

Filed on Behalf of: Generac Power Systems, Inc.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GENERAC POWER SYSTEMS, INC.

Petitioner,

- vs. -

CHAMPION POWER EQUIPMENT, INC.,

Patent Owner

REPLY TO PATENT OWNER RESPONSE IN
INTER PARTES REVIEW OF U.S. PATENT NO. 11,143,145

Case No.: IPR2025-01457

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PETITIONER'S EXHIBIT LIST

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1001	U.S. Patent No. 11,143,155 (“145 Patent”)
1002	File History of U.S. Patent No. 11, 143,155 (“145 File History”)
1003	Declaration of Dr. Mahdi Shahbakhti
1004	JPS61283734A (Original) (“Nakafushi”)
1005	Certified Translation of JPS61283734A (“Nakafushi”)
1006	Small Engine Technology, Second Edition, Schuster, William A, (1999) (“Schuster”)
1007	U.S. Patent No. 5,301,644 (“Olmr”)
1008	U.S. Patent No 1,931,698 (“Holzapfel”)
1009	Kubota DF-972-E2 Workshop Manual (“Workshop Manual”)
1010	Declaration from Mr. James Strepek re Kubota Manuals
1011	Declaration from Mr. Scott Schlabach re Kubota Manuals
1012	U.S. Patent No. 5,161,496 (“Matsushima”)
1013	U.S. Patent No. 6,213,083 (“Winberg”)
1014	Champion's Infringement Contentions with Respect to Petitioner Generac's Model PM4500DF and GP7500E DF Generators
1015	U.S. Patent No. 3,718,000 (“Walker”)

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1016	DuroMax XP4400EH Operator's Manual ("DuroMax")
1017	Declaration of David Raskin (dated May 7, 2025)
1018-1054	<i>Reserved</i>
1055	Order on Defendant/Counter-Claimant's Motion for Partial Stay, <i>FaceTec v. iProov, Ltd.</i> , No. 21-cv- 02252, Dkt. 188 (D. Nev., order dated June 18, 2025)
1056	Docket Navigator Statistics Regarding Judge Adelman's Grant Rate for Motions to Stay
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1070	Memorandum in Support of Plaintiff's Motion to Sever Defendant's Counterclaims for Infringement or in the Alternative for Leave to File an Amended Answer and Counter-Counterclaim, <i>Champion Power Equipment, Inc. v. Generac Power Systems, Inc.</i> , No. 24-cv-1281, Dkt. 38 (E.D. Wis. July 3, 2025)
1071-1076	<i>Reserved</i>
1077	Defendant Champion Power Equipment, Inc.'s Opening Markman Brief, <i>Harbor Freight Tools USA, Inc. v. Champion Power Equipment, Inc.</i> , No. 24-cv-8722, Dkt. 83 (C.D. Cal., Sept. 9, 2025)
1078-1082	<i>Reserved</i>
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1084-1085	<i>Reserved</i>
1086	Champion Dual Fuel Generator Model 100153 Operator's Manual
1087	YouTube Video, HONDA EU20i LPG, https://www.youtube.com/watch?v=yBpq33aJmR0
1088	<i>Reserved</i>
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1096	U.S. Patent Publication No. 2014/0238340 (“Dunn”)
1097	U.S. Patent No. 5,816,224 (“Welsh”)
1098-1099	<i>Reserved</i>
1100	Blackmer, LPG Autogas Handbook (2015)
1101	File History for U.S. Patent No. 11,306,667 (“the ’667 File History”)
1102	U.S. Patent Application No. 61/640,603 (“Collie”)
1103	U.S. Patent No. 5,504,417 (“Kern”)
1104	U.S. Patent No. 8,360,027 (“Sotiriades”)
1105	U.S. Patent No. 7,669,572 (“Jury”)
1106	Leigh Jenison, LinkedIn, https://www.linkedin.com/in/leigh-jenison-3a032b6/ (last visited Aug. 18, 2026)
1107	Kohler CV17-750 Service Manual
1108	U.S. Patent No. 4,691,668 (“West”)
1109	U.S. Patent No. 6,857,515 (“Barron”)

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1110	U.S. Patent Publication No. 2011/0017168 (“Gilpatrick”)
1111	<i>Reserved</i>
1112	U.S. Patent No. 11,143,120 (the “’120 Patent”)
1113	Declaration of Dr. Madhi Shahbakhti, dated September 1, 2026
1114	U.S. Patent No. 10,697,398 (the “’398 Patent”)
1115	U.S. Patent Publication No. 2007/0137591 (“Sugimoto”)
1116	Champion’s Infringement Contentions for U.S. Patent No. 10,221,780 as Asserted Against Firman Model WH02942 et al., <i>Champion Power Equipment, Inc. v. Firman Power Equipment Inc.</i> , No. 23-cv-2371 (D. Ariz., amended contentions served July 15, 2026)
1117	Champion’s Infringement Contentions for U.S. Patent No. 11,143,145 as Asserted Against Generac Model DF3500E et al., <i>Champion Power Equipment, Inc. v. Generac Power Systems, Inc.</i> , No. 24-cv-01281 (E.D. Wis., served Apr. 15, 2025)
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1119	Champion’s Infringement Contentions for U.S. Patent No. 11,143,145 as Asserted Against Harbor Freight Model 70143, <i>Harbor Freight Tools USA, Inc. v. Champion Power Equipment, Inc.</i> , No. 24-cv-8722 (C.D. Cal., served Apr. 24, 2025)
1120	Champion’s Infringement Contentions for U.S. Patent No. 11, 143,145 as Asserted Against Harbor Freight Model 70476, <i>Harbor Freight Tools USA, Inc. v. Champion Power Equipment, Inc.</i> , No. 24-cv-8722 (C.D. Cal., served Apr. 24, 2025)

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1121	Champion's Infringement Contentions for U.S. Patent No. 11,143,145 as Asserted Against Firman Model WH02942 et al., <i>Champion Power Equipment, Inc. v. Firman Power Equipment Inc.</i> , No. 23-cv-2371 (D. Ariz., amended contentions served July 15, 2026)
1122	Champion's Infringement Contentions for U.S. Patent No. 11,143,145 as Asserted Against Firman Model H05751 et al., <i>Champion Power Equipment, Inc. v. Firman Power Equipment Inc.</i> , No. 23-cv-2371 (D. Ariz., amended contentions served July 15, 2026)
1123	<i>Propane - Thermophysical properties</i> , The Engineering Toolbox, https://www.engineeringtoolbox.com/propane-d_1423.html#gsc.tab=0 (last visited Aug. 31, 2026).
1124	<i>3600 RPM 4-stroke 1000cc 30 Hp 2V92FE Electric Vertical Shaft Diesel Engine</i> , AliExpress, https://www.aliexpress.us/item/3256810014256010.html (last visited Aug. 31, 2026)
1125	<i>Diagram Of The Ford Model T Magneto And Transmission, Published In Ford Times, October 1910</i> , The Henry Ford, https://www.thehenryford.org/collections/explore/artifact/88714?AssetId=THF115213 (last visited Aug. 31, 2026).
1126	<i>Propane - Vapor Pressure vs. Temperature</i> , The Engineering ToolBox, https://www.engineeringtoolbox.com/propane-vapor-pressure-d_1020.html#gsc.tab=0 (last visited Aug. 31, 2026).
1127	<i>2CV Technical Specifications</i> , Citroenet, https://www.citroenet.org.uk/passenger-cars/michelin/2cv/technical.html (last visited Aug. 31, 2026).
1128	<i>How Cars Started Back in the Early Days</i> , Car and Driver (Dec. 7, 2016) https://www.caranddriver.com/features/g15376936/how-cars-started/ .
1129	Robert Bosch GmbH, <i>Basic principles, Physics</i> , in <i>Electronic Automotive Handbook</i> (2002) (ebook).

Exhibit No.	Description
1130	Ian H. Bell et al., <i>Pure and Pseudo-pure Fluid Thermophysical Property Evaluation and the Open-Source Thermophysical Property Library CoolProp</i> , 53 Indus. & Eng'g Chem. Res. 2498 (2014).

I. INTRODUCTION

Champion's principal argument in its Patent Owner Response ("POR," Paper 27) is that fuels are classified as "liquid fuel" and "gaseous fuel" based on their phase at certain points in the system. This is wrong. Instead, POSAs would have understood that gaseous fuels exist in a gaseous state at standard temperature and pressure. Generac's construction is supported by the specification, the prior art cited in the '145 Patent, and relevant extrinsic evidence.

II. BACKGROUND

The '145 Patent is directed to engines operable on liquid and gaseous fuels. EX1001, 1:17-20. The specification teaches that gaseous fuel exists in a "gaseous state" at normal temperature and pressure but is stored under pressure in a "liquid state." *Id.*, 1:44-55. The specification identifies liquified petroleum gas (LPG) as "gaseous fuel." *Id.*, 1:44-47. The specification does not disclose the gaseous fuel's phase anywhere after exiting the fuel tank.

