

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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ROBERT BOSCH LLC and MERCEDES-BENZ USA, LLC,  
Petitioner,

v.

WESTPORT FUEL SYSTEMS CANADA INC.,  
Patent Owner.

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IPR2023-00292  
Patent 6,298,829 B1

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Before NEIL T. POWELL, CARL M. DEFRANCO, and  
FRANCES L. IPPOLITO, *Administrative Patent Judges*.

DEFRANCO, *Administrative Patent Judge*.

DECISION  
Denying Institution of *Inter Partes* Review  
35 U.S.C. § 314

## I. INTRODUCTION

Westport Fuel Systems Canada Inc. (“Westport”) is the owner of U.S. Patent No. 6,298,829 B1 (Ex. 1001, “the ’829 patent”). Robert Bosch LLC and Mercedes-Benz USA, LLC (collectively, “Bosch”) filed a Petition requesting an *inter partes* review of claims 1–3, 6, 11, 12, 14, 15, and 18–20 of the ’829 patent. Paper 1 (“Pet.”). Westport filed a Preliminary Response. Paper 7 (“Prelim. Resp.”).

Under 35 U.S.C. § 314(a), an *inter partes* review may not be instituted unless the information presented in the Petition and any response thereto shows “there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” Upon consideration of the Petition, Preliminary Response, and the evidence of record, we determine that the information presented in the Petition does not establish a reasonable likelihood that Bosch would prevail in showing the unpatentability of at least one of the challenged claims. Accordingly, we decline to institute *inter partes* review of challenged claims 1–3, 6, 11, 12, 14, 15, and 18–20 as raised in the Petition.

## II. BACKGROUND

### A. Related Matters

The ’829 patent is or was the subject of the following infringement actions: *Westport Fuel Systems Canada Inc. v. Ford Motor Company*, No. 2:21-cv-00453 (E.D. Tex.); *Westport Fuel Systems Canada Inc. v. Mercedes-Benz USA, LLC*, No. 2:21-cv-00454 (E.D. Tex.) (dismissed); *Westport Fuel Systems Canada Inc. v. Nissan North America, Inc.*, No. 2:21-cv-00455 (E.D. Tex.) (dismissed); *Westport Fuel Systems Canada Inc. v. General Motors, LLC*, No. 2:21-cv-00456 (E.D. Tex.); *Westport Fuel*

*Systems Canada Inc. v. FCA USA LLC d/b/a FCA Group US LLC*, No. 2:21-cv-00457 (E.D. Tex.) (dismissed); and *Robert Bosch, LLC v. Westport Fuel Systems Canada Inc.*, No. 1:22-cv-00370 (E.D. Va.). Pet. 4–5; Paper 5, 2.

The '829 patent is also the subject of another petition filed by Mercedes in IPR2023-00352. *See* Paper 3 (“Petitioners Petition Ranking and Explanation of Material Differences Between Petitions”). Bosch and Mercedes also filed petitions challenging certain claims of related U.S. Patent No. 6,575,138 B2 in IPR2023-00293 and IPR2023-00351.

*B. Real Parties in Interest*

Bosch identifies itself, Robert Bosch GmbH, Mercedes-Benz Intellectual Property GmbH & Co. KG, Mercedes-Benz AG, Ford Motor Company, and General Motors LLC as the real parties in interest. Pet. 4. Westport identifies only itself as the real party in interest. Paper 5, 2.

*C. The '829 Patent*

The '829 patent, titled “Directly Actuated Injection Valve,” relates to “high pressure fuel injection valves or injectors for internal combustion engines.” Ex. 1001, code (54), 1:12–14. The '829 patent discloses “an injection valve that is directly controllable by a position activating material (such as, for example, a piezoelectric or magnetostrictive material) and which includes a passive hydraulic link.” *Id.* at 1:14–17.

Figure 1 of the '829 patent, reproduced below, is a cross-section view of a directly actuated fuel injection valve according to a preferred embodiment. *Id.* at 8:23–24.

