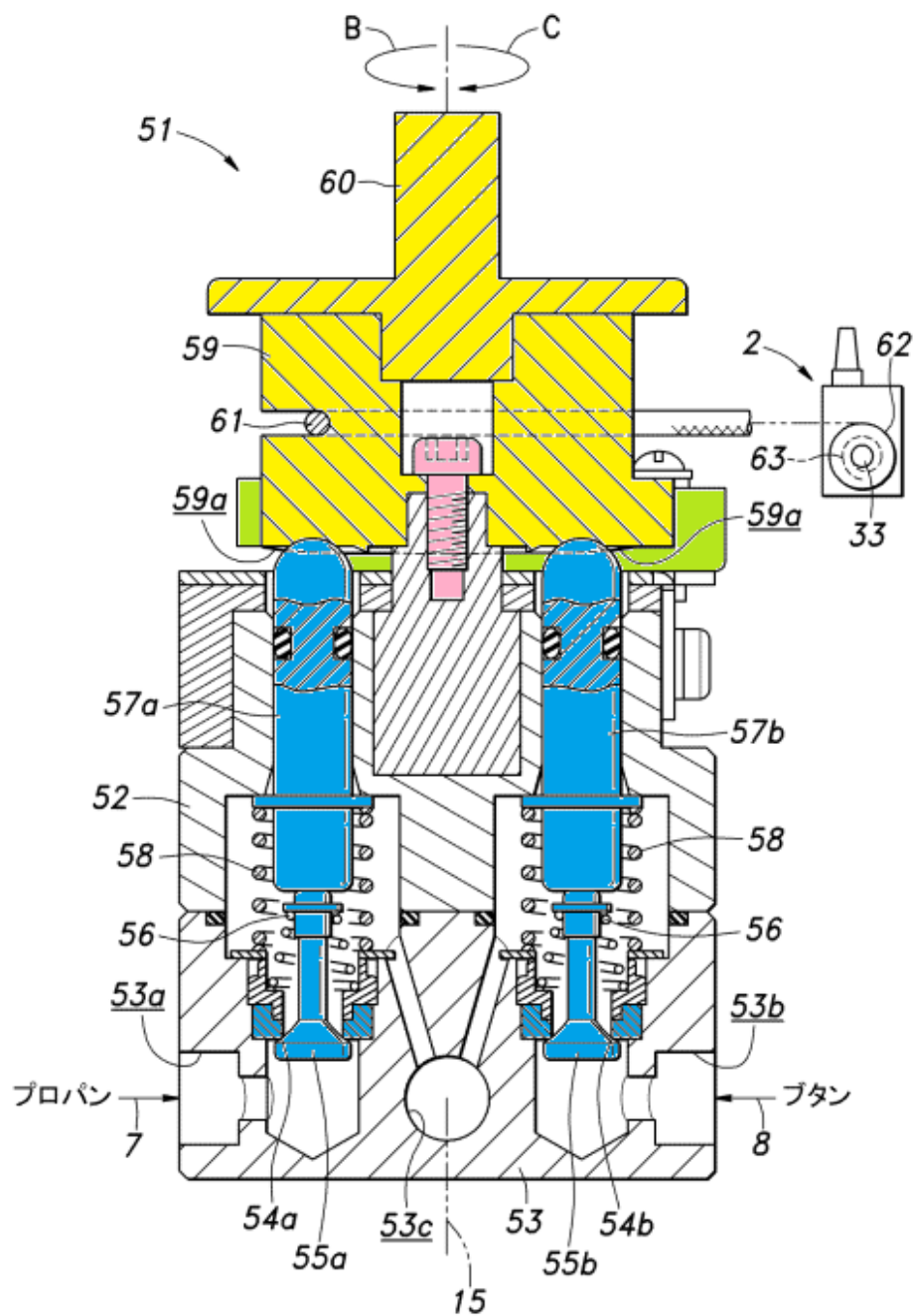
266. Fujisawa anticipates claim element [7.2] because Fujisawa teaches a valve assembly with two mechanical fuel valves having open and closed positions to selectively control the first and second fuel flows to the engine. Specifically, Fujisawa teaches a valve assembly consisting of a first fuel valve (54a and 55a) and a second fuel valve (54b and 55b). *Id.*, ¶[0032]. The first fuel valve opens and closes

to control the first fuel flow from first fuel source 4 through inlet 53a. *Id.*, ¶¶[0013], [0031]-[0032]. The second fuel valve also opens and closes to control the second fuel flow from the second fuel source 5 through inlet 53b. *Id.* A POSA would have understood that the first and second fuel valves are mechanical valves that mechanically open and close in response to rotation of the knob 60 and cam body 59. The knob and cam body control the positions of the valve bodies because the cam follower rods move up and/or down in response to the contoured cam surface as the knob is rotated. *Id.*, ¶¶[0035]-[0038].

[7.3] a selector switch movable with respect to the valve assembly to allow a user to manually select the first fuel flow or the second fuel flow.

267. Fujisawa anticipates claim element [7.3] because Fujisawa teaches a selector switch movable with respect to the valve assembly to allow the user to select one of a first fuel source and a second fuel source. Specifically, under Patent Owner's apparent construction of the term "selector switch" (*supra* Section V.C), Fujisawa teaches a selector switch comprising a rotary knob (60, yellow) and a cam body (59, yellow) which allows the user to manually select alternate fuel flows. EX1005, ¶[0034].

【図 5】



EX1004, FIG. 5 (annotated).

268. The selector switch rotates relative to the valve assembly. EX1005, ¶[0034]. Cam surface 59a is constructed such that when the user rotates the selector switch (knob and cam body), the contours of the cam surface move the cam follower rods to open and close the valves. As a result, one of the two fluid valves is opened in response to the selector switch rotation, selecting one of the first fuel flow and the second fuel flow. *Id.*, ¶[0035].

B. Claim 8

[8] The fuel selector of claim 7 wherein the selector switch provides for manual actuation of the first fuel valve and the second fuel valve between the open and closed positions.

269. Fujisawa anticipates claim 8 because Fujisawa describes that the user manually actuates the valves between open and closed positions by “grasp[ing] and turn[ing]” the selector switch. *Id.*, ¶[0035].

C. Claim 9

[9] The fuel selector of claim 8 further comprising:

a first valve handle coupled to the first fuel valve and actuatable between an ON position and an OFF position to selectively actuate the first fuel valve between the open position and the closed position, respectively; and

a second valve handle coupled to the second fuel valve and actuatable between an ON position and an OFF position to selectively actuate the second fuel valve between the open position and the closed position, respectively;

wherein the selector switch is positioned relative to the first and second valve handles so as to provide for only one of the first and second valve handles to be in the ON position at a given time.

270. Fujisawa anticipates claim 9 because Fujisawa teaches first and second valve handles 57a and 57b that are actuatable between an ON position and an OFF position. *Supra* Section X.A, Element [7.1]. The first valve handle is coupled to valve body 55a of the first fuel valve, while the second valve handle is coupled to valve body 55b of the second fuel valve. EX1005, ¶¶[0037]-[0038]. Fujisawa teaches that the valve handles and valve bodies are biased in the closing direction by return springs. *Id.*, ¶¶[0032]-[0033]. The valve handles and valve bodies are depicted in the OFF/closed (“maximum protrusion positions in the valve closing direction”) position in FIG. 5. *Id.*, ¶[0037]. Each of the valve handles is actuatable to a depressed ON/open position by rotating the selector switch.

271. The selector switch is positioned “in sliding contact” relative to the valve handles, with cam surface 59a constructed such that only one valve handle can be in the ON position at a given time. *Id.*, ¶¶[0035]-[0038]. When the cam body 59 is rotated in direction B or direction C, either the first valve handle or the second valve handle moves in the “push-in” direction in response to the cam surface and selectively opens one of the two respective valves. *Id.*, ¶[0035].

D. Claim 10

[10] The fuel selector of claim 9 further comprising a selector plate positioned adjacent to the first and second valve handles;

wherein the selector switch is coupled to the selector plate so as to be movable between a first position and a second position, with movement of the selector switch between the first and second positions enabling positioning of only one of the first and second valve handles in the ON position at a given time.

272. Fujisawa anticipates claim 10 because Fujisawa teaches a selector plate adjacent to the first and second valve handles, which the selector switch is coupled to, enabling positioning only one of the valve handles in the ON position at a given time. Fujisawa teaches a selector plate (green) which is positioned adjacent to the valve handles of the valve assembly (blue). EX1005, FIG. 5. The selector switch (yellow) is coupled to the selector plate using a threaded fastener (pink). *Id.* The selector switch is movable to a first position (rotation direction B) and is movable to a second position (rotation direction C). *Id.*, ¶[0035]. Cam surface 59a is contoured such that the first valve handle 57a is only in the ON position when the selector switch is in the first position and the second valve handle 57b is only in the ON position when the selector switch is in the second position. *Id.*, ¶¶[0035]-[0038]. A POSA would have understood that only one of the two valve handles can be in the ON position at a given time, as a result of the specific design of the contoured cam surface.

when the selector switch is in the first position, the first valve handle is actuatable between the ON position and the OFF position, and the second valve handle is prohibited from being in the ON position; and

when the selector switch is in the second position, the first valve handle is prohibited from being in the ON position, and the second valve handle is actuatable between the ON position and the OFF position.

273. Fujisawa anticipates claim 11 because Fujisawa teaches that a first position for the selector switch in which only the first valve handle is actuatable and a second position for the selector switch in which only the second valve handle is actuatable. As explained above, Fujisawa teaches that the selector switch is movable between first and second positions. *Supra* Section X.D. While rotating knob 60 in direction B (first position), first valve handle 57a can be actuated between ON and OFF positions, while second valve handle 57b is locked in the OFF position because the valve bodies are biased in the closing direction by return springs. EX1005, ¶¶[0032]-[0033]; *supra* Sections X.C-D. While rotating knob 60 in direction C (second position), second valve handle 57b can be actuated between ON and OFF positions, while first valve handle 57a is locked in OFF position because the valve bodies are biased in the closing direction by return springs. *Id.*, ¶¶[0032]-[0033]; *supra* Sections X.C-D.

F. Claim 15

[15.0] A fuel selector for use with a dual fuel generator, the fuel selector comprising:

[15.1] a valve assembly fluidly couplable to each of a first fuel source and a second fuel source and operable to selectively control a first fuel flow and a second fuel flow from the first fuel source and the second fuel source, respectively, to an engine of the dual fuel generator, the valve assembly comprising:

[15.2] a first fuel valve having open and closed positions to selectively control the first fuel flow to the engine; and

a second fuel valve having open and closed positions to selectively control the second fuel flow to the engine; and

274. Fujisawa anticipates claim elements [15.0]-[15.2] *Supra* Section X.A, Elements [7.0]-[7.2].

[15.3] at least one valve handle mechanically coupled to the first fuel valve and the second fuel valve to selectively open and close the first fuel valve and the second fuel valve responsive to actuation thereof so as to enable the first fuel flow to the engine or the second fuel flow to the engine.

275. Fujisawa anticipates claim element [15.3] because Fujisawa discloses at least one valve handle mechanically coupled to the first and second fuel valve to selectively open and close the valves. Under the proper construction, where the “valve assembly” is separate and distinct from the “selector switch,” Fujisawa describes valve handles 57a and 57b. *Supra* Section X.C. Valve handle 57a is mechanically coupled to first fuel valve body 55a. Actuation of valve handle 57a selectively opens and closes the first fuel valve. *Supra* Section X.C. Valve handle 57b is mechanically coupled to second fuel valve body 55b. Actuation of valve handle 57b selectively opens and closes the second fuel valve. *Supra* Section X.C.

276. Alternatively, under Patent Owner's apparent construction, the valve handle (rotary knob 60 and cam body 59) is mechanically coupled to the first fuel valve and the second fuel valve through their respective cam followers. EX1005, ¶¶[0037]-[0038]. Cam surface 59a is contoured to selectively open and close the valves in response to actuation of the valve handle. *Id.*, ¶¶[0035]-[0038].

G. Claim 16

[16] The fuel selector of claim 15 wherein the at least one valve handle enables only one of the first and second fuel flows to the engine at a given time.

277. Fujisawa anticipates claim 16 because the at least one valve handle enables only one fuel source at a given time. Under the proper construction, the first valve handle 57a enables only the first fuel flow to the engine at a given time and the second valve handle 57b enables only the second fuel flow to the engine at a given time. EX1005, ¶¶[0035]-[0038]. The cam surface 59a is contoured such that only one of fuel valves can be opened at a time, such that only one of the first fuel and the second fuel flows to the engine at a given time. *Id.*

278. Alternatively, under Patent Owner's apparent construction, the cam surface 59a of the valve handle (rotary knob 60 and cam body 59) is constructed such that only one of the fuel valves can be opened at a time, such that only one of the first fuel and the second fuel flows to the engine at a given time. *Id.*

H. Claims 17-18

[17] The fuel selector of claim 15 wherein the at least one valve handle comprises:

a first valve handle coupled to the first fuel valve and actuable between an ON position and an OFF position to selectively actuate the first fuel valve between the open position and the closed position, respectively; and

a second valve handle coupled to the second fuel valve and actuable between an ON position and an OFF position to selectively actuate the second fuel valve between the open position and the closed position, respectively.

