

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

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

Petitioners

v.

CHAMPION POWER EQUIPMENT, INC.,

Patent Owner

Patent No. 10,221,780

Issued: March 5, 2019

Title: DUAL FUEL LOCKOUT SWITCH FOR GENERATOR ENGINE

Inter Partes Review No. IPR2025-01185

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 10,221,780**

TABLE OF CONTENTS

I.	STANDING AND RELIEF REQUESTED	9
II.	STATE OF THE ART	10
A.	Dual-Fuel Engines.....	10
III.	SUMMARY OF THE '780 PATENT	11
IV.	LEVEL OF ORDINARY SKILL IN THE ART	15
V.	CLAIM CONSTRUCTION	15
A.	The Claimed Term “Fuel Lockout Apparatus”	16
B.	The Claimed Terms “Prevent...Coupling” and “Permit...to Couple”	21
C.	Patent Owner Has Construed “Fuel Lockout Apparatus,” “Prevent...Coupling,” and/or “Permit...to Couple” Incorrectly in the Related Litigations	24
VI.	OVERVIEW OF THE ASSERTED PRIOR ART	25
A.	Overview of DuroMax	25
B.	Overview of Elsdon.....	27
C.	Overview of Hallberg.....	29
D.	Overview of Rumao	33
E.	Overview of Parlatore	35
VII.	THE CHALLENGED CLAIMS ARE UNPATENTABLE.....	36
A.	Ground 1: The Combination of DuroMax and Elsdon Renders Obvious Claims 1, 2, 3, 4, 6, 7 and 15.	36
B.	Ground 2A/2B: Hallberg Anticipates Claims 1, 6, and 7 (Ground 2A) and Renders Obvious Claims 2 and 15 (Ground 2B).....	54
C.	Ground 3: The Combination of Rumao, DuroMax, and Elsdon, or alternatively the Combination of Rumao and Hallberg Renders Obvious Claims 8, 9, 11, and 14.	73
D.	Ground 4: The Combination of Rumao, DuroMax, Elsdon, and Parlatore, or alternatively, Rumao, Hallberg, and Parlatore Renders Obvious Claims 12 and 13.	92
E.	Ground 5: The Combination of DuroMax, Elsdon, and Parlatore Renders Obvious Claim 5.	98

F.	Ground 6: The Combination of Rumao, DuroMax, and Elsdon Renders Obvious Claim 10.	100
VIII.	MANDATORY NOTICES	101
A.	Real Parties in Interest.....	101
B.	Related Matters.....	101
C.	Lead and Back-Up Counsel Information	103
D.	Service Information Under 37 C.F.R. § 42.8(b)(4).....	105
E.	Payment of Fees	105
IX.	CONCLUSION.....	106

LIST OF EXHIBITS

Exhibit No.	Description
Ex.1001	U.S. Patent No. 10,221,780 (“the ’780 Patent”)
Ex.1002	File History of the ’780 Patent (“the ’780 File History”)
Ex.1003	Declaration of Dr. Mahdi Shahbakhti (“Decl.”)
Ex.1004	DuroMax XP4400EH Operator’s Manual (“DuroMax”)
Ex.1005	U.S. Patent No. 5,718,265 to Elsdon (“Elsdon”)
Ex.1006	U.S. Patent No. 4,492,207 to Hallberg (“Hallberg”)
Ex.1007	U.S. Patent No. 10,337,399 to Rumao (“Rumao”)
Ex.1008	U.S. Patent No 1,931,698 to Holzapfel (“Holzapfel”)
Ex.1009	<i>Cambridge Dictionary</i> , https://dictionary.cambridge.org/dictionary/english/couple (last visited July 8, 2025).
Ex.1010	U.S. Patent Publication No. 2011/0100335 A1 to Parlatore (“Parlatore”)
Ex.1011	Champion’s Claim Construction Brief CV-23-2371-PHX-DWL
Ex.1012	Declaration of David Raskin (dated May 7, 2025)
Ex.1013	https://www.youtube.com/watch?v=Ip7ckWAZ3xQ
Ex.1014	<i>American Heritage Dictionary of the English Language</i> (3d ed. 1996).

CLAIM LISTING

Element	Claim Language
[1.0]	A mechanical fuel lockout switch for a dual fuel engine comprising:
[1.1]	a mechanical fuel valve actuateable between a first position and a second position to selectively control fuel flow to the dual fuel engine from a first fuel source through a first fuel line and a second fuel source through a second fuel line; and
[1.2]	a fuel lockout apparatus coupled to the mechanical fuel valve;
[1.3]	wherein the mechanical fuel lockout switch: communicates the first fuel source to the dual fuel engine and prevents communication between the second fuel source and the dual fuel engine when the mechanical fuel valve is in the first position, and communicates the second fuel source to the dual fuel engine and interrupts the first fuel source communication with the dual fuel engine when in the second position; and
[1.4]	wherein the fuel lockout apparatus is configured to: prevent the second fuel source from coupling to the second fuel line while the mechanical fuel valve is in the first position; and permit the second fuel source to couple to the second fuel line while the mechanical fuel valve is in the second position.
[2]	The mechanical fuel lockout switch for a dual fuel engine of claim 1, wherein the fuel lockout apparatus prevents actuation of the mechanical fuel valve to the first position when the second fuel source communicates with the dual fuel engine.
[3]	The mechanical fuel lockout switch for a dual fuel engine of claim 1, wherein the fuel lockout apparatus comprises a flange rigidly coupled to the mechanical fuel valve that covers an inlet of the second fuel line while the mechanical fuel valve is in the first position and uncovers the inlet of the second fuel line while the mechanical fuel valve is in the second position.
[4]	The mechanical fuel lockout switch for a dual fuel engine of claim 3, wherein the mechanical fuel valve rotates between

	the first position and the second position and the flange rotates transversely across the inlet of the second fuel line.
[5]	The mechanical fuel lockout switch for a dual fuel engine of claim 3, further comprising; a first end of a quick-disconnect hose coupling attached to the inlet of the second fuel line; and a second end of the quick-disconnect hose coupling attached to the second fuel source to mate with the first end of the quick-disconnect hose coupling to couple the second fuel source to the second fuel line.
[6]	The mechanical fuel lockout switch for a dual fuel engine of claim 1, wherein the mechanical fuel valve and the fuel lockout apparatus operate together to ensure that fuel from the first fuel source and fuel from the second fuel source are not simultaneously delivered to the dual fuel engine.
[7]	The mechanical fuel lockout switch for a dual fuel engine of claim 6, wherein the first fuel source provides liquid fuel from a liquid fuel tank to the dual fuel engine and the second fuel source provides gaseous fuel from a pressurized fuel container to the dual fuel engine.
[8.0]	A method of assembling a mechanical fuel lockout switch for an internal combustion engine comprising:
[8.1]	providing an internal combustion engine configured to operate on a fuel from a first fuel source and a different fuel from a second fuel source;
[8.2]	coupling a mechanical fuel valve to the internal combustion engine actuateable between a first position and a second position to selectively control fuel flow to the internal combustion engine from the first fuel source through a first fuel line and the second fuel source through a second fuel line; and
[8.3]	coupling a fuel lockout apparatus to the mechanical fuel valve;
[8.4]	wherein when the mechanical fuel valve is in the first position, the fuel lockout apparatus communicates the first fuel source to the internal combustion engine and prevents the second fuel source from coupling to the internal combustion

	engine, and actuation of the mechanical fuel valve to the second position causes the fuel lockout apparatus to permit the second fuel source to couple to the internal combustion engine, and interrupts the first fuel source communication with the internal combustion engine; and
[8.5]	wherein the fuel lockout apparatus prevents actuation of the mechanical fuel valve to the first position when the second fuel source is coupled to the internal combustion engine.
[9]	The method of claim 8, wherein the fuel lockout apparatus is further configured to: prevent coupling of the second fuel source to the second fuel line while the mechanical fuel valve is in the first position; and permit coupling of the second fuel source to the second fuel line while the mechanical fuel valve is in the second position.
[10]	The method of claim 8, wherein the fuel lockout apparatus comprises a fuel inlet cover configured to actuate in unison with the mechanical fuel valve to cover a fuel inlet on the internal combustion engine for the second fuel source when the mechanical fuel valve is in the first position and uncover the fuel inlet when the mechanical fuel valve is in the second position.
[11]	The method of claim 8, further comprising coupling a fuel regulator system to the second fuel source to reduce fuel pressure therefrom and deliver fuel to the second fuel line at a pressure required for operation of the internal combustion engine.
[12]	The method of claim 11, further comprising mounting the fuel regulator system to the second fuel source located off-board the internal combustion engine.
[13]	The method of claim 11, further comprising: coupling one end of a quick-disconnect hose coupling to an inlet on the internal combustion engine for the second fuel source; and coupling a mating end of the quick-disconnect hose coupling to an outlet of the fuel regulator system.

[14]	The method of claim 8, further comprising providing gasoline in a liquid fuel tank as the first fuel source and LPG in a pressurized fuel container as the second fuel source.
[15.0]	A mechanical fuel lockout switch for a dual fuel engine comprising
[15.1]	a mechanical fuel valve actuateable between a first position and a second position to selectively control fuel flow to the dual fuel engine from a first fuel source through a first fuel line and a second fuel source through a second fuel line; and
[15.2]	a fuel lockout apparatus coupled to the mechanical fuel valve;
[15.3]	wherein the mechanical fuel lockout switch: communicates the first fuel source to the dual fuel engine and prevents communication between the second fuel source and the dual fuel engine when the mechanical fuel valve is in the first position, and communicates the second fuel source to the dual fuel engine and interrupts the first fuel source communication with the dual fuel engine when in the second position; and
[15.4]	wherein the fuel lockout apparatus prevents actuation of the mechanical fuel valve to the first position when the second fuel source communicates with the dual fuel engine.

I. STANDING AND RELIEF REQUESTED

MWE Investments, LLC, Harbor Freight Tools USA, Inc., and Generac Power Systems, Inc. (“Petitioners”) request *Inter Partes* Review (“IPR”) under 35 U.S.C. §§311–319 and 37 C.F.R. §42 of claims 1-15 of U.S. Patent No. 10,221,780 (“the ’780 patent”) based on the following grounds set forth.

Ground	Basis	Challenged Claims	Reference(s)
1	§103	1, 2, 3, 4, 6, 7 and 15	DuroMax and Elsdon
2A	§102	1, 6 and 7	Hallberg
2B	§103	2 and 15	Hallberg
3	§103	8, 9, 11 and 14	Rumao, DuroMax, and Elsdon, or alternatively, Rumao and Hallberg
4	§103	12 and 13	Rumao, DuroMax, Elsdon and Parlatore, or alternatively, Rumao, Hallberg, and Parlatore
5	§103	5	DuroMax, Elsdon, and Parlatore
6	§103	10	Rumao, DuroMax, and Elsdon

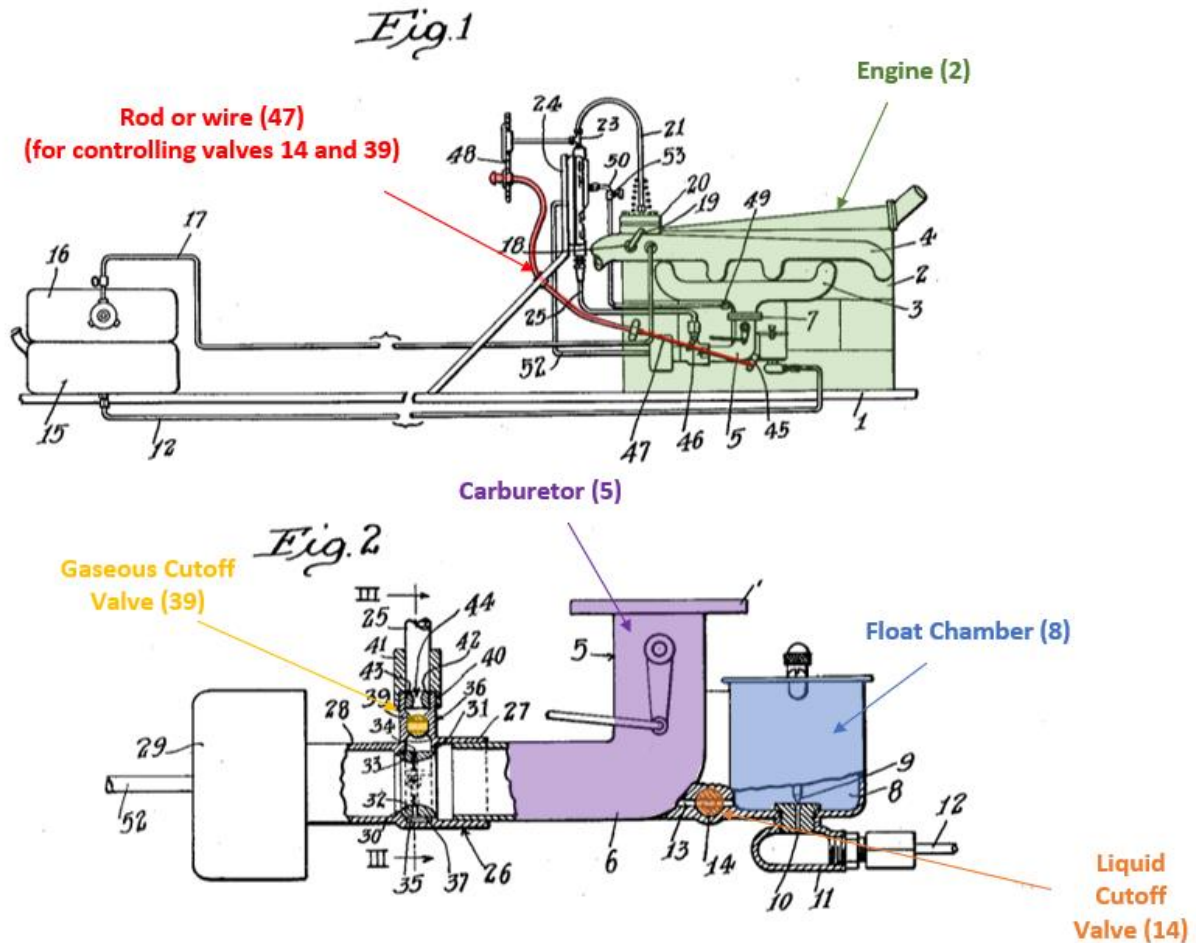
Petitioner certifies that the ’780 patent is available for IPR.

As explained herein, this Petition establishes a reasonable likelihood that Petitioners will prevail in showing that at least one of the Challenged Claims is unpatentable. Petitioners respectfully request that this IPR be instituted, and that claims 1-15 be canceled as unpatentable.

II. STATE OF THE ART

A. Dual-Fuel Engines

Dual-fuel engines that run on liquid or gaseous fuel have been known in the art for many years. For example, Holzapfel, U.S. Patent No 1,931,698, was filed in 1931 and discloses “a fuel system embodying the supplying of liquid fuel and gaseous fuel to an engine in alternation at will.” Ex.1008, 1:1–5. The disclosed engine “provide[s] a fuel system...in which the liquid fuel supply may be cut off and the gaseous fuel supply turned on, or vice versa so that when the liquid fuel is employed the gaseous fuel is disconnected and while the gaseous fuel is employed the liquid fuel is disconnected.” *Id.*, 1:35–42. Holzapfel also discloses that a “rod or wire 47” is connected to gaseous and liquid cutoff valves to control both valves, as seen in Holzapfel’s FIGS. 1-2 below:



Ex.1008, FIGS. 1-2 (Emphasis Added).

III. SUMMARY OF THE '780 PATENT

The '780 patent generally relates to “a mechanical fuel lockout switch for a dual fuel engine.” Ex.1001, Abstract. The mechanical fuel lockout switch 38, includes a mechanical fuel valve 54 actuatable between first position 38(a) and second position 38(b) to selectively control fuel flow to the dual fuel engine from a first fuel source 28 through a first fuel line and second fuel source 30 through a second fuel line 36. Ex.1001, 5:31-36.

The mechanical fuel valve 54 opens the first fuel line (to enable liquid fuel flow to the engine) when fuel valve handle 56 is in the first position, and...closes the first fuel line (to prevent liquid fuel flow to the engine) when fuel valve handle 56 is in the second position. Ex.1001, 6:2-6.

Fuel lockout apparatus 58 is controlled by fuel valve handle 56. Ex.1001, 6:10-11. Moving fuel valve handle 56 to the first position (FIGS. 2 and 4A, below) moves fuel lockout apparatus 58 to block fuel inlet 59 for LPG. Ex.1001, 6:10-18.

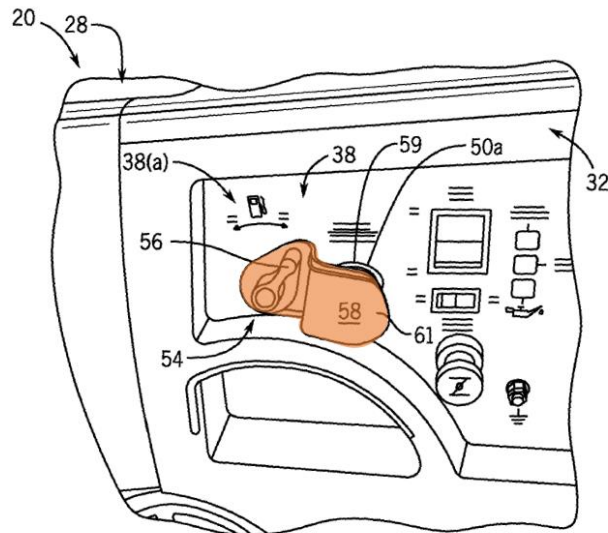


FIG. 2

Ex.1001, FIG. 2 (Emphasis Added)

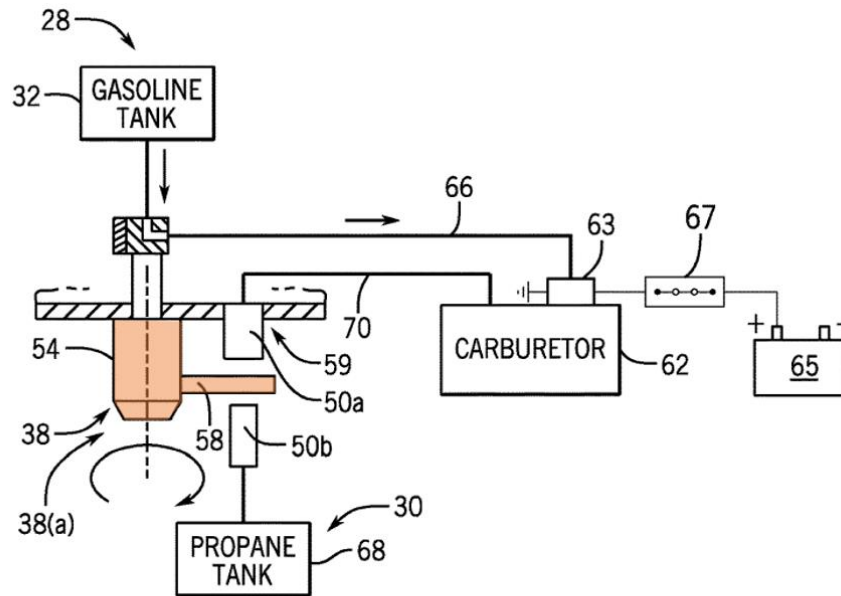
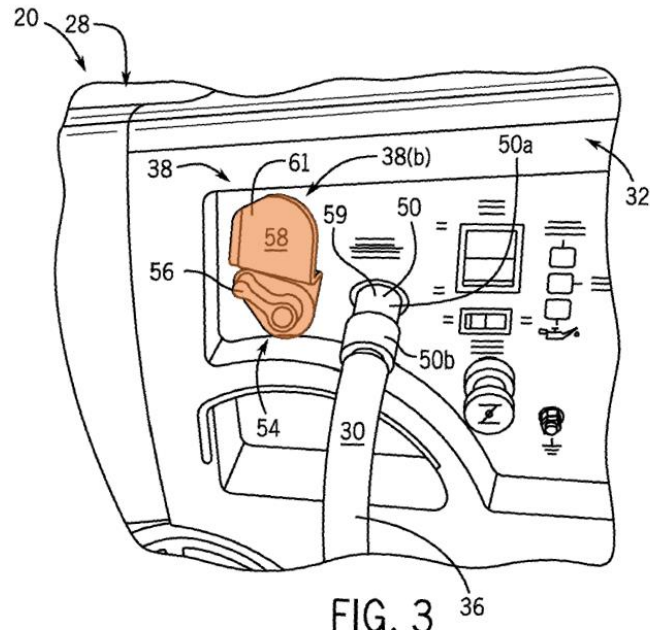


FIG. 4A

Ex.1001, FIG. 4A (Emphasis Added)

FIGS. 3 and 4B depict mechanical fuel lockout switch 38 in a second position 38(b), unblocking fuel inlet 59 for LPG. Ex.1001, 6:32-41. In this position, the mechanical fuel lockout switch 38 stops gasoline flow from gasoline tank 32 to the engine while allowing coupling of LPG supply hose 36 to fuel inlet 59 of the second fuel line. *Id.* FIGS. 3 and 4B show LPG supply hose 36 coupling second fuel source 30 to generator 20 to deliver LPG to the generator. *Id.*



Ex.1001, FIG. 3

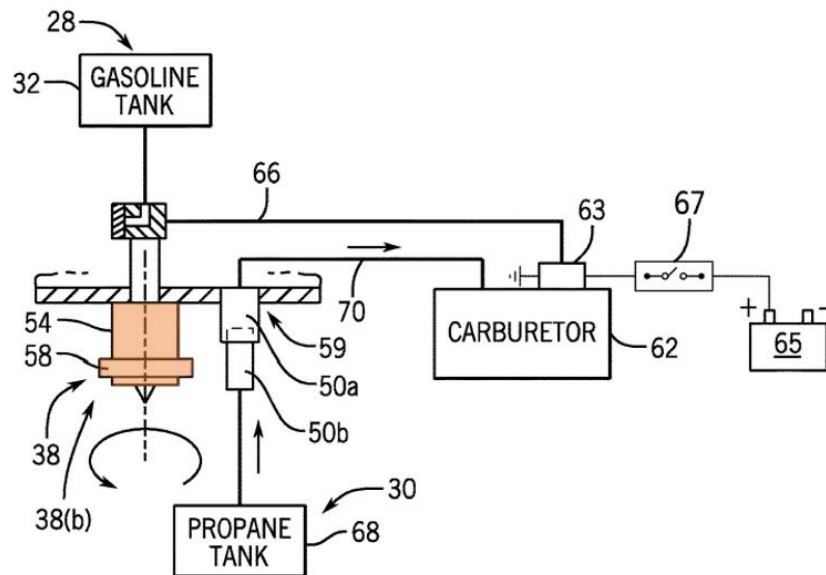


FIG. 4B

Ex.1001, FIG. 4B

IV. LEVEL OF ORDINARY SKILL IN THE ART

A person of ordinary skill in the art (hereinafter “POSA”) would “be aware of all the pertinent prior art” at the time of the alleged invention (*Custom Accessories, Inc. v. Jeffrey-Allan Indus.*, 807 F.2d 955, 963 (Fed. Cir. 1986)), including specialized knowledge applicable to various aspects of the claimed invention. *See, e.g., AVX Corp. v. Greatbatch, Ltd.*, IPR2014-00697, Paper 60 at 3 (P.T.A.B. Jan. 11, 2016). A POSA is also a person of ordinary creativity, not an automaton, and thus is able to make inferences from the art. *KSR Int’l Co. v. Teleflex*, 550 U.S. 398, 420-21 (2007).