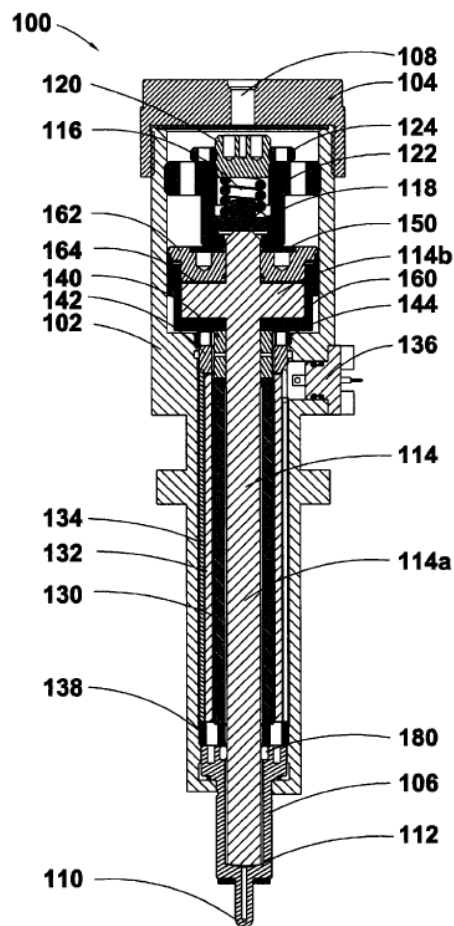


Figure 1

Figure 1 depicts injection valve 100 including elongated valve housing 102, valve cap 104, and valve tip 106, which cooperate to form a fluidly-sealed body. *Id.* at 8:39–43. Fuel enters the valve body through inlet port 108 in valve cap 104, and fuel exits the valve body through at least one nozzle orifice 110 in valve tip 106, which further comprises valve seat 112. *Id.* at 45–49. Valve needle 114, which includes integral valve stem 114a and hydraulic piston 114b, is located within the valve body and has one end that contacts valve seat 112 to prevent fuel from passing to valve orifice 110 and, thereby, close injection valve 100. *Id.* at 8:59–65, 10:67–11:4. A spring assembly comprising at least one needle spring 116 biases valve

needle 114 in a closed position. *Id.* at 9:16–19. To open the valve, an actuator assembly provides an opening force that overcomes the closing force provided by the spring assembly. *Id.* at 9:36–38. In the preferred embodiment, the actuator assembly is a magnetostrictive actuator comprising magnetostrictive member 130, electric coil 132, and flux tube 134 disposed concentrically around valve stem 114a. *Id.* at 9:45–49, 10:54–58. The opening force generated by the actuator assembly is transmitted through a hydraulic link assembly to valve needle 114. *Id.* at 10:64–67.

Figure 2 of the '829 patent, reproduced below, is an enlarged view of an upper portion of the fuel injection valve shown in Figure 1. *Id.* at 8:25–26.

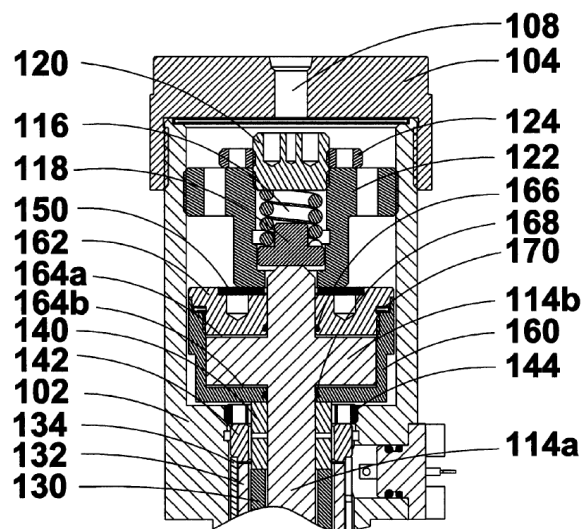


**Figure 2**

Figure 2 depicts hydraulic cylinder 160, cylinder cap 162, seals 166, 168, 169, and viscous hydraulic fluid 164b. *Id.* at 11:4–6. Hydraulic piston 114b is disposed in a close-fitting relationship within hydraulic cylinder 160 and is free to move in the longitudinal direction. *Id.* at 10:64–67. The '829

