

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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BLASTERS, INC,  
Petitioner,

v.

WATERBLASTING, LLC,  
Patent Owner.

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Case IPR2018-00504  
Patent 7,255,116 B2

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Before JEFFREY W. ABRAHAM, MICHAEL L. WOODS and  
JOHN R. KENNY, *Administrative Patent Judges*.

KENNY, *Administrative Patent Judge*.

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

## I. INTRODUCTION

Blasters, Inc. (“Petitioner”) filed a Petition (Paper 1, “Pet.”), requesting an *inter partes* review of claims 1–6 and 10 (“challenged claims”) of U.S. Patent No. 7,255,116 B2 (Ex. 1001, “the ’116 patent”). Waterblasting, LLC (“Patent Owner”) filed a Preliminary Response (Paper 5, “Prelim. Resp.”). We have authority under 35 U.S.C. § 314 to institute an *inter partes* review if “there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.”

Having considered the arguments and evidence presented in and with the Petition and the Preliminary Response, we determine Petitioner demonstrates a reasonable likelihood that it would prevail in showing the unpatentability of the challenged claims. Accordingly, we institute an *inter partes* review of the challenged claims based on all grounds asserted in the Petition. *SAS Inst., Inc., v. Iancu*, 138 S. Ct. 1348, 1352–53 (2018) (holding a decision to institute under 35 U.S.C. § 314 may not institute on less than all claims challenged in the petition).

## II. BACKGROUND

### A. *Related Proceeding*

The parties indicate that the ’116 patent is at issue in *Waterblasting, LLC v. Blasters, Inc.*, Case No.: 8:17-cv-02660-CEH-MAP (M.D. Fla). Pet. 8; Paper 4, 2.

### B. *Overview of the ’116 Patent (Ex. 1001)*

The ’116 patent is directed to high pressure water cleaning devices for highways, runways, parking decks, and other hard surfaces. Ex. 1001, 1:5–7. The ’116 patent explains that paint, when used for roadway marking,

penetrates into the pavement so mere surface removal does not sufficiently remove it. *Id.* at 1:25–29. According to the '116 patent, paint can be removed by using abrasive wheels or teeth, but these techniques can melt thermoplastic materials, causing equipment to gum up. *Id.* at 1:29–33. The '116 patent discloses, instead, removing paint from a hard surface using a high pressure liquid. *Id.* at 2:23–24.

Figure 1 of the '116 patent is shown below:

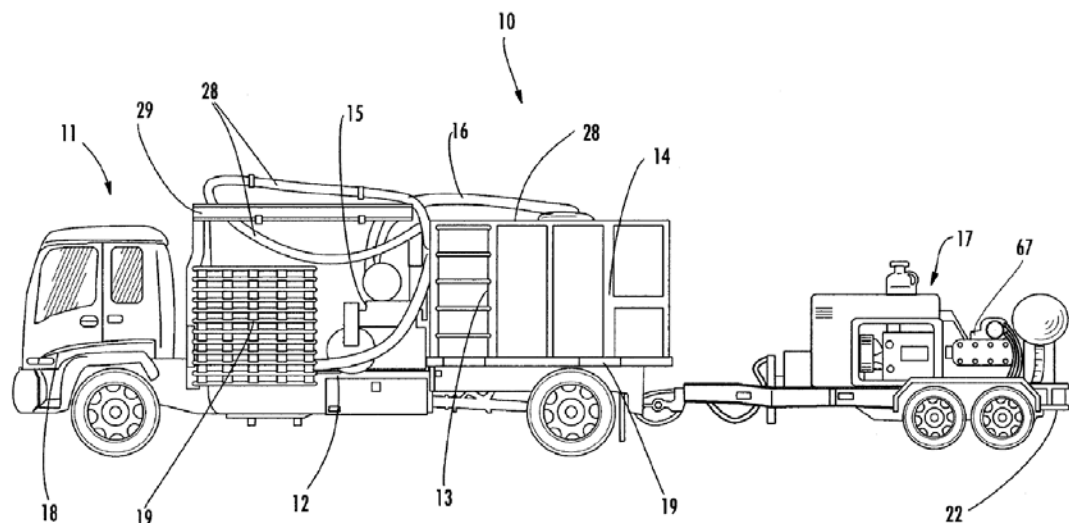
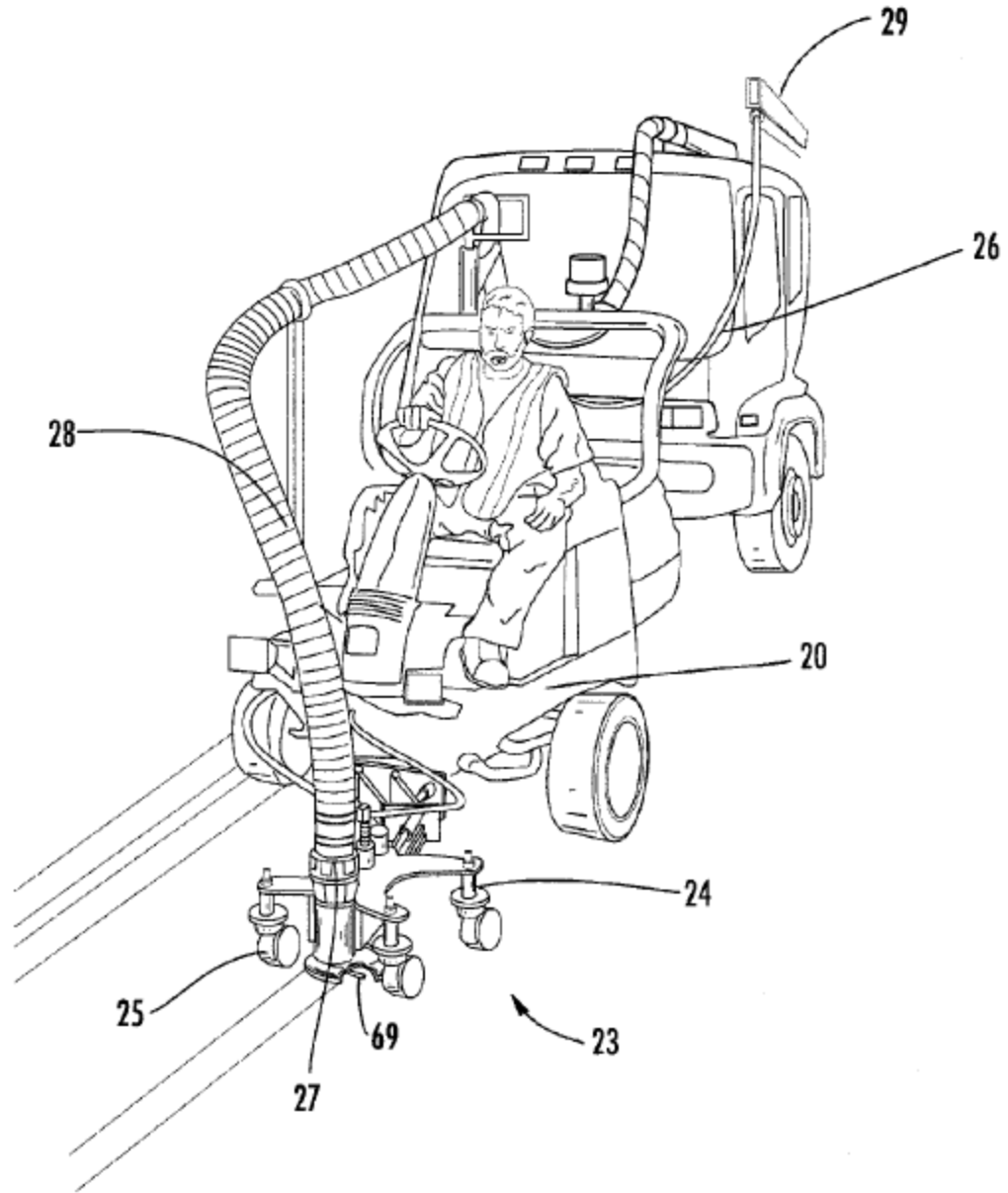