For purposes of this Petition, a POSA as of June 12, 2015 (the filing date of the ’780 patent), would have at least a Bachelor of Science degree in mechanical engineering, physics, or related fields, and three years of work experience in combustion engines. Ex.1003, [0028]. Additional higher graduate education could substitute for work experience, and extensive experience/technical training could substitute for formal education. *Id.*

V. CLAIM CONSTRUCTION

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. *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9 at 8 (P.T.A.B. Aug. 24, 2022) (precedential).

Petitioners therefore propose the following claim constructions for certain claim terms. For the purpose of this petition, no other terms in the Challenged Claims require construction. Petitioners reserve the right to respond to any constructions offered by the Patent Owner or adopted by the Board.

A. The Claimed Term “Fuel Lockout Apparatus”

Every claim of the ‘780 Patent requires “a fuel lockout apparatus.” As explained below, the term “fuel lockout apparatus” is a means-plus-function claim term that covers the following corresponding structure and equivalents thereof: Items 58, 61 in Figs. 2, 3, 4A, 4B, as described at Ex.1001, 5:37-64; 6:10-31; 6:42-7:17; 7:54-67; 8:49-64.¹

1. “Fuel Lockout Apparatus” Does Not Recite Any Structure and Therefore Invokes §112(f).

The term “fuel lockout apparatus” does not provide any structure corresponding to the function of providing fuel lockout and therefore invokes 35 U.S.C. § 112(f).

Section 112(f) applies to claim terms that recite “function without reciting sufficient structure for performing that function.” *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1349 (Fed. Cir. 2015). The “critical question” in making this assessment “is whether the claim term is used in common parlance or by persons

¹ If this term is not treated as a means-plus-function limitation, it should be given the meaning that the Patentees chose for it, as clearly supported by the sole embodiment in the specification and discussed below—“a moveable barrier capable of blocking physical access for attaching a fuel source to a fuel inlet on the second fuel line.”

of skill in the pertinent art to designate structure.” *MTD Prods. Inc. v. Iancu*, 933 F.3d 1336, 1341 (Fed. Cir. 2019) (internal citations omitted). Generic terms such as “mechanism,” “element,” “device,” and other nonce words . . . [are] tantamount to using the word “means” because they “typically do not connote sufficiently definite structure” and therefore invoke Section 112(f). *Williamson*, 792 F.3d at 1350 (Fed. Cir. 2015). “Apparatus” is another example of a generic term that invokes §112(f).

Here, the phrase “fuel lockout apparatus” recites a function without providing any structure for performing that function. The phrase “fuel lockout apparatus” is not understood by POSAs to connote a specific structure. The claim merely replaces the term “means” with “apparatus.” The term “fuel lockout apparatus” has no independent meaning aside from “a means for providing fuel lockout.” The claim language fails to provide any structure for the “providing fuel lockout” function and is therefore subject to construction under §112(f).

2. The Corresponding Structure for “Fuel Lockout Apparatus”

The ’780 Patent describes a single embodiment of a “fuel lockout apparatus.” In that embodiment, the “fuel lockout apparatus 58” is a “flange” that “is rigidly coupled to the rotating handle [56].” Ex.1001, 6:19-25. The flange “extends radially outward from fuel valve handle 56” and “sweeps over” the LPG fuel hose coupling “as the fuel valve handle rotates.” *Id.* Based on the user

selection, the flange “blocks off” or “uncovers” the “first end 50a of the quick-disconnect hose coupling when fuel valve handle is rotated” between the first and second positions.

Specifically, when the fuel lockout apparatus is in the first position (selecting gasoline), the flange provides a barrier that extends over the fuel hose coupling 50a and prevents the user from coupling an LPG supply hose to the fuel hose coupling 50, thereby providing LPG fuel lockout. Ex.1001, 7:4-17; FIGS. 2, 4A.

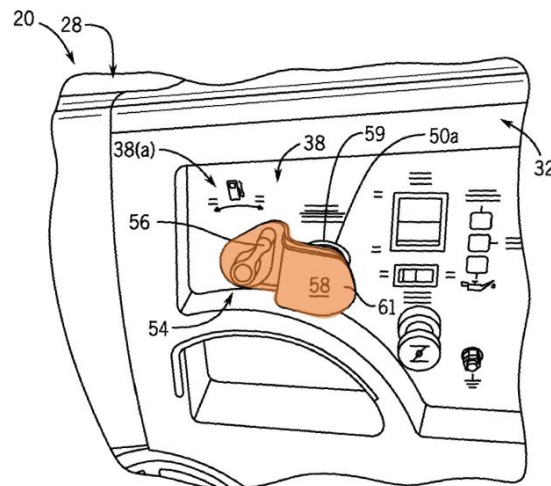


FIG. 2

Ex.1001, FIG. 2 (Emphasis Added).

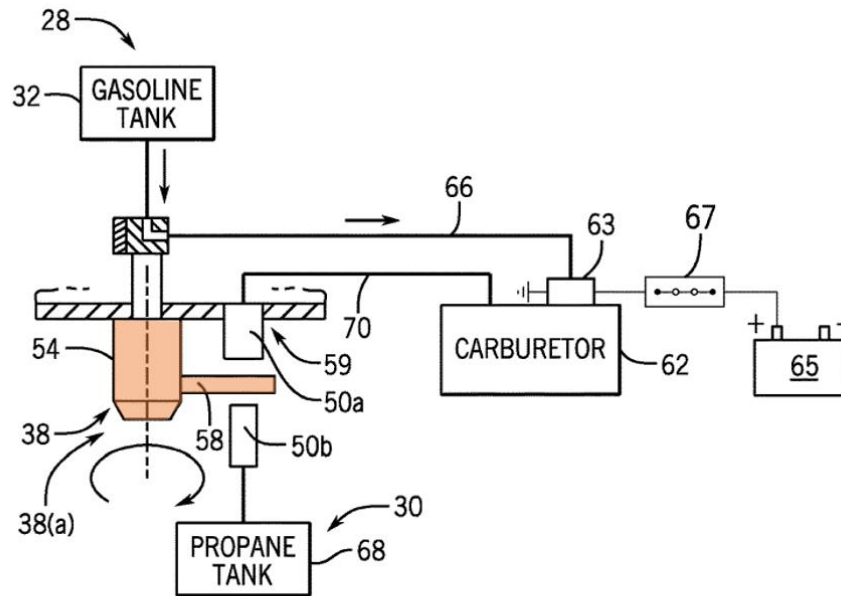
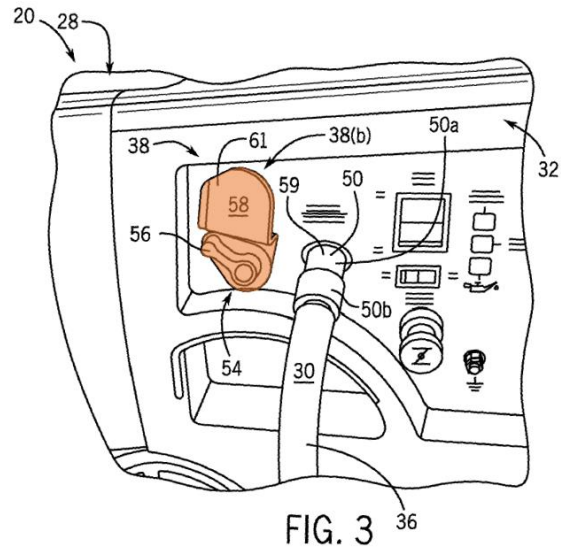


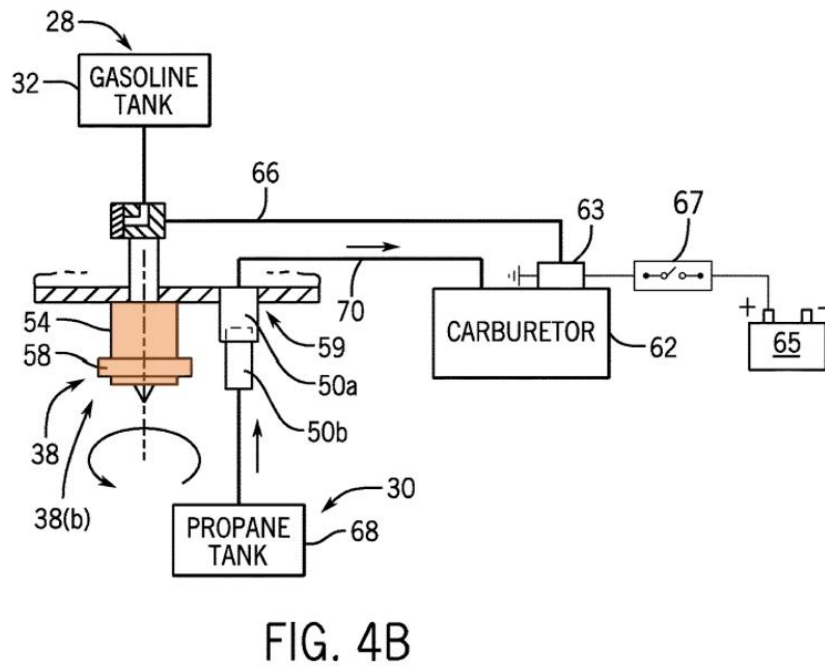
FIG. 4A

Ex.1001, FIG. 4A (Emphasis Added).

When the fuel lockout apparatus is in the second position (selecting LPG), the fuel lockout apparatus prevents the user from selecting gasoline until the LPG supply hose is removed, and thereby providing gasoline fuel lockout. Ex.1001, 7:18-29; FIGS. 3, 4B.



Ex.1001, FIG. 3 (Emphasis Added).



Ex.1001, FIG. 4B (Emphasis Added)

The flange that extends radially outward from the valve handle and rotates with the valve handle over the fuel hose coupling provides both the gasoline and

LPG lockout functionality. Thus, the proper structure corresponding to the “providing fuel lockout” functionality is: Items 58, 61 in Figs. 2, 3, 4A, 4B, as described at Ex.1001,5:37-64; 6:10-31; 6:42-7:17; 7:54-67; 8:49-64.

B. The Claimed Terms “Prevent...Coupling” and “Permit...to Couple”

Claim 1 of the ‘780 Patent recites:

[A] fuel lockout apparatus coupled to the mechanical fuel valve...[and] configured to: **prevent** the second fuel source from **coupling** to the second fuel line while the mechanical fuel valve is in the first position; and **permit** the second fuel source **to couple** to the second fuel line while the mechanical fuel valve is in the second position.

The terms “coupling” and “to couple” refer to physically connecting or attaching two items. Ex.1003 [0119]; Ex.1014, p.4. As it was with the term “fuel lockout apparatus,” the specification of the ‘780 Patent is the best guide for ascertaining what a POSA would have understood the terms “prevent...coupling” and “permit...to couple” to mean.

The specification of the ‘780 Patent discloses only one way in which the fuel lockout apparatus “prevent[s]...coupling” of the second fuel source to the second fuel line: the “flange” (item 61) of the fuel lockout apparatus “block[s] fuel inlet 59 to prevent coupling the first end 50a and second end 50b of the quick-disconnect hose coupling together.” Ex.1001 7:60-63; *see also* Ex.1001 5:52-64, 6:10- 31.

FIGS. 2 and 4A illustrate this:

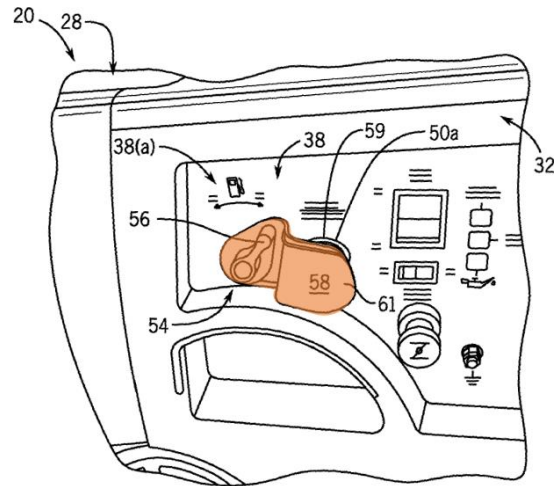


FIG. 2

Ex.1001, FIG. 2 (Emphasis Added).

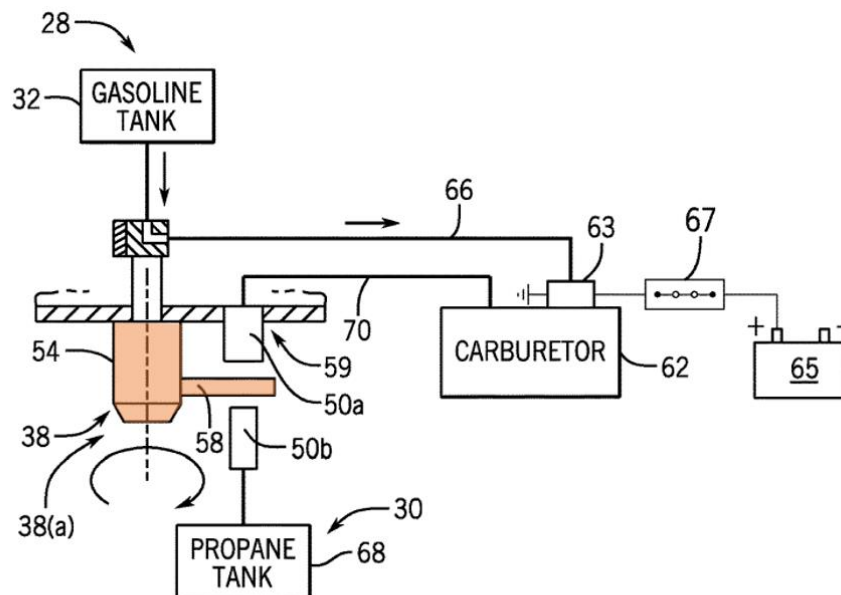
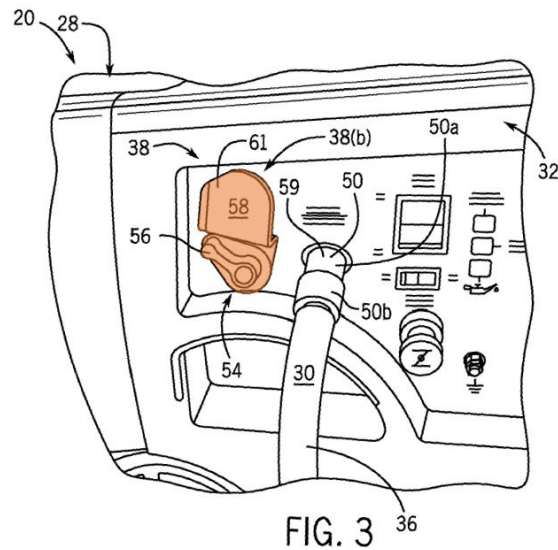


FIG. 4A

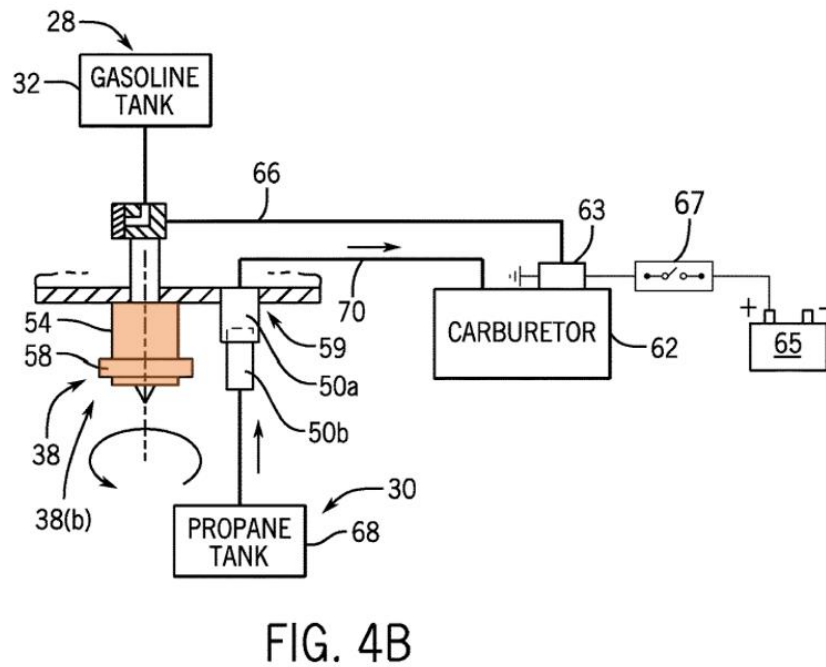
Ex.1001, FIG. 4A (Emphasis Added).

The specification of the '780 Patent also discloses only one way in which the fuel lockout apparatus "permits" the second fuel source "to couple" to the second

fuel line: “fuel lockout apparatus 58 unblock[s] fuel inlet 59 to permit attaching first end 50a and second end 50b together.” Ex.1001 7:63-67; Figs. 3, 4B; *see also id.* 6:32-41, 8:38-48. FIGS. 3 and 4B illustrate this:



Ex.1001, FIG. 3 (Emphasis Added).



Ex.1001, FIG. 4B (Emphasis Added)

The construction of “prevent...coupling” and “permit...to coupled” to mean “prevent...attaching” and “permit...to attach” thus finds ample support in the specification of the ‘780 Patent.

Moreover, during prosecution, the Examiner stated that the original dependent claim 3 would be allowable if presented as an independent claim based on the understanding that the “fuel lockout apparatus **prevent[s] the second fuel source from coupling to the second fuel line...mean[ing] that not only are the two not in fluid communication but they are not physically connected in any manner** (Emphasis Added).” Ex. 1002, p.160. In his reasoning, the Examiner stated that the prior art Champion Manual “discloses a dual fuel system as discussed...but its lockout switch **does not prevent the hose of the propane tank from even coupling to the engine fuel system lines** (Emphasis Added).” *Id.* The Examiner thus interpreted the term “coupling” to require not only “fluid communication,” but “physical[] connect[ion].”

A POSA would have therefore understood the terms “prevent...coupling” and “permit...to couple” to mean “prevent...attaching” and “permit...to attach,” respectively. Ex. [0121]-[0125].

C. Patent Owner Has Construed “Fuel Lockout Apparatus,” “Prevent...Coupling,” and/or “Permit...to Couple” Incorrectly in the Related Litigations

Patent Owner filed multiple patent infringement lawsuits alleging that accused competitor products infringe at least claim 1 the '780 Patent. *See infra* §VIII.B. Based on Patent Owner's infringement allegations in the Related Litigations, Patent Owner appears to adopt a claim construction wherein (1) the "fuel lockout apparatus" can be any apparatus that prevents selection of more than one fuel source; (2) "prevent...coupling" can be any means to prevent fuel flow without necessarily preventing physical attachment of a fuel source to a fuel line; and (3) "permit...to couple" can be any means to permit fuel flow without necessarily permitting physical attachment of a fuel source to a fuel line. *See, e.g.,* Ex.1011, pp. 17,19.

Patent Owner's apparent constructions are wrong, as explained above. However, and in the alternative, Petitioners include Grounds 2A/B and also alternatives in Grounds 3 and 4, showing how even under Patent Owner's apparent construction the claims are anticipated or obvious over the prior art. In arguing in the alternative, Petitioners do not admit or concede that Patent Owner's apparent constructions are correct.

VI. OVERVIEW OF THE ASSERTED PRIOR ART

A. Overview of DuroMax

DuroMax was published/publicly available at least by November 1, 2012, before the filing date of the earliest application to which the '780 Patent claims

priority. Ex.1012, ¶¶18-19. DuroMax is prior art to the '780 Patent under 35 U.S.C. §102(a).

DuroMax discloses the XP4400EH dual fuel generator—a dual fuel generator that runs alternatively on gasoline or liquefied petroleum gas (LPG). The generator includes a mechanical fuel shutoff valve having a valve handle.

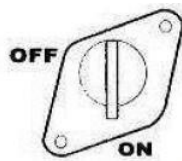


Figure 6 - fuel valve in the "on" position

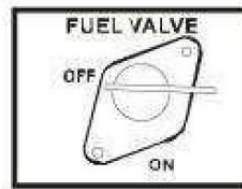


Figure A - Fuel Valve in the "OFF" position

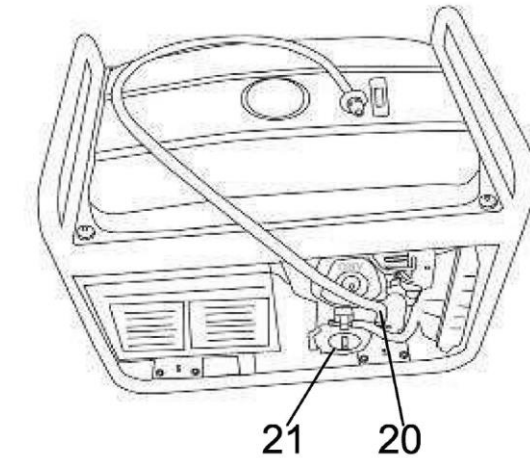
Ex.1004, pp.11,12.



Figure 19 –Removing the Fuel Filter Cup

Ex.1004, p.20 (Emphasis Added).

The generator also includes an LPG fuel inlet.



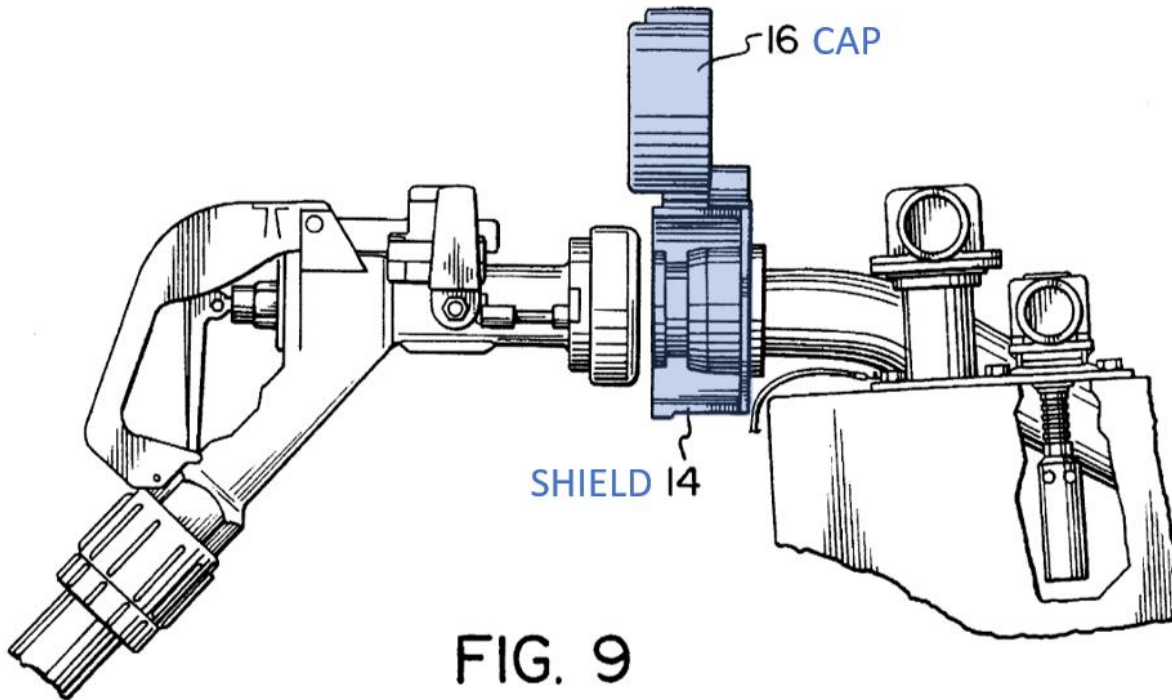
20. Hose connector- Connect liquid propane gas to generator.