patent explains that “the hydraulic fluid preferably has a sufficiently high viscosity and bulk modulus so that it acts as an incompressible solid when activation of the actuator assembly causes a valve opening force to be quickly transmitted through the hydraulic fluid between the bottom of cylinder 160 and hydraulic piston 114*b*.” *Id.* at 11:21–26. According to the ’829 patent,

because valve actuation occurs suddenly (on the order of 200  $\mu$ s), hydraulic fluid 164*b* does not have time to flow through the narrow clearance gap between piston 114*b* and hydraulic cylinder 160. Instead, hydraulic fluid 164*b* acts as a solid and transfers the movement of magnetostrictive member 130 to valve needle 114 via piston 114*b*, causing valve needle 114 to lift away from valve seat 112.

*Id.* at 12:57–64.

*D. The Challenged Claims*

Bosch challenges claims 1–3, 6, 11, 12, 14, 15, and 18–20 of the ’829 patent. Pet. 1. Of the challenged claims, claim 1 is the only independent claim and is reproduced below:

1. An injection valve for injecting fuel into a combustion chamber of an internal combustion engine, said injection valve comprising:

(a) a valve housing comprising:

a fuel inlet port;

an interior chamber fluidly connected to said fuel inlet port,

a nozzle comprising a nozzle orifice providing a fluid passage from said interior chamber to said combustion chamber;

(b) a valve needle disposed within said valve housing wherein said valve needle is movable between a closed position at which a sealing end of said valve needle contacts a valve seat to fluidly seal said interior chamber from said nozzle orifice, and an open position at which said sealing end of said valve

needle is spaced apart from said valve seat whereby said interior chamber is fluidly connected with said nozzle orifice, wherein valve needle lift equals the distance traveled by said sealing end away from said valve seat;

(c) a needle spring associated with said valve needle, wherein said needle spring applies a closing force to said valve needle for biasing said valve needle in said closed position;

(d) a[n] actuator assembly associated with said valve needle, wherein said actuator assembly may be activated to apply an opening force to said valve needle stronger than said closing force, for moving said valve needle to said open position; and

*(e) a hydraulic link assembly comprising a passive hydraulic link having a hydraulic fluid thickness through which said opening and closing forces are transmitted, whereby said hydraulic fluid acts substantially as a solid with said thickness being substantially constant while said actuator assembly is activated and wherein said thickness of said hydraulic link is adjustable while said actuator is not activated in response to changes in the dimensional relationship between components of said injection valve to maintain a desired valve needle lift upon activation of said actuator assembly.*

Ex. 1001, 17:2–43 (emphasis added).

*E. The Asserted Challenges*

| <b>Claims Challenged</b>       | <b>35 U.S.C. §</b> | <b>Basis</b>                               |
|--------------------------------|--------------------|--------------------------------------------|
| 1–3, 6, 11, 12, 14, 15, 18, 19 | 103(a)             | Wirbeleit, <sup>1</sup> Klügl <sup>2</sup> |
| 20                             | 103(a)             | Wirbeleit, Klügl, Newcomb <sup>3</sup>     |
| 1–3, 6, 11, 12, 14, 15, 18, 19 | 103(a)             | Klügl, Hayes <sup>4</sup>                  |
| 20                             | 103(a)             | Klügl, Hayes, Newcomb                      |

<sup>1</sup> US 5,479,902, issued Jan. 2, 1996 (Ex. 1004, “Wirbeleit”).

<sup>2</sup> Certified translation of DE 19708304 A1, published Feb. 28, 1997 (Ex. 1006, “Klügl”) and original German language version (Ex. 1005).

<sup>3</sup> US 4,284,263, issued Aug. 18, 1981 (Ex. 1014, “Newcomb”).

<sup>4</sup> US 5,779,149, issued July 14, 1998 (Ex. 1024, “Hayes”).

In support of these challenges, Bosch also submits the declaration of J. Matt Quinlan, Ph.D. Ex. 1003. Westport submits the declaration of Christopher Atkinson, Ph.D. Ex. 2004.