[18] The fuel selector of claim 17 further comprising a selector switch positioned relative to the first and second valve handles so as to provide for only one of the first and second valve handles to be in the ON position at a given time.

279. Fujisawa anticipates claims 17-18. *Supra* Section X.C.

I. Claim 19

[19] The fuel selector of claim 18 further comprising a selector plate positioned adjacent to the first and second valve handles;

wherein the selector switch is coupled to the selector plate so as to be movable between a first position to a second position, with movement of the selector switch between the first and second positions enabling positioning of only one of the first and the second valve handles in the ON position at a given time.

280. Fujisawa anticipates claim 19. *Supra* Section X.D.

J. Claim 20

[20] The fuel selector of claim 19 wherein:

when the selector switch is in the first position, the first valve handle is actuatable between the ON position and the OFF position, and the second valve handle is prohibited from being in the ON position; and

when the selector switch is in the second position, the first valve handle is prohibited from being in the ON position, and the second valve handle is actuatable between the ON position and the OFF position.

281. Fujisawa anticipates claim 20. *Supra* Section X.E.

K. Claim 30

[30.0] A fuel selector for use with a dual fuel generator, the fuel selector comprising:

[30.1] a valve assembly fluidly couplable to each of a first fuel source and a second fuel source and operable to selectively control a first fuel flow and a second fuel flow from the first fuel source and the second fuel source, respectively, to an engine of the dual fuel generator, the valve assembly comprising:

282. Fujisawa anticipates claim elements [30.0]-[30.1]. *Supra* Section X.A, Elements [7.0]-[7.1].

[30.2] two fuel inputs comprising:

a first fuel input couplable to the first fuel source; and

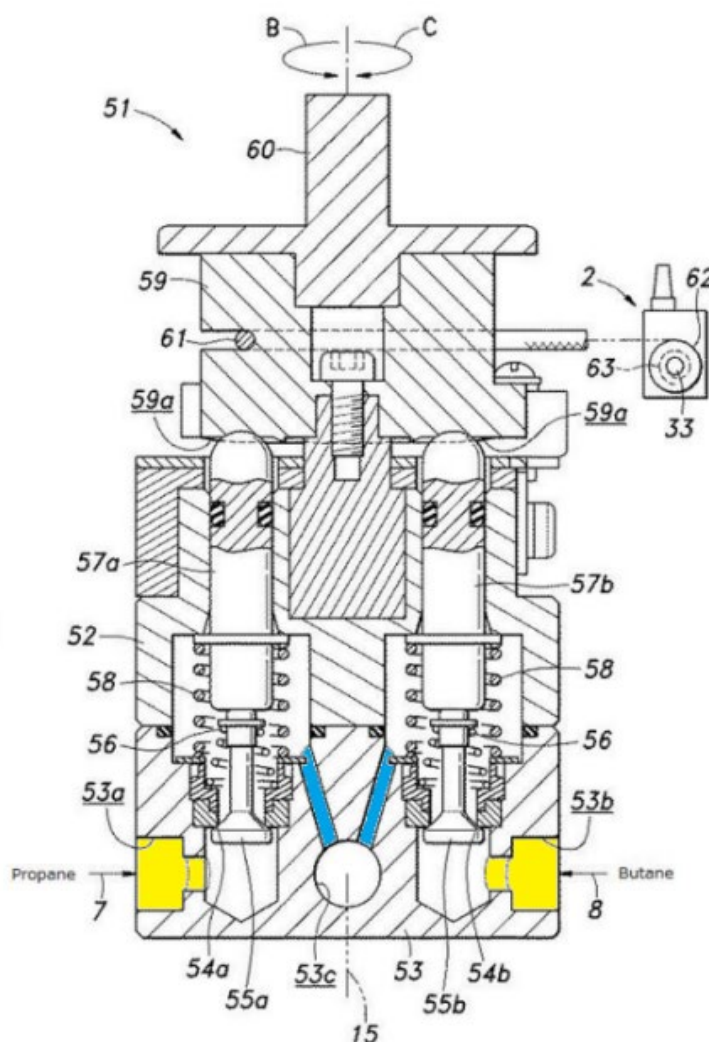
a second fuel input couplable to the second fuel source; and

two fuel outputs configured to selectively supply fuel to the engine from the first fuel source or the second fuel source; and

283. Fujisawa anticipates claim element [30.2] because Fujisawa teaches a valve assembly with two fuel inputs and two fuel outputs connected to two fuel sources. Specifically, Fujisawa teaches two fuel inputs (yellow), with the first fuel

input 53a connected to first fuel source 4 and the second fuel input 53b connected to second fuel source 5. EX1005, ¶[0013], FIG. 5. Fujisawa teaches two fuel outputs (blue), with first fuel output supplying fuel from only fuel source 4 and second fuel output supplying fuel from only fuel source 5.

[FIG. 5]

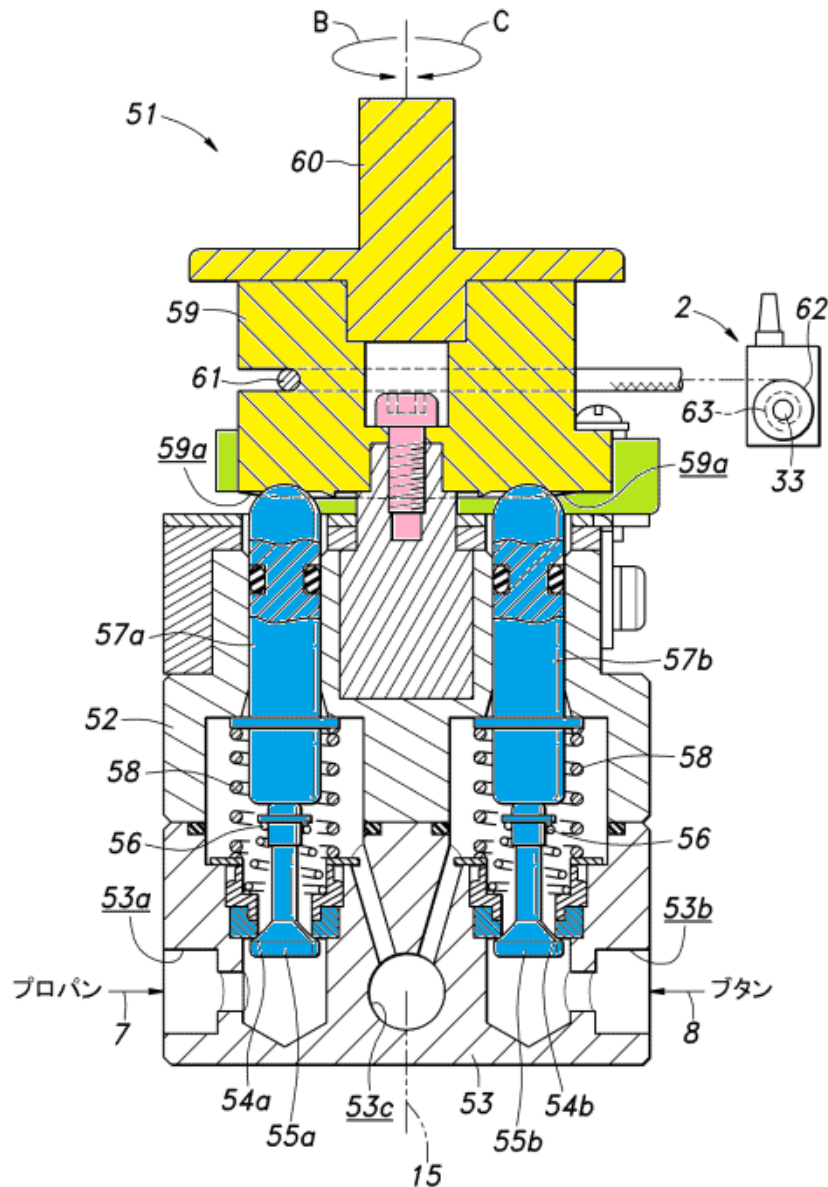


EX1005, FIG. 5 (annotated).

[30.3] a selector switch positioned on the valve assembly to allow a user to manually select the first fuel flow or the second fuel flow.

284. Fujisawa anticipates claim element [30.3] because Fujisawa teaches a selector switch positioned on the valve assembly that allows the user to select one of a first fuel source and a second fuel source. Specifically, under Patent Owner's apparent construction of the term "selector switch" (*supra* Section V.C), Fujisawa teaches a selector switch comprising a rotary knob (60, yellow) and a cam body (59, yellow) which allows the user to manually select alternate fuel flows. EX1005, ¶[0034].

【図 5】



EX1004, FIG. 5 (annotated).

285. The selector switch is positioned on and “in contact with” cam follower rods 57a and 57b of the valve assembly. EX1005, ¶[0034]. Cam surface 59a is constructed such that when the user rotates the selector switch (knob and cam body),

the contours of the cam surface move the cam follower rods to open and close the valves. As a result, one of the two fluid valves is opened in response to the selector switch rotation, selecting one of the first fuel flow and the second fuel flow. *Id.*, ¶¶[0035]-[0038].

L. Claim 31

[31] The fuel selector of claim 30 wherein the two fuel outputs are configured to selectively supply fuel to the engine from only one of the first and second fuel sources responsive to selection of the first fuel flow or the second fuel flow via the selector switch and a corresponding operation of the valve assembly.

286. Fujisawa anticipates claim 31 because cam surface 59a is contoured such that only one of the fuel valves can be opened to supply fuel through one of the fuel outputs at a time, such that only one of the first fuel and the second fuel flows to the engine at a given time. EX1005, ¶¶[0034]-[0038]. The selective supply of fuel to the engine from only one of the first fuel source or the second fuel source is responsive to the rotation of the selector switch and the corresponding actuation of the first cam body and fuel valve or the second cam body and fuel valve, depending on the rotation direction. *Supra* Section X.A, Elements [7.1]-[7.3].

M. Claim 32

[32] The fuel selector of claim 30 wherein the valve assembly comprises:

a first fuel valve having open and closed positions to selectively control the first fuel flow to the engine; and

a second fuel valve having open and closed positions to selectively control the second fuel flow to the engine.

287. Fujisawa anticipates claim 32. *Supra* Section X.A, Element [7.2].

N. Claim 33

[33] The fuel selector of claim 32 further comprising:

a first valve handle coupled to the first fuel valve and actuatable between an ON position and an OFF position to selectively actuate the first fuel valve between the open position and the closed position, respectively; and

a second valve handle coupled to the second fuel valve and actuatable between an ON position and an OFF position to selectively actuate the second fuel valve between the open position and the closed position, respectively.

288. Fujisawa anticipates claim 33. *Supra* Section X.C.

O. Claim 34

[34] The fuel selector of claim 32 wherein the first fuel valve and the second fuel valve are non-solenoid, mechanical valves.

289. Fujisawa anticipates claim 34 because Fujisawa teaches first and second fuel valves that are non-solenoid, mechanical valves. Fujisawa teaches that the first and second fuel valves are opened and closed in response to rotation of the knob 60 and cam body 59. The knob and cam body control the positions of the valve bodies because the cam follower rods move up and/or down in response to the contoured cam surface as the knob is rotated. EX1005, ¶¶[0035]-[0038]. A POSA would have understood that Fujisawa does not operate using electrically energized

solenoid valves for the first and second fuel valves, but rather uses manually actuated non-solenoid, mechanical valves.

P. Claim 35

[35] The fuel selector of claim 32 wherein the selector switch provides for manual actuation of the first fuel valve and the second fuel valve between the open and closed positions.

290. Fujisawa anticipates claim 35. *Supra* Section X.B.

XI. GROUND 4: CLAIMS 7-11, 14-20, AND 30-35 ARE UNPATENTABLE AS OBVIOUS OVER FUJISAWA IN VIEW OF DUROMAX

A. Motivation to Combine Fujisawa and DuroMax

291. A POSA would have been motivated to combine the dual fuel generator and fuel selector valve assembly of Fujisawa and the teachings of DuroMax, which teaches a dual fuel generator that runs alternately on gasoline or LPG. The resulting combination consisting of a dual fuel generator with the fuel selector of Fujisawa operating on gasoline and LPG fuels would provide specific advantages known in the art.