FIG. 1

Figure 1 is a side view of stripe removal system 10 of the '116 patent. Ex. 1001, 3:21–22. Stripe removal system 10 includes truck 11 and trailer 17. *Id.* at 3:33–34. Truck 11 includes swinging boom 29, vacuum hose 28, vacuum pump 15, hose 16, sump 14, liquid reservoir 13, bed 12, ramp 19, and cab-over 18. *Id.* at 3:33–4:10. The vacuum tank is capable of pumping approximately 1100 cubic feet per minute. *Id.* at 3:46–48. Trailer 17 includes water blasting pump 67, trailer bed 22, and a pump that delivers fluid at a pressure greater than 25,000–40,000 psi (pounds per square inch) and at a rate of 2–15 gallons per minute. *Id.* at 3:57–60, 4:57–61.

Figure 2 of the '116 patent is shown below:



**FIG. 2**

Figure 2 is a perspective of stripe removal system 10 with blast head 23 deployed. Ex. 1001, 3:21–22. Blast head 23 has one to sixteen high pressure nozzles 69. System 10 in Figure 2 includes chassis 24, shroud 27, and castors 25. *Id.* at 3:65–4:10.

*C. Illustrative Claim*

As discussed, Petitioner challenges claims 1–6 and 10 of the '116 patent, of which claim 1 is independent and is reproduced below:<sup>1</sup>

1. [a] A cleaning system for removing coatings from a hard surface by high pressure liquid comprising in combination
  - [b] a liquid reservoir connected to a high pressure pump,
  - [c] said pump connected to a mobile blast head by a high pressure hose,
  - [d] said blast head having at least one high pressure nozzle for delivering high pressure liquid onto a hard surface,
  - [e] a waste removal hose connected at one end to said blast head and at the other end to a sump for collection of liquid and coating,
  - [f] said sump connected to said liquid reservoir,
  - [g] whereby liquid is pumped through said high pressure hose from said reservoir and exits said high pressure nozzle onto the hard surface for removing coatings therefrom,
  - [h] said liquid and coatings conveyed through said waste removal hose to said sump via a high power vacuum pump, said coatings collected in said sump,
  - [i] said liquid reservoir, said sump and said high power vacuum pump being mounted on a mobile frame,
  - [j] said mobile frame forming an integral part of a truck having a bed portion and a cab portion, said truck being self-propelled,

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<sup>1</sup> For ease of reading, we altered the formatting of claim 1 and added, in brackets, the labels that Petitioner assigned to the limitations of claim 1.

[k] said mobile blast head being mounted at a distal end of an articulating link, a proximal end of said articulating link secured to a tractor,

[l] said tractor including an engine for propulsion thereof,

[m] wherein said high pressure hose and said waste removal hose extend between said truck and said tractor and

[n] whereby said tractor is utilized to maneuver said blast head.

*Id.* at 6:35–59.

*D. Evidence Relied Upon by Petitioner*

Petitioner relies on the following references:<sup>2</sup>

Reference		Issue/Copyright Date	Exhibit
Jones	U.S. Patent No. 3,902,219	Sept. 2, 1975	Ex. 1002
Breither	U.S. Patent No. 3,011,206	Nov. 13, 1957	Ex. 1003
Herhold	U.S. Patent No. 6,889,914 B2	May 10, 2005 (filed Jan. 31, 2003)	Ex. 1004
Schrunk	U.S. Patent No. 5,494,393	Feb. 27, 1996	Ex. 1005
NLB	Water Jet Solutions for Removing Pavement Markings and Runway Rubber	Apr. 23, 1996	Ex. 1006
Clemons	U.S. Patent No. 6,381,801 B1	May 7, 2002	Ex. 1008

Petitioner also relies on declarations from Messrs. Boos and Butler Exs. 1009, 1016.

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<sup>2</sup> The '116 patent issued from an application that was filed on July 2, 2004. Ex. 1001, [22].