The specification describes an embodiment with two separate pathways to route gasoline and LPG to the carburetor and engine.

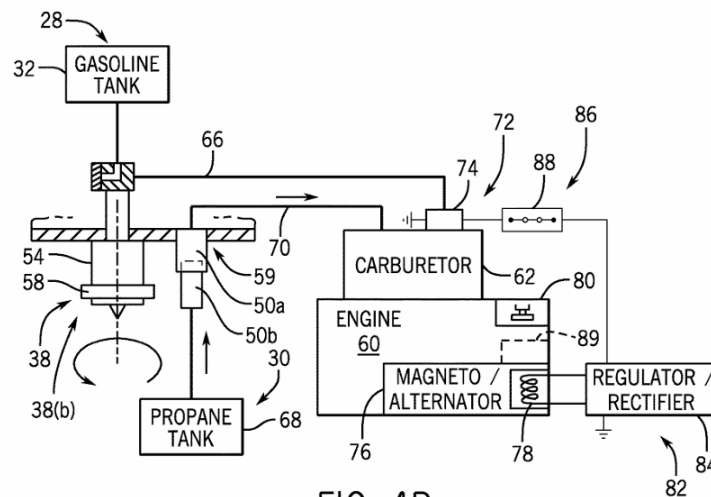


FIG. 4B

EX1001, FIG. 4B.

In the first (liquid fuel) pathway, gasoline exits gasoline tank 32, traveling through first fuel line 66 to carburetor 62 and engine 60. EX1001, 9:52-11:29. In the second (gaseous fuel) pathway, LPG exits propane tank 68, traveling through second fuel line 70 to the carburetor and engine. *Id.*

III. LEVEL OF ORDINARY SKILL IN THE ART

Champion faults Generac's identification of the level of skill in the art for requiring three years of work experience while conceding that fuel delivery system components are not taught at the undergraduate level. POR, 8. Work experience is how one gains familiarity with these claimed components. EX1113, ¶¶12-16. The Board adopted Generac's POSA definition. IPR2025-00805, Paper 24 at 11. Regardless, Champion concedes that the level of skill has no impact here. POR, 8.

IV. CLAIM CONSTRUCTION

Champion raises a claim construction dispute by arguing that whether a fuel is “liquid” or “gaseous” depends on its phase at specified locations. POR, 4; *see also* IPR2025-00805, Paper 24 at 19.

The Board previously rejected Champion's claim construction arguments and found that “the phrase ‘gaseous fuel source’ does not require fuel in a gaseous state upon exiting a storage container (as argued by [Champion]); rather, that phrase merely requires fuel (such as LPG) in a gaseous state when entering the recited ‘engine’ prior to combustion,” where the fuel is near standard temperature and pressure. IPR2025-00805, Paper 24 at 20-21.

The Board's prior determination resolves the matter here. *Infra* §§V.B, VI.B, VII.C. However, Champion's arguments are unavailing even if its claim construction position were correct. *Infra* §§V.B-C, VI.B-C, VII.C.

Champion's claim construction arguments should be rejected. The intrinsic and extrinsic evidence confirm that “gaseous fuel” and “liquid fuel” are immutable classifications based on the fuel's state at standard temperature and pressure. EX1113, ¶¶21-23.

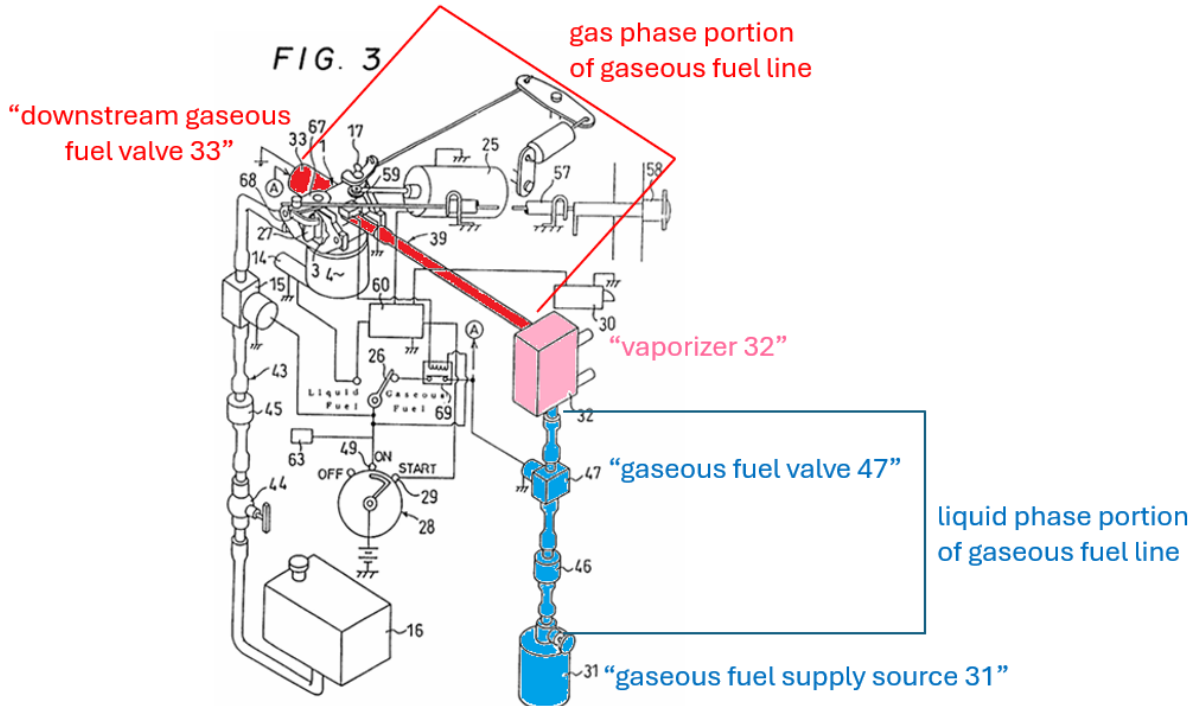
The claims refer to liquid fuel and gaseous fuel without setting a location where each fuel's phase must be determined. POSAs would have understood that the claims' uses of the phrase “gaseous fuel” refer to the *same* fuel, regardless of

that fuel's phase at any point in the system. EX1113, ¶¶24-26. For example, Claims 5 and 13 state that the gaseous fuel is LPG and the liquid fuel is gasoline without specifying location.

The specification states that gaseous fuels “*exist in a gaseous state at normal temperature and pressure*” and can be any one of liquefied petroleum gas, compressed natural gas, hydrogen, or the like.” EX1001, 1:39-47 (emphasis added). The specification explains that gaseous fuels “can be conveniently stored under pressure in a liquid state.” *Id.*, 1:47-50. The specification describes advantages of gaseous fuel due to its state at standard temperature and pressure. *Id.*, 1:25-36; EX1113, ¶¶27-32; EX2133, ¶77.

The prior art cited in the '145 Patent and its parents applies Generac's construction. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1317 (Fed. Cir. 2005) (stating “prior art cited during examination” is intrinsic evidence); EX1113, ¶¶33-37. Deutsch and Welsh both *expressly define* “gaseous fuel” as “combustible fuels which are gaseous at standard temperature and pressure.” EX1095, 1:26-27; EX1097, 2:8-10.

Likewise, Tsuda, describing the *Workshop Manual's DF972 engine* (Paper 10 at 17-18), discloses a “gaseous fuel supply source 31” and a “gaseous fuel valve 47” *upstream of vaporizer* 32. EX2062, 3:20-27. Tsuda thus characterizes its fuel source and valve as “gaseous” despite containing liquid phase gaseous fuel.



EX2062, FIG. 3 (annotated).

Extrinsic evidence also supports Generac's construction. EX1113, ¶¶38-42. The EPA defines “gaseous fuel” as combustible material “in the gaseous state at standard atmospheric temperature and pressure conditions.” 40 C.F.R. § 98.6 (2015). The USPTO classified the '145 Patent in class F02D 19/0647, relating to “engines working with pluralities of...type[s] of fuels...one fuel being gaseous, the other fuels being gaseous or liquid *at standard conditions*.” EX1001; EX1093, 4-5 (emphasis added).

Champion's construction is unworkable. EX1113, ¶¶43-54. Champion first states that the relevant location for “engine operable on a gaseous fuel and a liquid

fuel” is the engine. POR, 4. But liquid fuels are vaporized into gas phase at the carburetor before reaching the engine. POR, 6 (citing EX1006, 7); EX1113, ¶43. Recognizing its problem, Champion suggests assessing phase where the fuel “reaches the carburetor.” POR, 6. But the '145 Patent states that the carburetor and engine are separate. *See* EX1001, 2:13-15; FIGS. 4A, 4B. Under Champion's alternative proposal, the claimed “engine” is irrelevant and carburetors are required despite their optionality in engine configurations and the claims. EX1113, ¶¶44-45.