292. At the time of the claimed priority date, dual fuel engines configured to operate on either an LPG fuel source or a gasoline fuel source were known in the art. *See, e.g.*, EX1012, 2:8-12, 2:124-147; EX1025, 1:6-20. Both DuroMax and Fujisawa teach dual fuel generators configured to operate on two different types of fuels. Fujisawa describes a dual fuel generator configured to use two gaseous fuel sources,

propane (LPG) and butane (EX1005, ¶¶[0004]-[0006]), whereas DuroMax is a dual fuel generator configured to operate on a liquid fuel (gasoline) and a gaseous fuel (LPG). EX1006, 11-12. It would have been obvious to a POSA to reconfigure the Fujisawa generator based on the teachings of DuroMax to provide the dual fuel generator and fuel selector switch of Fujisawa alternately providing gasoline and LPG rather than butane and propane (LPG).

293. A POSA would have been motivated by the teachings of DuroMax, specifically an LPG- or gasoline-powered dual-fuel generator, to supply gasoline instead of butane to one of Fujisawa's fuel valve assemblies. A POSA would have understood that gasoline provides various advantages because it is readily available in large quantities, has a higher energy density than butane (thereby providing more power for the same mass of fuel), has better performance in cold weather, and can be stored in an unpressurized container. For at least these reasons, a POSA would have been motivated to substitute the butane fuel source disclosed in Fujisawa for a gasoline fuel source, as taught by DuroMax.

B. Reasonable Expectation of Success in Combining Fujisawa and DuroMax

294. A POSA would have had a reasonable expectation of success in combining the teachings of DuroMax with the fuel selector and dual fuel generator of Fujisawa. Fujisawa discloses a generator with an engine that is designed to

function with different gaseous fuels. While Fujisawa may not explicitly state that its engine can operate using gasoline fuel, a POSA would have understood that engines configured to run on either LPG fuel and gasoline fuel were well known (*see, e.g.*, EX1006). A POSA would have understood that the fuel supply switching system of Fujisawa could be readily modified to supply gasoline rather than butane, resulting in a dual fuel generator selectively operating with LPG fuel or gasoline fuel.

295. Furthermore, while Fujisawa discloses a valve assembly that is designed for gaseous fuels, a POSA would have understood that the fluid valves such as those taught by Fujisawa could be used to handle many types of fluids, including gasoline, not just gaseous fuels such as propane and butane.

296. While a POSA would have understood that the fluid conduits and valves of Fujisawa would function equivalently to open or close to allow or stop the flow of liquid gasoline fuel, a POSA would have understood that liquid gasoline is not a pressurized gaseous fuel, such as propane or butane. Therefore, a POSA would have understood that it would be unnecessary to pass the liquid gasoline fuel through the pressure regulator of Fujisawa. A POSA would have understood that the flow of gasoline fuel, when the gasoline valve of fuel cock 51 is opened, should be delivered directly to the carburetor. *See, e.g.*, EX1009, ¶[0012]. A POSA would have understood that routing the gasoline fuel from the valve assembly of Fujisawa to the

carburetor could be accomplished using standard fuel system components well known in the art.

297. In sum, a POSA would have known that the fluid valve assembly of Fujisawa would function equivalently with gasoline and could be readily configured to selectively supply gasoline fuel or propane (LPG) fuel instead of butane fuel and propane fuel. A POSA would have further understood that gasoline would not need to pass through the pressure regulator of Fujisawa. In modifying Fujisawa to function with gasoline, a POSA would have understood that it would be desirable to divert the gasoline from fuel pipe 15 of Fujisawa, instead supplying the gasoline fuel directly to the engine's carburetor. By directing the gasoline directly to the carburetor, a POSA would prevent the liquid fuel from unnecessarily entering the gaseous pressure regulator. A POSA would have had a reasonable expectation of success because simple conduits and fuel system components to connect a fuel valve outlet to a carburetor were well known in the art and could be accomplished with the ordinary creativity of a POSA.

C. Claims 7-11

298. The combination of Fujisawa and DuroMax renders claims 7-11 obvious. *Supra* Sections X.A-E.

D. Claim 14

[14] The fuel selector of claim 7 wherein:

the first fuel valve is couplable to a liquefied petroleum gas (LPG) fuel source; and

the second fuel valve is couplable to a gasoline source.

299. The combination of Fujisawa and DuroMax renders claim 14 obvious because, as explained above, a POSA would have modified the fuel selector of Fujisawa to use LPG as a first fuel and gasoline as a second fuel. A POSA would have understood that the valves of Fujisawa would function equivalently with liquid gasoline as they would with the liquified gaseous fuels. *Supra* Sections XI.A-B. A POSA would have been motivated by the teachings of DuroMax, an LPG/gasoline dual fuel generator, to modify the dual fuel generator of Fujisawa to operate selectively on LPG fuel or gasoline fuel, as taught by DuroMax. *Supra* Section XI.A. A POSA would have had a reasonable expectation of success in doing so, given that the fuel selector of Fujisawa would be compatible with liquid fuels, such as gasoline, and that dual fuel generators capable of alternately operating with liquid fuels or gaseous fuels were well known. *Supra* Section XI.B.

E. Claims 15-20, 30-35

300. The combination of Fujisawa and DuroMax renders claims 15-20 and 30-35 obvious. *Supra* Sections X.F-P.

**XII. GROUND 5: CLAIMS 1-5, AND 7-38 ARE UNPATENTABLE
AS OBVIOUS OVER FUJISAWA AND DUROMAX IN VIEW
OF NAKAFUSHI AND OLMR**

**A. Motivation to Combine Fujisawa, DuroMax, Nakafushi, and
Olmr**

301. A POSA would have been motivated to combine the dual fuel generator and fuel selector of Fujisawa, modified to selectively operate using LPG or gasoline, as taught by DuroMax, with the carburetor cutoff solenoid valve of Nakafushi or Olmr because of the specific advantages afforded. Fujisawa discloses a dual fuel generator with two liquified gaseous fuels. A POSA would have been motivated to modify the dual fuel generator of Fujisawa based on the teachings of DuroMax to configure the generator to alternately operate using an LPG fuel or a gasoline fuel. *Supra* Sections XI.A-B. A POSA would have understood that the modification of Fujisawa would require the addition of an ordinary gasoline carburetor to the intake passage of the combustion engine. Such methods and components were well known in the art and readily available at the time of the claimed priority date.

302. A POSA would have been motivated to add the carburetor control valve 23 of Nakafushi to the dual fuel generator of Fujisawa and DuroMax to solve engine performance and potential safety problems related to remnant fuel in the carburetor when switching to gaseous fuel model, as noted by DuroMax. EX1006, 5, 11, 13. Nakafushi solves this by adding an electrical-switch-controlled valve to the outlet of

the carburetor to stop the flow of fuel from the carburetor bowl. *Supra* Section IX.A. The specific benefits afforded by implementing an electrically-controlled solenoid valve on the carburetor outlet were understood and techniques to implement such devices were well known, including reducing unsteady engine operation, carbon monoxide poisoning, engine backfire, and engine afterfire. *Supra* Sections IX.A-B. Similarly, a POSA would have been motivated to implement the explicitly named solenoid valve of Olmr, which would function equivalently in the electrically switched circuit of Nakafushi, to provide a carburetor solenoid control valve for the same reasons. *Supra* Sections IX.A-B.

303. Fujisawa teaches that certain desirable device settings are dependent on fuel choice, such as the supply pressure for different gaseous fuels, such as butane and propane. EX1005, ¶¶[0007]-[0008]. It is therefore beneficial to couple the adjustment of such settings to the switching mechanism used to switch between fuels in a dual fuel generator. Fujisawa teaches that coupling the adjustment of such settings to the fuel switching mechanism is useful to simplify operation of the generator. *Id.*, ¶[0010]. Similarly, Nakafushi discloses a system by which actuation of the control valve 23, for shutting off liquid fuel flow from the carburetor, is coupled to the switching mechanism for switching between gasoline and LPG fuels. A POSA would have therefore been motivated to couple the actuation of the control valve 23 to the adjustment of the switching mechanism disclosed by Fujisawa.

Furthermore, a POSA would have been motivated to combine the teachings of Olmr's solenoid switch with Nakafushi's control valve 23. *Supra* Section IX.A.

B. Reasonable Expectation of Success in Combining Fujisawa, DuroMax, Nakafushi, and Olmr

304. A POSA would have a reasonable expectation of success in combining the LPG/gasoline dual fuel generator of Fujisawa and DuroMax with the carburetor control valve of Nakafushi because Fujisawa teaches methods to couple the control valve of Nakafushi with the selector switch of Fujisawa. Specifically, Fujisawa teaches a simple wire and pulley system coupled to the selector switch to control another function, adjusting the regulator pressure setting when different fuel sources are selected. EX1005, ¶¶[0036]-[0041]. A POSA would have understood that this simple feature of Fujisawa could be used to control another simple function, such as the actuation of an electrical switch to control a solenoid valve.

305. As another option, a POSA would have understood that a contoured surface on a rotary cam could be used to selectively depress components, such as cam follower rods 57a and 57b. A POSA would have understood that the same basic function could be implemented equally to depress an electrical switch when the selector switch is moved to the intended position. The '896 Patent is consistent with this understanding, as it explains that the specific type of carburetor shutoff valve

and switch, whether an electrically actuated solenoid valve or another type of valve, is a design choice. EX1001, 6:65-7:3.

306. As these examples illustrate, a POSA would have understood that there were various methods to couple the actuation of a solenoid valve control switch to the Fujisawa selector switch using ordinary components and techniques known in the art. Accordingly, a POSA would have had reasonable expectation of success in implementing Nakafushi's carburetor control valve with the selector switch of Fujisawa. Similarly, and for the same reasons, a POSA would have had a reasonable expectation of success in combining the teachings of Olmr's solenoid valve with Nakafushi's carburetor control valve switch. *Supra* Section IX.B.

C. Claim 1

[1.0] A dual fuel generator comprising:

307. The combination of Fujisawa, DuroMax, Nakafushi, and Olmr renders claim element [1.0] obvious. Fujisawa discloses a dual fuel "power generator." EX1005, ¶[0012].

[1.1] an internal combustion engine couplable to a first fuel source and a second fuel source to selectively receive fuel therefrom; and

308. The combination of Fujisawa, DuroMax, Nakafushi, and Olmr renders claim element [1.1] obvious. Fujisawa teaches an "internal combustion engine 1" couplable to first fuel tank 4 and second fuel tank 5. *Id.*, ¶¶[0012]-[0013].

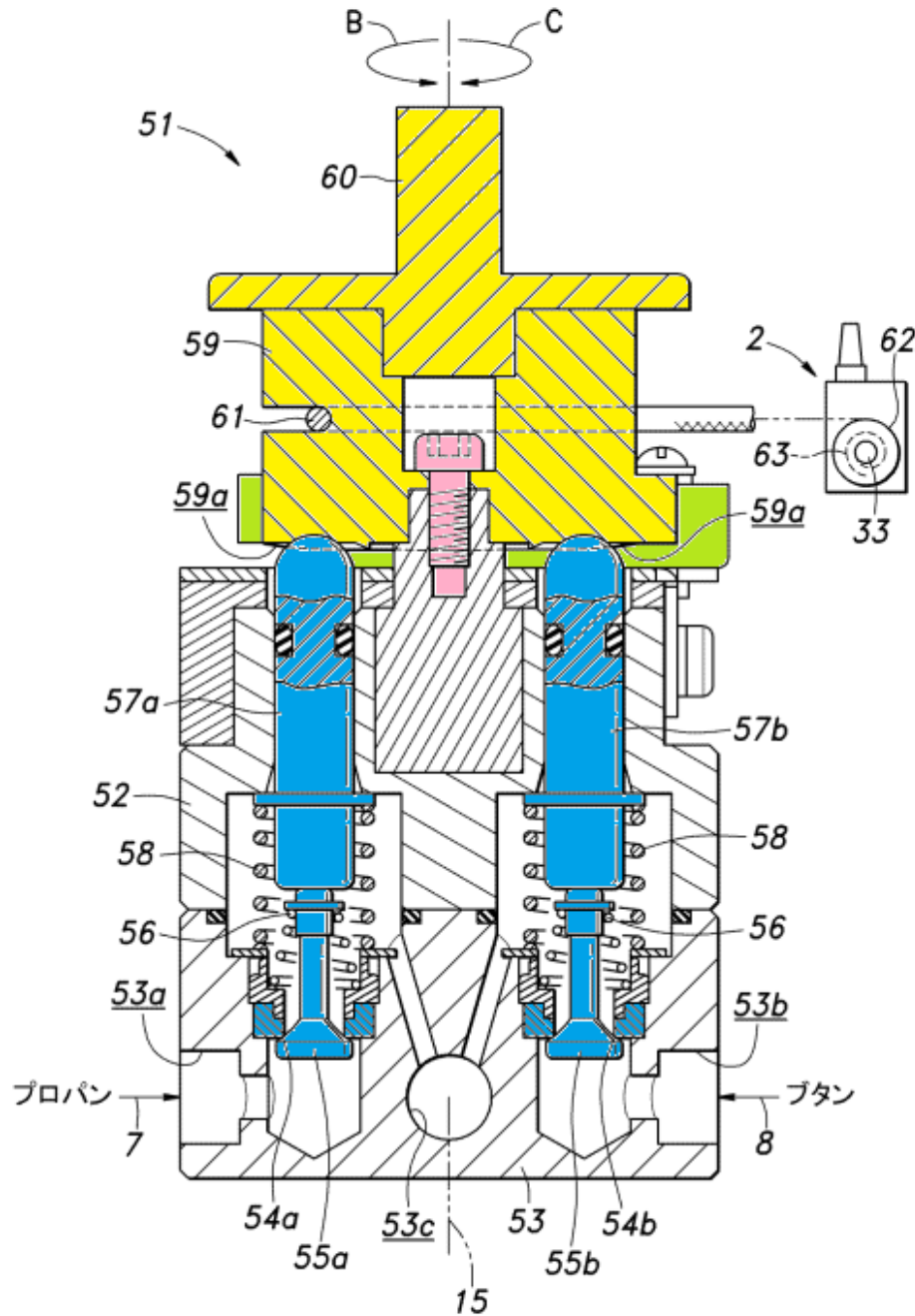
[1.2] a fuel selector configured to control a flow of fuel to the internal combustion engine, the fuel selector comprising:

309. The combination of Fujisawa, DuroMax, Nakafushi, and Olmr renders claim element [1.2] obvious. Fujisawa teaches a fuel selector (“supply switching device”) configured to control fuel flow to the engine. *Id.*, ¶[0001].