### III. ANALYSIS

#### *A. Level of Ordinary Skill in the Art*

Bosch contends that one skilled in the art “would have had a degree in mechanical engineering or a similar discipline, along with 2 years of professional experience working with the design and development of fuel injection systems for internal combustion engines or an equivalent level of skill, knowledge, and experience” and “would be aware of and generally knowledgeable about how fuel injector valves are structured and operate, and how they are used to deliver fuel to an engine’s combustion chambers.” Pet. 23 (citing Ex. 1003 ¶¶ 37–41).

Westport does not dispute Bosch’s proposed definition of the level of skill in the art, similarly proposing that one skilled in the art “would have had a degree in mechanical engineering or a similar discipline along with two (2) years of professional experience working with fuel injectors or fuel injection systems for internal combustion engines.” Prelim. Resp. 18 (citing Ex. 2004 ¶ 14). For purposes of deciding institution, we adopt Bosch’s proposed definition of the level of skill in the art as reasonable and consistent with the prior art.

#### *B. Claim Construction*

“In an *inter partes* review proceeding, a claim of a patent . . . shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b).” 37 C.F.R. § 42.100(b). That standard “includ[es] construing the claim in accordance

with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” *Id.*; *see also Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc).

Bosch contends that “the terms of the ’829 patent’s claims do not require further construction and can be afforded their plain and ordinary meaning.” Pet. 15. Westport asserts that, “[f]or the purposes of this preliminary response, [it] does not seek construction of any term.” Prelim. Resp. 19.

On this record, we do not perceive the need to expressly construe any claim term in order to determine whether to institute *inter partes* review. *See Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”).

### *C. Overview of the Asserted Prior Art*

#### *1. Summary of Wirbeleit (Ex. 1004)*

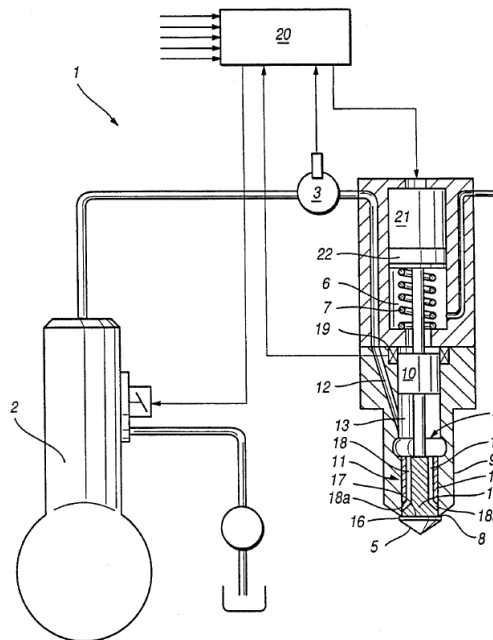
Wirbeleit is titled “Fuel Injection System for a Diesel Engine.” Ex. 1004, code (54). Wirbeleit “relates to a fuel injection system for a Diesel engine which includes a high pressure fuel pump supplying fuel under pressure to a common-rail fuel supply conduit which is in communication with valve-controlled injectors for the injection of fuel under the control of an electronic control unit.” *Id.* at 1:7–12. In particular, Wirbeleit describes

fuel injectors having fuel injection control needles engaged by springs so as to be normally seated on a valve seat and a control needle actuator for lifting the control needle off the valve seat under the control of an electronic control unit, the needle includes a cylindrical needle body movable within a cylinder and has slot-shaped orifices formed in its outer surface which are

fully covered when the control needle is seated but which are exposed to a degree controllable by the needle actuator for adjustment of the orifice sizes depending on engine operating parameters.

*Id.* at 1:45–58.

Wirbeleit's sole figure (unnumbered) is reproduced below.