Ex.1004, p.7.

B. Overview of Elsdon

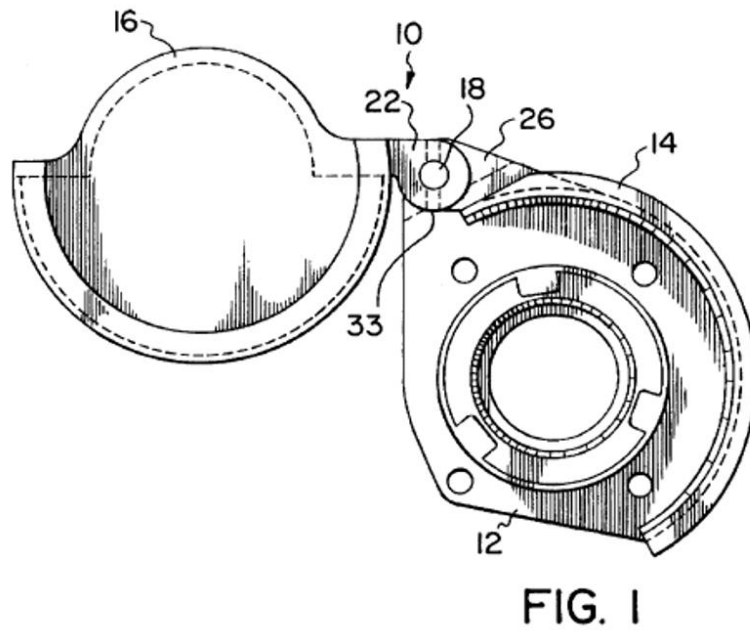
Elsdon was filed on February 24, 1995. Elsdon issued on February 17, 1998. Elsdon is prior art to the '780 Patent under 35 U.S.C. §102(a).

Elsdon discloses an assembly having cap 16 and shield 14 assembly of a fluid conduit coupler 12 that is used for “flammable or other hazardous fluids, such as fuel...” Ex.1005, 1:10-13, 3:3-4, FIG. 9.

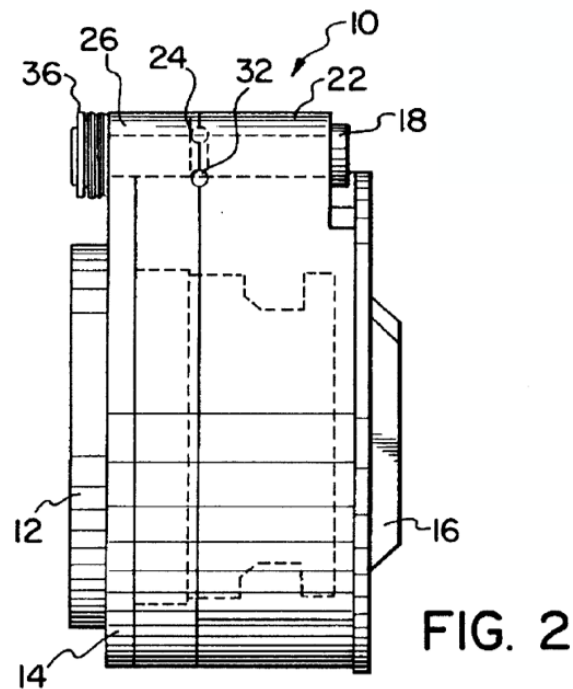


Ex.1005, FIG. 9 (Emphasis Added).

Cap 16 is hingedly connected to shield 14 and is readily moveable between an open position (FIG. 9 above and FIG. 1 below) and a closed position (FIG. 2 below) in which cap 16 is positioned over the coupler 12 to prevent coupling with a fuel hose. Ex.1005, 3:4-11.



Ex.1005, FIG. 1.



Ex.1005, FIG. 2.

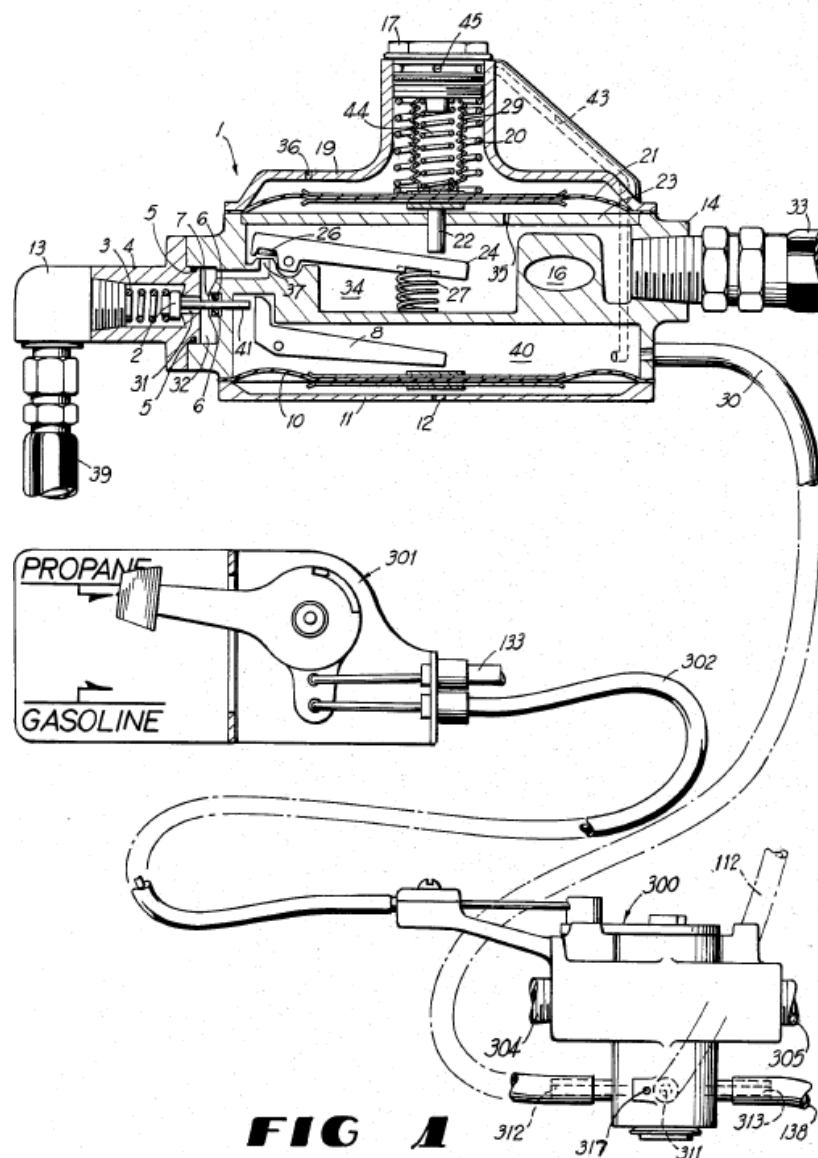
C. Overview of Hallberg

Hallberg was filed on February 27, 1981, and issued on January 8, 1985.

Hallberg is prior art to the '780 Patent under 35 U.S.C. §102(a).

Hallberg discloses a dual fuel system for use with internal combustion engines. Ex.1006, Abstract. Fuel to be utilized is selected by positioning fluid dual value control 301 in one of two positions, either "gasoline" or "propane."

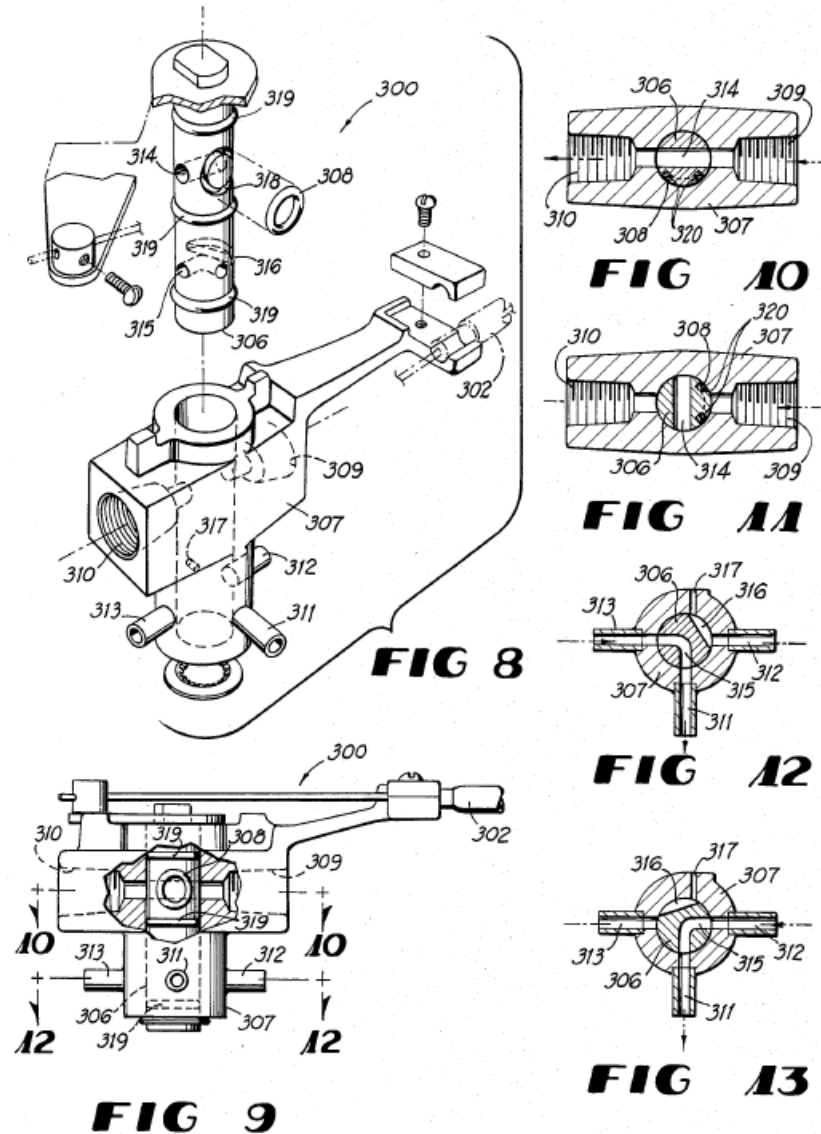
Ex.1006, 7:27-29, Fig. 1.



Ex.1006, FIG. 1.

Positioning of control 301 in the “gasoline” mode acts through control cable 302 to rotate spool 306 within valve body 307. Ex.1006, 7:30-32. Simultaneously, gasoline from gasoline supply line 304 is supplied to the carburetor 110 through engine gasoline line 305, which lines communicate through tunnel 314 (as shown in FIG. 10) connecting liquid inlet opening 309 and liquid outlet opening 310 in fluid dual valve 300. In this mode, the carburetor functions normally. Ex.1006, 7:33-44.

When the “propane” mode of control 301 is selected, spool 306 is rotated within valve body 307 by control cable 302 such that O-ring 308 on the face of spool 306 forms a seal between spool 306 and valve body 307 around liquid inlet opening 309 (as shown in FIG. 11) thereby prohibiting flow of gasoline to a conventional carburetor 110. Ex.1006, 8:3-10.



Ex.1006, FIGS. 8-13.

When the engine is started, a vacuum, communicated to the engine intake manifold pressure chamber 40 via lines 112 and 30, creates a reduced pressure on the upper side of the liquid inlet diaphragm 10. Ex.1006, 8:31-36. Atmospheric pressure on the opposite side of diaphragm 10 urges diaphragm upward against the liquid inlet lever 8, the opposite end of which drives inlet valve shaft 41 against

bias spring 3 and opens liquid inlet valve 2. Ex.1006, 8:36-40. Upon opening valve 2, liquified gaseous fuel (e.g., propane) flows through inlet valve orifice 31 into liquified fuel passage 32 and onto the mixer 100. Ex.1006, 8:40-60. When valve 2 is closed, valve 2 and related structures provide a “lock-off” of liquified gaseous fuel. Ex.1006, 7:64-68.

D. Overview of Rumao

Rumao was filed October 3, 2016, and issued July 2, 2019. Rumao is a continuation of Application No. 14/169,739, filed January 31, 2014, which claims priority to a provisional application filed February 2, 2013. Rumao is prior art to the '780 Patent under 35 U.S.C. §102(a).

Rumao discloses methods for assembling a portable generator system. Ex.1007, Abstract. In one configuration, the portable generator system includes portable generator 20 having an internal combustion engine powered by propane or gasoline, onboard fuel tank 40 configured to store fuel supplied to engine 30 by a fluid coupling such as a tube or hose, and control panel 50 for operating and monitoring the generator. Ex.1007, 5:6-12, 5:24-30. FIG. 24 illustrating engine 30, fuel tank 40, and control panel 50 of generator 20 is provided below.

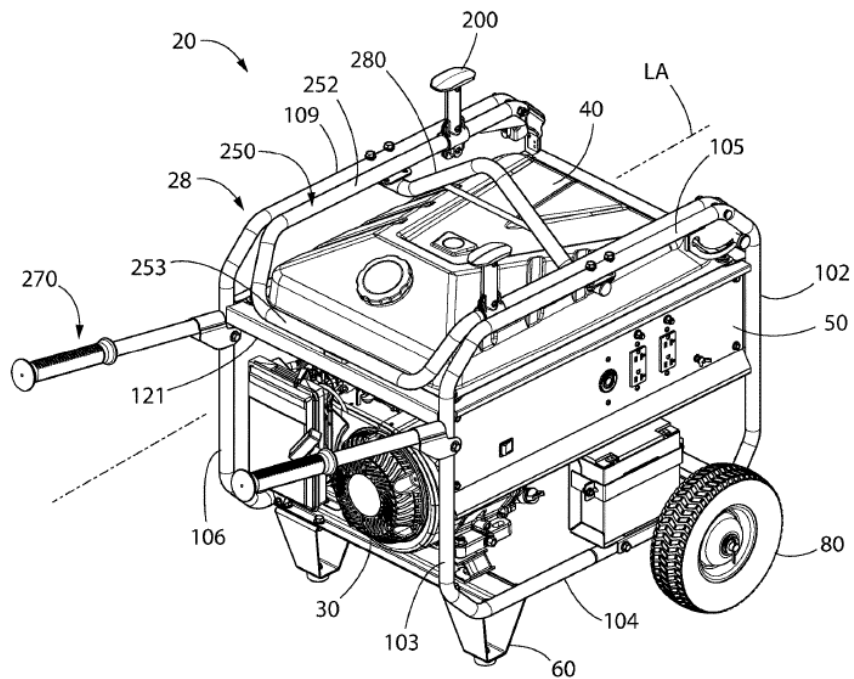


FIG. 24

Ex.1007, FIG. 24.

Rumao also discloses an alternative configuration whereby the portable generator system includes generator frame 301 supporting permanent fuel tank 360, removable fuel tank 380, engine 311, control panel 400, and other accessories for forming a functional generator. Ex.1007, 18:34-40. In this configuration, any suitable type of engine and fuel source may be used, “including ... liquid fuels or gaseous fuels such as propane.” Ex.1007, 18:40-43. FIG. 82 illustrating permanent fuel tank 360 and removable fuel tank 380 of the alternative configuration is provided below.

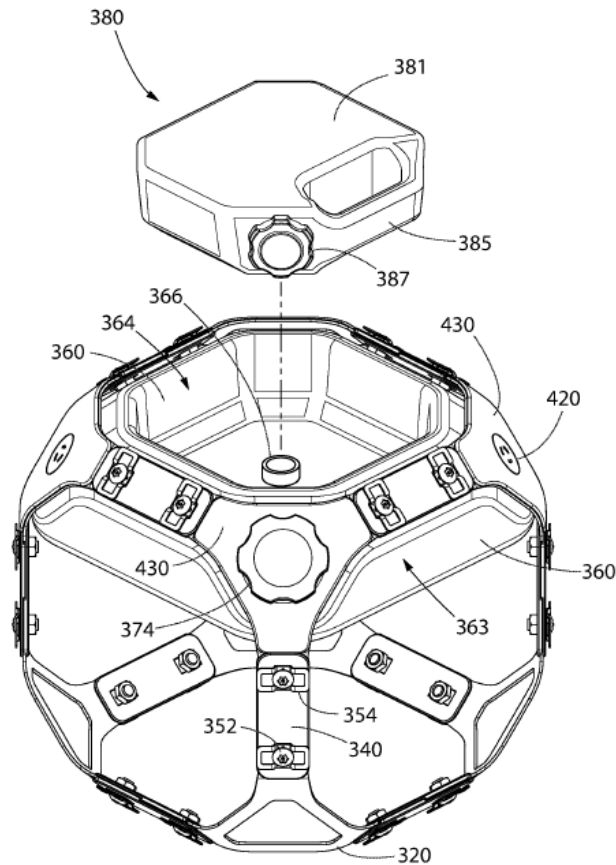


FIG. 82

Ex.1007, FIG. 82.

Rumao also discloses additional non-limiting examples of generators that include “all related appurtenances and accessories necessary for a fully functional generator system (alternator, electrical system, pressure regulators, relief valves, controls, electrical outlets, etc.).” Ex.1007, 29:20-33.

E. Overview of Parlatore

Parlatore was filed November 5, 2009, and published May 5, 2011.

Parlatore is prior art to the '780 Patent under 35 U.S.C. §102(a).

Parlatore discloses a “method and system [having] one or more fuel storage tanks housing propane, one or more regulators through which fuel may flow and one or more fuel metering devices or systems.” Ex.1010, Abstract. Parlatore discloses an LPG tank that may be connected to a primary regulator. Ex.1010, [0016]. The primary regulator may step down pressure of any stored propane vapor energy in the LPG tank, and output the lowered pressure to a secondary regulator. *Id.*

The LPG tank may be connected to the primary regulator by a connector. Ex.1010, [0020]. A low-pressure output of the secondary regulator may be attached to a propane carburetor on an engine in any of a variety of manners (e.g., a hose and coupling). *Id.* A low-pressure output of the secondary regulator may be attached to the propane carburetor either permanently or releasably. *Id.*

VII. THE CHALLENGED CLAIMS ARE UNPATENTABLE

A. Ground 1: The Combination of DuroMax and Elsdon Renders Obvious Claims 1, 2, 3, 4, 6, 7 and 15.

Claims 1, 2, 3, 4, 6, 7 and 15 of the ‘780 Patent are obvious under §103, as detailed below and in the Declaration of Dr. Mahdi Shahbakhti.

1. Independent claim 1

a. Element [1.0]

To the extent the preamble is limiting, the combination of DuroMax and Elsdon discloses element 1.0. DuroMax discloses a dual fuel generator in which

either LPG or gasoline may be selected for operation of the generator. Ex.1004, pp.11-12. DuroMax also discloses a mechanical fuel valve coupled to the internal combustion engine. *Id.*

Elsdon discloses a fuel conduit coupler shield 14 and cap 16 that when closed prevents connection of a fuel source. Ex.1005, 3:3-14. As discussed in §§VII.A.1.a.1-2, *infra*, a POSA would have understood it to be obvious to combine the Elsdon fuel conduit coupler cap with the mechanical fuel valve of DuroMax to provide a mechanical fuel lockout switch and prevent unsafe operating conditions, such as where both fuels are simultaneously delivered to the generator engine.

1. Motivation to Combine DuroMax and Elson

DuroMax discloses a dual fuel generator that is configured to operate on both LPG and gasoline fuel sources. Ex.1004, pp.11-12.

To start your generator with gasoline, perform the following steps:

- 3 Turn the gasoline fuel valve to the "ON" position

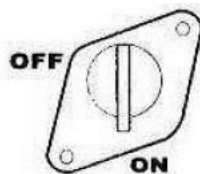


Figure 6 - fuel valve in the "on" position

Ex.1004, p.11.

To start your generator with LPG, perform the following steps:

3. Turn the gasoline fuel valve to the "OFF" position (see *figure 6*).

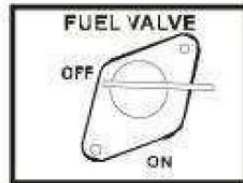


Figure A - Fuel Valve in the "OFF" position

Ex.1004, p.12.

DuroMax discloses that the generator includes a gasoline fuel tank with a mechanical fuel valve that stops gasoline fuel from exiting the gasoline tank and being delivered to the generator engine when run on LPG fuel. Ex.1004, p.12.

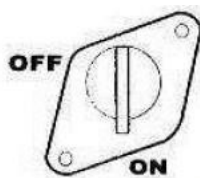


Figure 6 - fuel valve in the "on" position

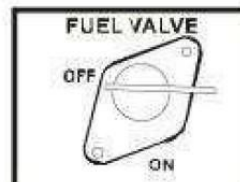


Figure A - Fuel Valve in the "OFF" position

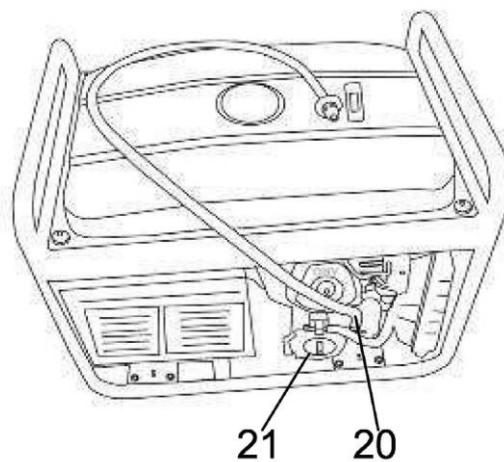
Ex.1004, pp.11,12.



Figure 19 –Removing the Fuel Filter Cup

Ex.1004, p.20 (Emphasis Added).

DuroMax also discloses an onboard LPG tank connector which couples to an LPG hose of an external LPG tank for delivering LPG fuel to the generator engine when run on LPG fuel. Ex.1004, p.7.



20. Hose connector- Connect liquid propane gas to generator.

Ex.1004, pp.7-8.