[1.3] a selector plate;

310. The combination of Fujisawa, DuroMax, Nakafushi, and Olmr renders claim element [1.3] obvious. Fujisawa teaches a selector plate (green). *Id.*, FIG. 5.

【図 5】



EX1004, FIG. 5 (annotated).

[1.4] a first fuel valve assembly positioned adjacent to the selector plate and including a first fuel valve and a first fuel valve handle, the first fuel valve

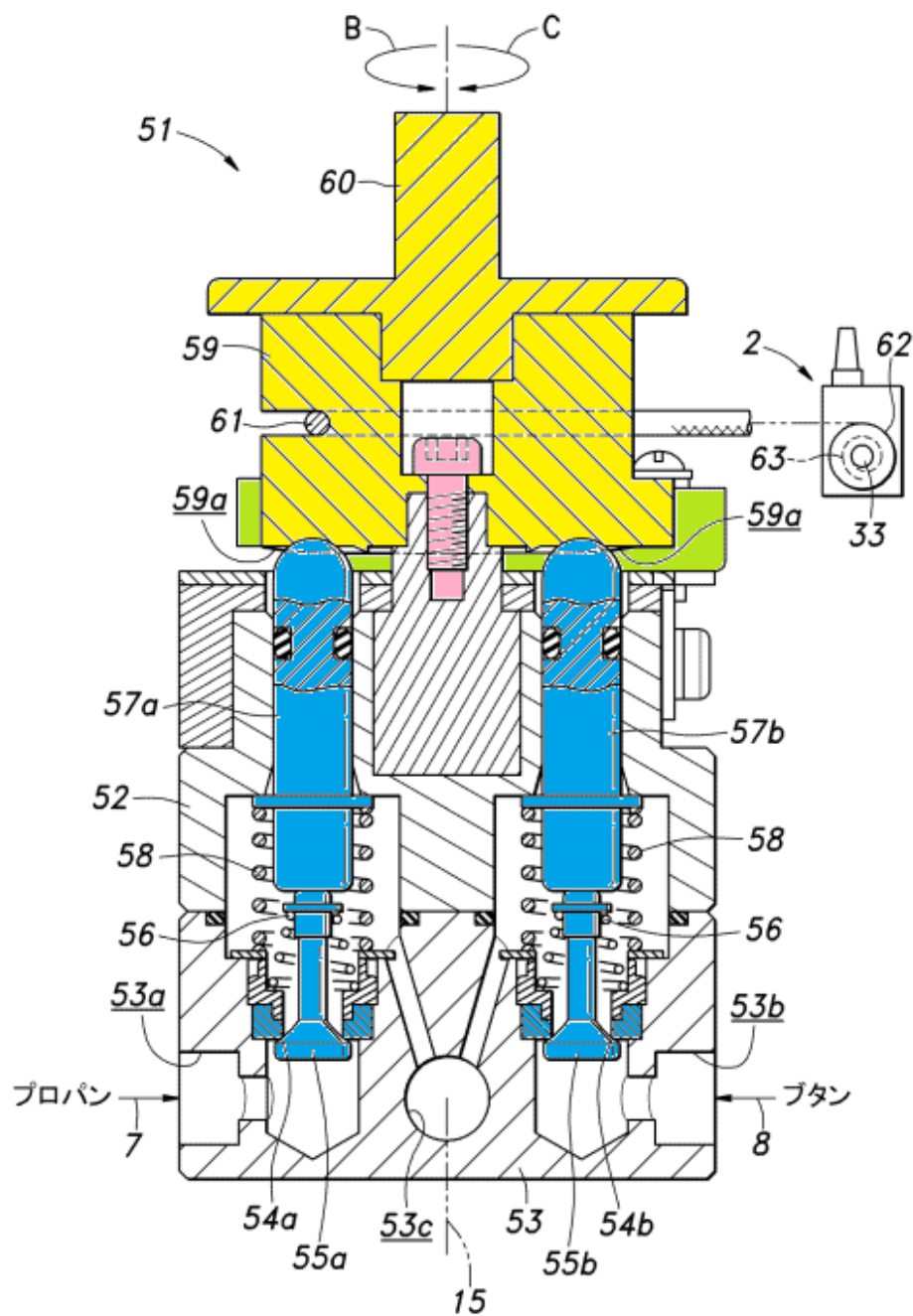
handle being actuatable between an ON position and an OFF position to selectively open and close the first fuel valve;

a second fuel valve assembly positioned adjacent to the selector plate and including a second fuel valve and a second fuel valve handle, the second fuel valve handle being actuatable between an ON position and an OFF position to selectively open and close the second fuel valve;

311. The combination of Fujisawa, DuroMax, Nakafushi, and Olmr renders claim element [1.4] obvious. Fujisawa describes a first fuel valve assembly comprising a first fuel valve (valve seat 54a and valve body 55a, blue) and a first fuel valve handle (cam follower 57a, blue). Fujisawa describes a second fuel valve assembly comprising a second fuel valve (valve seat 54b and valve body 55b, blue) and a second fuel valve handle (cam follower 57b, blue). EX1005, ¶¶[0032]-[0033].

312. The valve handles 57a, 57b are positioned adjacent to the selector plate (green). Each valve handle has an OFF position corresponding to a “maximum protrusion position” to close its respective valve (*id.*, ¶¶[0035]-[0038]) and an ON position corresponding to a “push-in” position to open its respective valve (*id.*).

【図 5】



EX1004, FIG. 5 (annotated).

[1.5] a selector switch slidably coupled to the selector plate so as to be movable between:

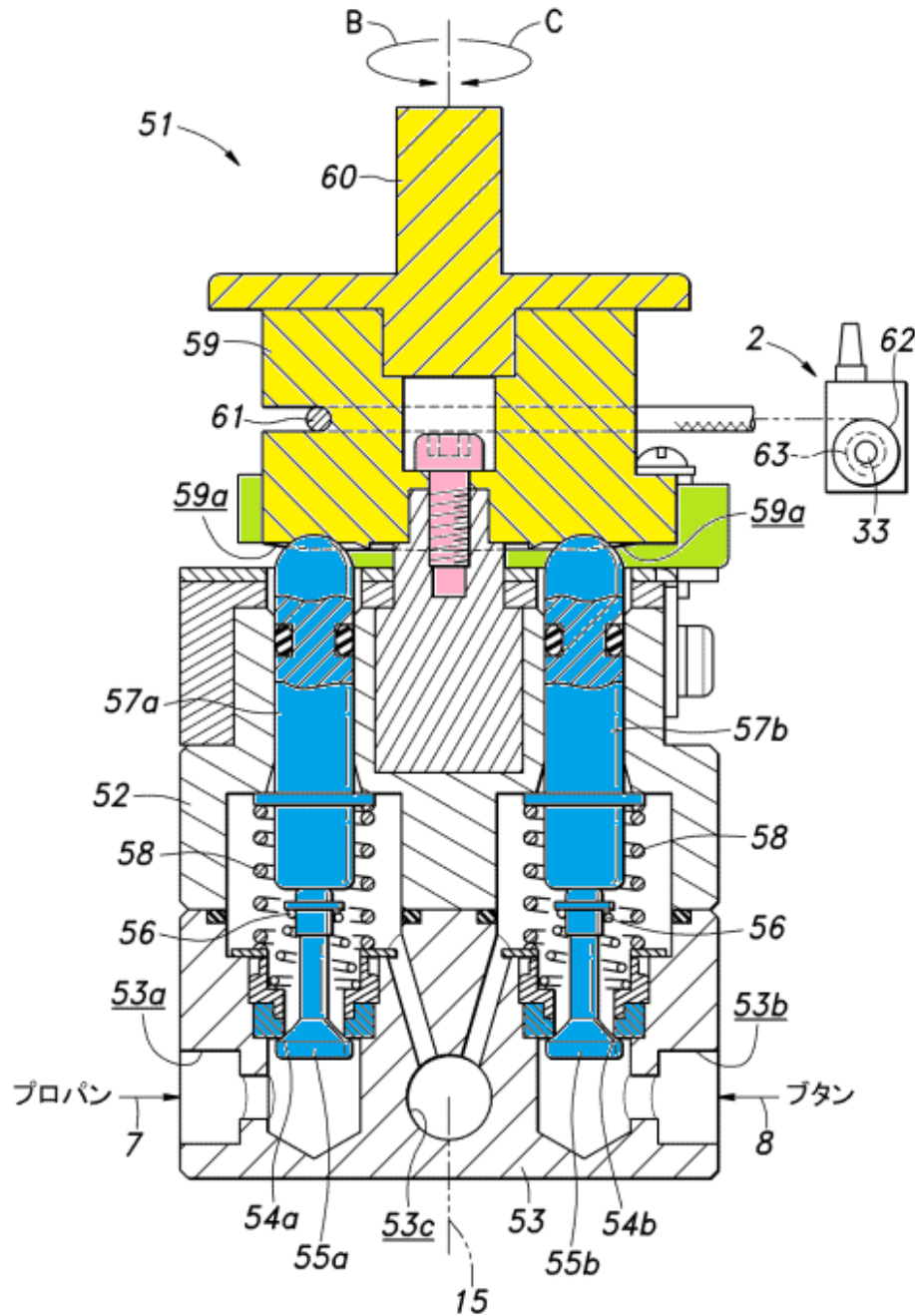
a first position in which the selector switch covers the second fuel valve handle so as to prevent actuation of the second valve handle to the ON position; and

a second position in which the selector switch covers the first valve handle so as to prevent actuation of the first valve handle to the ON position; and

313. The combination of Fujisawa, DuroMax, Nakafushi, and Olmr renders claim element [1.5] obvious. Under Patent Owner's apparent construction of "selector switch," Fujisawa describes a selector switch comprising rotary knob 60 and cam body 59 (yellow). EX1005, ¶¶[0035]-[0038]. The selector switch rotates relative to the selector plate (green) such that it is "in sliding contact" with the cam followers. *Id.*, ¶[0037].

314. The selector switch is movable between a first position (rotating counterclockwise in direction B) and second position (rotating clockwise in direction C). *Id.*, ¶[0035]. In the first position, cam body 59 covers the second fuel valve handle 57b and controls its height to prevent its actuation to the ON position. *Id.*, ¶¶[0035]-[0038]. In the second position, cam body 59 covers the first fuel valve handle 57a and controls its height to prevent its actuation to the ON position. *Id.*

【図 5】



EX1004, FIG. 5 (annotated).

[1.6] a carburetor fuel shutoff solenoid that is activated when the selector switch is in the first position.

315. The combination of Fujisawa, DuroMax, Nakafushi, and Olmr renders claim element [1.6] obvious. Nakafushi and Olmr teach a carburetor solenoid switch configured to activate a normally open carburetor solenoid valve. *Supra* Sections IX.C, Element [1.6] and IX.J.