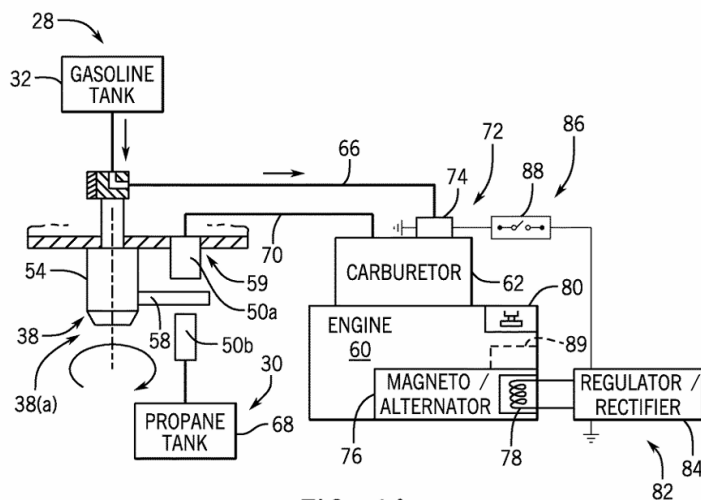
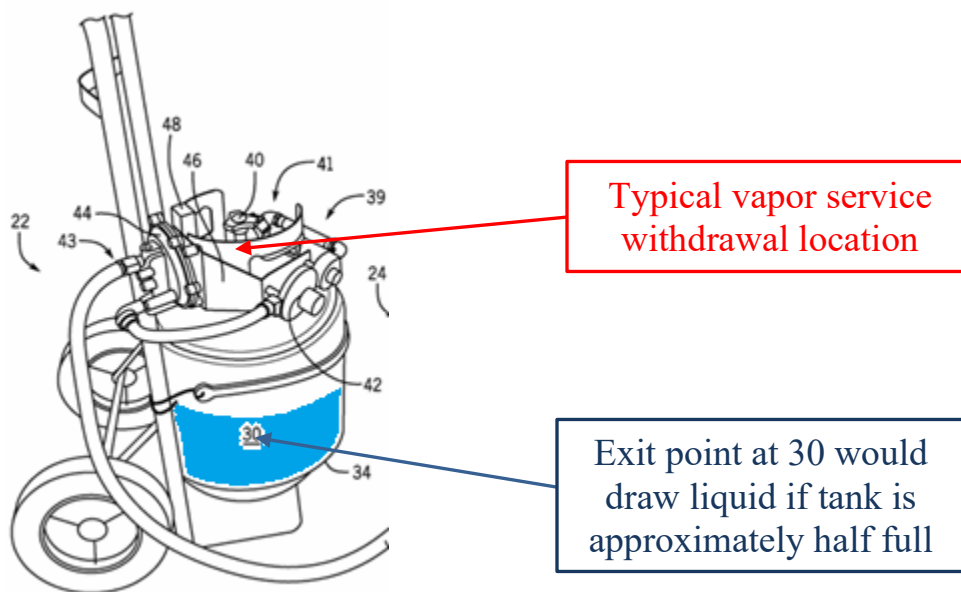


FIG. 4A

EX1001, FIG. 4A.

Similarly, Champion states that the relevant location for “gaseous fuel source” and “liquid fuel source” is “the source of the fuel.” POR, 4. But LPG tanks contain both liquid-phase and gas-phase LPG. POR, 13; EX1113, ¶46. Thus, Champion's construction makes LPG tanks *both* liquid and gaseous fuel sources.

Champion attempts to avoid this issue by identifying the “source” as the point where fuel exits the tank. *See, e.g.*, POR, 26. This is directly contradicted by the specification: second (gaseous) fuel source 30 refers to the entire tank—not the point where LPG exits the tank. EX1113, ¶47. If anything, the location of reference number 30 suggests that liquid exits the tank. *See* POR, 13; EX1091, 90:1-13 (stating that LPG tanks are “pretty full”).



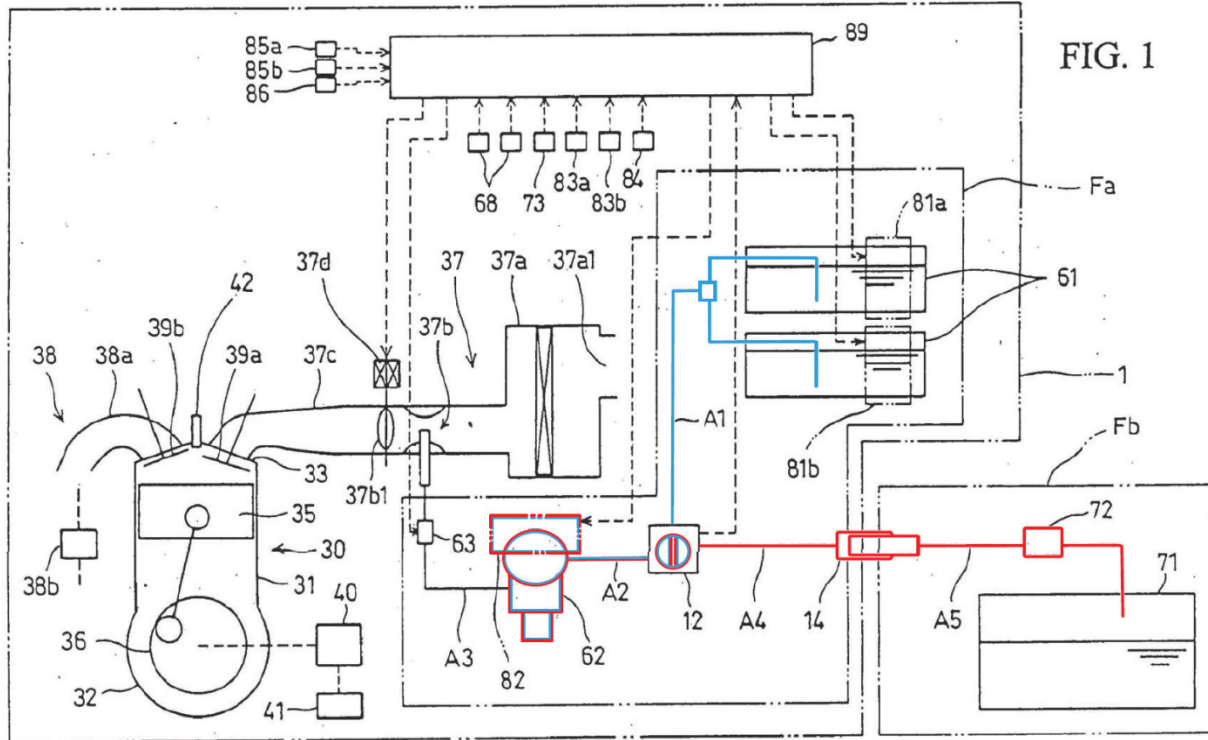
EX1001, FIG. 1 (annotated).

The Board previously recognized this inconsistency. Once Champion's relevant location is shifted away from the literal engine and tank, there is no reason to limit that location to the carburetor inlet or tank outlet. Thus, the Board would “not exclude supply lines containing LPG in a gaseous state from the scope of the phrase ‘gaseous fuel source.’” IPR2025-00805, Paper 24 at 22.

Moreover, gaseous fuels in liquid service applications exit the tank and flow through fuel lines as a two-phase mixture of liquid and vapor. *See infra* §§V.B-C, VI.B-C, VII.C; EX1113, ¶¶49-54. Champion's construction would result in all such fuel sources/lines/valves being **both** liquid and gaseous fuel sources/lines/valves.

Champion argues that "propane vapor service and propane liquid service are completely different from one another." POR, 14. The '145 Patent does not make this distinction. The specification neither expressly discloses nor limits itself to "vapor service"—it only mentions fuel phase in "normal" conditions and when stored. EX1001, 1:44-50. The main difference between liquid (gasoline) and gaseous (LPG) fuel delivery systems in the '145 Patent is the pressure regulators in gaseous fuel delivery systems. EX1113, ¶¶55-61. But pressure regulation is a requirement shared between liquid and vapor service of gaseous fuels. *Id.*

Liquid service and vapor service components for gaseous fuels must seal **pressurized** gaseous fuel in liquid and gas phase. *Id.*, ¶57. POSAs would have understood how to **optimize** such components for liquid or vapor service (which simply impacts the rate of fuel delivery). *Id.*; EX1091, 141:12-142:25. Indeed, Sugimoto (EX1115) provides an example where liquid phase gaseous fuel and gas phase gaseous fuel pass through the *same* selector valve 12, line A2, and regulator/vaporizer 62. EX1113, ¶¶59-60.