A POSA would understand that while DuroMax can run on either gasoline fuel or LPG fuel, DuroMax is not configured to run on both fuel sources at the same time. Ex.1003, [0148]. For example, DuroMax provides the following warning label:

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

Ex.1004, p.11.

This is consistent with the background section of the '780 Patent, which discloses that prior art dual fuel engines “can experience overly rich air-fuel ratio when both fuels are simultaneously engaged” which can “make the engine hard to start or lead to unstable operating conditions.” Ex.1001, 1:48-55. *See Qualcomm Inc. v. Apple Inc.*, 24 F.4th 1367, 1375 (Fed. Cir. 2022) (“[I]t is appropriate to rely on admissions in a patent’s specification when assessing whether that patent’s claims would have been obvious’ in an *inter partes* review proceeding.”); *see also* USPTO, Updated Guidance on the Treatment of Statements of the Applicant in the Challenged Patent in Inter Partes Reviews under §311, at 4 (June 9, 2022).

Elsdon discloses a cap and shield assembly for covering a fluid conduit (i.e., a fuel line). Ex.1005, 3:3-14; Ex.1003, [0151]. Elsdon discloses that by rotating cap 16 over conduit coupler 12, cap 16 prohibits access to the coupler interface,

thereby preventing connecting of a hose with the coupler interface. *Id.*, 3:3-14, 5:1-10.

Elsdon explicitly recognizes the importance of properly sequencing the connection of fuel sources with the opening of associated valves. For example, Elsdon notes that it may be important to ensure the closing or opening of fuel valves before permitting coupling or uncoupling to the connection interface. Ex.1005, 1:23-40. Elsdon discloses that its cap and shield may be utilized in such sequenced interconnected valve and coupler arrangements. Ex.1005, 4:44-53.

A POSA would be motivated to implement the fuel conduit coupler cap assembly of Elsdon to selectively cover and uncover the LPG fuel conduit coupler of DuroMax. Ex.1003, [0153]. Specifically, a POSA would have been motivated to connect the Elsdon fuel conduit coupler cap to the mechanical fuel valve of DuroMax to restrict access to the LPG hose connector interface of DuroMax when the DuroMax generator is running gasoline fuel. *Id.*

A POSA would have understood that by implementing the Elsdon fuel conduit coupler cap assembly in this way, one could link the opening and closing of the DuroMax mechanical fuel valve with the covering and uncovering of the LPG fuel conduit coupler. Ex.1003, [0154]. A POSA would have understood such an arrangement to prevent simultaneous use of LPG and gasoline, which was a

known problem with generators such as DuroMax. Ex.1004, p.11; Ex.1001, 1:43-55; Ex.1003, [0155].

2. Reasonable Expectation of Success in Combining DuroMax and Elson

A POSA would have had a reasonable expectation of success in implementing the fuel conduit coupler cap of Elsdon onto the LPG fuel conduit coupler of DuroMax. Ex.1003, [0156]. Elsdon emphasizes that its cap assembly may be “retrofit” to cover existing fuel couplers on “construction equipment” such as a generator. Ex.1005, 2:27-32; 5:11-14. Elsdon utilizes a simple connection arrangement, in which cap 16 rotates around the axis of the shaft 18. See FIGS. 1,3 below (emphasis added).

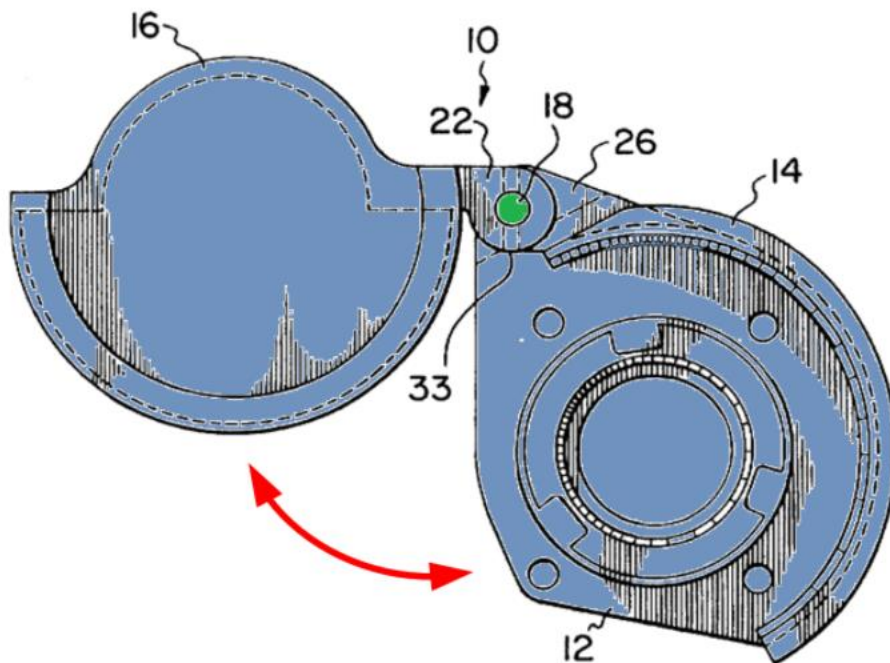


FIG. 1

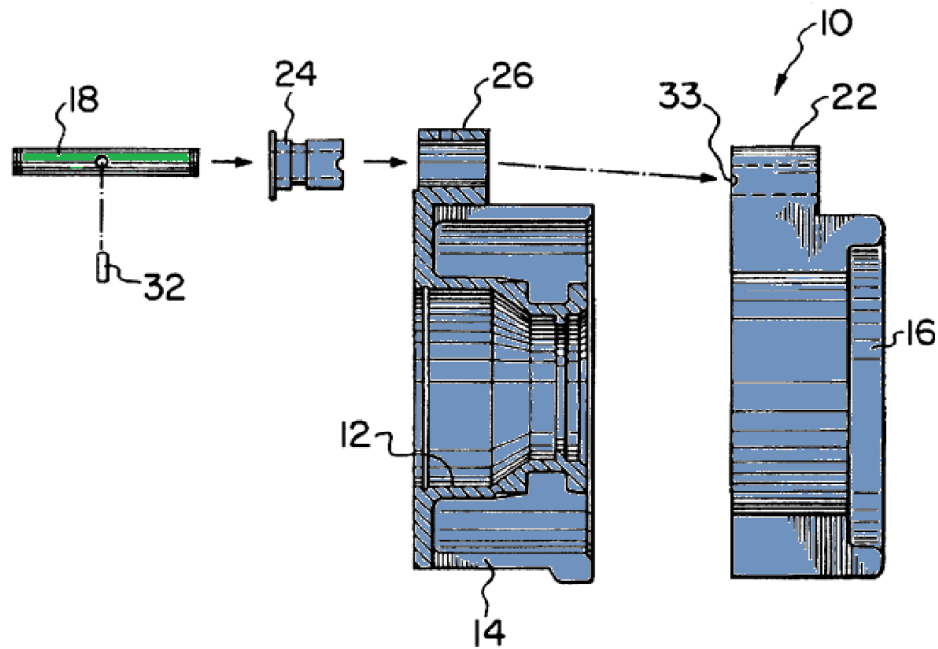


FIG. 3

A POSA would have understood that the fuel valve of DuroMax is a simple mechanical fuel valve utilizing a valve handle that rotates a shaft connected to a stop inside of the valve body for preventing fuel flow. Ex.1004, pp.11,12; Ex.1003, [0157].

A POSA would have understood that the valve handle and shaft of the DuroMax fuel valve could be readily connected to cap 16 of Elsdon such that the DuroMax valve handle and shaft rotate together with Elsdon cap 16. Ex.1003, [0158].

A POSA would have further understood that the fuel valve and LPG fuel conduit coupler of DuroMax could easily be moved to different positions on the generator such that the two components are located immediately next to each other.

Ex.1003, [0159]; *see also* Ex.1013, 15:39-16:20 (discussing how the position of the LPG inlet connector on a portable generator can be easily moved around the generator). In that case, cap 16 of Elsdon would rotate with the valve handle of the DuroMax fuel valve to cover the LPG fuel conduit coupler when the DuroMax fuel valve is open, and could rotate to permit access to the LPG fuel conduit coupler when the DuroMax fuel valve is closed. Ex.1003, [0161].

b. Element [1.1]

DuroMax discloses a mechanical fuel valve coupled to the internal combustion engine. Ex.1004, pp.11-12.

To start your generator with gasoline, perform the following steps:

- 3 Turn the gasoline fuel valve to the "ON" position

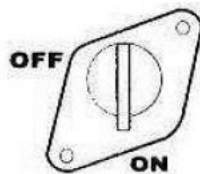


Figure 6 - fuel valve in the "on" position

Ex.1004, p.11.

To start your generator with LPG, perform the following steps:

3. Turn the gasoline fuel valve to the "OFF" position (see *figure 6*).

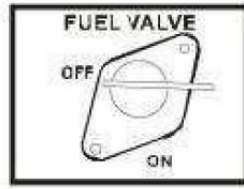


Figure A - Fuel Valve in the "OFF" position

Ex.1004, p.12.

Elsdon discloses a fuel conduit coupler shield 14 and cap 16 that when closed prevents connection of a fuel source. Ex. 1005, 3:3-14. Elsdon discloses that by rotating cap 16 over conduit coupler 12, cap 16 prohibits access to the coupler interface, thereby preventing connecting of a hose with the coupler interface. *Id.*, 3:3-14, 5:1-10.

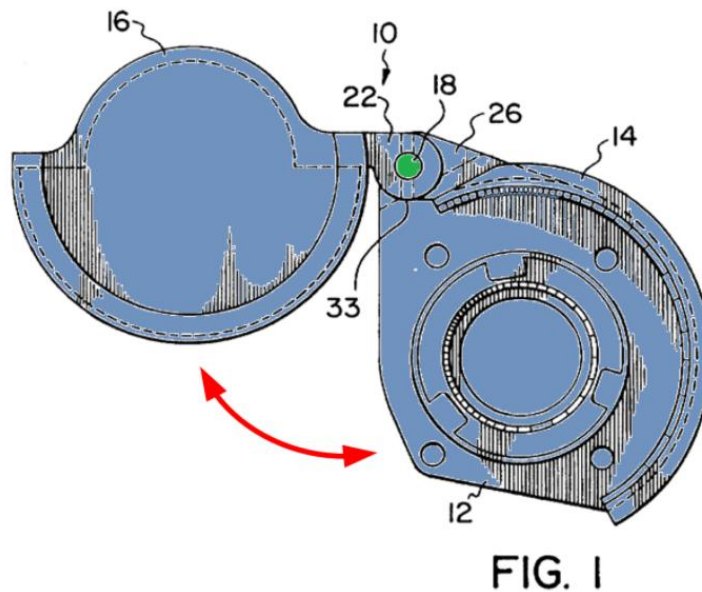


FIG. 1

Ex.1005, FIG. 1 (annotated).

It would have been obvious to a POSA to combine the Elsdon fuel conduit coupler cap with the gasoline fuel valve of DuroMax to provide a mechanical fuel

valve that both controls the flow of gasoline from the tank through the gasoline line (as disclosed by DuroMax) and simultaneously rotates to block and unblock the LPG inlet (as disclosed by Elsdon). Ex.1003, [0164]. By blocking and unblocking the LPG inlet, this combined apparatus would selectively control the flow of LPG through the LPG fuel line. *Id.* This combination would appear and function the same way as Figures 2-4B of the '780 Patent. Ex.1003, [0165].

c. Element [1.2]

The term “fuel lockout apparatus” is properly construed as a means plus function term covering items 58, 61 in Figs. 2, 3, 4A, 4B, as described at Ex.1001, 5:37-64; 6:10-31; 6:42-7:17; 7:54-67; 8:49-64, and equivalents thereof. *Supra*, §V.A.

As noted above, it would have been obvious to have connected the valve handle and shaft of the DuroMax fuel valve to cap 16 of Elsdon, which would have resulted in a flange that is rigidly coupled to a fuel valve handle, with the flange extending radially from the fuel valve handle so that the flange rotates with the fuel valve handle and rotates transversely over the fuel inlet for LPG between a first position in which the flange blocks access to the fuel inlet for the LPG when the fuel valve handle is in position to allow gasoline to run the engine, and between a second position in which the flange does not block the fuel inlet for the LPG when the fuel valve handle is in position to restrict gasoline from running the engine.

Supra, §§VII.A.1.a.1-2. Thus, the combination of DuroMax and Elston teaches a “fuel lockout apparatus coupled to [a] mechanical fuel valve.” Ex. 1003, [0167].

d. Element [1.3]

The DuroMax mechanical fuel valve rotates between a first position in which the valve is opened (communicating the gasoline fuel source to the dual fuel engine) and a second position in which the valve is closed (interrupting communication of the gasoline fuel source to the dual fuel engine). It would have been obvious to connect the valve handle and shaft of the DuroMax fuel valve to cap 16 of Elsdon to prevent the simultaneous flow of gasoline and LPG fuel to the dual fuel engine. *Supra*, §§VII.A.1.a.1-2.

Specifically, it would have been obvious to connect these components so that cap 16 covers the LPG fuel conduit coupler when the mechanical fuel valve is in the open (first) position (preventing communication between the LPG fuel source and the dual fuel engine) and to uncover the LPG fuel conduit coupler (communicating the second fuel source to the dual fuel engine) when the mechanical fuel valve is in the closed (second) position. *Supra*, §§VII.A.1.a.1-2.

e. Element [1.4]

It would have been obvious to have connected the valve handle and shaft of the DuroMax fuel valve to cap 16 of Elsdon so that cap 16 covers the LPG fuel conduit coupler when the mechanical fuel valve is in the open (first) position and

to uncover the LPG fuel conduit coupler when the mechanical fuel valve is in the closed (second) position. *Supra*, §VII.A.1.d. When covering the LPG fuel conduit coupler, cap 16 would prevent the LPG hose from coupling to the LPG fuel conduit connector. When uncovering the LPG fuel conduit connector, cap 16 would permit the LPG hose to couple with the LPG fuel conduit connector. Ex.1003, [0172].

2. Claim 2

The combination of DuroMax and Elsdon teaches claim 2. The combination of DuroMax and Elsdon discloses a fuel lockout apparatus coupled to a mechanical fuel valve. *Supra*, §VII.A.1.c. Elsdon discloses a fuel lockout apparatus comprising a cap and shield. *Supra*, §VII.A.1.c. As seen in FIG. 1 (below), when the cap is in the open position the second fuel source (LPG) may be communicated to the internal combustion engine.

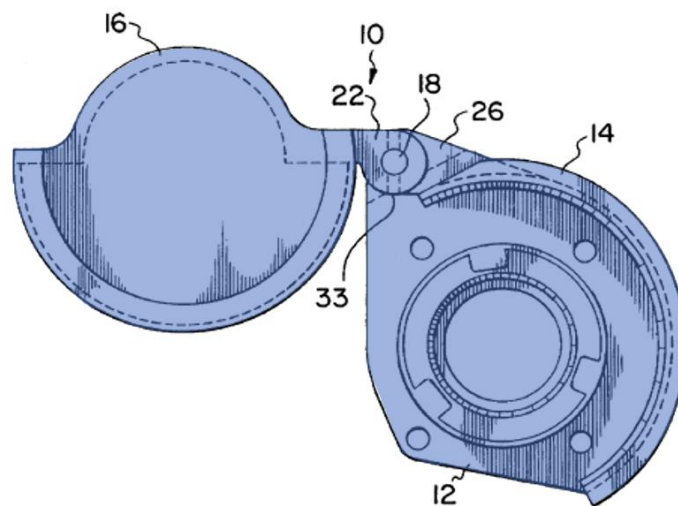
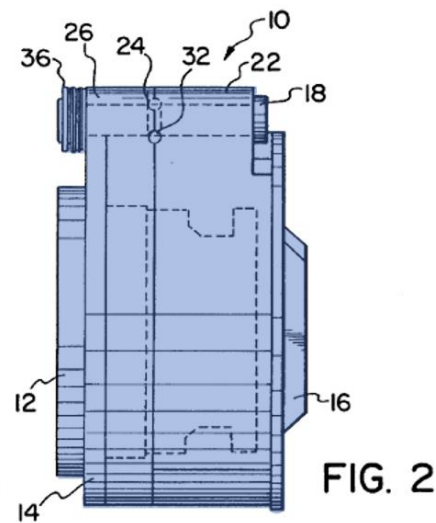


FIG. 1

Ex.1005, FIG. 1 (Emphasis Added).

As shown in FIG. 2 (below), when the cap is in the closed position, the second fuel source (LPG) is prevented from being communicated with the internal combustion engine.



Ex.1005, FIG. 2 (Emphasis Added).

As described in §VII.A.1.e, *supra*, a POSA would have understood that operation of the mechanical fuel valve and the fuel lockout apparatus is interconnected such that only one fuel can be communicated to the engine at one time. Ex.1003, [0176].

Specifically, the mechanical gasoline fuel valve of DuroMax would be rigidly connected to the cap of Eldson such that when the gasoline valve is rotated into a closed position, the cap of Eldson is moved into the open position and when

the gasoline valve is rotated into an open position, the cap of Eldson is moved into the closed position. A POSA would have therefore understood that when the fuel lockout apparatus of Elsdon is interconnected with the mechanical fuel valve of DuroMax, the mechanical fuel valve would be prevented from moving into the first position when the second fuel source communicates with the dual fuel engine (due to the cap coming into contact with the LPG input line). Ex.1003, [0178].

Accordingly, a POSA would have understood that the combination of DuroMax and Elsdon teaches claim 2. Ex.1003, [0179].

3. Claim 3

The combination of DuroMax and Elsdon teaches claim 3. The combination of DuroMax and Elsdon discloses a fuel lockout apparatus coupled to a mechanical fuel valve. *Supra*, §VII.A.1.c. The fuel lockout apparatus includes a cap. *Supra*, §VII.A.1.c.

A POSA would have understood it to be obvious to have rigidly connected the DuroMax gasoline fuel valve to the cap of Eldson such that the DuroMax valve handle and shaft rotate together with Elsdon cap 16. *Supra* §§VII.A.1.a.1-2; VII.A.1.c. A POSA would have further considered it to be obvious to have arranged the gasoline fuel valve and cap assembly of DuroMax and Elsdon adjacent to the LPG input such that the cap of Eldson rotates over and covers the LPG inlet (preventing coupling thereto) when the gasoline fuel valve is placed into

an open position and uncovers the LPG inlet (permitting coupling thereto) when the gasoline fuel valve is placed into the closed position. *Supra* §VII.A.1.a.1-2.

Accordingly, a POSA would have understood that the combination of DuroMax and Elsdon teaches claim 3. Ex.1003, [0182].

4. Claim 4

The combination of DuroMax and Elsdon teaches claim 4. DuroMax discloses a mechanical fuel valve that rotates between a first position and a second position. *Supra*, §VII.A.1.b. Elsdon discloses a flange comprising a cap and shield. *Supra*, §VII.A.1.b. That the cap and shield are arranged such that when the cap is in a closed position, the fluid coupler is concealed, and when the cap is rotated from a closed position to an open position, the coupler is exposed. Ex.1005, 2:19-23. A POSA would have understood that the cap and shield can thus rotate transversely across the inlet of a fuel line. Ex.1003, [0184].

Accordingly, a POSA would have understood that when the fuel valve of DuroMax is connected to the cap of Elsdon, the mechanical fuel valve rotates between the first position and the second position and the flange rotates transversely across the inlet of the second fuel line as recited in claim 4. *Supra* §§VII.A.1.a.1-2.

5. Claim 6

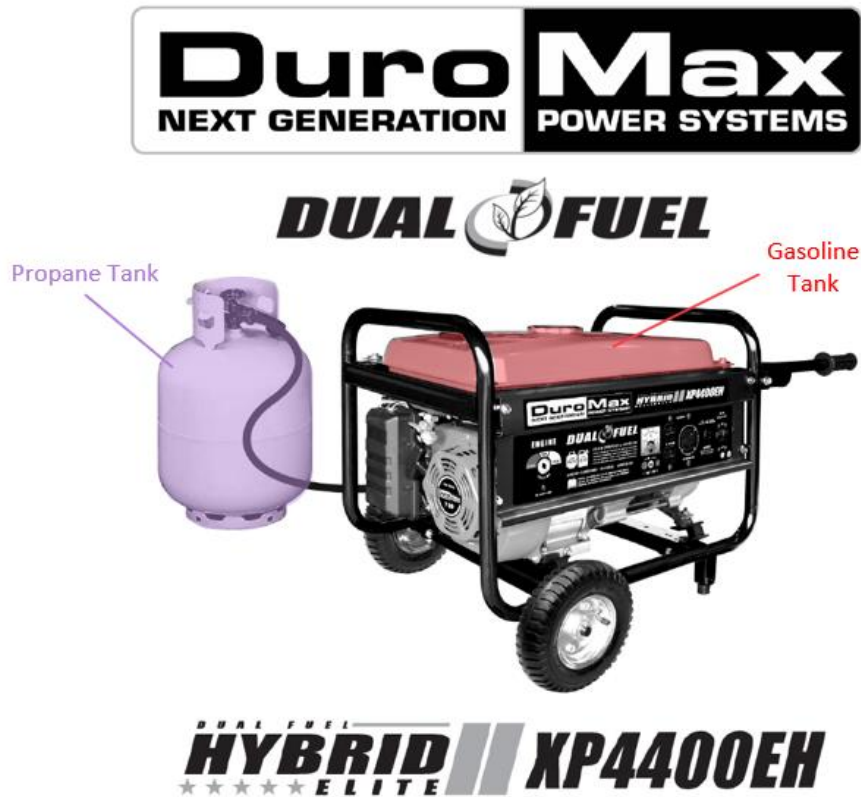
The combination of DuroMax and Elsdon teaches claim 6. A POSA would have considered it obvious to have connected the mechanical gasoline valve of DuroMax to the cap of Eldson to prevent the simultaneous delivery of gasoline and LPG fuel to the engine. *Supra* §§VII.A.1.a.1-2.

Specifically, a POSA would have been motivated to connect the Elsdon fuel conduit coupler cap to the gasoline fuel valve of DuroMax to restrict access to the LPG hose connector interface of DuroMax when the DuroMax generator gasoline valve is in the open position. Likewise, the combination would prevent the gasoline valve of DuroMax from being moved from the closed to the open position when an LPG hose is connected to the LPG hose connector interface due to the interference between the Eldson flange with the LPG hose. *Supra* §§VII.A.1.a.1-2.

Accordingly, a POSA would have understood that the combination of DuroMax and Elsdon teaches claim 6. Ex.1003, [0188].

6. Claim 7

DuroMax teaches claim 7. DuroMax discloses a first fuel tank and a second fuel tank. Ex.1004, p.1.



Ex.1004, p.1

The first fuel tank provides gasoline, and the second fuel tank provides propane. Ex.1004, pp. 7, 11-12. A POSA would have understood that DuroMax discloses a first fuel source that provides liquid fuel from a liquid fuel tank to the dual fuel engine. Ex.1003, [0190]. A POSA would also have understood that DuroMax discloses a second fuel source that provides gaseous fuel from a pressurized fuel container to the dual fuel engine. Ex. 1003, [0191].