316. A POSA would have been motivated by the teachings of DuroMax, which teaches an LPG/gasoline generator with a carburetor, and the teachings of Nakafushi and Olmr, which disclose a normally open carburetor shutoff solenoid coupled to the switching means, to modify the generator of Fujisawa to include a carburetor with a normally open carburetor shutoff solenoid. A POSA would have been motivated to couple the solenoid circuitry to the selector switch of Fujisawa such that the solenoid is activated in the first position (LPG) to shut off liquid fuel flow. A POSA would have a reasonable expectation of success, given that the selection mechanism of Fujisawa is configured to be coupled to other system adjustments. *Supra* Sections XII.A-B.

D. Claim 2

[2] The dual fuel generator of claim 1 wherein:

the first fuel valve assembly is configured to couple to a liquefied petroleum gas (LPG) fuel source; and

the second fuel valve assembly is configured to couple to a gasoline source.

317. The combination of Fujisawa, DuroMax, Nakafushi, and Olmr renders claim 2 obvious. A POSA would have been motivated by the teachings of DuroMax to modify the generator of Fujisawa to run on both LPG and gasoline fuel and would have a reasonable expectation of success. *Supra* Section XI.D. This would have resulted in the first fuel valve assembly being couplable to an LPG fuel source and a second fuel valve assembly being couplable to a gasoline fuel source. *Supra* Section XI.D.

E. Claim 3

[3] The dual fuel generator of claim 1 wherein:

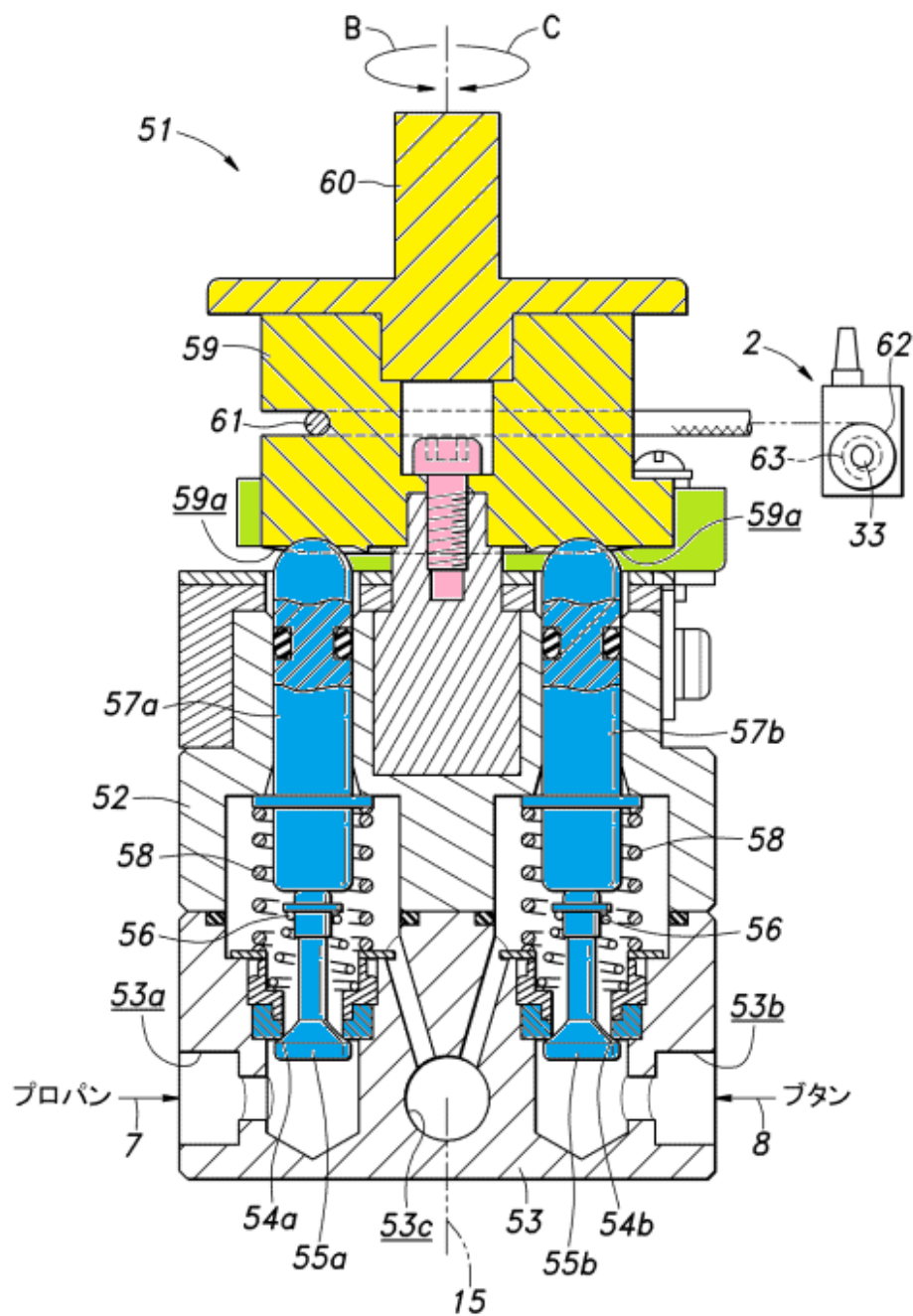
the selector plate comprises first and second openings;

the first valve assembly extends through the first opening of the selector plate; and

the second valve assembly extends through the second opening of the selector plate.

318. The combination of Fujisawa, DuroMax, Nakafushi, and Olmr renders claim 3 obvious. The “outwardly protruding end[]” of the first valve assembly (blue) extends through a first opening of the selector plate (green) to maintain “contact” with cam surface 59a (yellow). EX1005, ¶[0034]. The outwardly protruding end of the second valve assembly (blue) extends through a second opening of the selector plate to maintain contact with cam surface 59a.

【図 5】



EX1004, FIG. 5 (annotated).

F. Claim 4

[4] The dual fuel generator of claim 1 wherein the selector switch comprises:

a front side;

a back side; and

a groove located on the back side and configured to:

prohibit actuation of the first fuel valve handle to the ON position when the selector switch is in the second position; and

prohibit actuation of the second fuel valve handle to the ON position when the selector switch is in the first position.

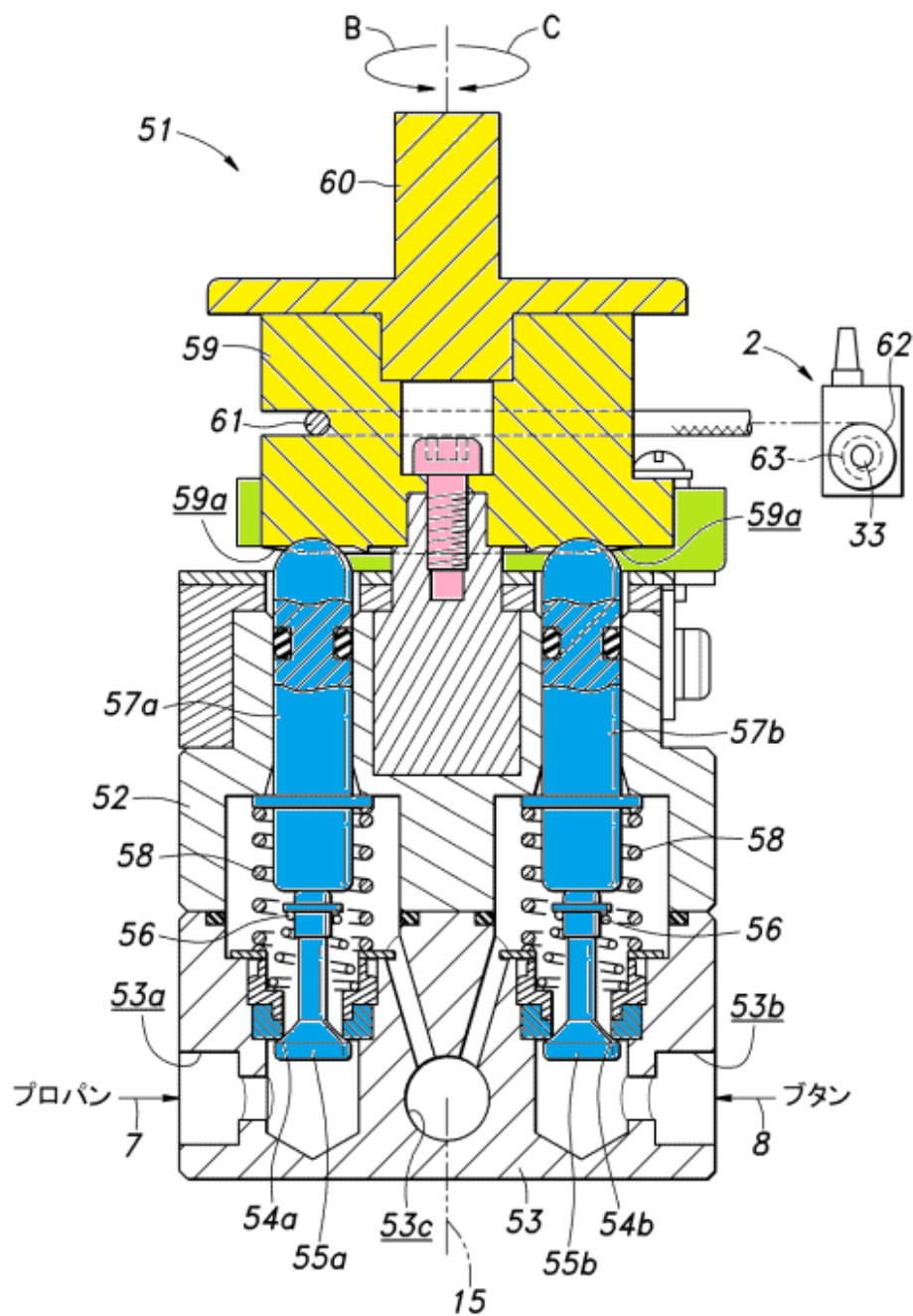
319. The combination of Fujisawa, DuroMax, Nakafushi, and Olmr renders claim 4 obvious. The selector switch has a front side (knob 60 “provided on the upper surface of the cam body 59”) and a back side (“lower surface [59a] of the cam body 59”). EX1005, ¶[0034].

320. The “stopper surface portion” of cam surface 59a is a groove configured to “regulate[] the maximum protrusion position” of the valve handles, such that first fuel valve handle 57a cannot be actuated when the selector switch is in the second position, and second fuel valve handle 57b cannot be actuated when the selector switch is in the first position. EX1005, ¶¶[0035]-[0038]; *supra* Section XII.C, Element [1.5].

G. Claim 5

321. The combination of Fujisawa, DuroMax, Nakafushi, and Olmr renders claim 5 obvious. The “stopper surface portion” of cam surface 59a (the “groove”) is configured such that the selector switch cannot be moved between the first position (rotated in direction B) and second position (rotated in direction C) without both the first and second valve handles being in the OFF position, shown below. EX1005, ¶¶[0035]-[0038], FIG. 5. A POSA would have understood that movement from the first position and the second position (or equivalently movement from a second position to a first position) requires the selector switch to first enter a neutral position (shown below) where both valve handles are in the OFF position.

【図 5】



EX1004, FIG. 5 (annotated).

H. Claims 7-11

322. The combination of Fujisawa, DuroMax, Nakafushi, and Olmr renders claims 7-11 obvious. *Supra* Sections X.A-E.

I. Claims 12-13

[12] The fuel selector of claim 10 further comprising a carburetor solenoid switch extending through an opening in a front surface of the selector plate and comprising a depressible switch configured to activate an associated solenoid when depressed.

[13] The fuel selector of claim 12 wherein, when the selector switch is in the first position and prohibiting the second valve handle from being in the ON position, the selector switch depresses the carburetor solenoid switch so as to activate the carburetor solenoid and prohibit the second fuel flow to the engine.

323. The combination of Fujisawa, DuroMax, Nakafushi, and Olmr renders claims 12 and 13 obvious. Nakafushi and Olmr teach a carburetor solenoid switch configured to activate a normally open carburetor solenoid valve. *Supra* Sections IX.C, Element [1.6] and IX.J.

324. Fujisawa teaches a selector switch with a first position (rotating counterclockwise in direction B) and second position (rotating clockwise in direction C). *Supra* Section XII.C, Element [1.5].

325. A POSA would have been motivated by the teachings of DuroMax, which teaches an LPG/gasoline generator with a carburetor, and the teachings of Nakafushi and Olmr, which disclose a carburetor shutoff solenoid coupled to the

switching means, to modify the generator of Fujisawa to include a carburetor with a solenoid switch configured to activate a normally open carburetor solenoid when the selector switch is in the first position. *Supra* Sections XII.A, XII.C, Element [1.6].