EX1115, FIG. 1 (annotated).

POSAs would have understood that “liquid fuel” and “gaseous fuel” refer to the state of the fuel at standard temperature and pressure rather than the phase at particular locations.

V. GROUNDS 1, 2, AND 5: CLAIMS 1-16 ARE RENDERED OBVIOUS BY THE WORKSHOP MANUAL ALONE OR IN COMBINATION WITH MATSUSHIMA, OLMR, AND WINBERG

A. Elements 1.0 and 11.0

Champion argues in this IPR that the preambles of Claims 1 and 11 are limiting. But Champion admitted the preambles are not limiting in the Generac,

Firman, and Harbor Freight litigations.¹ EX1117 (“The preambles of the Asserted Claims of the ’145 Patent are not limiting....”); EX1118 (same); EX1119 (same); EX1120 (same); EX1121 (same and served *after* POR was filed); EX1122 (same and served *after* POR was filed). These admissions are binding and Champion’s gamesmanship should not be rewarded.

Champion is also wrong on the merits. “[A] preamble is not limiting ‘where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention.’” *Catalina Mktg. Int’l v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002). The bodies of Claims 1 and 11 describe structurally complete inventions accomplishing the patent’s goal of preventing simultaneous fuel delivery. EX1113, ¶64. The preambles are not limiting even if they recite “additional structure of which the body-recited [elements are] a part.” *Arctic Cat Inc. v. GEP Power Prods., Inc.*, 919 F.3d 1320, 1329-30 (Fed. Cir. 2019). “The [dual fuel generator] in the preamble is entirely conventional apart from the improvement in the body of the claims.” *Id.*

Champion’s cherry-picked descriptions regarding generator embodiments misrepresent the scope of the invention. The title and abstract of the ’145 Patent both

¹ The Westinghouse litigation resolved before Champion served infringement contentions.

show the scope of the invention includes dual fuel engines. Similarly, the specification states that “the invention is equally applicable for use with *any* dual fuel internal combustion engine.” EX1001, 3:61-64 (emphasis added); EX1113, ¶65.

Similarly, Champion takes Dr. Shahbakhti's testimony out of context. Dr. Shahbakhti explained that the preamble provides context for the meaning of the claim body. EX1113, ¶66. That does not make the preamble limiting. In the same way, the specification guides a POSA's understanding of the claims without importing every detail in the specification into the claims.

Even if the preambles were limiting, the Petition explains that the Workshop Manual teaches a dual fuel generator. Pet., 30-32; EX1113, ¶67. To the extent the preambles are limiting *and* narrow Claims 1 and 11, the Petition also explains that generators driven by engines, including dual fuel engines, were well known. Pet., 30. However, the Board does not need to reach this issue, because the preamble is not limiting—as admitted by Champion—and the Workshop Manual itself teaches a dual fuel generator.

B. Elements 1.4 and 11.2

Champion argues that the Workshop Manual fails to disclose a gaseous fuel source because LPG leaves LPG Tank (14) as liquid. Champion is wrong.

First, the “gaseous fuel” terms refer to components interacting with fuel in gaseous state at standard temperature and pressure. *Supra* §IV. LPG is a gaseous

fuel. EX1113, ¶¶69-70. Therefore, the LPG Tank is a “gaseous fuel source.” Tsuda describes the Workshop Manual’s LPG Tank as a “gaseous fuel supply source 31.” EX2062, 3:20-27; Paper 10 at 17-18.

Second, even if LPG must exit the tank in gas phase, the LPG tank is a “gaseous fuel source” because at least some LPG would be in gas phase upon exiting the LPG Tank due to localized pressure and heat differentials. EX1113, ¶71.

Third, even if the “gaseous fuel source” must supply gaseous fuel *only* in gas phase, the LPG Tank and vaporizer constitute a “gaseous fuel source.” *See* IPR2025-00805, Paper 24 at 22-23.

C. Claim 2

Champion argues that LPG Cut Off Solenoid (7) is not positioned “along a gaseous fuel line” because it is not a part of the black elastomeric tubing. But the claim broadly indicates that the gaseous fuel line “coupl[es] the gaseous fuel source to the carburetor.” EX1001, Claim 2. The specification states that the gaseous fuel line “provide[s] a flow path for second [gaseous] fuel source 30 to carburetor 62.” EX1001, 11:19-23. POSAs would have understood the claimed fuel line to include the entire flow path from the fuel source to the carburetor, which is not limited to tubing. EX1113, ¶¶74-78.

Indeed, the '145 Patent describes fuel inlet 59 (including valve 50a) as part of gaseous fuel line 70. EX1001, 8:21-23, 8:5-7, 7:24-25, 10:54-56. Thus, the claimed “gaseous fuel line” includes structures such as valves and inlets along the flow path.

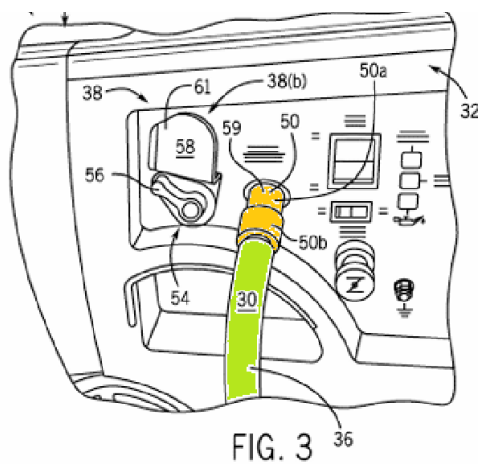


FIG. 3

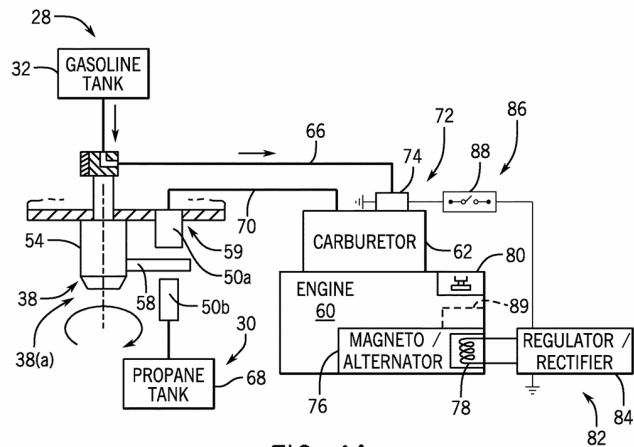
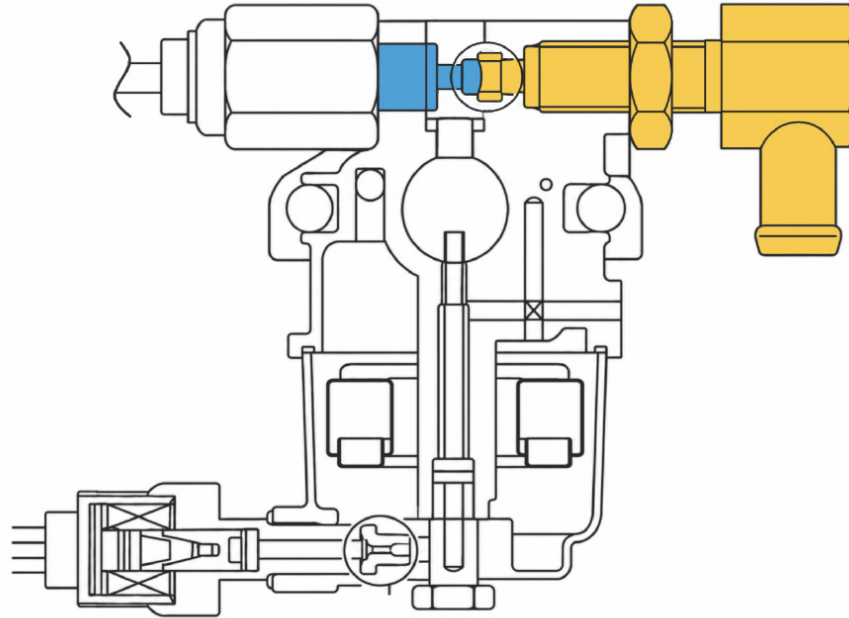


FIG. 4A

Id., FIGS. 3, 4A (annotated).

Like the '145 Patent, the Workshop Manual discloses a barb (gold) along the flow path between the gaseous fuel source and the carburetor. LPG Cut Off Solenoid (7) with a plunger (blue) extends into the barb to interrupt the gaseous fuel path before the carburetor throat. EX1113, ¶¶79-82. This extension into the gaseous fuel line results in the gaseous fuel valve being positioned “along a gaseous fuel line.” EX2127, 156:4-5 (describing the gaseous fuel line as “not just the black hose, but all that bit that then goes into the carburetor”).



EX1009, 68 (cleaned up and annotated).