The figure of Wirbeleit depicts a fuel injection system including a fuel injector shown in a cross-sectional view. *Id.* at 2:21–22. The injector includes injector orifice control needle 5 forced onto valve seat 8 of injector body 9 via return spring 7 in spring chamber 6, but injector orifice control needle 6, but injector orifice control needle 5 is outwardly-movable to open slot orifice 4. *Id.* at 2:31–35. Orifice control needle 5 includes pressure compensation piston 10 that, along with needle tip 11, delimits pressure chamber 13, which is in communication with common supply conduit 3 via fuel admission passage 12. *Id.* at 2:35–39. Magnetostrictive actuator 21, under control of control unit 20, operates orifice control needle 5 via hydraulic transmission element 22 at the end of the control needle opposite tip 11. *Id.* at 2:60–64.

2. *Summary of Klügl (Exs. 1005 and 1006)*

Klügl is titled “Device for transmitting a motion and an injector with a device for transmitting a motion.” Ex. 1006, code (54). Klügl discloses “[a] power transmission device . . . used, for example, in automotive engineering to transmit the movement of a piezoelectric actuator in an injection valve to a control element, the control element opening a servo valve, for example, which in turn controls the opening and closing of an injection valve.” *Id.* at 2:7–12. Figure 1 of Klügl is reproduced below.

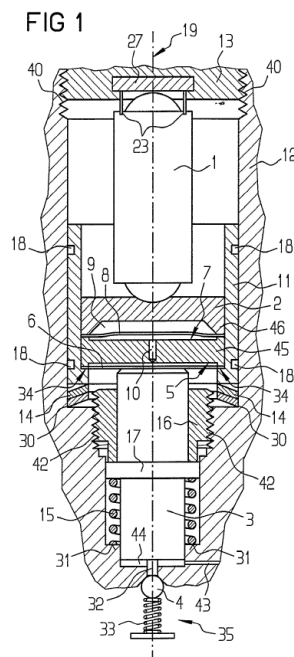


Figure 1 of Klügl depicts an injection valve including housing 12 and piezoelectric actuator 1, which is arranged between upper stop 13 and transmission module 2. *Id.* at 1:47–51. Transmission module 2 is essentially cylindrical and includes pressure chamber 5, which is at least partially filled with hydraulic fluid and is delimited by first membrane 6. *Id.* at 1:60–62; 1:68–2:2. Connecting bore 10, which has a throttling effect, connects pressure chamber 5 to compensation chamber 7. *Id.* at 1:62–66. Drive piston 3 is biased against lower stop 16 and merges into control needle

32, which extends through relief chamber 34 to valve seat 35. *Id.* at 2:35–36, 50–52. Ball (or closing element) 4 presses against valve seat 35 by valve spring 33. *Id.* at 2:54–55. Actuating piezoelectric actuator 1 presses transmission module 2 against the spring force of the disk spring 14 and exerts pressure on drive piston 3 via first membrane 6, which exercises the hydraulic fluid in pressure chamber 5. *Id.* at 3:23–29. The hydraulic fluid moves drive piston 3 against the force of tension spring 15, and control needle 32 lifts ball 4 off valve seat 35. *Id.* at 3:30–33.

3. *Summary of Newcomb (Ex. 1014)*

Newcomb is titled “Temperature-Compensated Control Valve.” Ex. 1014, code (54). Newcomb “relates to a control valve such as a servovalve or fuel injection valve for controlling flow of a medium.” *Id.* at 1:5–7. Newcomb describes that the object of the invention is to provide a control valve with a construction that reduces the effects of thermal expansion. *Id.* at 1:45–49; *see also id.* at 1:31–38 (describing that piezoelectric valves have a small stroke and that it is essential to minimize thermal expansion of valve parts so that valve flow varies only slightly with ambient temperature changes). Newcomb discloses a control valve in which “part of the actuating member consists of a spacer or distance piece of a different non-piezoelectric material having such a coefficient of thermal expansion that with temperature variations the linear expansion of the actuating element and distance piece together is equal to that of the housing.” *Id.* at 1:51–56. Newcomb explains that using a valve body material with a similar thermal expansion coefficient to the piezoelectric actuator “minimize[s] variations of valve opening with temperature.” *Id.* at 2:10–11.