326. Nakafushi does not explicitly state any specific type of switch for its fuel selecting switch 19, nor does Nakafushi explicitly describe how a user is expected to physically interact with and manipulate the switch. A POSA would have understood that various types of electrical switches were known in the art that were configured to perform the simple switching function outlined in Nakafushi. A POSA would have further understood that depressible switches had long been used to perform electrical switching functions. *See, e.g.*, EX1037. The '896 Patent notes that more than one type of switch can be used to control a solenoid and explains that the solenoid control could be a “depressible switch” or “another type of switch.” EX1001, 6:65-7:3. A POSA would have been motivated to add an electrical switch to the selector switch of Fujisawa to control the carburetor solenoid valve. A POSA would have had a reasonable expectation of success in implementing an electrical switch on the selector switch of Fujisawa, because Fujisawa already teaches the coupling of another function to the rotation of its selector switch. It would be an ordinary task using the ordinary skill and creativity of a POSA to position a depressible solenoid switch (or other type of switch) such that it was actuated selectively when Fujisawa’s selector switch was moved to the first position (or

alternately the second position). A POSA would have understood that the contoured cam surface is designed to depress movable structures (cam followers) when rotated, and that same simple function could be used to activate a simple depressible switch to control the carburetor solenoid switch.

327. Depressible switches were one of a finite number of well-known types of switches used for closing an electrical circuit and actuating a solenoid valve prior to the priority date of the '896 Patent. A POSA would have been motivated to couple the selector switch of Fujisawa to a depressible solenoid switch because Fujisawa already discloses depressible cam followers coupled to the selector switch. Like cam followers 57a and 57b, the depressible contact for the solenoid switch would also extend out of the surface of the selector plate.

328. A POSA would have a reasonable expectation of success because cam surface 59a can be configured to simultaneously depress a cam follower 57a and the solenoid switch when it is rotated in direction B to the first position.

J. Claims 14-20

329. The combination of Fujisawa, DuroMax, Nakafushi, and Olmr renders claims 14-20 obvious. *Supra* Sections XI.D-E.

K. Claim 21

[21.0] A fuel selector of a dual fuel generator comprising:

[21.1] a valve assembly fluidly couplable to each of a first fuel source and a second fuel source and operable to selectively control a first fuel flow and a second

fuel flow from the first fuel source and the second fuel source, respectively, to an engine of the dual fuel generator;

330. The combination of Fujisawa, DuroMax, Nakafushi, and Olmr renders claim elements [21.0]-[21.1] obvious. *Supra* Section X.A, Elements [7.0]-[7.1].

[21.2] a selector switch having a first fuel mode and a second fuel mode;

331. The combination of Fujisawa, DuroMax, Nakafushi, and Olmr renders claim element [21.2] obvious. Fujisawa teaches a selector switch (knob 60 and cam body 59, yellow) with first and second fuel modes. *Supra* Section X.A, Element [1.2]. Fujisawa teaches that the selector switch has a first fuel mode when rotated in direction B and a second fuel mode when rotated in direction C. EX1005, ¶[0035].

A POSA would have understood that ON and OFF refer to open and closed positions. Similarly, Olmr teaches that the solenoid valve is normally in the open position and actuatable to a closed position. EX1010, 1:42-45. Further, a POSA would have understood that the basic function of a fuel solenoid valve is to open or close to allow or prevent the flow of fuel. Therefore, a POSA would have inherently understood that fuel solenoid valves, like those of Nakafushi and Olmr, have open and closed positions.

333. To the extent it is not readily apparent that valve 23 of Nakafushi is a solenoid valve, Olmr explicitly teaches a carburetor shutoff valve that is a solenoid valve. EX1010, 2:30-56; *see also id.*, 1:33-36, FIG. 2. A POSA would have been motivated by the teachings of DuroMax, which teaches a carbureted dual-fuel generator, and the teachings of Nakafushi and Olmr, which disclose electrically-switched carburetor shutoff solenoids, to improve the function and safety of Fujisawa by adding a carburetor with a carburetor solenoid. *Supra* Section XII.A. A POSA would have a reasonable expectation of success given that the solenoid valve of Olmr is similarly controlled by an electrical circuit, like the control valve switch of Nakafushi. *Supra* Section XII.B.

[21.4] a solenoid switch having open and closed positions;

334. The combination of Fujisawa, DuroMax, Nakafushi, and Olmr renders claim element [21.4] obvious because the combination comprises a solenoid switch

with open and closed positions. A POSA would have been motivated by the teachings of DuroMax, which teaches an LPG/gasoline generator with a carburetor, and the teachings of Nakafushi and Olmr, which disclose a normally open carburetor shutoff solenoid coupled to the switching means, to modify the generator of Fujisawa to include a carburetor with a solenoid switch. A POSA would have had a reasonable expectation of success, given that the selection mechanism of Fujisawa is configured to be coupled to other system adjustments.

335. Specifically, Nakafushi discloses a switch 19 that operates the control valve 23, which a POSA would have recognized to be an electrical solenoid switch. Nakafushi teaches that switch 19 has a closed position in which it is switched to contact point 19b to close the LPG circuit, and an open position in which it is disconnected from contact point 19b. EX1009, ¶[0014]. Nakafushi teaches that the (solenoid) control valve 23 has open (“ON”) and closed (“OFF”) positions. When the switch is switched to gasoline operation (contact 19a), the control valve is turned ON by a cut signal from the gasoline side contact point, and when the switch 19 is switched to LPG operation (contact 19b), the control valve is turned OFF by not receiving a cut signal. EX1009, ¶¶[0013]-[0014]. A POSA would have understood from the plain language of Nakafushi that ON indicates that fuel is passing through the opened control valve 23 and that OFF indicates that fuel is not passing through

the closed control valve 23. Therefore, a POSA would have understood that Nakafushi comprised a solenoid switch with open and closed positions.

336. To the extent it is not readily apparent that valve 23 of Nakafushi is a solenoid valve, Olmr explicitly teaches a solenoid carburetor shutoff valve. EX1010, 2:30-56; *see also id.*, 1:33-36, FIG. 2. A POSA would have been motivated by the teachings of DuroMax, which teaches a carbureted dual-fuel generator, and the teachings of Nakafushi and Olmr, which disclose electrically-switched carburetor shutoff solenoids, to improve the function and safety of Fujisawa by adding a carburetor with a carburetor solenoid. *Supra* Sections IX.A, XII.A. A POSA would have had a reasonable expectation of success given that the solenoid valve of Olmr is similarly controlled by an electrical circuit, like the control valve switch of Nakafushi. *Supra* Sections IX.B, XII.B.

337. Further, aside from the explicit teachings of Nakafushi and Olmr, a POSA would have understood that a typical solenoid valve is controlled with an electrical switch, which is typically configured with on and off positions, to selectively energize or deenergize the solenoid valve. Therefore, a POSA would have inherently understood that fuel solenoids, like those of Nakafushi and Olmr, are typically controlled with switches that have open and closed positions.

[21.5] wherein, when the selector switch is in the first fuel mode, the solenoid switch and the fuel solenoid are in the closed positions;

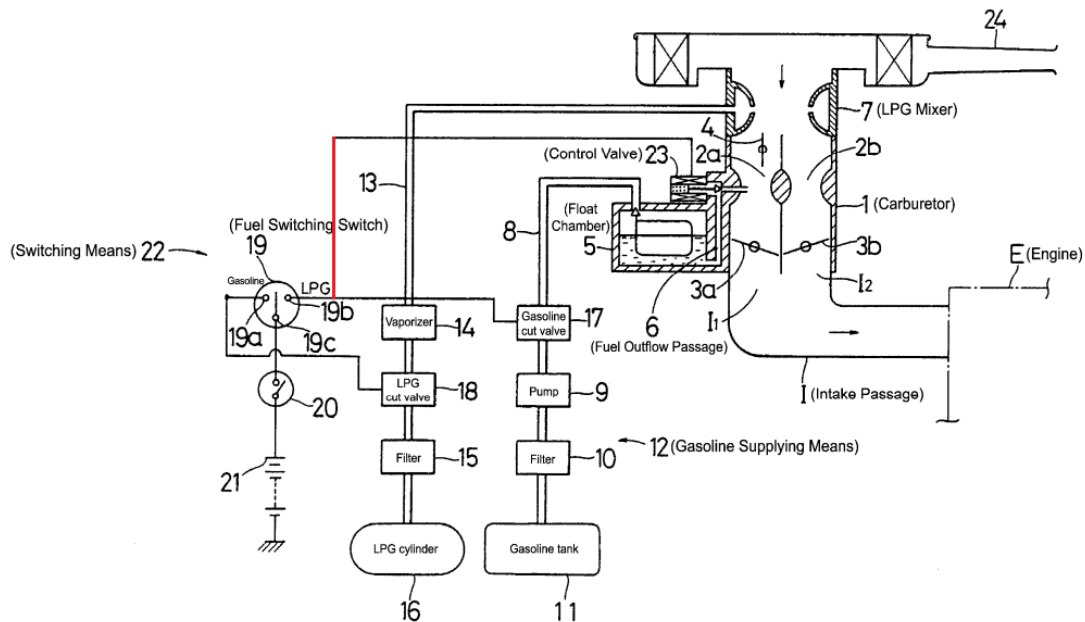
wherein, when the selector switch is in the second fuel mode, the solenoid switch and the fuel solenoid are in the open positions; and,

338. The combination of Fujisawa, DuroMax, Nakafushi, and Olmr renders claim element [21.5] obvious. Nakafushi describes a fuel selector switch which includes a first fuel mode in which switch 19 connects to contact point 19b and a second fuel mode in which switch 19 instead connects to contact point 19a. EX1009, ¶¶[0013]-[0014]. Nakafushi teaches that in the first fuel mode (LPG), the solenoid control valve 23 is OFF (i.e., in a closed position). *Id.*, ¶[0014]. Nakafushi teaches that the solenoid control valve is “turned OFF by not receiving a cut signal to close the fuel outflow passage.” *Id.* Nakafushi teaches that in the second fuel mode (gasoline), the solenoid control valve 23 is ON (i.e., in an open position). *Id.* The solenoid is “turned ON upon receiving a cut signal to open the fuel outflow passage.” *Id.*

339. As explained above, in adding the carburetor solenoid valve and control switch of Nakafushi or Olmr, it would be a straight-forward matter to configure the combination such that the solenoid switch is activated, and the carburetor valve closed, when the selector switch of Fujisawa is moved to the first fuel (LPG) position. *Supra* Section XII.I.

340. To the extent that it is not readily apparent that Nakafushi discloses a solenoid switch and solenoid valve with open and closed positions, Olmr teaches

that the carburetor solenoid valve is normally open when the circuit is not energized (i.e., the circuit is open and no current is flowing and the solenoid fuel valve is also open allowing fuel to pass). Olmr teaches that the solenoid valve closes in response to a switch closure and cuts off the flow of gas to the venturi (contraction in the throat of the carburetor). EX1010, 4:11-27. Typical solenoid valves are either normally open or normally closed when unpowered. A POSA would have understood that using the normally open solenoid of Olmr in place of the normally closed control valve of Nakafushi could be accomplished in simple and straightforward ways. One approach would involve connecting the normally open solenoid valve of Olmr in the circuit connected to point 19b instead of 19a, as shown below, so that the solenoid valve blocks the fuel outflow of gasoline fuel when in the first fuel mode (LPG). A POSA would have understood that both normally open and normally closed solenoid valves were known in the art and readily available, and that choosing between a normally open and normally closed valve is a simple design choice. *Compare* EX1009 *with* EX1010. A POSA would be motivated to pursue both options using the ordinary skill of a POSA. A POSA would have understood that using the normally open solenoid of Olmr in place of the normally closed control valve of Nakafushi would involve connecting the solenoid downstream of contact point 19b instead of 19a, shown below.



EX1009, FIG. 1 (modified).

341. A POSA would have been motivated by the teachings of DuroMax, which teaches a carbureted dual-fuel generator, and the teachings of Nakafushi and Olmr, which disclose electrically-switched carburetor shutoff solenoids, to improve the function and safety of Fujisawa by adding a carburetor with a carburetor solenoid. *Supra* Section XII.A. A POSA would have a reasonable expectation of success given that the solenoid valve of Olmr is similarly controlled by an electrical circuit, like the control valve switch of Nakafushi. *Supra* Section XII.B.

[21.6] wherein positioning of the selector switch in the first fuel mode and the second fuel mode enables a selection of the first fuel flow or the second fuel flow.

342. The combination of Fujisawa, DuroMax, Nakafushi, and Olmr renders claim element [21.6] obvious. Fujisawa teaches that the selector switch has a first fuel mode that enables a first fuel flow when rotated in direction B and a second fuel mode that enables a second fuel flow when rotated in direction C. EX1005, ¶¶[0035]-[0038].