Tsuda, describing the *Workshop Manual's DF972 engine* (Paper 10 at 17-18), describes: “gaseous fuel supply passage 39 [(gold)] ... feed[s] a gaseous fuel from a gaseous fuel supply source 31 to the carburetor 1.” EX2062, 3:20-22. “[D]ownstream gaseous fuel valve 33 [(blue)] ... [is] arranged *in* ... gaseous fuel supply passage 39.” *Id.*, 3:23-27 (emphasis added).

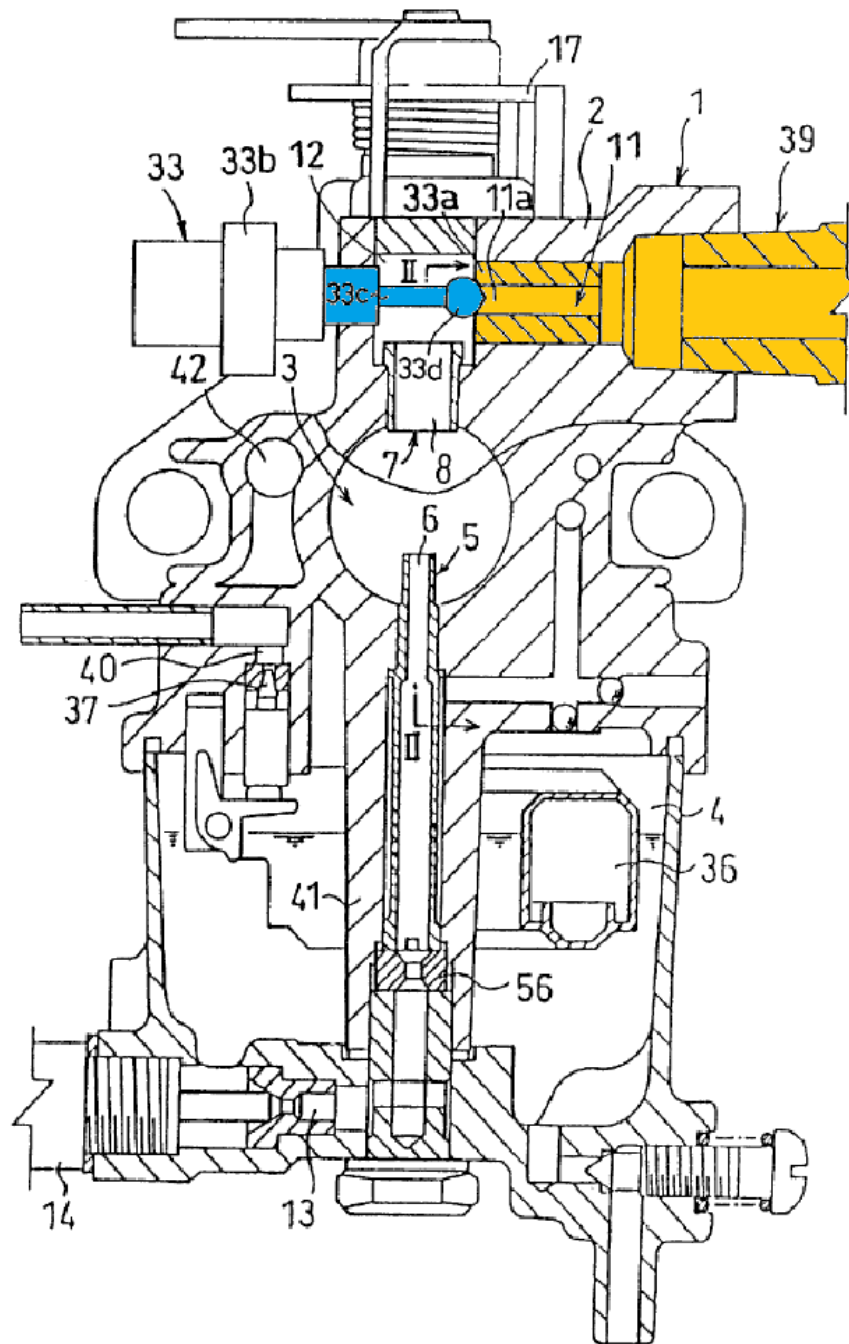
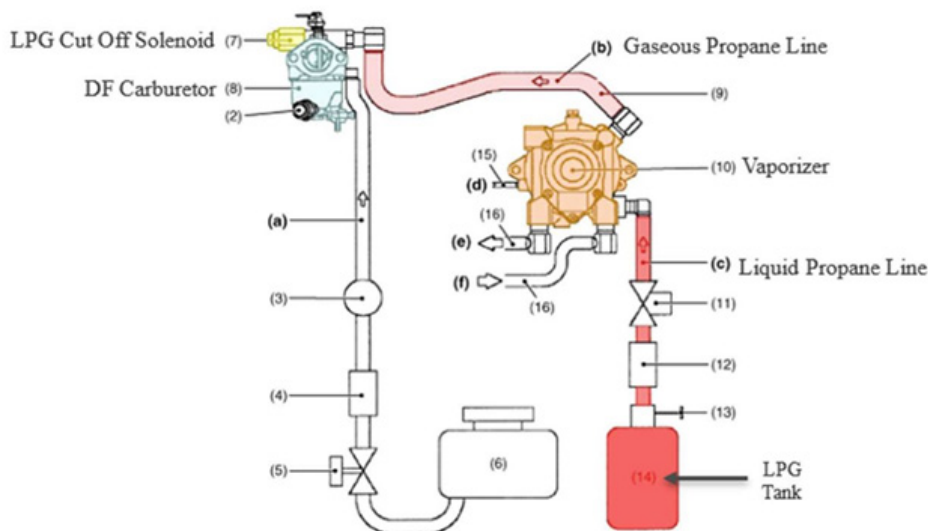


FIG. 1

EX2062, FIG. 1 (annotated).

Regardless, LPG Shut Off Solenoid (11) and LPG Manual Valve (13) are “along a gaseous fuel line,” as LPG is a “gaseous fuel” and is in partial gas phase at these locations. *Supra* §V.B; EX1113, ¶83.



POR, 31.

D. Claim 3

Champion does not dispute that LPG Manual Valve (13) is a mechanical valve. LPG Manual Valve (13) is a gaseous fuel valve along a gaseous fuel line. *Supra* §V.C.

LPG Cut Off Solenoid (7) and LPG Shut Off Solenoid Valve (11) are also mechanical valves. In the Firman litigation, Champion admits that a valve with mechanical components is a mechanical valve, even if it also actuates a solenoid. EX1116, 5-11, EX1113, ¶85. Likewise, LPG Cut Off Solenoid (7) and LPG Shut

Off Solenoid Valve (11) have mechanical components and therefore are mechanical valves notwithstanding their other electrical components. EX1113, ¶85.

Even if solenoid valves are not mechanical valves, the type of valve used in a fuel system is a mere design choice, and solenoid valves are readily interchangeable with mechanical valves. *Id.*, ¶86. Champion argues that the Petition did not identify a specific type of mechanical valve for substitution, but the specific type of mechanical valve is interchangeable and immaterial. *Id.*, ¶87.

E. Claim 6

Champion argues that the switch is not connected to the electrical power generator. The Petition presents two alternative arguments for this limitation.

First, the Workshop Manual alone teaches that its switch is connected to the generator through the battery. “[B]attery current” flows to the solenoids through the switch. EX1009, 68. The battery is connected to the electrical power generator. *Id.*, 77. Thus, the switch is connected to the generator. EX1113, ¶¶89-90. The ’145 Patent confirms that connections may include intermediate components. For example, Claim 6 states that the switch “connect[s] one fuel source to the carburetor.” EX1001, Claim 6. But Claim 6 also requires components between the fuel source and carburetor, such as the liquid fuel cut-off solenoid. *Id.* Similarly, the specification states that components of the engine, such as the switch, are “operatively connected” to the alternator (generator) “by conventional means.”

EX1001, 4:7-8. Thus, “connected” in Claim 6 encompasses “operative” connections, such as an operative connection through a battery.

Second, to the extent connection to the generator through a battery does not meet this element, it would have been obvious to remove the battery based on Matsushima's batteryless generator teaching. *Infra* §V.G; EX1113, ¶91. Matsushima discloses that it is desirable to connect electrical components such as switches to a generator so that the electrical components can receive power without a battery or when the battery is dead. This teaching is not limited to the precise structures powered by Matsushima's batteryless generator. EX1113, ¶91.