Accordingly, a POSA would have understood that DuroMax teaches claim 7. Ex.1003, [0192].

7. Independent claim 15

a. Element [15.0]

To the extent the preamble is limiting, DuroMax teaches [15.0] for at least the same reasons as [1.0]. *Supra*, §VII.A.1.a

b. Element [15.1]

DuroMax teaches [15.1] for at least the same reasons as [1.1]. *Supra*, §VII.A.1.b

c. Element [15.2]

The combination DuroMax and Elsdon teaches [15.2] for at least the same reasons as [1.2]. *Supra*, §VII.A.1.c.

d. Element [15.3]

DuroMax teaches [15.3] for at least the same reasons as [1.3]. *Supra*, §VII.A.1.d

e. Element [15.4]

The combination of DuroMax and Elsdon teaches [15.4] for at least the same reasons as claim 2. *Supra*, §VII.A.2.

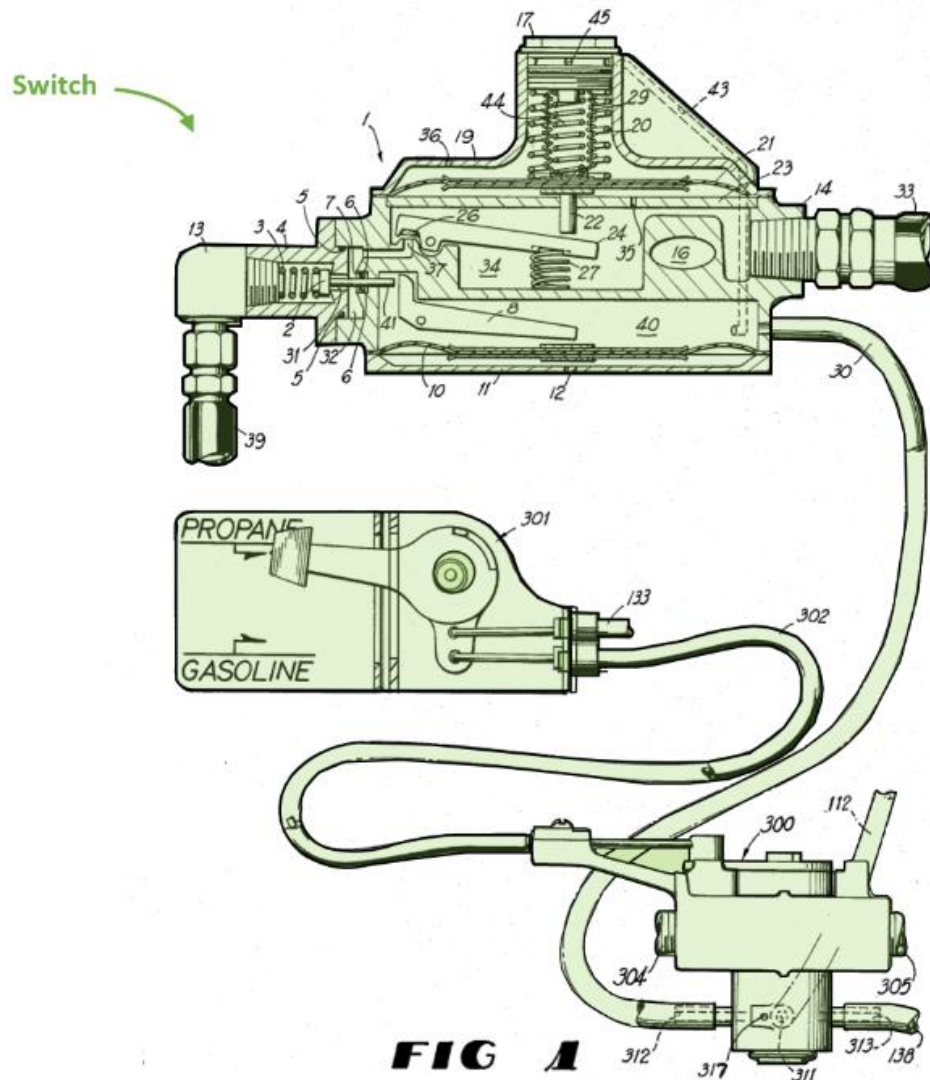
B. Ground 2A/2B: Hallberg Anticipates Claims 1, 6, and 7 (Ground 2A) and Renders Obvious Claims 2 and 15 (Ground 2B).

Petitioners include Grounds 2A/B showing how even under Patent Owner's apparent construction, claims 1, 6 and 7 of the '780 Patent are anticipated by Hallberg (Ex.1006) under §102, and claims 2 and 15 are rendered obvious by Hallberg under §103. *Supra*, §§V.A-C.

1. Independent claim 1

a. Element [1.0]

Hallberg teaches element [1.0]. Hallberg discloses a system which may be used with conventional internal combustion engines...to permit alternative utilization of a liquified gas fuel....such as propane...and a liquid fuel...such as gasoline. Ex.1006, 3:49-55. The system includes a “mechanical fuel lockout switch comprising a fluid dual valve control 301, a liquified-to-gaseous fuel converter 1, and a fluid dual valve structure 300. Ex.1006, 7:5-6, 7:27-29. As shown in FIG. 1 (below), the liquified-to-gaseous fuel converter and fluid dual valve structure are controlled by a fluid dual valve control 301 having gasoline and propane positions. Ex.1006, 7:27-29, Fig. 1.

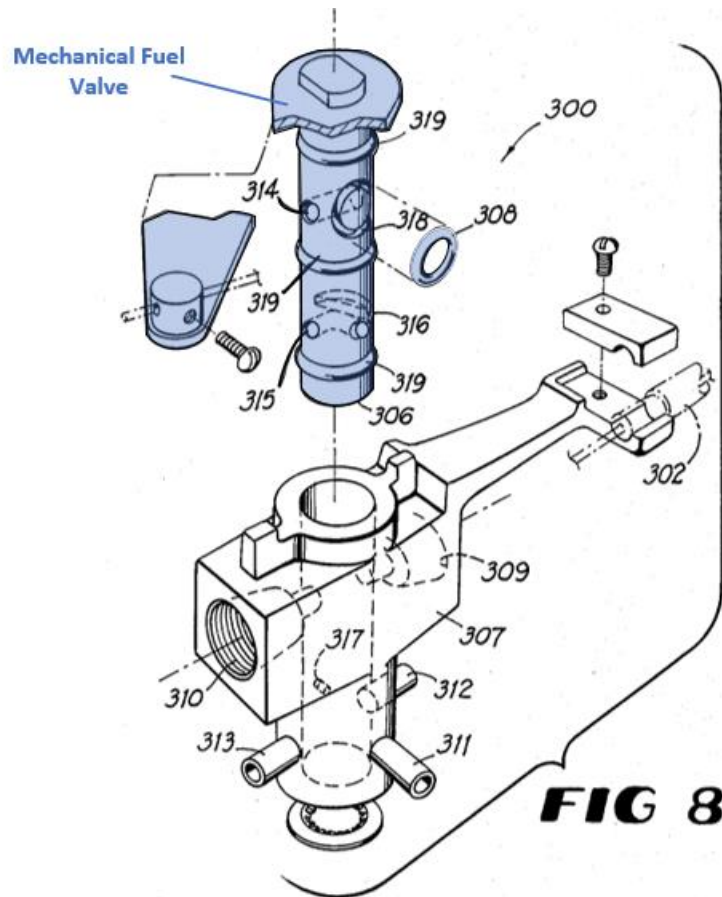


Ex.1006, FIG. 1 (Emphasis Added).

A POSA would have therefore understood that Hallberg teaches a “mechanical fuel lockout switch” for a dual fuel engine as recited in element [1.0]. Ex.1003, [0203]-[0204].

b. Element [1.1]

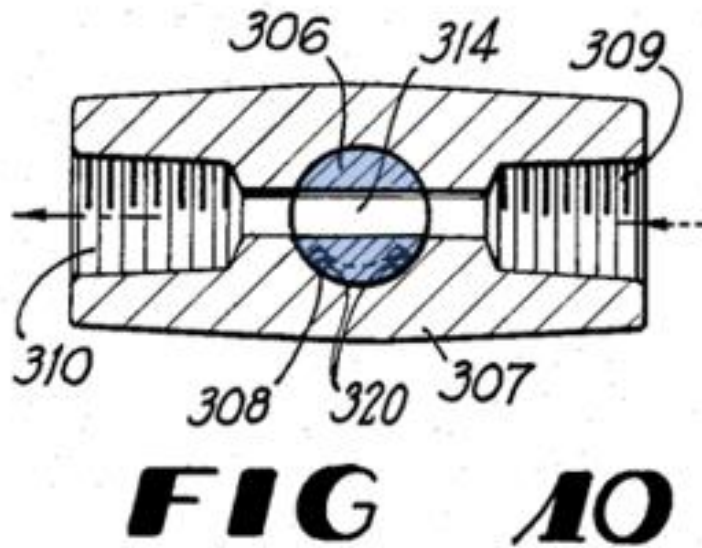
Hallberg teaches element [1.1]. Hallberg discloses a mechanical fuel valve as shown in FIG. 8 below (“[i]n the figures...300 is the fluid dual valve structure.” Ex.1006, 7:5-7).



Ex.1006, FIG. 8 (Emphasis Added).

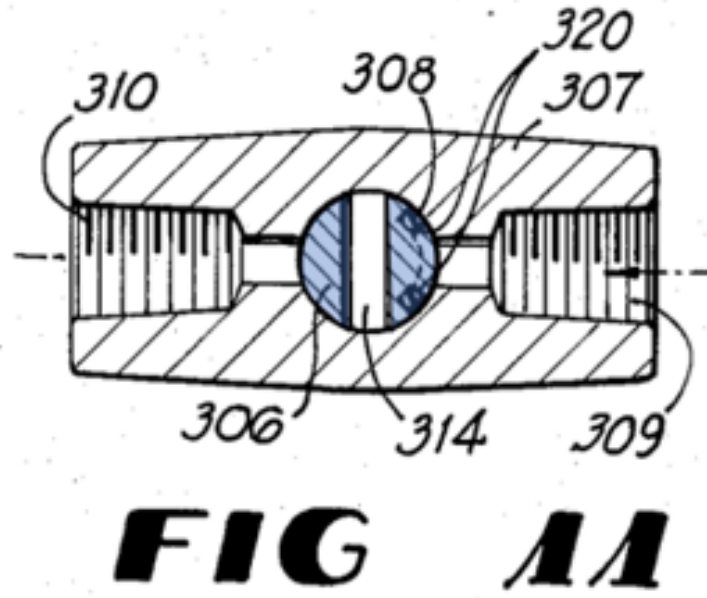
Positioning of control 301 in “gasoline” mode acts through control cable 302 to rotate spool 306 within valve body 307 such that gasoline from gasoline supply line 304 is supplied to the carburetor 110 and the flow of propane is locked out. Ex.1006, 7:27-40. As shown in FIG. 10 below, when the mechanical fuel valve is

in gasoline mode, liquid inlet opening 309 and liquid outlet opening 310 communicate through tunnel 314. Ex.1006, 7:40-7:43. A POSA would have thus understood that the mechanical fuel valve is actuatable to a first position to selectively control fuel flow to the dual fuel engine from a first fuel source through a first fuel line. Ex.1003, [0208].



Ex.1006, FIG. 10 (Emphasis Added).

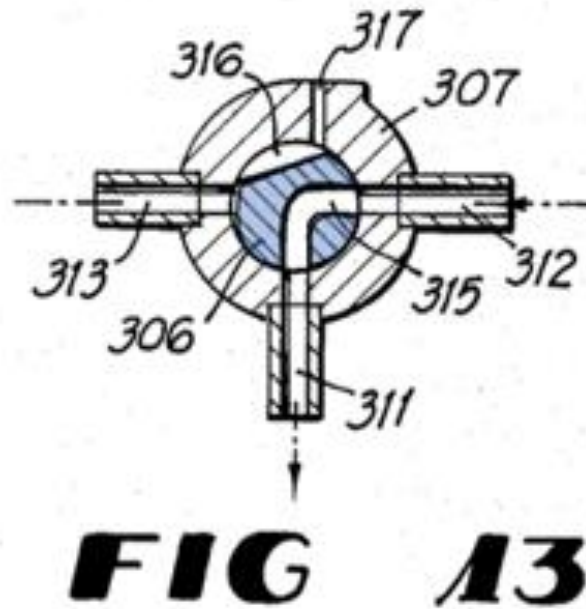
As shown in FIG. 11 (below) when “propane” mode of control 301 is selected, spool 306 is rotated within valve body 307 by control cable 302 such that O-ring 308 on the face of spool 306 forms a seal between spool 306 and valve body 307 around liquid inlet opening 309. Ex.1006, 8:3-7. Forming a seal between the spool 306 and valve body 307 prohibits the flow of gasoline to conventional carburetor 110. Ex.1006, 8:7-10.



Ex.1006, FIG. 11 (Emphasis Added).

However, as shown in FIG. 13 (below), during “propane” mode operation, duct 315 within spool 306 is simultaneously aligned to communicate with vacuum inlet port 311 and first vacuum outlet port 312. Ex.1006, 8:23-26, Fig. 13.

Communicating vacuum inlet port 311 with the first vacuum outlet port 314 connects converter vacuum line 30 (shown in FIG. 1) to the intake manifold, via intake manifold line 112. Ex.1006, 8:26-30.



Ex.1006, FIG. 13 (Emphasis Added).

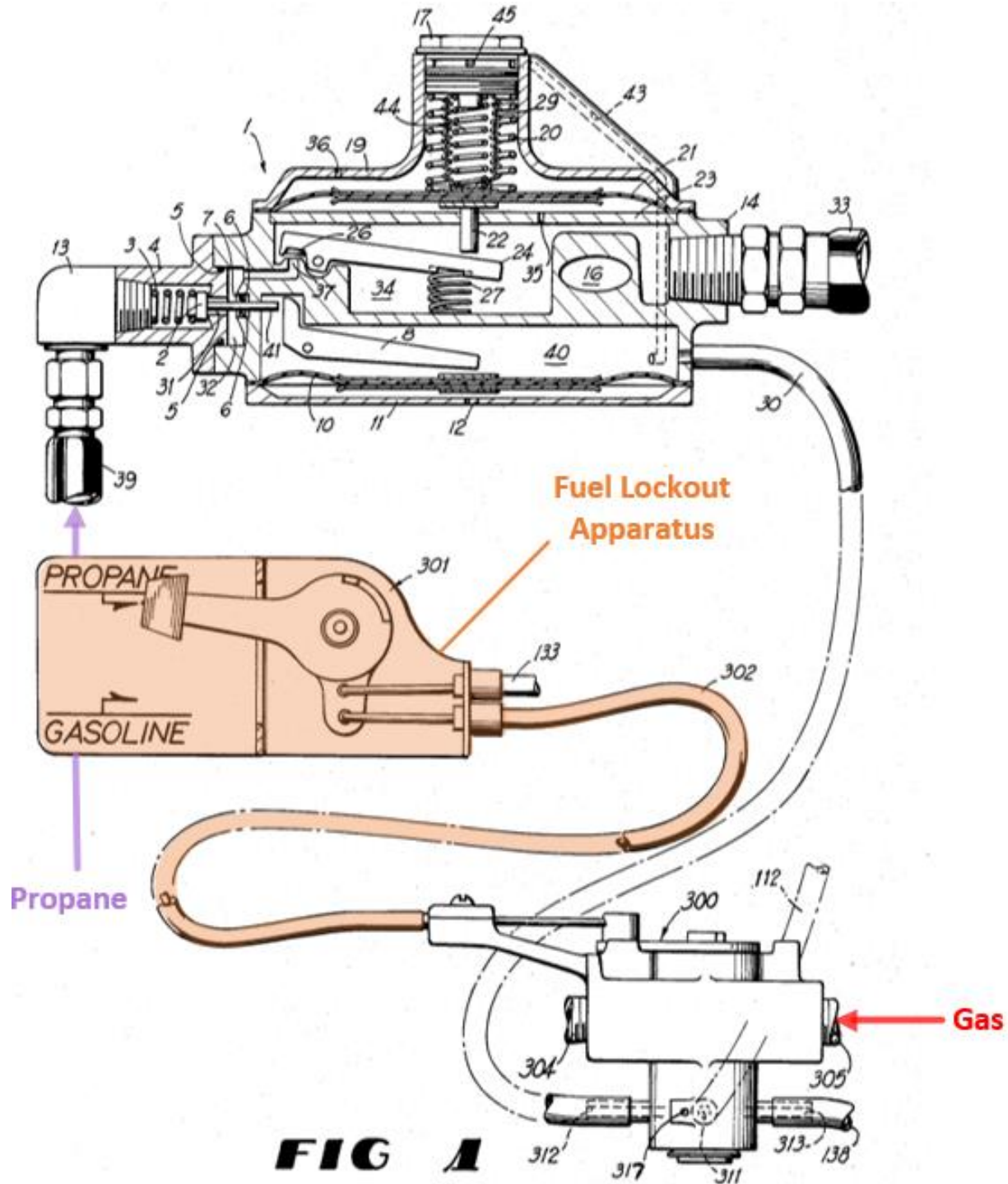
When the engine is started, a vacuum is created in line 30, urging diaphragm 10 upward against liquid inlet lever 8. Ex.1006, 8:31-38. Actuating inlet lever 8 drives inlet valve shaft 41 against bias spring 3 which opens liquid inlet valve 2 allowing propane to flow through the propane fuel line to the engine. Ex.1006, 8:38-42.

A POSA would have therefore understood that Hallberg teaches a mechanical fuel valve actuateable between a first position (e.g., gasoline) and a second position (e.g., propane) to selectively control fuel flow to the dual fuel engine from a first fuel source through a first fuel line and a second fuel source through a second fuel line as recited in element [1.1]. Ex.1003, [0214]-[0215].

c. Element [1.2]

Hallberg teaches element [1.2]. Hallberg discloses a mechanical fuel valve. *Supra*, §VII.B.1.b. Hallberg also discloses a fuel lockout apparatus coupled to the mechanical fuel valve, the fuel lockout apparatus being configured to perform the function described in element [1.4] of claim 1 (discussed hereinafter in §VII.B.1.e).

Hallberg discloses a fuel lockout apparatus comprising a fluid dual value control 301 and a control cable 302. Ex.1006, 7:27-44; Ex.1003, [0219]. As shown in FIG. 1 (below), the fuel lockout apparatus comprising fluid dual value control 301 and control cable 302 is coupled to fluid dual valve structure 300. Ex.1006, 7:28-36 and 8:3-9. Positioning control 301 in the “gasoline” mode acts through control cable 302 to permit gasoline to flow through fluid dual valve structure 300, and to lock out propane from flowing to the dual fuel engine. *Supra*, §VII.B.1.b. Positioning control 301 in the “propane” mode acts through control cable 302 to permit propane to flow to the dual fuel engine, and to lock out gasoline from flowing through fluid dual valve structure 300. *Supra*, §VII.B.1.b.

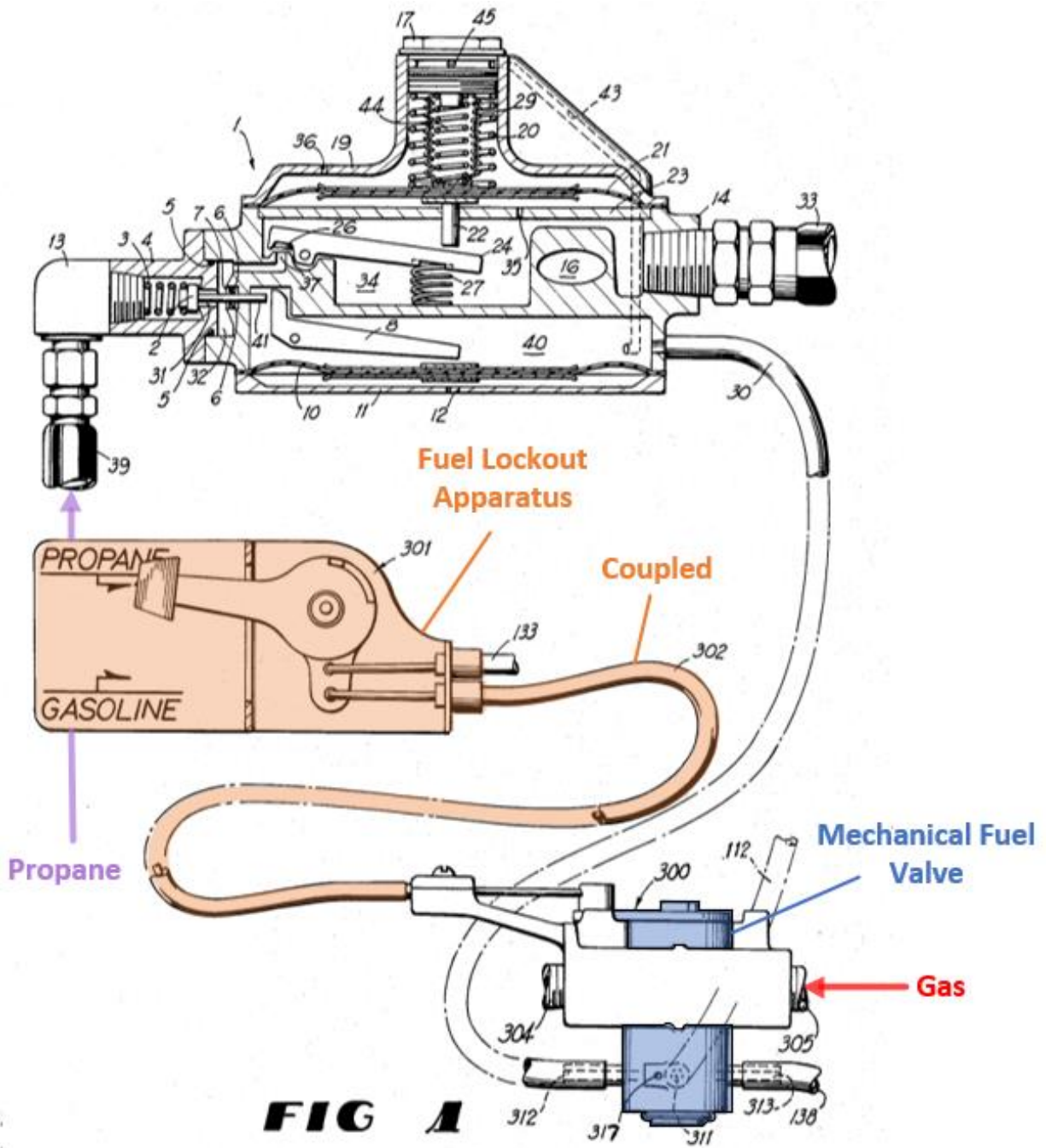


Ex.1006, FIG. 1 (Emphasis Added).

A POSA would understand that the components of the fuel lockout apparatus (fluid dual valve control 302 and control cable 302) can be actuated

and/or engaged to allow propane to flow through propane supply line 39 to the internal combustion engine. If the components of the fuel lockout apparatus are not actuated and/or engaged, propane is not supplied to the dual fuel generator. Ex. 1003, [0222].