L. Claim 22

[22] The fuel selector of claim 21 wherein:

positioning the selector switch in the first fuel mode enables the selection of the first fuel flow; and

positioning the selector switch in the second fuel mode enables the selection of the second fuel flow.

343. The combination of Fujisawa, DuroMax, Nakafushi, and Olmr renders claim 22 obvious. *Supra* Section XII.K, Element [21.6]. Rotating the selector switch in direction B to first fuel mode enables the selection of the first fuel flow. Rotating the selector switch in direction C to second fuel mode enables the selection of the second fuel flow. EX1005, ¶¶[0035]-[0038].

M. Claim 23

[23] The fuel selector of claim 21 wherein the selector switch triggers the solenoid switch when changed from the second fuel mode to the first fuel mode so as to cause the solenoid switch and the fuel solenoid to operate in the closed positions.

344. The combination of Fujisawa, DuroMax, Nakafushi, and Olmr renders claim 23 obvious. Fujisawa teaches that the selector switch may have a wire wrapped around it, which is used to couple rotation of the selector switch to the rotation of a separate cam 33 to control another function. As explained above, it would have been straightforward to utilize the wire and cam system taught by Fujisawa to actuate a switch to control the fuel solenoid of Nakafushi or Olmr. *Supra* Section XII.B. The resulting combination would provide a selector switch that triggers a solenoid switch to close a fuel solenoid when changed to a first fuel (LPG) mode. A POSA would have a reasonable expectation of success, given that the selector of Fujisawa is already configured to be coupled to control another function and could be readily implemented to actuate a solenoid switch. *Supra* Sections IX.B, XII.B.

345. Similarly, a POSA would have understood that the selector switch of Fujisawa is comprised of a rotary knob with a contoured cam surface. A POSA would have understood that it would be an ordinary task to position a depressible switch beneath the cam surface such that it is actuates to control a solenoid valve when the selector switch is rotated to the LPG mode position, such that the solenoid valve stops the supply of fuel from the carburetor outlet. *Supra* Section XII.I.

N. Claim 24

[24] The fuel selector of claim 21 wherein the fuel solenoid is a carburetor shutoff solenoid.

346. The combination of Fujisawa, DuroMax, Nakafushi, and Olmr renders claim 24 obvious. The fuel solenoids of Nakafushi and Olmr selectively shut off fuel flow in the carburetor. *Supra* Section XII.K, Element [21.3].

O. Claim 25

[25] The fuel selector of claim 21 wherein the selector switch is positioned adjacent to the valve assembly.

347. The combination of Fujisawa, DuroMax, Nakafushi, and Olmr renders claim 25 obvious. The selector switch is positioned adjacent to and “in contact with” at least cam follower rods 57a and 57b of the valve assembly. EX1005, ¶[0034].

P. Claim 26

*[26] The fuel selector of claim 21 wherein the valve assembly comprises:
two fuel inputs comprising:*

a first fuel input couplable to the first fuel source; and

a second fuel input couplable to the second fuel source; and

two fuel outputs for selectively supplying fuel to the engine from the first fuel source or the second fuel source.

348. The combination of Fujisawa, DuroMax, Nakafushi, and Olmr renders claim 26 obvious. *Supra* Section X.K, Element [30.2].

Q. Claim 27

[27] The fuel selector of claim 26 wherein the two fuel outputs selectively supply fuel to the engine from only one of the first and second fuel sources

responsive to selection of the first fuel flow or the second fuel flow via the selector switch and a corresponding operation of the valve assembly.

349. The combination of Fujisawa, DuroMax, Nakafushi, and Olmr renders claim 27 obvious. *Supra* Section X.L.

R. Claim 28

[28] The fuel selector of claim 26 wherein the valve assembly comprises:

a first fuel valve having open and closed positions to selectively control the first fuel flow to the engine; and

a second fuel valve having open and closed positions to selectively control the second fuel flow to the engine.

350. The combination of Fujisawa, DuroMax, Nakafushi, and Olmr renders claim 28 obvious. *Supra* Section X.A, Element [7.2].

S. Claim 29

[29] The fuel selector of claim 28 further comprising:

a first valve handle coupled to the first fuel valve and actuable between an ON position and an OFF position to selectively actuate the first fuel valve between the open position and the closed position, respectively; and

a second valve handle coupled to the second fuel valve and actuable between an ON position and an OFF position to selectively actuate the second fuel valve between the open position and the closed position, respectively.

351. The combination of Fujisawa, DuroMax, Nakafushi, and Olmr renders claim 29 obvious. *Supra* Section X.C.

T. Claims 30-35

352. The combination of Fujisawa, DuroMax, Nakafushi, and Olmr renders claims 30-35 obvious. *Supra* Sections X.K-P.

U. Claims 36-38

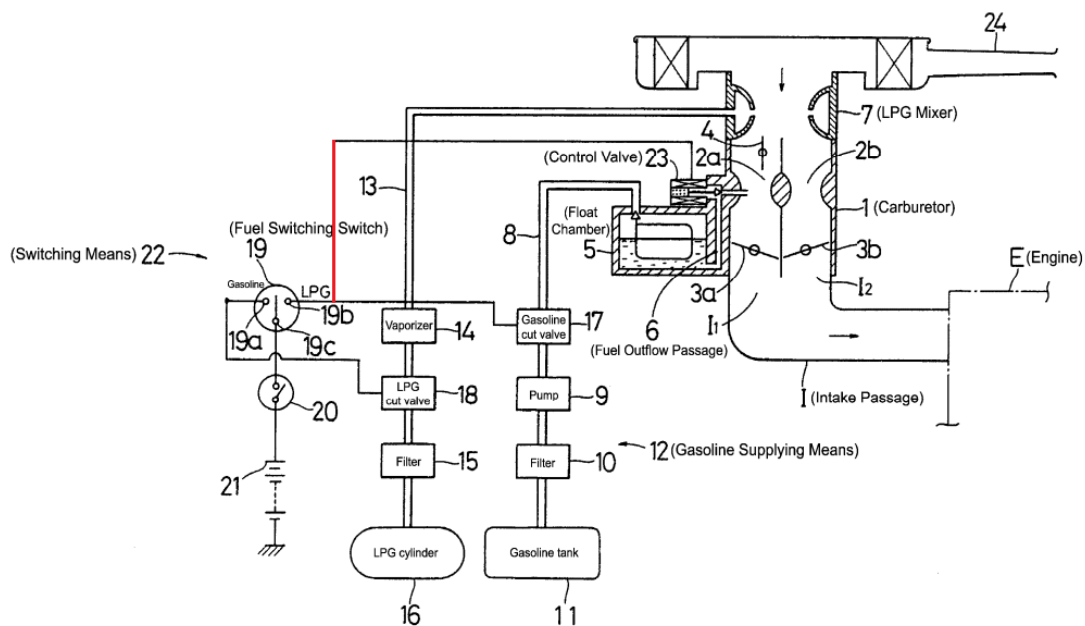
[36] The fuel selector of claim 30 further comprising a carburetor solenoid switch configured to activate an associated carburetor solenoid when actuated.

[37] The fuel selector of claim 36 wherein, when the selector switch is in a first position, the selector switch actuates the carburetor solenoid switch so as to activate the carburetor solenoid and prohibit the second fuel flow to the engine.

[38] The fuel selector of claim 37 wherein, when the selector switch is in a second position, the carburetor solenoid allows the second fuel flow to the engine.

353. The combination of Fujisawa, DuroMax, Nakafushi, and Olmr renders claims 36-38 obvious. Nakafushi discloses a carburetor control valve 23 and carburetor solenoid switch 19, which a POSA would have understood to be an electrically operated solenoid valve. To the extent it is not readily apparent that valve 23 is a solenoid valve, Olmr explicitly discloses a carburetor shutoff valve that is a normally open solenoid valve. EX1010, 2:30-56; *see also id.*, 1:33-36, FIG. 2. A POSA would have understood that both normally open and normally closed solenoid valves were known in the art and readily available, and that choosing between a normally open and normally closed valve is a simple design choice. *Compare*

EX1009 *with* EX1010. A POSA would be motivated to pursue both options using the ordinary skill of a POSA. A POSA would have understood that using the normally open solenoid of Olmr in place of the normally closed control valve of Nakafushi would involve connecting the solenoid downstream of contact point 19b instead of 19a, shown below.



EX1009, FIG. 1 (modified).

354. Fujisawa teaches that the selector switch has a first fuel mode when rotated in direction B and a second fuel mode when rotated in direction C. EX1005, ¶[0035].

355. A POSA would have been motivated by the teachings of DuroMax, which teaches a carbureted dual-fuel generator, and the teachings of Nakafushi and

Olmr, which disclose electrically-switched carburetor shutoff solenoids, to improve the function and safety of Fujisawa by adding a carburetor with a carburetor solenoid valve. *Supra* Section XII.A. A POSA would have been motivated to add an electrical switch to the selector switch of Fujisawa to control the carburetor solenoid valve. A POSA would have had a reasonable expectation of success, because Fujisawa already teaches the coupling of another function to the rotation of its selector switch. A POSA would have understood that the operation of the carburetor solenoid valve switch could be accomplished with the same methods and techniques taught by Fujisawa for controlling other system settings, such as fuel pressure. *Supra* Sections XII.A-B. Furthermore, it would be a routine exercise for a POSA to position a switch such that it was actuated selectively when Fujisawa's selector switch was moved to the first position (or alternately the second position). This would have resulted in a configuration in which rotating the selector switch to the "first position" would depress cam follower rod 57a to open the first valve while activating the carburetor solenoid switch to stop the second fuel flow to the engine. Rotating the selector switch to the "second position" would depress cam follower rod 57b to open the second valve and allow the second fuel flow to the carburetor while deactivating the carburetor solenoid switch to allow the second fuel to flow to the engine. *Supra* Sections XII.A-B.

XIII. OBJECTIVE INDICIA OF NON-OBVIOUSNESS

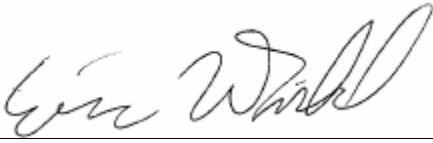
356. I am not aware of any objective indicia of non-obviousness that would make Claims 1-38 of the '896 Patent non-obvious over the prior art considered herein. In my opinion, any possible objective indicia of non-obviousness would not overcome the prior art that clearly demonstrates that the subject matter of Claims 1-38 of the '896 Patent would have been obvious to a POSA as of November 1, 2013.

XIV. CONCLUSION

357. I reserve the right to supplement my opinions as appropriate. I further reserve the right to supplement my opinions regarding any objective indicia of non-obviousness if Respondent alleges or offers any purported evidence of any such objective indicia of non-obviousness.

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

Submitted by:



Eric S. Winkel, Ph.D., P.E., CFEI,
CVFI
Senior Engineering Consultant

July 11, 2025

Date

APPENDIX A: LIST OF MATERIALS CONSIDERED

Patents and Patent Applications

- U.S. Patent No. 1,827,214 (Sturm)
- U.S. Patent No. 1,931,698 (Holzapfel)
- U.S. Patent No. 2,645,570 (Anderson)
- U.S. Patent No. 2,945,111 (McCormick)
- U.S. Patent No. 4,489,699 (Poehlman)
- U.S. Patent No. 4,492,207 (Hallberg)
- U.S. Patent No. 4,641,625 (Smith)
- U.S. Patent No. 5,301,644 (Olmr)
- U.S. Patent No. 6,276,345 (Nelson)
- U.S. Patent No. 7,481,087 (DeVries)
- U.S. Patent No. 8,040,663 (Czarnecki)
- U.S. Patent No. 9,175,601 (Markoski)
- U.S. Patent No. 9,435,273 (the '273 Patent)
- U.S. Patent No. 10,598,101 (the '101 Patent)
- U.S. Patent No. 11,306,667 (the '667 Patent)
- U.S. Patent No. 11,761,390 (the '390 Patent)
- U.S. Patent No. 11,905,896 (the '896 Patent)
- U.S. Patent Application Publication No. 2007/0137591 (Sugimoto)
- JP Publication No. JP2005330867 (Fujisawa)
- English Translation of Fujisawa (EX1005)
- JP Publication No. JPS61283734A (Nakafushi)
- English Translation of Nakafushi (EX1009)

Patent Prosecution Histories

- Prosecution History of U.S. Patent No. 9,435,273
- Prosecution History of U.S. Patent No. 10,598,101
- Prosecution History of U.S. Patent No. 11,306,667
- Prosecution History of U.S. Patent No. 11,761,390
- Prosecution History of U.S. Patent No. 11,905,896

Declarations

- Declaration of David Raskin (dated May 7, 2025)
- Declaration of Mina Ching (dated Apr. 22, 2025)