*E. Asserted Grounds*

Petitioner presents the following grounds of unpatentability based on 35 U.S.C. § 103(a):

Ground	Claims Challenged	References
1	1, 2, and 10	Jones, Breither, and NLB
2	3 and 4	Jones, Breither, NLB, and Herhold
3	5 and 6	Jones, Breither, NLB, Herhold, and Schrunk
4	1–4 and 10	Clemons and NLB
5	5–6	Clemons, NLB, and Schrunk

*F. Real Parties in Interest*

Petitioner identifies Blasters, Inc. as its real party in interest. Pet. 8. Patent Owner identifies Waterblasting LLC as its real party in interest. Paper 4, 2.

III. CLAIM CONSTRUCTION

*A. Law of Claim Construction*

In an *inter partes* review, claim terms in an unexpired patent are given their broadest reasonable interpretation in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b). Under this standard, we presume that a claim term carries its “ordinary and customary meaning,” which “is the meaning the term would have to a person of ordinary skill in the art in question” at the time of the invention. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007); *see also Trivascular, Inc. v. Samuels*, 812 F.3d 1056, 1062 (Fed. Cir. 2016) (“Under a broadest reasonable

interpretation, words of the claim must be given their plain meaning, unless such meaning is inconsistent with the specification and prosecution history.”). Any special definition for a claim term must be set forth in the specification with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). Finally, only terms which are in controversy need to be construed, and then only to the extent necessary to resolve the controversy. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017); *Vivid Techs., Inc. v. Am. Sci. & Eng’g. Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

### *B. Claim Construction Overview*

Petitioner proposes constructions for ten terms recited in the challenged claims. Pet. 13–17. Patent Owner disagrees with many of Petitioner’s proposed constructions, proposes alternative constructions, and argues that some terms do not require construction. Prelim. Resp. 3–13.

For purposes of this Decision, we find no terms require construction. As discussed below, many of the claim construction disputes between the parties relate only to alternative arguments by Petitioner that concern whether it could prove that the challenged claims are unpatentable without relying upon NLB. For this Decision, we do not need to address those alternative arguments because NLB is included in every asserted ground, and, as set forth below, we find Petitioner provides a sufficient basis for combining NLB with Petitioner’s other references. Therefore, we need not resolve the claim construction disputes between the parties that relate only to those alternative arguments. For the other claim construction disputes or proposed claim constructions, no party has established the pertinence of those disputes or proposed constructions to any patentability dispute.



It is possible, however, that some of the claim construction disputes or proposed constructions could become pertinent during the course of the trial in this proceeding. For that reason, we provide some guidance. First, if the parties wish to rely on dictionaries to support their proposed constructions, they should cite dictionaries that were published before the filing date of the '116 patent, and preferably the most recent version of that dictionary before that filing date (e.g., Petitioner has submitted no proof that Ex. 1010 is such a dictionary). The parties should also include publication information in the pertinent exhibit (e.g., Ex. 2007 should include the dictionary's copyright page). We may strike, disregard, or assign little or no weight to any dictionary excerpts that the parties do not establish as having been published before the filing date of the '116 patent, even if neither party objects to or moves to strike such evidence. Similarly, for other extrinsic evidence that the parties wish to rely upon, they should establish that evidence relied upon was published before the filing date of the '116 patent or provide a good explanation why we should nevertheless consider such evidence and on what basis we should consider that evidence (e.g., Patent Owner has not done this with Ex. 2003). We may strike, disregard, or assign little or no weight to any extrinsic evidence for which the parties do not do this, even if neither party objects to or moves to strike such evidence.

Below, we address the parties' specific claim construction arguments.

### *C. Construction of Specific Terms*

#### *1. "hard surface"*

Petitioner proposes construing "hard surface," recited in claims 1 and 4, as "any surface having rigidity sufficient to support the weight of a vehicle carrying the blast head." Pet. 13; Ex. 1009 ¶ 16. Patent Owner

disagrees with that proposed construction, but does not propose an alternative. Instead, Patent Owner contends that the term does not require construction. Prelim. Resp. 5–8.

For this Decision, we do not need to construe this term because its construction is not necessary to resolve any patentability dispute. For example, neither party has disputed that the pavement, roads, concrete, and asphalt described in NLB are “hard surfaces.” Ex. 1006, 2.