Hallberg also discloses that the fuel lockout apparatus is coupled to the mechanical fuel valve. Ex.1003, [0223]. A POSA would have understood “coupled” to mean “attached.” *Id.*, See also Ex.1014, p.4. As shown in FIG. 1 (below), control cable 302 couples the fuel lockout apparatus comprising fluid dual value control 301 and control cable 302 to the mechanical fuel valve. Without control cable 302, the fluid dual valve control 301 would be unable to rotate spool 306 within the valve body 307. Ex.1006, 7:30-33.

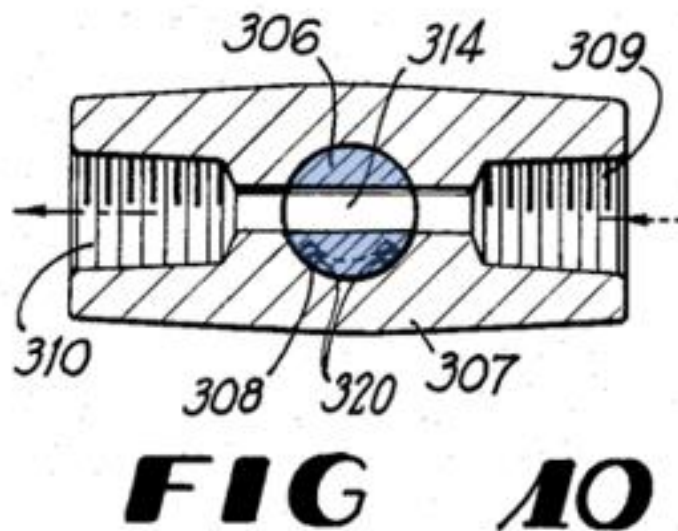


Ex.1006, FIG. 1 (Emphasis Added).

Accordingly, a POSA would have understood that Hallberg teaches a fuel lockout apparatus coupled to the mechanical fuel valve as recited in element [1.2]. Ex.1003, [0224].

d. Element [1.3]

Hallberg teaches element [1.3]. Hallberg discloses that when gasoline is selected on the fluid dual valve control 301, spool 306, within valve body 307, is rotated such that gasoline from gasoline supply line 304 is supplied to the carburetor 110 through engine gasoline line 305. Ex.1006, 7:27-44. As shown in FIG. 10 below, when gasoline is selected, gasoline is communicated through inlet opening 309, tunnel 314 and liquid outlet opening 310.



Ex.1006, FIG. 10 (Emphasis Added).

During gasoline mode, the fuel lockout apparatus prevents the flow of propane to the internal combustion engine. *Supra*, §VII.B.1.c. A POSA would have therefore understood that when the mechanical fuel valve is in the first position, the mechanical fuel lockout switch communicates the first fuel source to

the dual fuel engine and prevents communication between the second fuel source and the dual fuel engine. Ex.1003, [0228].

When propane mode is selected on the fluid dual valve control 301, propane is provided to the dual fuel engine. Ex.1006, 7:27-44. As described in §§VII.B.1.b, VII.B.1.c, *supra*, when propane mode is selected, spool 306 is rotated within valve body 307 to form a seal to prevent the flow of gasoline to the engine and a vacuum is created in line 30, urging diaphragm 10 upward against liquid inlet lever 8 which drives inlet valve shaft 41 against bias spring 3 which opens liquid inlet valve 2 allowing propane to flow through the propane fuel line to the engine. Ex. 1003, [0229].

A POSA would have therefore also understood when the mechanical fuel valve is in a second position, the mechanical fuel lockout switch communicates the second fuel source to the dual fuel engine and interrupts the first fuel source communication with the dual fuel engine. Ex.1003, [0230].

Accordingly, a POSA would have understood that Hallberg teaches wherein the mechanical fuel lockout switch: communicates the first fuel source to the dual fuel engine and prevents communication between the second fuel source and the dual fuel engine when the mechanical fuel valve is in the first position, and communicates the second fuel source to the dual fuel engine and interrupts the first

fuel source communication with the dual fuel engine when in the second position; and as recited in element [1.3]. Ex.1003, [0231].

e. Element [1.4]

Hallberg teaches element [1.4]. Hallberg discloses a fuel lockout apparatus comprising a fluid dual valve control 301 and control cable 302. *Supra*, §VII.B.1.c.

The fluid dual valve control 301 and control cable 302 can be actuated and/or engaged to allow either gasoline or propane to flow to the internal combustion engine. *Id.* Positioning control 301 in gasoline mode, acts through control cable 302, to rotate spool 306 within valve body 307 to permit gasoline (a first fuel) to flow through fluid dual valve structure 300 (a mechanical fuel valve) and lock out propane (a second fuel) from flowing through fluid dual valve structure 300. *Supra*, §VII.B.1.b.

A POSA would have understood that the fluid dual valve control 301 and control cable 302 is therefore a fuel lockout apparatus configured to prevent a second fuel source from coupling to the second fuel line while the mechanical fuel valve is in the first position. Ex.1003, [0246]-[0247]. Positioning control 301 in propane mode, acts through control cable 302, to rotate spool 306 within valve body 307, to create a vacuum in line 30, which opens liquid inlet valve 2, allowing propane to flow through the propane fuel line to the engine. Ex.1006, 8:38-42; Ex.

1003, [0236]. A POSA would have understood that the fuel lockout apparatus therefore is configured to permit the second fuel source to couple to the second fuel line while the mechanical fuel valve is in the second position. Ex.1003, [0237]. When gasoline mode is selected, control cable 302 activates spool 306 within the dual valve 300 to allow gasoline to flow to the internal combustion engine. *Supra*, §§VII.B.1.b, VII.B.1.d.

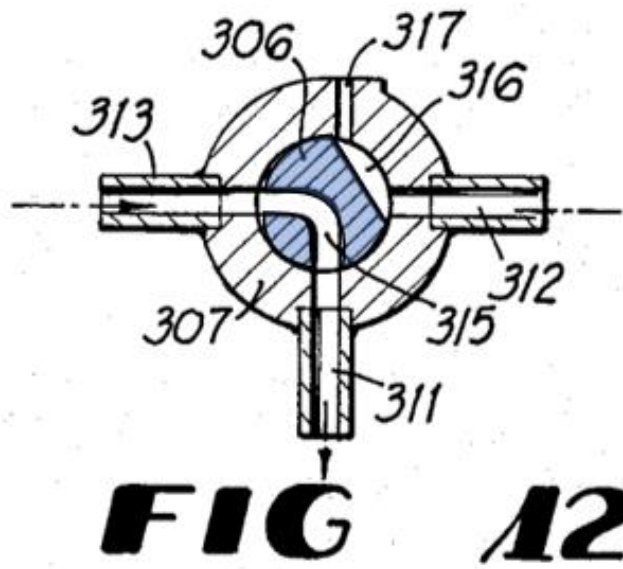
As discussed in §§VII.B.1.b, VII.B.1.c, VII.B.1.d, *supra*, when propane mode is selected (and mechanical fuel valve is in second position) a vacuum is created in line 30, urging diaphragm 10 upward against liquid inlet lever 8, which drives inlet valve shaft 41 against bias spring 3, which opens liquid inlet valve 2 allowing propane to flow through the propane fuel line to the engine. Ex.1006, 8:38-42. A POSA would have understood that when the mechanical fuel valve is in the second position, the second fuel source is coupled to the second fuel line. Ex.1003, [0238]-[0239].

Accordingly, a POSA would have understood that Hallberg teaches a fuel lockout apparatus configured to prevent the second fuel source from coupling to the second fuel line when the mechanical fuel valve is in the first position and permit the second fuel source to couple with the second fuel line when the mechanical fuel valve is in the second position as recited in element [1.4]. Ex.1003, [0240]-[0241].

2. Claim 2

Hallberg teaches and/or suggests claim 2. Hallberg discloses that the fuel lockout apparatus prevents actuation of the mechanical fuel valve to the first position when the second fuel source communicates with the dual fuel engine. However, as described in §VII.B.1.e, *supra*, a POSA would have understood that operation of the mechanical fuel valve and the fuel lockout apparatus is interconnected such that only one fuel can be communicated to the engine at one time. Ex.1003, [0243]. A POSA would have therefore looked to the fuel lockout apparatus and mechanical fuel valve of Hallberg to render this limitation obvious. *Id.*

As shown in FIG. 12, positioning of control 301 in the “gasoline” mode acts through control cable 302 to rotate spool 306 within valve body 307 such that converter vacuum line 30 (communicating with first vacuum outlet port 312) is open to the atmosphere through notch 316 between first vacuum outlet port 312 and vent 317. Ex.1006, 7:30-38. In this configuration, no vacuum is provided to vacuum line 30. Ex.1003, [0244]-[0245].



Ex.1006, FIG. 12 (Emphasis Added).

As described in §§VII.B.1.b, VII.B.1.c, *supra*, when propane mode is engaged, spool 306 is rotated within valve body 307 to form a seal between spool 306 and valve body 307. When the spool 306 is rotated, vacuum inlet port 311 and vacuum outlet port 312 are aligned to provide vacuum, via vacuum line 30, to the fuel lockout apparatus to open liquid inlet valve 2. Ex. 1003, [0246]-[0247].

A POSA would have understood that when propane is communicated to the engine and vacuum is provided to the fuel lockout apparatus via vacuum line 30, the rotatable spool cannot be in a gasoline position as it is well known in the art that when a valve is in a first position, it cannot be in a second position. Ex.1003, [0248]. The fuel lockout apparatus therefore prevents actuation of the mechanical fuel valve to a first position. Ex.1003, [0249].

Accordingly, a POSA would have understood that Hallberg teaches and/or suggests a fuel lockout apparatus that prevents actuation of the mechanical fuel valve to the first position when the second fuel source communicates with the dual fuel engine as recited in claim 2. Ex.1003, [0250].

3. Claim 6

Hallberg teaches claim 6. Hallberg discloses a mechanical fuel valve actuateable between a first position and a second position to selectively control fuel flow to the dual fuel engine from a first fuel source and a second fuel source. *Supra*, §VII.B.1.b. Hallberg also discloses a fuel lockout apparatus configured to prevent the second fuel source from coupling to the second fuel line while the mechanical fuel valve is in the first position and permit the second fuel source to couple to the second fuel line while the mechanical fuel valve is in the second position. *Supra*, §VII.B.1.e. The fuel lockout apparatus also prevents actuation of the mechanical fuel valve to the first position when the second fuel source communicates with the dual fuel engine. *Supra*, §VII.B.3. A POSA would have thus understood that the mechanical fuel valve and fuel lockout apparatus “function with each other” to ensure that the first fuel and the second fuel are not simultaneously delivered to the dual fuel engine. Ex.1003, [0255]-[0256].

Accordingly, a POSA would have understood that Hallberg teaches wherein the mechanical fuel valve and the fuel lockout apparatus operate together to ensure

that fuel from the first fuel source and fuel from the second fuel source are not simultaneously delivered to the dual fuel engine as recited in claim 6. Ex.1003, [0257].

4. Claim 7

Hallberg teaches claim 7. Hallberg discloses that gasoline is provided to the dual fuel engine by way of the carburetor (e.g. “gasoline from gasoline supply line 304 is supplied to the carburetor 110 through engine gasoline line 305.” Ex.1006, 7:36-43). Propane is supplied to the dual fuel engine by way of the mixer (“the mixer 100 admits pressurized gaseous fuel to the engine.” Ex.1006, 8:56-60). The propane is stored in a pressurized fuel tank (“[l]iquidified petroleum gas, propane and the other “gaseous” fuels with which the present invention is intended to be used are normally held for use in a reservoir or tank under sufficient pressure and at a temperature such that the fuels are in a liquid state.” Ex.1006, 1:54-58).

Accordingly, a POSA would have understood that Hallberg teaches a first fuel source providing liquid fuel from a liquid fuel tank to the dual fuel engine and the second fuel source providing gaseous fuel from a pressurized fuel container to the dual fuel engine. Ex.1003, [0262].

6. Independent claim 15

a. Element [15.0]

Hallberg teaches element [15.0] for at least the same reasons as [1.0].

Supra, §VII.B.1.a.

b. Element [15.1]

Hallberg teaches element [15.1] for at least the same reasons as [1.1].

Supra, §VII.B.1.b.

c. Element [15.2]

Hallberg teaches element [15.2] for at least the same reasons as [1.2].

Supra, §VII.B.1.c.

d. Element [15.3]

Hallberg teaches element [15.3] for at least the same reasons as [1.3].

Supra, §VII.B.1.d.

e. Element [15.4]

Hallberg teaches element [15.4] for at least the same reasons as claim 2.

Supra, §VII.B.2.

C. Ground 3: The Combination of Rumao, DuroMax, and Elsdon, or alternatively the Combination of Rumao and Hallberg Renders Obvious Claims 8, 9, 11, and 14.

As discussed in §VII.A, *supra*, under a proper construction of “fuel lockout apparatus” as a means plus function term invoking 35 U.S.C. §112(f), claims 1, 3, 4, 6, 7, and 15 are rendered obvious under §103 by the combination of DuroMax and Elsdon.

As discussed in §VII.B, *supra*, under the apparent construction of the term “fuel lockout apparatus” that is being advanced by Patent Owner in the Related

Litigations, claims 1, 6 and 7 are also anticipated under §102 by Hallberg and claims 2 and 15 are rendered obvious under §103 by Hallberg. *Supra*, §VII.B.

Claims 8, 9, 11, and 14 include limitations similar to those of claims 1, 2, 6, 7, and 15. A POSA would have looked to Rumao to teach, and render obvious, any limitation not disclosed by the combination of DuroMax and Elsdon, or alternatively, Hallberg. Ex.1003, [0320].

1. Independent claim 8

a. Element [8.0]

To the extent the preamble is limiting, the combination of Rumao, DuroMax, and Elsdon teaches element [8.0]. Alternatively, the combination of Rumao and Hallberg teaches element [8.0].

Rumao discloses methods of assembling generators including internal combustion engines powered by propane or gasoline. Ex.1007, Abstract; Ex.1007, 5:6-12.

The combination of DuroMax and Elsdon discloses a mechanical fuel lockout switch for an internal combustion engine. *Supra*, §VII.A. Alternatively, Hallberg discloses a mechanical fuel lockout switch for an internal combustion engine. *Supra*, §VII.B.

Accordingly, a POSA would have understood that Rumao, DuroMax, and Elsdon could be combined to teach a method of assembling a mechanical fuel

lockout switch for an internal combustion engine. Ex.1003, [0345]. Alternatively, a POSA would have understood that Rumao and Hallberg could be combined to teach a method of assembling a mechanical fuel lockout switch for an internal combustion engine. Ex.1003, [0325].

b. Element [8.1]

The combination of Rumao and DuroMax, or alternatively, Rumao and Hallberg teaches [8.1]. Rumao discloses methods of assembling a generator. *Supra*, §VII.C.1.a. In one configuration (see FIG. 82 below), the generator includes permanent fuel tank 360 (i.e., a first fuel source) and removable fuel tank 380 (i.e., a second fuel source). Ex.1007, 18:34-36. Rumao discloses that any suitable type of fuel source may be used, including liquid fuels or gaseous fuels such as propane. Ex.1007, 18:40-43.

A POSA would therefore have understood that Rumao discloses assembling an internal combustion engine that, in one configuration, operates on a first fuel (e.g., gasoline) from a first fuel source (e.g., permanent fuel tank 360 and/or removable fuel tank 380), and in a second configuration, operates on a second fuel (e.g., propane) from a second fuel source. Ex.1003, [0327].

DuroMax also discloses an internal combustion engine operable alternately on gasoline or propane. *Supra*, §VII.A.1.a. A POSA would have understood that

the internal combustion engine of DuroMax can be combined with the methods of assembling generators of Rumao to teach element [8.1]. Ex.1003, [0328].

Alternatively, a POSA would have looked to Hallberg. Ex.1003, [0329]. Hallberg also discloses a conventional internal combustion engine operable on a liquified gas fuel (e.g., propane) and a liquid fuel (e.g., gasoline). Ex.1006, 1:6-12.

Accordingly, a POSA would have understood that the internal combustion engine of Hallberg can be combined with the method of assembling generators of Rumao to teach element [8.1]. Ex.1003, [0330].

c. Element [8.2]

The combination of Rumao and DuroMax, or alternatively, Rumao and Hallberg, teaches element [8.2].

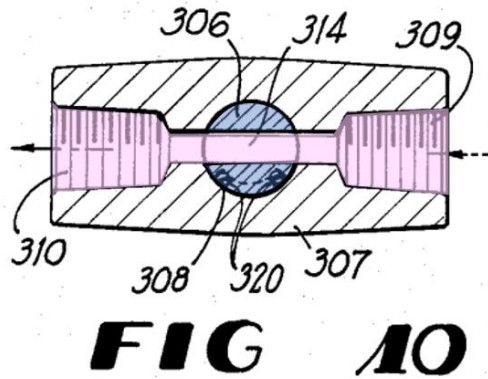
Rumao discloses methods of assembling a generator system comprising engine 311 and “other accessories for forming a fully functional generator.” Ex.1007, 18:34-40. A POSA would have understood that “other accessories for forming a fully functional generator” includes a mechanical fuel valve that selectively controls fuel flow of propane or gasoline to the internal combustion engine. Ex.1003, [0331].

DuroMax describes a mechanical fuel valve that is actuatable between an opened and closed position in which gasoline is selectively permitted to flow through a gasoline fuel line. *Supra*, §VII.A.1.b. The mechanical fuel valve is

coupled to the internal combustion engine. Ex.1004, pp.7-8. A POSA also would have found it obvious to combine the Elsdon fuel conduit coupler cap with the mechanical fuel valve of DuroMax to have enabled the mechanical fuel valve of DuroMax to further control the flow of LPG fuel through the LPG fuel conduit coupler via cap 16. *Supra*, §VII.A.1.b.

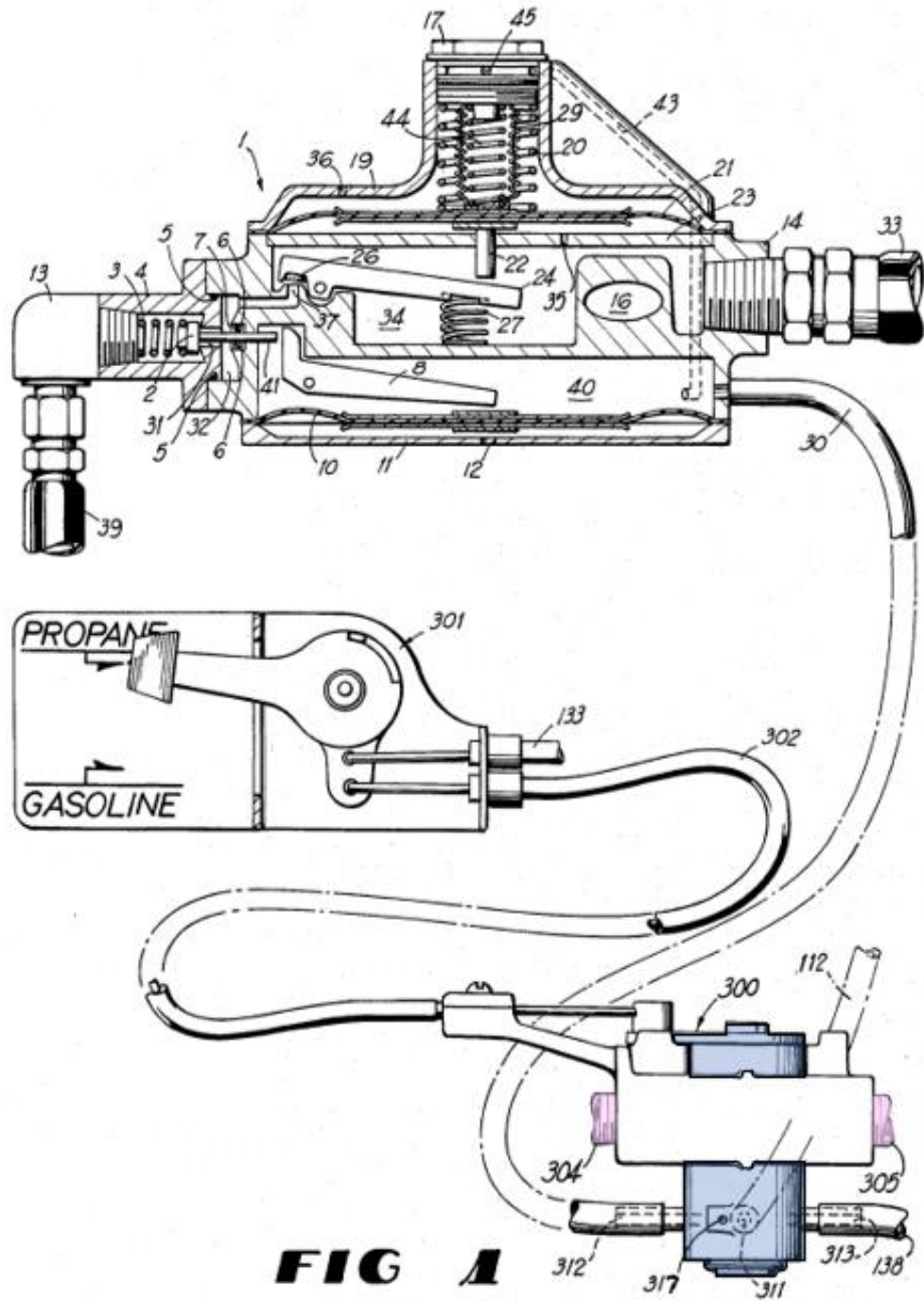
A POSA would have understood that the mechanical fuel valve of DuroMax coupled to the internal combustion engine of DuroMax can be combined with the methods of assembling generators of Rumao (discussed hereinafter in §VII.C.1.d.i-ii) to teach element [8.2]. Ex.1003, [0333].

Alternatively, Hallberg discloses a mechanical fuel valve actuateble between a first position and a second position to selectively control fuel flow from a first fuel source through a first fuel line and a second fuel source through a second fuel line to a dual fuel engine. *Supra*, §VII.B.1.b. Hallberg also discloses that the mechanical fuel valve is coupled to the internal combustion engine. *Supra*, §VII.B.1.b. As shown in FIG. 10 of Hallberg (see below), the mechanical fuel valve is coupled to liquid outlet opening 310. Ex.1006, FIG. 10.



Ex.1006, FIG. 10 (Emphasis Added).

FIGS. 1 and 9 of Hallberg (below) further disclose that the liquid outlet opening 310 is coupled to gasoline line 305. Ex.1006, FIGS. 1, 9. Gasoline from gasoline supply line 304 is supplied to the carburetor 110 through engine gasoline line 305. Ex.1006, 7:39-43.



Ex.1006, FIG.1 (Emphasis Added).