Non-Patent Literature

- DuroMax XP4400EH Operator's Manual
- MARTY AHRENS, NAT'L FIRE PROT. ASS'N, U.S. VEHICLE FIRE TRENDS AND PATTERNS (2010)
- TONY ATKINS & MARCEL ESCUDIER, OXFORD DICTIONARY OF MECHANICAL ENGINEERING (2013)
- Castell Safety Int'l Ltd., *Castell Interlocks: How They Work*, YOUTUBE (Apr. 14, 2009), <https://www.youtube.com/watch?v=CpNy6u5GssA>
- S.B. CHOPRA, ANMOL'S DICTIONARY OF MECHANICAL ENGINEERING (1989)
- Engineering Explained, *Why Cars Backfire - Afterfire - Explained*, YOUTUBE (Feb. 13, 2013), <https://www.youtube.com/watch?v=bgS3PA5r0vY>
- FORD MOTOR CO., 2004 SERVICE MANUAL: POWERTRAIN CONTROL/EMISSIONS DIAGNOSIS: ON BOARD DIAGNOSTICS BI-FUEL LPG TRUCK (Aug. 2003)
- RUDOLF F. GRAF, MODERN DICTIONARY OF ELECTRONICS (Charlie Buffington & Jack Davis eds., Butterworth-Heinemann 6th ed. 1997) (1984)
- Neil B. Hampson & Jennette L. Zmaeff, *Carbon Monoxide Poisoning from Portable Electric Generators*, 28 AM. J. PREVENTIVE MED. 123 (2005)
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- *Powermate DF3500E – 3500 Watt Electric Start Dual Fuel Portable*, ELECTRIC GENERATORS DIRECT, <https://www.electricgeneratorsdirect.com/Powermate-6957-Portable-Generator/p72548.html> (last visited Apr. 4, 2025)
- Shivansh Sabhadiya, *What Causes Backfire in an Engine?*, ENGINEERING CHOICE, <https://www.theengineeringchoice.com/what-causes-car-backfire/> (last visited Apr. 15, 2025)
- WILLIAM A. SCHUSTER, SMALL ENGINE TECHNOLOGY (2d ed. 1999)
- *Selector Switch*, MERRIAM-WEBSTER, <https://www.thefreedictionary.com/selector+switch> (last visited Apr. 4, 2025)
- *Selector Switch*, THE FREE DICTIONARY <https://www.thefreedictionary.com/selector+switch> (last visited Apr. 14, 2025)
- *Switch*, MERRIAM-WEBSTER, <https://www.merriam-webster.com/dictionary/switch> (last updated Mar. 31, 2025)

- *Switch*, CAMBRIDGE DICTIONARY, <https://dictionary.cambridge.org/us/dictionary/english/switch> (last visited Apr. 4, 2025)
- *Switch*, THE FREE DICTIONARY, <https://www.thefreedictionary.com/switch> (last visited Apr. 14, 2025)
- H. Windawi, *Controlling the Exhaust Emissions from Alternative Fuel Vehicles: New Opportunity for Platinum Metals Catalysts*, 36 PLATINUM METALS REV. 185 (1992)
- Complaint, *Champion Power Equipment, Inc. v. Generac Power Systems, Inc.*, No. 24-cv-1281, Dkt. 1 (E.D. Wis., filed Oct. 9, 2024)
- Champion's Infringement Contentions for U.S. Patent No. 10,598,101 as Asserted Against General Model DF3500E et al. (served Apr. 15, 2025)
- Champion's Infringement Contentions for U.S. Patent No. 11,306,667 as Asserted Against General Model DF3500E et al. (served Apr. 15, 2025)
- Champion's Infringement Contentions for U.S. Patent No. 11,905,896 as Asserted Against General Model DF3500E et al. (served Apr. 15, 2025)

APPENDIX B: ERIC S. WINKEL C.V.



Eric S. Winkel, Ph.D., P.E., CFEI, CVFI

Professional Specialization

Dr. Winkel has more than 17 years of experience as a forensic consultant specializing in maritime matters. Dr. Winkel has expertise in marine accident investigation and reconstruction, marine engineering design, vessel and component design analysis, intellectual property matters, and has worked with a variety of other automotive and recreational products. Dr. Winkel has performed hundreds of accident investigations and reconstructions involving watercraft ranging from personal watercraft to large commercial vessels. He has extensive experience designing and executing experimental research to evaluate full vehicle/vessel, system-level, and component-level performance on everything from watercraft to motorcycles to passenger vehicles.

Dr. Winkel also has expertise and experience in fluid mechanics, acoustics, dynamics and vibrations, structural analysis, and fracture mechanics along with other mechanical and marine engineering disciplines. He is a NAFI-certified fire and explosion investigator. He has experience investigating incidents involving toxic gas exposure and mixing/dispersion phenomena, in particular carbon monoxide emissions from combustion engines in marine and automotive applications.

Dr. Winkel has investigated, studied, and published on human kinematics and injury mechanics related to marine, automotive, and motorsports incidents. Past investigations related to injury causation analysis have ranged from spinal injuries to propeller strikes to slip and fall incidents. He has authored numerous technical articles on a variety of engineering disciplines and presented the results to various professional associations. He has experience developing instructional materials and information systems such as owner's/operator's manuals and warning labels, related to recreational watercraft and motorsports products.

Professional Background

B.S.E. (Mechanical Engineering) University of Michigan - Ann Arbor, 2003

M.S.E. (Mechanical Engineering) University of Michigan - Ann Arbor, 2004

Ph.D. (Mechanical Engineering) University of Michigan - Ann Arbor, 2007

Senior Consultant

Design Research Engineering, 2024-Present

Senior Managing Consultant

Engineering Systems, Inc., 2023-2024

Principal Engineer

Winkel Consulting Services, PLLC, 2022-2023

Senior Project Engineer

Design Research Engineering, 2010-2022

Project Engineer

Design Research Engineering, 2007- 2010

Research Assistant

Department of Mechanical Engineering, University of Michigan - Ann Arbor, 2003-2007

Undergraduate Research Assistant

Department of Mechanical Engineering, University of Michigan - Ann Arbor, 2001-2003

Professional Licensure and Certification

Registered Professional Mechanical Engineer, Michigan, #6201061021

Certified Fire and Explosion Investigator (CFEI) #22182-12732

Certified Vehicle Fire Investigator (CFVI) #22182-12732v

Certified Technician, American Boat and Yacht Council (Marine Electrical)

Certified Technician, American Boat and Yacht Council (Marine Systems)

Honors

Magna cum Laude, University of Michigan

Rackham Merit Fellowship, University of Michigan

Memberships and Affiliations

Member, Acoustical Society of America
Member, Society of Automotive Engineers
Member, Society of Naval Architects
Member, National Association of Fire Investigators
Member, American Boat and Yacht Council
Technical Paper Reviewer, Society of Automotive Engineers
Technical Paper Reviewer, Traffic Injury Prevention

Continuing Education

- NASBLA Staged Boat Collisions (Sep 2007, Sep 2008, May & Sep 2009, Chester, VA)
- Training Seminar and Certification for the English XL Tribometer (Jan 2008, Tampa, FL)
- ASTM Conference on Pedestrian Safety (Jan 2008, Tampa, FL)
- NTSB Marine Accident Investigation – MS101 (Jan 2009)
- Faro Laser Scanner LS – Training Program (Dec 2009, Novi, MI)
- Chesapeake Power Boat Symposium (Mar 2010, Annapolis, MD)
- International Boatbuilder’s Exhibition and Conference, Boating Industry Risk Management Council meetings (Oct 2010, Louisville, KY)
- West Systems, Professional Level Workshop on Boat Repair (Oct 2011)
- International Boatbuilder’s Exhibition and Conference, 3-day Educational Seminars (Oct 17-19, 2011)
- Advanced Marine Fire Investigation Course (May 29-30, 2014, Sayreville, NJ)
- SAE 2015 World Congress & Exhibition (Apr 21-23, 2015, Detroit, MI) – *technical paper presented*
- ABYC Marine Electrical Certification (Apr 19-22, 2016, Norfolk, VA)
- ABYC Marine Systems Certification (Aug 13-16, 2016, Sturtevant, WI)
- National Fire investigator Training Program (Mar 13-16, 2017, Richmond, KY)
- NAFI – Vehicle Fire Arson & Explosion Investigation Science & Technology Seminar (Sep 18-20, 2017, Lexington, KY)
- NASBLA/ABYC GPS Forensics (Nov 15, 2018, Annapolis, MD)
- Florida FWC – Vessel Livery Operator’s Online Course (Oct 21, 2020, Virtual)
- PDH Express – Corrosion Control (Oct 28, 2020, Virtual)
- PDH Express – Introduction to Wave-Generation and Wave-Shaping (Oct 28, 2020, Virtual)
- ABYC Marine Electrical Recertification (Sep 15, 2021)
- ABYC Marine Systems Recertification (Sep 27, 2021)
- ABYC Marine Corrosion Certification (Mar 9-25, 2021, Virtual)
- Marine Surveyor and Technician Training (“Surtech”), ABYC (Feb 2023)
- National Fire Investigator Training Program (Feb 2023, Dallas, TX)
- ABYC Diesel Engine Certification (Nov 2023)
- Standards Week (Project Technical Committees), ABYC (Jan 2024, Annapolis, MD)
- ABYC Marine Legal Symposium (Jan 2024, Annapolis, MD)
- Northwestern University Traffic Accident Reconstruction for Engineers (Jan 2024, Aurora, IL)
- Standards Week (Project Technical Committees), ABYC (Jan 2025, Annapolis, MD)

Papers - Refereed Journals, Conferences and Symposium Proceedings

- “Water Intrusion Injuries: Occupant Kinematics and Pressure Exposure during Rearward Falls from a Personal Watercraft,” Society of Automotive Engineers, Journal of Transportation Safety, 2023 (with M. Schirmann, K. Zakutansky, K. Breen, and R. Taylor)
- “Focus Headform Testing Used to Evaluate Head Injury Risk for Ejected Riders of Personal Watercraft,” Proceedings of the International Mechanical Engineering Congress & Exposition, American Society of Mechanical Engineers, IMECE 2017-72676, Nov 2017, Tampa, Florida (with C. Mkandawire, N. White, E. Schatz) (as submitted for press)
- “Evaluation of Air Bag Electronic Sensing System Collision Performance through Laboratory Simulation,” Society of Automotive Engineers World Congress & Exhibition Occupant Protection: Safety Test Methodology, 2015 (with D. Toomey, R. Krishnaswami)
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- “Near-wall PTV Measurements in a High-Reynolds-Number Flat-plate Turbulent Boundary Layer,” American Physical Society, Division of Fluid Dynamics, 2007, Salt Lake City, UT (with G. Oweis, M. Perlin, S. Ceccio, D. Dowling).
- “High-Reynolds-Number Flat-Plate Turbulent Boundary Layer Measurements,” American Physical Society, Division of Fluid Dynamics, November 2006, Tampa Bay, FL (with J. M. Cutbirth, M. Perlin, S. Ceccio, D. Dowling).
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PROJECT	VENUE	
<u>2024</u>		
State of Florida v. Turco 2023-IN-1052 County Court of the Fifth Judicial Circuit, Citrus County, Florida	FL	Trial
<u>2023</u>		
E-Z Dock v. Snap Dock 1:21-cv-02761-TWP-KMB United States District Court, Southern District of Indiana	IN	Deposition
<u>2021</u>		
Brunswick v. Volvo Penta IPR2020-01512 United States Patent and Trademark Office, Patent Trial and Appeal Board	PTAB	Deposition
Malibu v. Skier's Choice 3:18-cv-00015 United States District Court, Eastern District of Tennessee, Knoxville Division	TN	Trial
<u>2020</u>		
Malibu v. Skier's Choice 3:18-cv-00015 United States District Court, Eastern District of Tennessee, Knoxville Division	TN	Deposition
<u>2019</u>		
Haytasingh v. San Diego 37-2014-00082437-CU-PO-CTL Superior Court of California, County of San Diego	CA	Trial
<u>2018</u>		
Haytasingh v. San Diego 37-2014-00082437-CU-PO-CTL	CA	Deposition

PROJECT**VENUE**

Superior Court of California, County of San Diego

Boton v. TriMarine

2:16-cv-03005

United States District Court, Central District of California

CA

Trial

2018**Boton v. TriMarine**

2:16-cv-03005

United States District Court, Central District of California

CA

Deposition

2010**Davis v. Mako Marine**

NJ

Deposition

Metcalf v. Yamaha

CA

Trial

Davis v. Mako Marine

NJ

Deposition

Metcalf v. Yamaha

CA

Deposition

2009**Pitman v. RJLW**

CA

Deposition

Correa-Harris v. Yamaha

USVI

Deposition