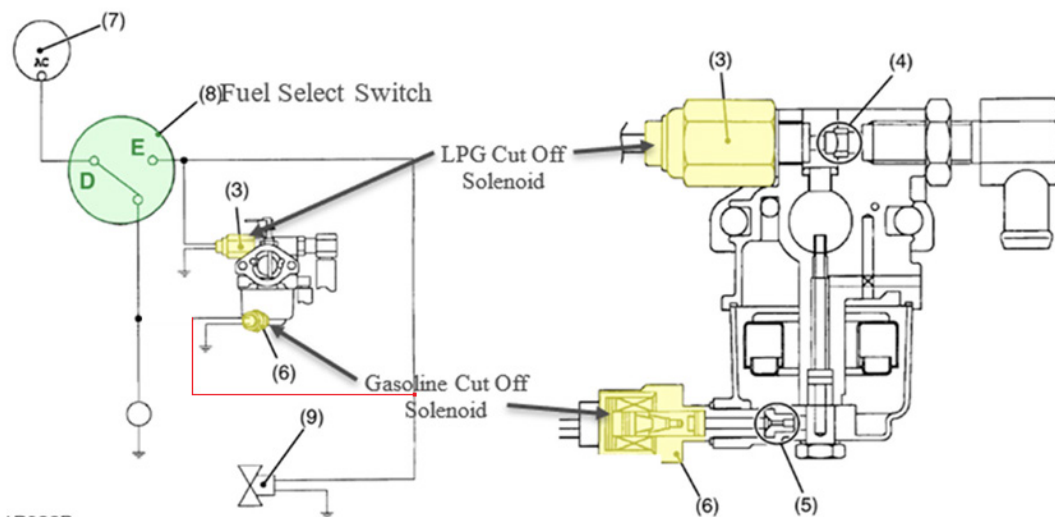
F. Claim 8

Champion does not contest that Olmr teaches a normally open valve, and instead disputes whether it would be obvious to combine the Workshop Manual with Olmr.

Olmr teaches that it is desirable to be able hold the valve open without electricity. Pet., 53 (citing EX1007, 3:43-52). It is also desirable for the valve to “fail in the normally open position.” *Id.* (quoting EX1007, 3:43-52). A POSA would have been motivated to combine the Workshop Manual with Olmr to allow engine starting if the battery is dead or if the engine is modified to operate without a battery. EX1113, ¶93.

Champion also faults Generac for purportedly failing to describe how to rewire the circuitry to work with a normally open valve. POR, 37-41. Champion then deploys a strawman argument assuming the valve orientation is flipped without rewiring. *Id.*

POSAs would have understood that Olmr's teaching can be applied to both the liquid fuel cut-off and the LPG solenoid. EX1113, ¶¶95-96. For example, the wiring below would apply if the liquid fuel cut-off is normally open and the gaseous fuel valve is normally closed. EX1113, ¶¶97-98.



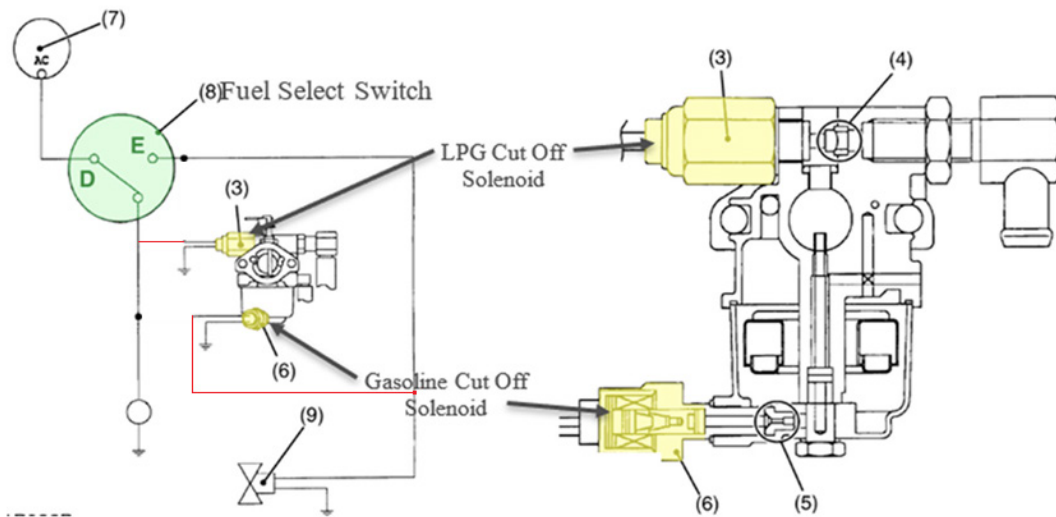
Pet., 33 (citing EX1009, 68) (rewired in red for normally open liquid fuel cut-off).

With this wiring, only one fuel valve is on at a time:

	Powered Solenoid	Liquid Fuel Cut-Off Position (Normally Open)	Gaseous Fuel Valve Position (Normally Closed)
Switch Position D	Neither Valve	Open	Closed
Switch Position E	Both Valves	Closed	Open

The wiring diagram below would apply if both valves are normally open.

EX1113, ¶¶99-100.



Pet., 33 (citing EX1009, 68) (rewired in red for both normally open valves).

With this wiring, only one fuel valve is on at a time:

	Powered Solenoid	Liquid Fuel Cut-Off Position (Normally Open)	Gaseous Fuel Valve Position (Normally Open)
Switch Position D	Gaseous Fuel Valve	Open	Closed
Switch Position E	Liquid Fuel Cutoff	Closed	Open

In either case, no rewiring of “main switch (7)” is needed. EX1113, ¶101.

POSAs would have understood these simple re-wirings would easily allow Olmr's

normally open solenoid to be used in place of the Workshop Manual's normally closed liquid fuel cut-off. EX1113, ¶¶97-103.

G. Claim 9

Champion does not contest that Matsushima teaches a pull-start, batteryless engine and instead only disputes that it would not be obvious to implement Matsushima's teaching in a "large" water-cooled engine.

Champion does not explain why the Workshop Manual-Matsushima combination must be a large, water-cooled engine. Neither the size of the engine nor the cooling system are claimed features. "The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference.... Rather, the test is what the *combined teachings* of the references would have suggested to" a POSA. *In re Keller*, 642 F.2d 413, 425 (C.C.P.A. 1981) (emphasis added). Here, "the question is whether it would have been obvious to [a POSA], working with the [Workshop Manual] and the [Matsushima] references before him, to do what the inventors herein have done" (*id.*), which is to use a dual fuel delivery system with a pull-start, batteryless engine.

The Petition answers this question. Batteries are known to die in cold weather or after long periods of nonuse. EX1113, ¶108. Incorporating Matsushima's pull-start engine with the Workshop Manual's fuel delivery system "would improve reliability in cold or remote applications." Pet., 55. Pull-start components are also

less expensive. *Id.* These teachings can be combined with “routine mechanical adaptation.” *Id.*

Even if the obviousness standard required bodily incorporation, POSAs would have understood that the force required to pull-start the Workshop Manual's engine and water pump would approximate the typical force for pull-starting an engine. EX1113, ¶¶109-118. Indeed, Champion manufactures a dual fuel 500cc pull-start engine. EX1092. Furthermore, POSAs would have understood that the engine size can be reduced, as Kubota also manufactured a substantially similar “smaller” 752cc engine pre-2015. EX1094; EX2044, 3; EX1113, ¶119.

POSAs would have understood that implementing a batteryless recoil starter would have “simultaneous advantages and disadvantages.” *Medichem, S.A. v. Rolabo S.L.*, 437 F.3d 1157, 1165 (Fed. Cir. 2006). The tradeoff between the advantages of a recoil starter and the difficulty of starting the engine is a design choice (EX1113, ¶¶120-121), which does not obviate the motivation to combine. *See Medichem*, 437 F.3d at 1165.

Finally, Champion argues that the Workshop Manual does not teach manually priming or choking. The Workshop Manual teaches a “choke valve (3) controlled by the choke lever (1).” EX1009, 67. Furthermore, manual priming and choking is not required—Champion acknowledges that pull-start engines merely “often” include priming and choking systems. IPR2025-01271, Paper 30 at 43; EX1113, ¶122. Even

if desired, such systems were well known and would naturally follow from a design choice to use a pull-start. EX1113, ¶122.

H. Claims 4-5, 7, 10, and 12-16

Claims 4-5, 7, 10, and 12-16 are not separately addressed and invalid for the reasons stated in the petition.

VI. GROUNDS 3 AND 6: CLAIMS 1-16 ARE RENDERED OBVIOUS BY THE COMBINATION OF NAKAFUSHI, MATSUSHIMA, OLMR, AND WINBERG

A. Elements 1.0 and 11.0

The preambles of Claims 1 and 11 are not limiting. *Supra* §V.A.

Even if the preambles were limiting, the Nakafushi-Matsushima combination teaches a dual fuel generator. Nakafushi teaches a dual fuel delivery system for an engine. Pet., 57. Champion admits that Nakafushi's teaching is not limited to any particular use case. IPR2025-01271, Paper 30 at 64-65. Matsushima teaches a generator driven by an engine. Pet., 57-58. The use of internal combustion engines, including dual fuel engines, to drive a generator was well known and is within the range of uses a POSA would have considered for Nakafushi's fuel delivery system. Pet., 56; EX1113, ¶125.