4. *Summary of Hayes (Ex. 1024)*

Hayes is titled “Piezoelectric Controlled Common Rail Injector with Hydraulic Amplification of Piezoelectric Stroke.” Ex. 1024, code (54). Hayes relates to piezoelectric actuators for controlling a common rail injector. *Id.* at 1:8–10. Hayes discloses “a piezo actuated fuel injector comprising a[] hydraulic amplifier to increase the stroke of the piezo stack and a 2/2 poppet valve with the return spring on the top side of the valve.” *Id.* at 1:54–57. Figure 1 of Hayes is reproduced below.

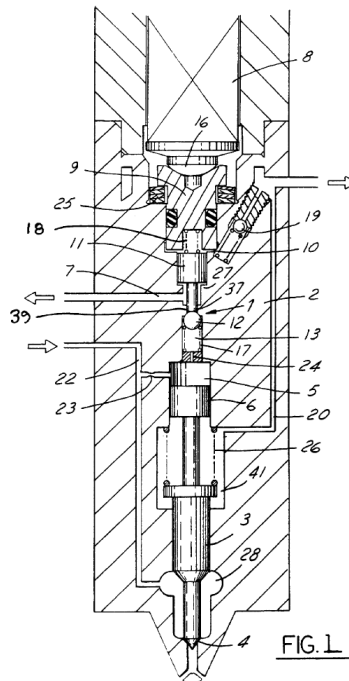


Figure 1 depicts an injector including body 2, piezoelectric actuator 8, a hydraulic stroke amplifier with pistons 9 and 11, hydraulic chamber 10 filled with low-pressure fuel, control valve 1, control chamber 5, and power piston 6 mechanically connected to injection valve needle 3. *Id.* at 2:6–15, 50–51. Feeding line 22 feeds high-pressure fuel to injection pressure chamber 28 and is connected to control chamber 5 via flow restrictor 23. *Id.* at 2:45–49. In operation, energizing piezoelectric actuator 8 opens sealing

component 12 of control valve 1, which lowers the pressure in control chamber 5 against power piston 6, which causes valve needle 3 to lift away from seat 4 and open a passage for high pressure fuel to be injected into a combustion chamber. *Id.* at 3:25–63.

*D. Obviousness Challenge Based on Wirbeleit and Klügl*

Bosch asserts that claims 1–3, 6, 11, 12, 14, 15, 18, and 19 are unpatentable as obvious over the combined teachings of Wirbeleit and Klügl. Pet. 24 (citing Ex. 1003 ¶¶ 142–144). In challenging claim 1, Bosch explains that Wirbeleit teaches essentially all the limitations of claim 1, including a “hydraulic link” (Wirbeleit’s element 22), but admits that Wirbeleit lacks teaching the specific details of the hydraulic link as recited in limitation (e) of claim 1. *Id.* at 34–35, 38 (citing Ex. 1004, 2:64).

Notably, limitation (e) of claim 1 recites:

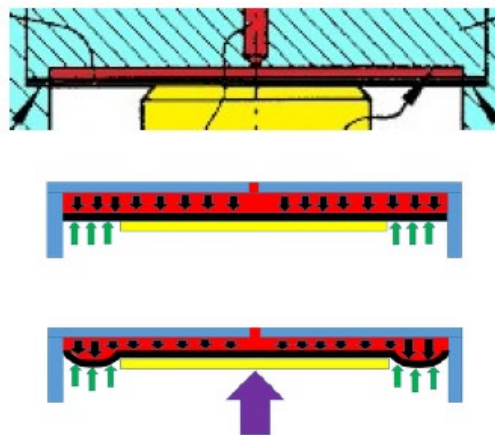
*a hydraulic link assembly comprising a passive hydraulic link having a hydraulic fluid thickness through which said opening and closing forces are transmitted, whereby said hydraulic fluid acts substantially as a solid with said thickness being substantially constant while said actuator assembly is actuated and wherein said thickness of said hydraulic link is adjustable while said actuator assembly is not actuated in response to changes in the dimensional relationship between components of said injection valve to maintain a desired valve lift upon actuation of said actuator assembly.*

*Id.* at 17:42–53 (emphases added).