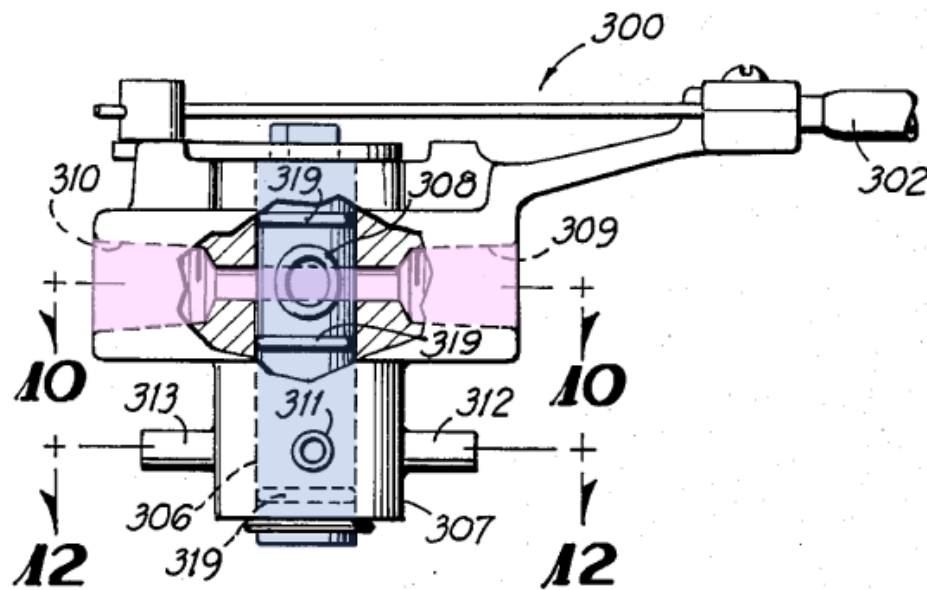


FIG 9

Ex.1006, FIGS. 1, 9 (Emphasis Added).

Accordingly, a POSA would have understood that the mechanical fuel valve and internal combustion engine of Hallberg can be combined with the methods of assembling generators of Rumao (discussed hereinafter in §§VII.C.1.i-ii) to teach element [8.2]. Ex.1003, [0337].

d. Element [8.3]

The combination of Rumao, DuroMax and Elsdon, or alternatively, Rumao and Hallberg, teaches [8.3].

Rumao discloses a method of assembling a generator system that includes “other accessories for forming a fully functional generator.” *Supra*, §VII.C.1.c. A

POSA would have understood that “other accessories for forming a fully functional generator” include a fuel lockout apparatus configured to communicate the first fuel source to the internal combustion engine and prevent the second fuel source from coupling to the internal combustion engine when the mechanical fuel valve is in the first position, and vice versa. Ex.1003, [0339].

Elsdon discloses a fuel lockout apparatus. *Supra*, §VII.A.1.c. A POSA would have been motivated to combine the fuel lockout apparatus of Elsdon with the mechanical fuel valve of DuroMax to provide a fuel lockout apparatus coupled to the mechanical fuel valve. *Supra* §§VII.A.1.a.1-2.

A POSA would have therefore understood that the fuel lockout apparatus of Elsdon, coupled to the mechanical fuel valve of DuroMax, can be combined with the methods of assembling generators of Rumao to teach element [8.3] (discussed hereinafter in §§VII.C.1.d.i-ii). Ex.1003, [0341].

Alternatively, Hallberg discloses a fuel lockout apparatus coupled to the mechanical fuel valve comprising fluid dual valve control 301 and control cable 302 that is coupled to a mechanical fuel valve. *Supra*, §VII.B.1.c.

A POSA would have understood that the fuel lockout apparatus coupled to the mechanical fuel valve of Hallberg can be combined with the methods of assembling generators of Rumao to teach the step of [8.3] (discussed hereinafter in §§VII.C.1.d.i-ii). Ex.1003, [0343].

i. Motivation to Combine Rumao, DuroMax, and Elsdon, or alternatively, Rumao and Hallberg, Elsdon.

Rumao, DuroMax, Elsdon, and Hallberg, all relate to internal combustion engines. Ex.1004, pp.2-5; Ex.1005, 6:35-52; Ex.1006, 1:6-8; Ex.1007, 5:6-10.

The internal combustion engines of Hallberg and DuroMax are operable on propane or gasoline. Ex.1004, pp.11-12; Ex.1006, 29:28-33; Ex.1007, 5:10-12.

Rumao discloses methods of assembling a generator system. Ex.1007, Abstract. The generator system includes “other accessories for forming a fully functional generator.” *Supra*, §VII.C.1.c. A POSA would have understood that “other accessories for forming a fully function generator” include a mechanical fuel valve to selectively control fuel flow of propane or gasoline that is coupled to the internal combustion engine, and a fuel lockout apparatus configured to prevent the second fuel source from coupling to the second fuel line while the mechanical fuel valve is in the first position and permit the second fuel source to couple to the second fuel line while the mechanical fuel valve is in the second position.

Ex.1003, [0346].

DuroMax discloses a mechanical fuel valve that is actuatable between an opened and closed position in which gasoline is selectively permitted to flow through a gasoline fuel line. *Supra*, § VII.A.1.b. Hallberg discloses a mechanical fuel valve actuatable between a first position and second position to selectively

control fuel flow to the dual fuel engine from a first fuel source through a first fuel line and a second fuel source through a second fuel line. *Supra*, § VII.B.1.b. A POSA would have therefore been motivated to combine the mechanical fuel valve of either DuroMax or Hallberg with the methods of assembling a generator system of Rumao. Ex.1003, [0349].

Elsdon discloses a fuel lockout apparatus, comprising a cap and shield. *Supra*, §VII.A.1.c. A POSA would have found it obvious to combine the Elsdon fuel conduit coupler cap with the mechanical fuel valve of DuroMax to have enabled the mechanical fuel valve of DuroMax to further control the flow of LPG fuel through the LPG fuel conduit coupler via cap 16. *Supra*, §VII.A.1.a.1-2.

Alternatively, Hallberg discloses a fuel lockout apparatus comprising fluid dual valve control 301 and control cable 302. *Supra*, §VII.B.1.c. A POSA would have understood that the fuel lockout apparatuses of Elsdon and Hallberg are configured to prevent the second fuel source from coupling to the second fuel line while the mechanical fuel valve is in the first position and permit the second fuel source to couple to the second fuel line while the mechanical fuel valve is in the second position. *Supra*, §§VII.A.1.c, VII.B.1.c.

A POSA would have therefore been motivated to combine the fuel lockout apparatus of DuroMax and Elsdon, or alternatively, Hallberg with the methods of assembling a generator system of Rumao. Ex.1003, [0353].

ii. Reasonable Expectation of Success

A POSA would have had a reasonable expectation of success in using the method of Rumao to assemble a generator with the fuel lockout apparatus of Elsdon and mechanical fuel valve of DuroMax. Ex.1003, [0354]. As of the date that the application that became '780 Patent was filed, the assembly of dual fuel generators was well known in the art, with Rumao and DuroMax being just two examples. Ex.1003, [0355]. A POSA would have therefore reasonably expected that the fuel lockout apparatus of Elsdon and the mechanical fuel valve of DuroMax could be successfully implemented in the methods of assembling a generator system disclosed in Rumao. *Id.*

A POSA would have also had a reasonable expectation of success in using the methods of Rumao to assemble a generator with the fuel lockout apparatus and mechanical fuel valve of Hallberg. Ex.1003, [0356]. The assembly of dual fuel generators was well known in the art, as of the date that the application that became '780 Patent was filed, with Rumao being just one example. *Id.*

A POSA would have therefore reasonably expected that the mechanical fuel valve and fuel lockout apparatus of Hallberg could be successfully implemented in the methods of assembling a generator system disclosed in Rumao. Ex.1003, [0357].

e. Element [8.4]²

The combination of Rumao, DuroMax, and Elsdon, or alternatively, Rumao and Hallberg teaches element [8.4].

A POSA would have understood that the combination of DuroMax and Elsdon discloses a mechanical fuel lockout switch comprising a mechanical fuel valve. *Supra*, §VII.A.1.b. A POSA would have understood that Elsdon discloses a fuel lockout apparatus that, when coupled to a mechanical fuel valve disclosed in DuroMax, selectively controls the flow of fuel. *Supra*, §VII.A.1.c. A POSA would have also understood that when the mechanical fuel valve is in the first position, the fuel lockout apparatus communicates the first fuel source to the engine and prevents communication between the second fuel source and the engine. *Supra*, §§VII.A.1.d-e. When the mechanical fuel valve is in a second position, the fuel lockout apparatus communicates the second fuel source to the engine and interrupts the first fuel source communication with the engine. *Id.*

A POSA would have therefore understood that the combination of Rumao, DuroMax, and Elsdon teaches a method of assembling a mechanical fuel lockout switch where a fuel lockout apparatus communicates the first fuel source to the internal combustion engine and prevents the second fuel source from coupling to

² While Claim 8 discusses the “fuel lockout apparatus [communicating] the first fuel source” and “interrupting first fuel source communication,” the disclosure of the ’780 Patent associates this functionality with the mechanical fuel valve assembly. While Claim 8 appears to be invalid under 35 U.S.C. §112 as a result, to the extent it is construed to cover the structure disclosed in FIGS. 2-4B of the ’780 Patent, it is invalid over DuroMax and Elsdon, which discloses the same structure.

the internal combustion engine when the mechanical fuel valve is in the first position. Ex.1003, [0362]. A POSA would have also understood that actuation of the mechanical fuel valve to the second position causes the fuel lockout apparatus to permit the second fuel source to couple to the internal combustion engine and interrupt the first fuel source communication with the internal combustion engine. Ex.1003, [0363].

Hallberg discloses a mechanical fuel valve coupled to a fuel lockout apparatus. *Supra*, §VII.B.1.c. When the mechanical fuel valve is in the first position, the fuel lockout apparatus communicates the first fuel source to the dual fuel engine and prevents communication between the second fuel source and the dual fuel engine. *Supra*, §VII.B.1.d. When the mechanical fuel valve is in a second position, the fuel lockout apparatus communicates the second fuel source to the dual fuel engine and interrupts the first fuel source communication with the dual fuel engine. *Supra*, §VII.B.1.d.

A POSA would have understood that the combination of Rumao and Hallberg discloses a method of assembling a mechanical fuel lockout switch where a fuel lockout apparatus communicates the first fuel source to the internal combustion engine and prevents the second fuel source from coupling to the internal combustion engine when the mechanical fuel valve is in the first position. Ex.1003, [0365]. A POSA also would have understood that actuation of the

mechanical fuel valve to the second position causes the fuel lockout apparatus to permit the second fuel source to couple to the internal combustion engine and interrupt the first fuel source communication with the internal combustion engine. Ex.1003, [0366].

f. Element [8.5]

The combination of Rumao, DuroMax and Elsdon, or alternatively, Rumao and Hallberg, teaches [8.5].

As discussed in §VII.A.2, *supra*, a POSA would have understood that the combination of the fuel lockout apparatus of Elsdon and the mechanical fuel valve of DuroMax discloses a fuel lockout apparatus that prevents actuation of the mechanical fuel valve to the first position when the second fuel source is coupled to the internal combustion engine.

As discussed in §VII.B.2, *supra*, Hallberg discloses a fuel lockout apparatus that prevents actuation of the mechanical fuel valve to the first position when the second fuel source is coupled to the internal combustion engine.

Accordingly, a POSA would have understood that the combination of Rumao, DuroMax and Elsdon, or alternatively, Rumao and Hallberg, teaches a method of assembling a mechanical fuel lockout switch where the fuel lockout apparatus prevents actuation of the mechanical fuel valve to the first position when the second fuel source is coupled to the internal combustion engine fuel lockout

apparatus that communicates the first fuel source to the internal combustion engine. Ex.1003, [0391].

2. Claim 9

The combination of Rumao, DuroMax, and Elsdon, or alternatively, Rumao and Hallberg teaches claim 9.

As discussed in §VII.A.1.c, *supra*, the combination of Elsdon and DuroMax discloses a fuel lockout apparatus that prevents the second fuel source from coupling to the second fuel line while the mechanical fuel valve is in the first position and permits the second fuel source to couple to the second fuel line while the mechanical fuel valve is in the second position.

As discussed in §VII.B.1.c, *supra*, Hallberg discloses a fuel lockout apparatus that prevents the mechanical fuel valve from coupling to the second fuel source when the mechanical fuel valve is in the first position and permits the second fuel source to couple with the second fuel line when the mechanical fuel valve is in the second position.

Accordingly, a POSA would have understood that the combination of Rumao, DuroMax, and Elsdon, or alternatively, Rumao and Hallberg, teaches claim 9. Ex.1003, [0374].

3. Claim 11

The combination of Rumao, DuroMax, and Elsdon, or alternatively, Rumao and Hallberg teaches claim 11.

Rumao discloses methods of assembling generators that includes “an engine configured to operate on a gaseous fuel source and...all related appurtenances and accessories necessary for a fully functional generator system (e.g., ... pressure regulators).” Ex.1007, 29:20-33. For example, Rumao discloses that “the backpack generator 500 may include...pressure regulators 512...and other appurtenances and accessories for a fully functional generator system. Ex.1007, 29:45-51.

A POSA would have understood that a “pressure regulator” is a “fuel regulator system ... to reduce fuel pressure ... and deliver fuel ... at a pressure required for operation of the internal combustion engine.” Ex.1003, [0377]. A POSA would have thus understood that Rumao discloses the step of “coupling a fuel regulator system to the second fuel source to reduce fuel pressure therefrom and deliver fuel to the second fuel line at a pressure required for operation of the internal combustion engine.” Ex.1003, [0378].

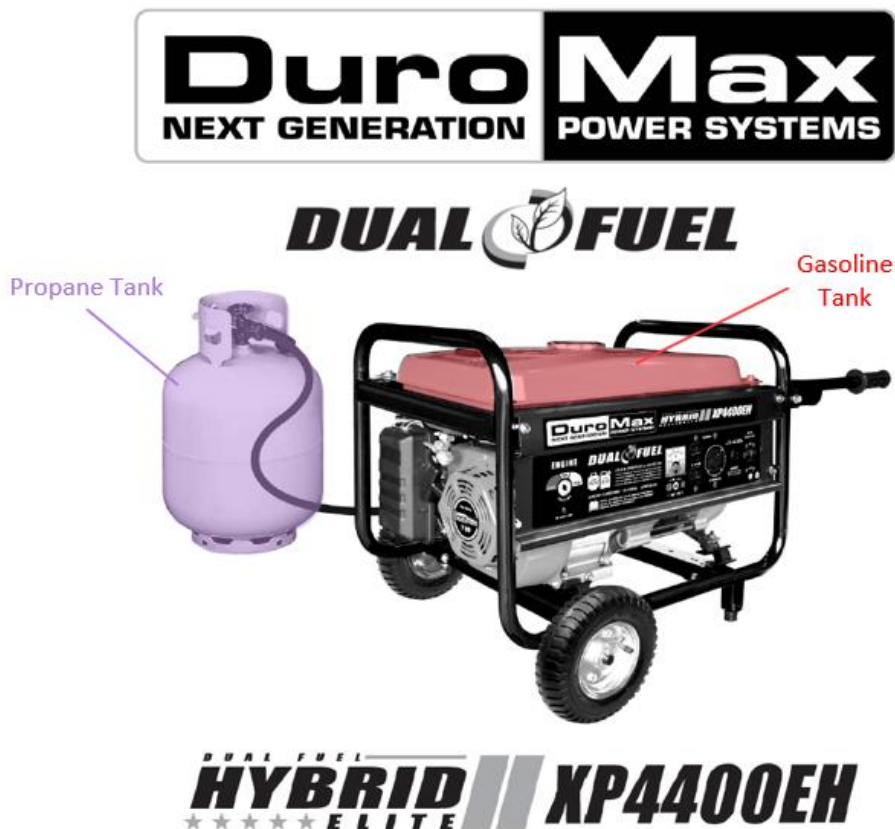
Accordingly, a POSA would have understood that the combination of Rumao, DuroMax, and Elsdon, or alternatively, Rumao and Hallberg teaches claim 11. Ex.1003, [0379].

4. Claim 14

The combination of Rumao and DuroMax, or alternatively, Rumao and Hallberg discloses claim 14.

Rumao discloses methods of assembling generators that includes internal combustion engines powered by propane or gasoline. *Supra*, §VII.C.1.a.

In the event that a Rumao does not explicitly disclose providing gasoline as a first fuel source and LPG as a second source, DuroMax discloses gasoline tank and propane tank Ex.1004, p.1. A POSA would have understood that the gasoline is stored in a liquid fuel tank, and propane is stored in a pressurized fuel container. Ex.1003, [0382].



Ex.1001, p.1

A POSA would have therefore understood that the gasoline tank and propane tank of DuroMax can be combined with the method of assembling a generator of Rumao to disclose the step of providing gasoline in a liquid fuel tank as the first fuel source and LPG in a pressurized fuel container as the second fuel source. Ex.1003, [0383].

Accordingly, a POSA would have understood that the combination of Rumao and DuroMax teaches claim 14. Ex.1003, [0384].

Alternatively, Hallberg discloses a propane fuel source and gasoline fuel source supplied to the dual fuel generator. *Supra*, §VII.B.1.b. A POSA would have understood that the gasoline fuel source is stored in a liquid fuel tank, and the propane fuel source is stored in a pressurized fuel container. Ex.1003, [0385].

A POSA would have thus understood that the propane fuel source and gasoline fuel source of Hallberg can be combined with the method of assembling a mechanical fuel lockout switch for an internal combustion engine of Rumao to disclose a method of assembling a mechanical fuel lockout switch for an internal combustion engine further comprising providing gasoline in a liquid fuel tank as the first fuel source and LPG in a pressurized fuel container as the second fuel source. Ex.1003, [0386].

Accordingly, a POSA would have understood that the combination of Rumao and Hallberg also teaches claim 14. Ex.1003, [0387].

D. Ground 4: The Combination of Rumao, DuroMax, Elsdon, and Parlatore, or alternatively, Rumao, Hallberg, and Parlature Renders Obvious Claims 12 and 13.

As discussed in §VII.C, *supra*, a POSA would have understood that claims 8, 9, 11 and 14 are rendered obvious by the combination of Rumao, DuroMax, and Elsdon, or alternatively the combination of Rumao and Hallberg. Claims 12 and 13 depend from claim 11 which depends from claim 8. A POSA would have looked to Parlature to teach, and render obvious, any limitation not disclosed by the combination of Rumao, DuroMax and Elsdon, or alternatively, Rumao and Hallberg. Ex.1003, [0388].

1. Claim 12

The combination of Rumao, DuroMax, Elsdon, and Parlature, or alternatively, Rumao, Hallberg and Parlature, teaches claim 12.

Rumao discloses a method of assembling generators that includes “an engine configured to operate on a gaseous fuel source and...all related appurtenances and accessories necessary for a fully functional generator system (e.g., ... pressure regulators).” Ex.1007, 29:20-33. A POSA would have understood that “all related appurtenances and accessories necessary for a fully functional generator system” includes a fuel regulator system. Ex.1003, [0390]. A POSA would also have understood that the fuel regulator system can mounted onto an LPG tank and located off-board the internal combustion engine. *Id.*

In the event that Rumao does not explicitly disclose the aforementioned limitation, a POSA would have looked to Parlatore. Ex.1003, [0391]. Parlatore discloses a propane vapor delivery system. Ex.1010, [0013]. As shown in FIG. 1, the propane vapor delivery system includes a first pressure regulator (e.g., Reg. 1) and a second pressure regulator (e.g., Reg. 2). Ex.1010, FIG. 1.

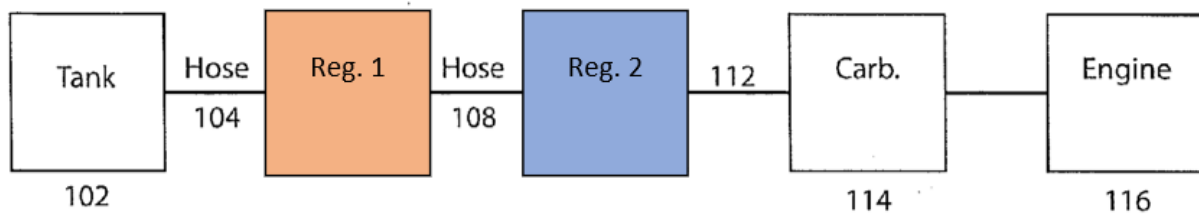
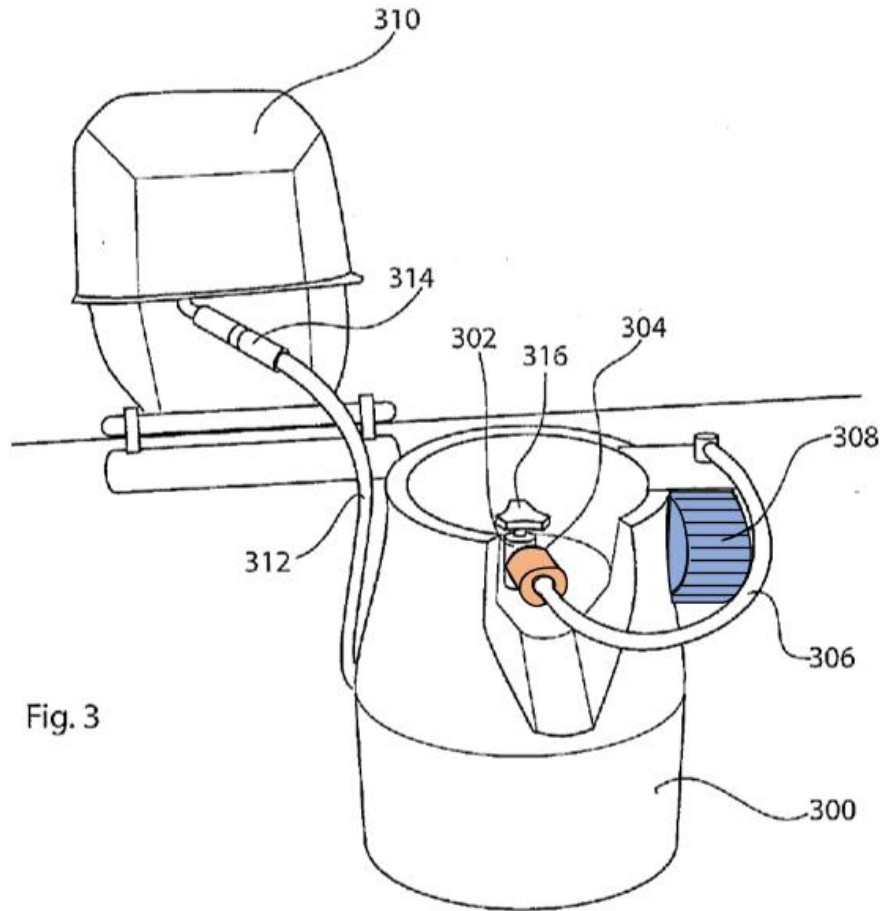


Fig. 1

Ex.1010, FIG. 1 (Emphasis Added).

As shown in FIG. 3, the “LPG tank 300 may be located separate, but coupled to, an engine 310.” Ex.1010, FIG. 3.