Champion complains that the Petition does not specify "which engine" is being implemented in a dual fuel generator. POR, 47. That is because the engine choice is irrelevant. EX1113, ¶126. Nakafushi teaches a dual fuel delivery system

for an engine while Matsushima teaches using an engine to drive a generator. The obviousness inquiry asks whether a POSA would have combined these *teachings*—there is no need to bodily incorporate Nakafushi's teaching into Matsushima's engine or vice versa. *In re Keller*, 642 F.2d at 425.

B. Elements 1.4 and 11.2

Champion argues that Nakafushi fails to disclose a gaseous fuel source because LPG leaves LPG Cylinder 16 in liquid phase. Champion is wrong.

First, the “gaseous fuel” terms refer to components that interact with fuel that is in the gaseous state at standard temperature and pressure. *Supra* §IV. LPG is a gaseous fuel. Therefore, the LPG Cylinder is a “gaseous fuel source.” *See supra* §V.B.

Second, Nakafushi does *not* state that liquid phase LPG exits the cylinder. Champion assumes that because Nakafushi's pressure regulator is a vaporizer, it receives liquid phase LPG. But Champion acknowledges that Sugimoto's vaporizer alternatively receives liquid phase gaseous fuel or gas phase gaseous fuel. POR, 6-7 (citing EX2137, 399); *see also supra* §IV; EX1113, ¶¶59-60. Nakafushi teaches an LPG Cylinder, which includes an LPG Cylinder from which the LPG exits in gas phase.

Third, at least some of the drawn LPG would be in gas phase upon exiting the LPG Cylinder. *See supra* §V.B; EX1113, ¶130.

Fourth, the LPG Cylinder and vaporizer constitute a “gaseous fuel source.”
See IPR2025-00805, Paper 24 at 22-23.

C. Claim 2

Champion argues that Nakafushi fails to disclose a gaseous fuel valve positioned along a gaseous fuel line because LPG is in liquid phase at these locations. Champion is wrong.

First, the “gaseous fuel” terms refer to components that interact with fuel in gaseous state at standard temperature and pressure. *Supra* §IV. LPG is a gaseous fuel. Therefore, LPG cut valve 18 is a gaseous fuel valve and LPG supplying passage 13 is a gaseous fuel line.

Second, Nakafushi does *not* state that LPG is in liquid phase at these locations. *Supra* §VI.B. Nakafushi teaches an LPG cut valve positioned along LPG supplying passage 13, and the scope of that disclosure includes an LPG cut valve and fuel line through which LPG travels in gas phase. *Supra* §VI.B; EX1113, ¶134.

Third, at least some LPG would be in gas phase in the LPG line (gaseous fuel line) and LPG cut valve (gaseous fuel valve). EX1113, ¶135.

D. Claim 3

Electrically operated valves, such as Nakafushi's cut valves, include mechanical components and therefore are mechanical valves. *Supra* §V.D. Even if Nakafushi's valves are not mechanical valves, it would have been obvious to

substitute them with mechanical valves, which would have been a simple design choice with known benefits and drawbacks. *Supra* §V.D; EX1113, ¶¶137-138. *Medichem*, 437 F.3d at 1165.

E. Claim 6

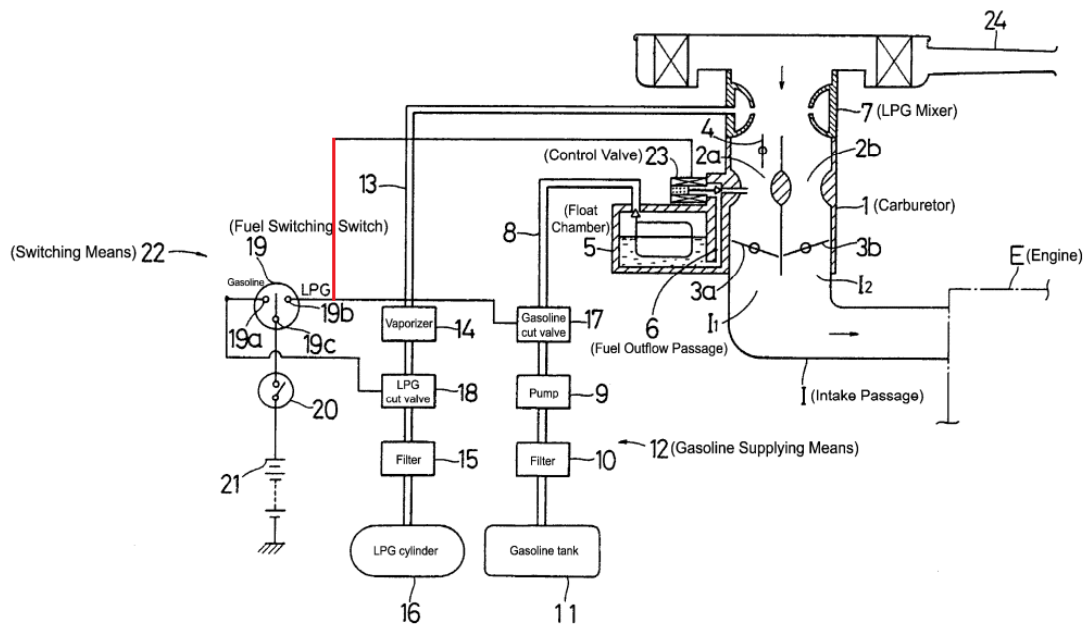
Nakafushi teaches that its switch is connected to a battery without specifying how the battery is charged. EX1005, ¶[0013]. Matsushima teaches it is desirable to connect electrical devices such as the switch to a generator so that they can be powered without a battery or when the battery is dead. Accordingly, it would have been obvious to connect the switch to a generator, either directly or through the battery. *See supra* §V.E; EX1113, ¶¶139-140.

F. Claim 8

Champion argues that gasoline cut valve 17 does not provide fuel “to the engine when [it] is unpowered” because of the presence of intervening control valve 23 along the fuel line. POR, 59-60. Champion’s premise is flawed—the specification describes valves other than the final valve as controlling fuel flow “to the engine.” *See, e.g.*, EX1001, 6:13-20. Valve 17 provides fuel to the engine when it is unpowered and valve 23 is powered, which occurs when switch 19 is powered in position 19a.

Champion contests the motivation to combine Nakafushi with Olmr to make control valve 23 normally open. Nakafushi and the Workshop Manual teach similar

fuel delivery systems such that a POSA would combine their teachings in similar ways. EX1113, ¶143. Any differences are immaterial to their combinability with Olmr. *Id.* Using a normally open valve involves a “simple substitution and rewiring” (Pet., 75-76; *see also id.*, ¶¶52-54, 65-66), as shown below. EX1113, ¶142.



EX1005, FIG. 1 (rewired for a normally open liquid fuel cutoff valve 23).

G. Claims 4-5, 7, 9-10, and 12-16

Claims 4-5, 7, 9-10, and 12-16 are not separately addressed and invalid for the reasons stated in the petition.

VII. GROUNDS 4, 7, AND 8: CLAIMS 1-16 ARE RENDERED OBVIOUS BY HOLZAPFEL, ALONE OR IN COMBINATION WITH MATSUSHIMA, OLMR, AND WINBERG

A. Elements 1.0 and 11.0

The preambles of Claims 1 and 11 are not limiting. *Supra* §V.A.

Even if they were limiting, the Holzapfel-Matsushima combination teaches a dual fuel generator. Like Nakafushi, Holzapfel teaches a dual fuel delivery system for an engine. It would have been obvious to combine this *teaching* with Matsushima's *teaching* of a generator driven by an engine. *Supra* §VI.A; *infra* §VII.B; EX1113, ¶¶147-148.

B. Element 1.2

Champion ignores the Petition's obviousness analysis. Pet., 78-79. It would have been obvious to combine Holzapfel's dual fuel delivery teaching with Matsushima's generator teaching. *Id.* Matsushima shows that electricity generation was a well-known and desirable use case for an engine. *Supra* §VI.A.

Holzapfel contemplates use of its fuel delivery system in "automobiles and similar vehicles." EX1008, 1:19-28; POR, 67. When the '145 Patent was filed, vehicle engines typically drove a generator to power ignition. EX1113, ¶150. Holzapfel is a gasoline engine (EX1008, 2:124-147), which requires spark ignition. EX1113, ¶150. Spark ignition requires electricity. *Id.* Matsushima discloses one of a finite number of well-known ways to obtain electricity after startup: using a generator. *Uber Techs., Inc. v. X One, Inc.*, 957 F.3d 1334, 1341 (Fed. Cir. 2020).