For teaching the specific details as claimed, Bosch relies on Klügl and contends that it teaches a hydraulic link that is “passive, “acts substantially as a solid with said thickness being substantially constant while said actuator assembly is activated,” and is “adjustable while said actuator is not

activated.” Pet. 38–40. Bosch also provides a reason to combine the respective teachings of Wirbeleit and Klügl. *Id.* at 47–53.

In response, Westport argues that Klügl does not teach a hydraulic fluid that acts substantially as a solid with a thickness being substantially constant while the actuator assembly is activated. Prelim. Resp. 21, 28–29. This is because “Klügl does not include the words ‘solid’ or ‘thickness’ and teaches a system that transmits movement using a chamber of fluid maintained at a constant pressure behind a flexible membrane so that the membrane can deform to adjust for dimensional changes.” *Id.* at 29 (citing Ex. 2004 ¶ 50). To explain, Westport provides a series of annotated figures, reproduced below, focusing on the operation of the hydraulic link depicted in Klügl’s Figure 1. *See id.* at 30–31.



Westport’s annotated figures illustrate the deformation of Klügl’s membrane 6 (in black) during actuation. *See id.* More specifically, Westport contends that Klügl’s member 6 will deform inward where it contacts the drive piston (yellow) and bulge outward into the annular area between the drive piston and sleeve 11 (blue) when a force (purple arrow) is applied. *Id.* (citing Ex. 2004 ¶¶ 48–50).

Based on our review of Klügl, we agree with Westport's position.

Klügl teaches that when actuated,

piezoelectric actuator 1 presses the entire transmission module 2 against the spring force of the disk spring 14 in the direction of the drive piston 3, *so that pressure is exerted on the drive piston 3 via the first membrane 6* and the transmission medium located in the pressure chamber 5 is exercised.

Ex. 1006, 3:12–29 (emphasis added). In this regard, we agree with Westover that Klügl's actuator assembly teaches a system that transmits movement using a chamber of fluid maintained at a constant pressure behind a membrane. *See* Prelim. Resp. 29. As such, whether the fluid in Klügl's actuator assembly acts “substantially as a solid with a thickness being substantially constant while the actuator assembly is activated” depends also on how actuation affects the membrane.

Bosch acknowledges that “chamber [5] is defined and sealed by a membrane 6.” Pet. 21 (citing Ex. 1006, 3:23–33). However, Bosch does not address membrane 6 in its discussion of claim 1(e). *See* Pet. 34–40. And Bosch's citations to the testimony of its expert are not helpful in this regard. *See* Ex. 1003 ¶¶ 207–215, 218–222. For example, Bosch's expert testifies that

In the embodiment shown in Klügl's Figure 1, the movement of the actuator results in the same amount of movement of the piston without amplification. In other words, there is no change in the “stroke translation.” (*Id.*, Fig. 1; 1:41–42, 3:23–29.) *As the fluid in chamber 5 is held in place by a membrane 6 and moves through a cylindrical space of constant width and unchanging shape, the thickness of the fluid in chamber 5 will remain constant throughout actuation.* (*See id.*).

*Id.* ¶ 208 (emphasis added). But, Bosch's expert's citations to Klügl do not support these conclusions. Neither Figure 1 nor the cited passage in Klügl's

column 1 teaches that the fluid in chamber 5 moves through a cylindrical space of “constant width” and “unchanging shape,” or that the fluid maintains a constant thickness throughout actuation. *See* Ex. 1006, Fig. 1, 1:41–42, 3:23–29. Likewise, the cited passage from Klügl’s column 3 teaches that “pressure is exerted on the drive piston 3 via the first membrane 6[.]” *See id.* at 3:23–29. Absent from these cited passages is any mention of constant width, unchanging shape, or fluid thickness. If anything, the cited passage from Klügl’s column 3 supports that the exertion of pressure on drive piston 3 leads to flexing of membrane 6.

Bosch’s expert further testifies that “[t]he fluid is unable to leave chamber 5 during actuation (it cannot flow through throttle 10 and is held in place by a membrane 6).” Ex. 1002 ¶ 212. While that may be so, neither Bosch nor its expert explains how membrane 6 maintains the constant dimensions of the purported cylindrical space, i.e., constant width, unchanging shape, and constant fluid thickness. *See id.* ¶¶ 208, 222. Rather, the conclusions of Bosch and its expert are unsupported by the cited passages in Klügl and the reference as whole.