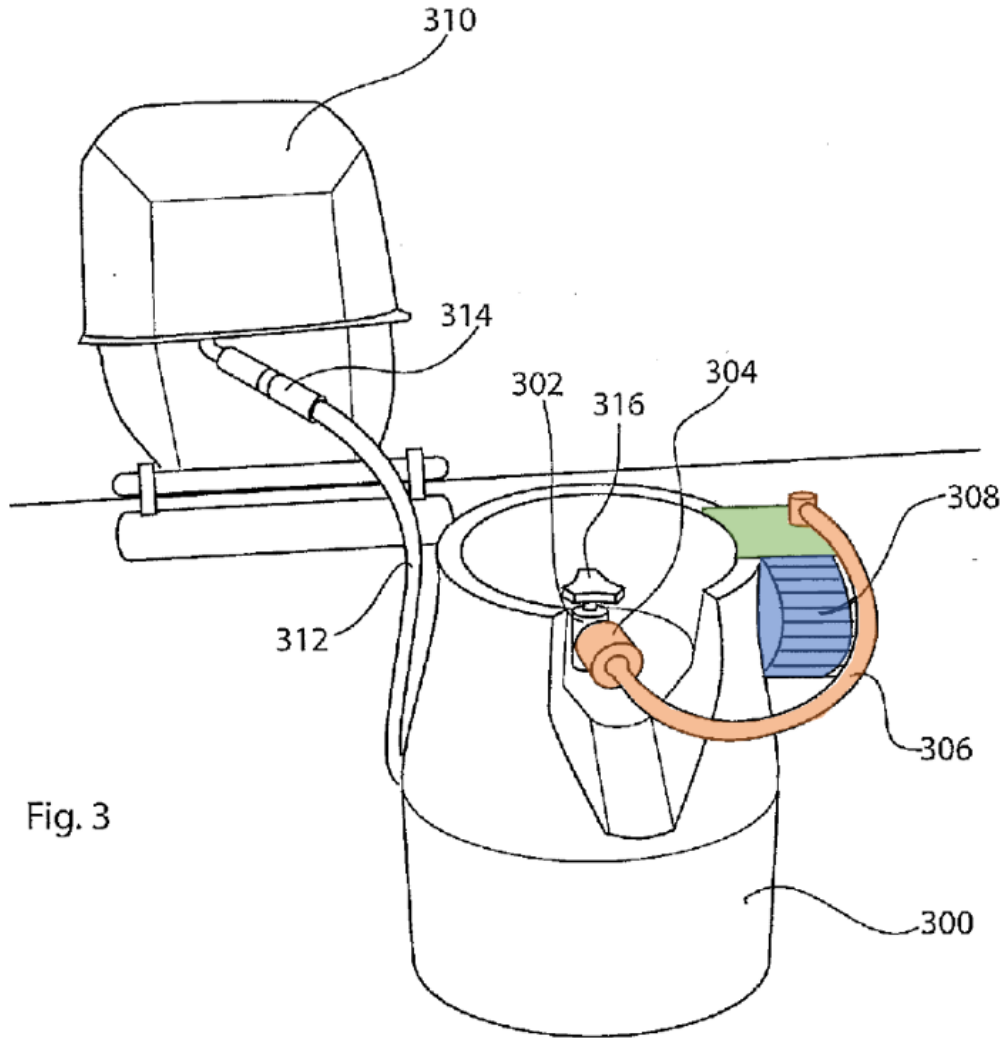


Ex.1010, FIG. 3 (Emphasis Added).

A POSA would have understood that the propane vapor delivery system of Parlature is a fuel regulator system located off board the dual fuel generator.

Ex.1003, [0391]-[0393].

FIG. 3 of Parlature discloses the primary and secondary regulator regulator mounted to a regulator mounting device. Ex.1010, FIG. 3. A POSA would have understood that Parlature discloses a fuel regulator system mounted to a LPG fuel source located off-board the internal combustion engine. Ex.1003, [0393].



Ex.1010, FIG. 3 (Emphasis Added).

Accordingly, a POSA would have understood that the combination of Rumao, DuroMax, Elsdon, and Parlature, or alternatively, Rumao, Hallberg, and Parlature, teaches claim 12. Ex.1003, [0394].

2. Claim 13

The combination of Rumao, DuroMax, Elsdon, and Parlature, or alternatively, Rumao, Hallberg, and Parlature, teaches claim 13.

Rumao discloses a method of assembling generators that includes “an engine configured to operate on a gaseous fuel source and...all related appurtenances and accessories necessary for a fully functional generator system (e.g., ... pressure regulators).” Ex.1007, 29:20-33.

Parlatore discloses hose 104 coupling an LPG supply to a first pressure regulator (e.g., Reg. 1). Ex.1010, FIG. 1. The first pressure regulator is coupled to the second pressure regulator (e.g., Reg. 2) via hose 108. *Id.* The second pressure regulator is coupled to the carburetor via hose 112. *Id.*

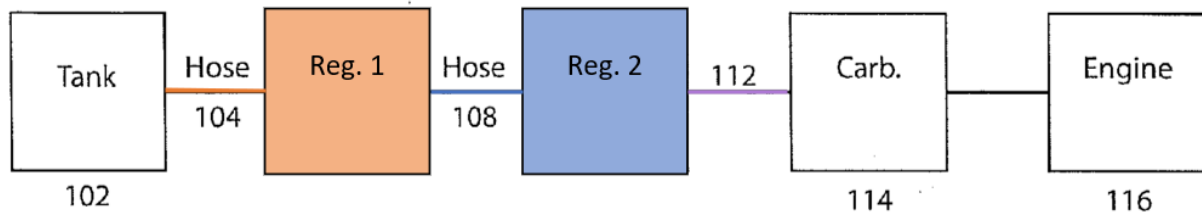


Fig. 1

Ex.1007, FIG. 1 (Emphasis Added).

As shown in FIG. 3 (see below), in one embodiment, the LPG tank (e.g., LPG tank 300) may be coupled to the primary regulator 304 via connector 302. Ex.1010, [0020] and FIG. 3. Primary regulator 304 is also coupled to secondary pressure regulator 308 via hose 306. *Id.* Secondary pressure regulator 308 is coupled to carburetor 114 via hose 312. *Id.*

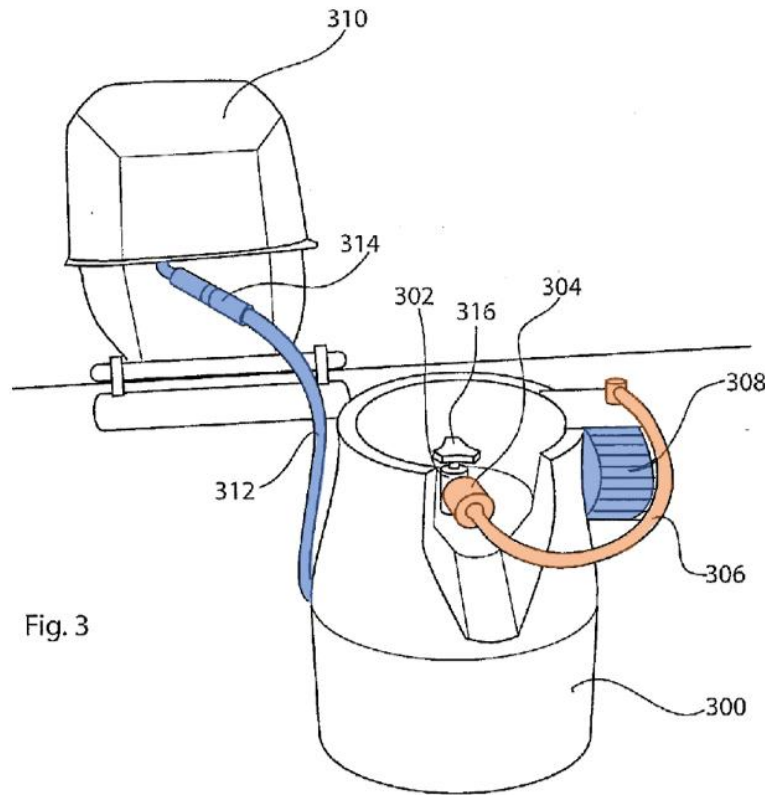


Fig. 3

Ex.1010, FIG. 3 (Emphasis Added).

A low pressure output of secondary regulator 308 may be releasably attached to the propane carburetor. Ex.1010, [0020] and FIG. 3.

A POSA would have understood that a quick disconnect attachment could be attached to the LPG supply hose to releasably attach and disconnect the LPG supply hose to and from an inlet of the internal combustion engine. Ex.1003, [0400]. A quick-disconnect hose attachment is well known in the art as an attachment that allows a hose to be releasably coupled. *Id.*

A POSA would also have understood that primary regulator 304 and secondary regulator 308 form a fuel regulator system, with secondary regulator

308 having an outlet connected to an internal combustion engine. Ex.1003, [0401].

A POSA would therefore have understood that Parlatore discloses a quick disconnect hose that can be coupled to an inlet on the internal combustion engine on one end, and coupled to an outlet of the fuel regulator system on the opposite end. *Id.*

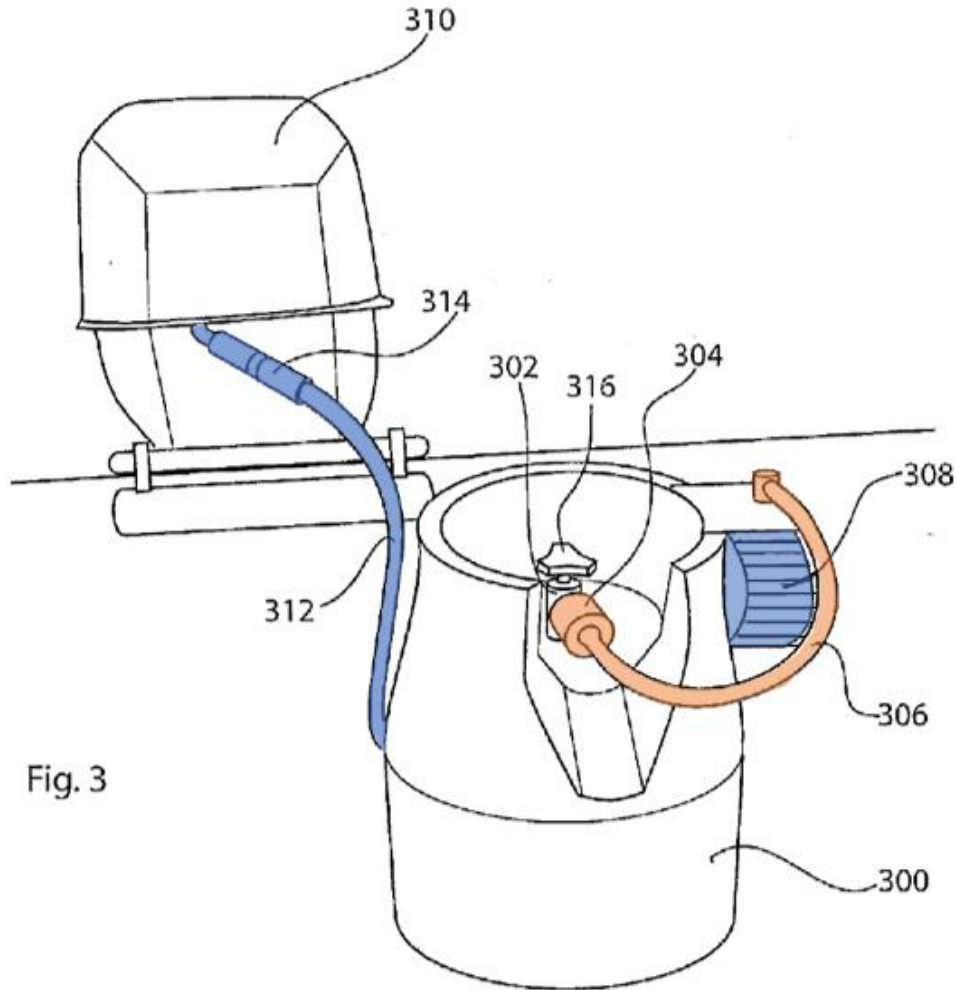
Accordingly, a POSA, would have understood that the combination of Rumao, DuroMax, Elsdon, and Parlatore, or alternatively, Rumao, Hallberg, and Parlatore teaches claim 13. Ex.1003, [0402].

E. Ground 5: The Combination of DuroMax, Elsdon, and Parlature Renders Obvious Claim 5.

As discussed in §VII.A.1, *supra*, claim 1 is rendered obvious by the combination of DuroMax and Elsdon. Claim 3 depends from claim 1 and is also rendered obvious by the combination of DuroMax and Elsdon. *Supra*, §VII.A.3. Claim 5 depends from claim 3. A POSA would have looked to Parlature to teach, and render obvious, any limitation not disclosed by the combination of DuroMax and Elsdon. Ex. 1003, [0404].

1. Claim 5

FIG. 3 of Parlature discloses an LPG tank 102 coupled to an engine 310 via: primary regulator 304, hose 306, secondary pressure regulator 308, hose 312, and coupling 314. Ex.1010, [0020]-[0021], and FIG. 3.



Ex.1010, FIG. 3 (Emphasis Added).

Parlatore also discloses that a low pressure output of secondary regulator 308 can be releasably attached to a propane carburetor. Ex.1010, [0020]. The low pressure output can be attached to the propane carburetor through hose 312 and coupling 314. *Id.*

A POSA would have understood that coupling 314 and hose 312 can be a first end of a quick disconnect hose coupling attached to an inlet of the second fuel line. Ex. 1003, [0407]. A POSA would also have understood that a second end of

the quick disconnect hose coupling could be attached to an LPG supply tank to couple the LPG supply tank to the second fuel line. Ex. 1003, [0408].

A POSA would therefore have understood that the combination of DuroMax, Elsdon and Parlatore teaches claim 5. Ex. 1003, [0409].

F. Ground 6: The Combination of Rumao, DuroMax, and Elsdon Renders Obvious Claim 10.

As discussed in §VII.C.1., *supra*, claim 8 is anticipated and/or rendered obvious by the combination of Rumao, DuroMax and Elsdon. Claim 10 depends from claim 8.

1. Claim 10

The combination of Rumao, DuroMax and Elsdon teaches claim 10. DuroMax discloses a mechanical fuel valve. *Supra*, §VII.A.1.b. Elsdon discloses a fuel lockout apparatus comprising a cap and shield. *Supra*, §VII.A.1.c. A POSA would have understood that the fuel lockout apparatus can be coupled to the mechanical fuel valve and configured to prevent the second fuel source from coupling to the second fuel line while the mechanical fuel valve is in the first position and permit the second fuel source to couple to the second fuel line while the mechanical fuel valve is in the second position. *Supra*, §VII.A.1.c-e. A POSA would have also understood that when the cap is closed, the fluid conduit is covered. *Supra*, §VII.A.2.

As described in §VII.A.1.e, *supra*, a POSA would have understood that operation of the mechanical fuel valve and the fuel lockout apparatus is interconnected such that only one fuel can be communicated to the engine at one time. Ex.1003, [0413]. It would thus have been obvious to a POSA that the fuel inlet cover actuate in unison with the mechanical fuel valve to cover a fuel inlet on the internal combustion engine for the second fuel source when the mechanical fuel valve is in the first position, and uncover the fuel inlet when the mechanical fuel valve is in the second position. Ex.1003, [0414].

VIII. MANDATORY NOTICES

A. Real Parties in Interest

In addition to Petitioners, MWE Equipment Sales, LLC, Harbor Freight Holdings, Inc., and Generac Holdings Inc., are listed as potential real-parties-in-interest.

B. Related Matters

To the best of Petitioner's knowledge, the '780 Patent is or has been involved in several pending litigations:

Name	Number	Court	Filed
Champion Power Equipment Inc. v. Firman Power Equipment Inc.	2-23-cv-02371	DAZ	Nov. 10, 2023
Champion Power Equipment Inc. v. Generac Power Systems Inc.	2-24-cv-01281	EDWI	Oct. 9, 2024
Harbor Freight Tools USA Inc. v. Champion Power Equipment Inc.	2:24-cv-8722	CDCA	Oct. 9, 2024

Champion Power Equipment Inc. v. Westinghouse Elec. Corp. et al.	2:25-cv-00844	DNV	May 14, 2025
--	---------------	-----	--------------

Name	Number	Court	Dismissed
Champion Power Equipment Inc. v. Harbor Freight Tools USA Inc.	2-24-cv-01302	EDWI	April 29, 2025

Patent Owner has asserted the '780 Patent, and related 10,393,034 ('034 Patent), 10,697,398 ('398 Patent), 11,143,120 ('120 Patent), 11,143,145 ('145 Patent), 11,492,985 ('985 Patent), 11,530,654 ('654 Patent), 11,840,970 ('970 Patent), and 11,905,895 ('895 Patent), as well as other non-family member patents, in *Champion Power Equipment Inc. v. Firman Power Equipment Inc.*, 23-cv-02371-DWL (D. Ariz.).

Patent Owner has asserted the '780 Patent and related '398 Patent, '120 Patent, '145 Patent, '985 Patent, '654 Patent, '970 Patent, '895 Patent, as well as other non-family member patents, in *Champion Power Equipment Inc. v. Generac Power Systems Inc.*, 24-cv-01281-LA (E.D. Wis.).

Petitioner Harbor Freight has filed a declaratory judgment action alleging non-infringement of the '780 Patent and related '034 Patent, '654 Patent, '985 Patent, '398 Patent, '120 Patent, '145 Patent, '970 Patent, '895 Patent, as well as other non-family member patents, in *Harbor Freight Tools USA, Inc. v. Champion Power Equipment, Inc.*, 24-cv-08722-SVW-AS (C.D. Cal.).

Patent Owner has asserted the '780 Patent, and related '985 Patent, '034 Patent, '895 Patent, '398 Patent, '120 Patent, '145 Patent, as well as other non-family member patents, in *Champion Power Equipment Inc. v. Westinghouse Elec. Corp. et al.*, 2:25-cv-00844 (D. Nev.).

Patent Owner asserted the '780 Patent, and related '034 Patent, '398 Patent, '120 Patent, '145 Patent, '985 Patent, '654 Patent, '970 Patent, '895 Patent, as well as other non-family member patents, against Petitioner Harbor Freight in *Champion Power Equipment Inc. v. Harbor Freight Tools USA Inc.*, 24-cv-01302-PP (E.D. Wis.). This case was dismissed on April 29, 2025, in favor of the earlier filed action in C.D. California cited above.

C. Lead and Back-Up Counsel Information

Pursuant to 37 C.F.R. §§ 42.8(b)(3) and 42.10(a), Petitioners provide the following designation of counsel, to which all correspondence should be addressed. Pursuant to 37 C.F.R. § 42.10(b), a Power of Attorney for each Petitioner accompanies this Petition.

Lead Counsel	Backup Counsel
Thomas Walsh Reg. No. 45,196 ICE MILLER LLP One American Square, Suite 2900 Indianapolis, IN 46282-0200 Tel: 317-236-5946 Email: thomas.walsh@icemiller.com	Thomas Rammer Reg. No. 62,591 ICE MILLER LLP 200 W. Madison Street, Suite 3500 Chicago, IL 60606 Tel: 312-705-6016 Email: tom.rammer@icemiller.com

	Aleksas Siliunas Reg. No. 79,826 ICE MILLER LLP 200 W. Madison Street, Suite 3500 Chicago, IL 60606 Tel: 312-726-8174 Email: alek.siliunas@icemiller.com Michael Houston Reg. No. 58,486 FOLEY & LARDNER LLP 321 N. Clark St., Suite 3000 Chicago, Illinois 60654 312-832-4500 mhouston@foley.com Jeffrey S. Gundersen Reg. No. 47,619 FOLEY & LARDNER LLP 777 E Wisconsin Ave Milwaukee, WI 53202-5306 414-271-2400 jgundersen@foley.com Kimberly K. Dodd Reg. No. 54,646 FOLEY & LARDNER LLP 777 E Wisconsin Ave Milwaukee, WI 53202-5306 414-271-2400 kdodd@foley.com Thomas J. Leach Reg. No. 53,188 MERCHANT & GOULD P.C. 150 South Fifth Street, Suite 2200
--	---

	Minneapolis, MN 55402 612-336-4665 TLeach@merchantgould.com Taylor R. Stemler Reg. No. 79,777 MERCHANT & GOULD P.C. 150 South Fifth Street, Suite 2200 Minneapolis, MN 55402 612-371-5215 TStemler@MerchantGould.com
--	--

D. Service Information Under 37 C.F.R. § 42.8(b)(4)

Please address all correspondence and service to the address listed above.

Petitioner consents to electronic service by email at thomas.walsh@icemiller.com, tom.rammer@icemiller.com, alek.siliunas@icemiller.com, and kristina.davis@icemiller.com. Petitioner consents to electronic service directed to the aforementioned email addresses.

E. Payment of Fees

The Office is authorized to charge fees for this Petition to Deposit Account No. 09-0007. Any additional fees that might be due are also authorized.

IX. CONCLUSION

Petitioners respectfully request that the Board institute an *inter partes* review trial to cancel claims 1-15 of the '780 Patent as unpatentable.

July 22, 2025

Respectfully submitted,

/Thomas A. Walsh/
Thomas Walsh, Reg. No. 45,196

**CERTIFICATE OF WORD COUNT UNDER 37 CFR § 42.24 AND
GENERAL FORMAT REQUIREMENTS OF 37 CFR § 42.6(a)**

I hereby certify that the foregoing Petition for *Inter Partes Review* of U.S. Patent No. 10,221,780 complies with the type-volume limitations of 37 CFR § 42.24 and general format requirements of 37 CFR § 42.6(a).

The foregoing Petition for *Inter Partes Review* of U.S. Patent No. 10,221,780 includes 12,993 words (as calculated by Microsoft Word), excluding those in the table of contents, table of authorities, mandatory notices, certificate of service, certificate of word count, appendix of exhibits, and claim listing. The Petition for *Inter Partes Review* of U.S. Patent No. 10,221,780 has also been prepared using Microsoft Word in 14-point Times New Roman.

July 22, 2025

Respectfully submitted,

/Thomas A. Walsh/

Thomas Walsh, Reg. No. 45,196

CERTIFICATE OF SERVICE

Pursuant to 37 CFR §§ 42.6(e)(4)(i) *et. seq.* and 42. 105(b), I hereby certify on July 22, 2025, that a true and correct copy of the Petition for *Inter Partes Review* of U.S. Patent No. 10,221,780 was served in its entirety via e-mail and courier service to the Patent Owner by serving the correspondence address of record for the 10,221,780 Patent:

26629 – ZIOLKOWSKI PATENT SOLUTIONS GROUP, SC (ZPS)
136 S WISCONSIN ST
PORT WASHINGTON, WI

Courtesy copies of the same documents were served electronically on Patent Owner's litigation counsel by email at the following address:

HB-Champion@huschblackwell.com
jmf@zpatents.com
jennifer.hoekel@huschblackwell.com
karen.luong@huschblackwell.com
Kimberly.Gutierrez@huschblackwell.com
Sharif.Ahmed@huschblackwell.com
tom.heneghan@huschblackwell.com
tjz@zpatents.com

July 22, 2025

Respectfully submitted,

/Thomas A. Walsh/

Thomas Walsh, Reg. No. 45,196