C. Elements 1.4 and 11.2

Champion argues that Holzapfel fails to disclose a gaseous fuel source because the normally gaseous fuel leaves tank 16 in liquid phase. Champion is wrong.

First, the “gaseous fuel” terms refer to components that interact with fuel in the gaseous state at standard temperature and pressure. *Supra* §IV. Holzapfel’s engine runs on “normally gaseous fuel.” EX1008, 2:8-12. Therefore, tank 16 is a “gaseous fuel source.” Holzapfel itself describes the fuel as a “gaseous fuel” inside the tank and claims a “source of gaseous fuel.” EX1008, Claim 2.

Second, tank 16 is a “gaseous fuel source” because some of the fuel exiting the tank would be in gas phase. EX1113, ¶154.

Third, tank 16 with heat exchanger 20 and/or pressure reducing valve 24 provide a “gaseous fuel source.” IPR2025-00805, Paper 24 at 22-23; POR, 65-66 (describing vaporization of gaseous fuel into gas phase by these structures).

D. Element 1.5

Champion disputes whether it would have been obvious to combine Holzapfel’s dual fuel delivery teaching with Olmr’s solenoid valve teaching. Although Holzapfel’s valves are mechanically actuated, POSAs would have understood that the choice between mechanical and electrical actuation is a design choice with known benefits and drawbacks. EX1113, ¶156. *Medichem*, 437 F.3d at

1165. For example, “solenoid valves provide fast response times and precise control.” Pet., 86. POSAs would have had a reasonable expectation of success implementing a (manual) actuation system for a solenoid valve, which could include implementing a power system for the actuation and/or a system to actuate a solenoid switch without replacing Holzapfel's rod/wire. EX1113, ¶157.

E. Element 1.6

Champion contests the motivation to combine Holzapfel's dual fuel delivery teaching with Matsushima's voltage regulator teaching. It would have been obvious to combine Holzapfel with Matsushima's generator teaching. *Supra* §VII.B. That combination would include Matsushima's voltage regulator so that the devices powered by the generator receive a consistent voltage. EX1113, ¶159.

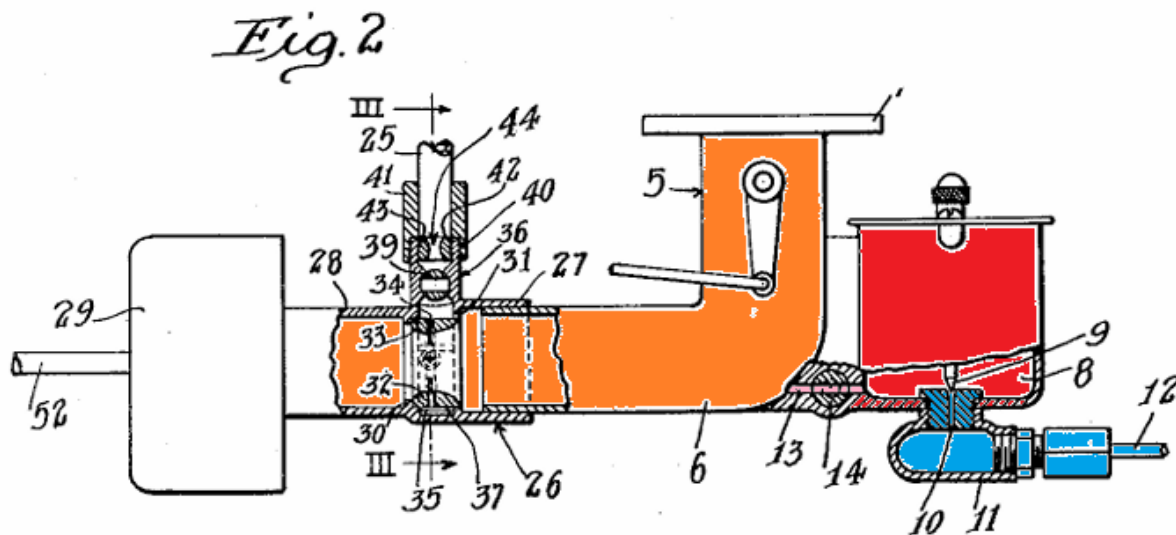
F. Claim 2

Champion argues that liquid fuel valve 9 is not positioned “along a liquid fuel line.” Champion restrictively reads the “liquid fuel line” as referring to only reference number 12 of Holzapfel. But the claim language and specification demonstrate that the claimed fuel line includes the entire flow path from the fuel source to the carburetor, not just tubing. *Supra* §V.C.

Like the '145 Patent, Holzapfel discloses an inlet structure along the flow path between the liquid fuel source and the carburetor. Holzapfel further discloses that

valve 9 obstructs the entrance point dividing the flow path “gaseous fuel line” and the carburetor. EX1008, 1:89-99.

Specifically, the '145 Patent discloses that the carburetor comprises a throat, float bowl, and fuel passage. EX1001, Claim 15. Holzapfel describes carburetor 5 as comprising float bowl 8 (red) and bent tube 6 (with a throat). EX1008, 2:84-107. Inlet connection 11 and passage 10 are components of the flow path/fuel line (blue) leading into carburetor 5. Needle valve 9 is positioned along (at the end of) that fuel line. EX1113, ¶¶166-168.



EX1008, FIG. 2 (annotated).

G. Claim 6

Using a solenoid valve with an electrical actuation system is a simple design choice, as taught by Olmr. *Supra* §VII.D. For example, Holzapfel's rod/wire could be coupled to the solenoid as shown in Walker. EX1015, 2:13-32, FIG. 1; EX1113,

¶169. It would also have been obvious to connect the switch to a generator. *Supra* §§VII.B, VI.E. The resulting combination would be an electromechanical switch coupled to the liquid fuel cut-off solenoid and generator.

H. Claim 8

It would have been obvious to use a solenoid valve. *Supra* §VII.D. The only argument Champion raises relating to whether the combination would result in a normally open valve is that “valve 14 will be open in the event the valve loses power, allowing gasoline to flow to the engine” when operating on gaseous fuel. POR, 73-74. The normally open valve has the opposite benefit of allowing gasoline to flow to the engine as intended if the valve loses power while operating on gasoline. Meanwhile, the leakage of liquid fuel in gaseous fuel operation is inherent to Claim 8's normally open valve disclosure. EX1113, ¶171. The simultaneous benefits and drawbacks of using a normally open solenoid valve do not teach away from the combination. *Medichem*, 437 F.3d at 1165.

I. Claim 9

Champion argues that “Holzapfel's engine does not actually need electrical power.” POR, 74. This is incorrect. Holzapfel is a spark ignition engine. *Supra* §VII.B. Manual and battery starting are the two known ways to start a spark ignition engine. Matsushima's pull-start teaching is one of a finite number of well-known ways to start an engine. *Uber Techs.*, 957 F.3d at 1341.

Furthermore, Holzapfel's dual fuel delivery system teaching is not limited to automobiles or large engines. *Supra* §V.G; EX1113, ¶173. Holzapfel's teaching can be used with small engines such as Matsushima's engine. At least under those circumstances, it would be obvious to use a pull starter for improved reliability in cold and remote applications. *Supra* §V.G. Even if bodily incorporation were required, some automobile engines in the 1900s were relatively small (*see, e.g.*, EX1127), and automobile engines may be started using a recoil starter. EX1113, ¶173.

J. Claims 3-5, 7, 10, and 12-16

Claims 3-5, 7, 10, and 12-16 are not separately addressed and invalid for the reasons stated in the petition.

VIII. CONCLUSION

For the reasons above, Petitioner asks that the PTAB issue a final written decision, finding Claims 1-16 unpatentable, and the Director cancel these claims.

Respectfully submitted,

Date: September 1, 2026

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CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. §42.24, the undersigned attorney for Petitioner Generac Power Systems, Inc. declares that the argument section of this Petition has 5,513 words, according to the word count tool in Microsoft Word™.

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CERTIFICATE OF SERVICE

The undersigned certifies, in accordance with 37 C.F.R. §§42.105 and 42.6,
that service was made on the Patent Owner as detailed below.

<i>Date of service</i>	September 1, 2026
<i>Manner of service</i>	Electronic mail addressed to: j.staley@pkhip.com s.amy@pkhip.com t.finch@pkhip.com championlit@pkhip.com
<i>Documents served</i>	Reply To Patent Owner Response in <i>Inter Partes</i> Review of U.S. Patent No. 11,143,145, including Exhibit List; Exhibits EX1091 through EX1130
<i>Persons served</i>	Joseph W. Staley, Reg. No. 60,732 Scott P. Amy (Admitted <i>Pro Hac Vice</i>) Thomas F. Finch Reg. No. 82,341 PERILLA KNOX & HILDEBRANDT LLP 5871 Glenridge Dr. Suite 350 Atlanta, Georgia 30328 Tel: (770) 927-7802 Fax: (877) 389-6779 Email: j.staley@pkhip.com

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