In contrast, Westport’s expert explains that “membrane [6] will tend to deform inward where it contacts the drive piston and bulge outward where unconstrained in the annular area between the edge of the drive piston and the wall of the transmission module in order to accommodate the volume of the fluid contained therein.” Ex. 2004 ¶ 52. Said another way, Westport’s expert considers that only a portion of membrane 6 bears against drive piston 6, while the remaining portion is left “unconstrained.” *Id.* ¶ 51. As a result, the unconstrained portion of membrane 6 will experience pressure from the fluid within pressure chamber 5, but will not contact piston 3. *Id.*

The testimony of Westport’s expert’s is consistent and better supported by the disclosure of Klügl while the testimony of Bosch’s expert is incomplete and does not fully account for how membrane 6 functions in Klügl’s actuator assembly. *See* Ex. 1003 ¶¶ 207–215, 218–222. Moreover, the Petition itself does not explicitly discuss Klügl’s membrane 6 with regard to claim 1(e). *See* Pet. 34–40. For these reasons, we find that Bosch’s arguments are incomplete and insufficiently developed to support its obviousness contentions for independent claim 1.

Bosch’s contentions for dependent claims 2, 3, 6, 11, 12, 14, 15, 18, and 19 relies on the same flawed analysis discussed above with respect to claim 1. Pet. 40–46. Thus, we determine that Bosch has not demonstrated a reasonable likelihood that the subject matter of independent claim 1 and dependent claims 2, 3, 6, 11, 12, 14, 15, 18, and 19 would have been obvious over the combined teachings of Wirbeleit and Klügl.

*E. Obviousness Challenge Based on Wirbeleit, Klügl, and Newcomb*

Bosch asserts that claim 20 is unpatentable under 35 U.S.C. § 103(a) as obvious over Wirbeleit, Klügl, and Newcomb. Pet. 53–55. Claim 20 depends from claim 1. Bosch’s contentions regarding claim 20 rely on the same deficient analysis discussed above with respect to claim 1. *See id.* at 53 (“Wirbeleit and Klügl teach everything claim 1 requires.”). Thus, we determine that Bosch has not established a reasonable likelihood that it would prevail in showing that the subject matter of claim 20 would have been obvious over the combination of Wirbeleit, Klügl, and Newcomb.

*F. Obviousness Challenge Based on Klügl and Hayes*

Bosch asserts that claims 1–3, 6, 11, 12, 14, 15, 18, and 19 are unpatentable under 35 U.S.C. § 103(a) as obvious over Klügl and Hayes.

Pet. 55–73. Bosch’s challenge of these claims relies on the same deficient analysis discussed above with respect to Klügl. *See id.* at 73 (“Klügl teaches the claimed ‘*hydraulic link*’ for the same reasons explained above in Section VII.C.1.a.[1(e)] . . .”). Thus, we determine that Bosch has not established a reasonable likelihood that it would prevail in showing that the subject matter of claims 1–3, 6, 11, 12, 14, 15, 18, and 19 would have been obvious over the combined teachings of Klügl and Hayes.

*G. Obviousness Challenge Based on Klügl, Hayes, and Newcomb*

Bosch asserts that claim 20 is unpatentable under 35 U.S.C. § 103(a) as obvious over Klügl, Hayes, and Newcomb. Pet. 73–74. Bosch’s contentions regarding claim 20 rely on the same deficient analysis discussed above regarding Klügl. *See id.* Thus, we determine that Bosch has not established a reasonable likelihood that it would prevail in showing that the subject matter of claim 20 would have been obvious over the combination of Klügl, Hayes, and Newcomb.

#### IV. CONCLUSION

For the foregoing reasons, we deny institution of *inter partes* review of the ’829 patent.

#### V. ORDER

It is hereby:

ORDERED that the Petition is denied as to all challenged claims, and no *inter partes* review is instituted.

IPR2023-00292  
Patent 6,298,829 B1

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