2. “*high pressure*”

Petitioner proposes construing “high pressure,” recited in claim 1, as “of or relating to pressures higher than normal, especially higher than atmospheric pressure.” Pet. 13; Ex. 1009 ¶ 18. Patent Owner proposes construing “high pressure” as “at least 25,000 psi.” Prelim. Resp. 6–7.

For purposes of this Decision, we do not need to construe this term because the parties’ claim construction dispute is relevant only to Petitioner’s alternative arguments that (i) the combination of Jones and Breither without NLB and (ii) Clemons without NLB disclose a high pressure liquid. Neither party disputes the pressure of 40,000 psi in NLB is “high pressure.” The parties’ patentability dispute concerns Jones’s pressure of 200 psi and Clemons’s pressure of 4000 psi, which satisfy Petitioner’s proposed construction, but not Patent Owner’s. Pet. 27; Prelim. Resp. 14–15, 23; Ex. 1002, 2:60–62; Ex. 1008, 6:12–17; Ex. 1009 ¶ 149; *see also* Ex. 1009 ¶ 67 (indicating that normal atmospheric pressure is approximately 14.7 psi).

To the extent the parties’ claim construction dispute become pertinent to the outcome of this trial, we note that Petitioner’s proposed construction is overly broad, as it appears to encompass tap water from a household faucet.

Also, to support its proposed construction, Petitioner relies on a general purpose dictionary definition that does not appear to be (i) particularly relevant to the disclosure of the '116 patent and (ii) published before the filing of the '116 patent. Pet. 13; Ex. 1010. On the other hand, the description of “a high pressure fluid pump greater than 25,000–40,000 psi” from the '116 patent’s specification does not appear to define “high pressure” as Patent Owner proposes, but rather appears to specify the particular pump utilized in that specification. Ex. 1001, 3:57–60. Although the applicant (during prosecution) distinguished a prior art reference with a pressure of between 1,500–5,000 psi as being “low pressure” rather than the claimed “high pressure” (*see* Ex. 2002, 110), Patent Owner has not explained why this argument supports a construction of “high pressure” as requiring “at least 25,000 psi.” Prelim. Resp. 7 (citing in part Ex. 2002, 110–114). Also, as discussed above, extrinsic evidence relied upon should be published before the filing date of the '116 patent or the party should provide a good explanation why we should nevertheless consider such evidence and on what basis we should consider that evidence. *See* Prelim. Resp. 6–8, nn.2–5; Exs. 2003–6. In view of this, the parties should consider whether additional explanation, alternative constructions, or evidence (in compliance with our rules) are warranted.

### 3. “blast head”

Petitioner proposes construing “blast head,” recited in claims 1 and 3–5, as “a mechanical component having one or more nozzles for ejecting a substance onto a surface.” Pet. 14. Patent Owner proposes construing “blast head” as “at least one and up to sixteen high pressure nozzles delivering high pressure fluid to the surface to be cleaned.” Prelim. Resp. 9.

For purposes of this Decision, we do not need to construe this term because the parties' claim construction dispute is relevant only to Petitioner's alternative arguments that (i) the combination of Jones and Breither without NLB and (ii) Clemons without NLB disclose a blast head. Neither party disputes that NLB's nozzle assembly with up to 16 nozzles that deliver water at a pressure of up to 40,000 psi is a blast head. Ex. 1006, 2, 4. As discussed in more detail below, the parties' patentability dispute concerns (i) Jones's sprayer means E with spray nozzles 42 that deliver water at a pressure of 200 psi and (ii) Clemons's deck with a plurality of nozzles that deliver water at a pressure of 4,000 psi. Pet. 30, 66; Prelim. Resp. 16, 23. These devices are blast heads under Petitioner's proposed construction, but not under Patent Owner's.

To the extent the parties' claim construction dispute pertinent to the outcome of this trial, we note that Petitioner's proposed construction is overly broad, for it does not appear to give any meaning to the word "blast"; whereas Patent Owner's proposed construction appears to read in a limitation from the specification (i.e., up to 16 nozzles). In view of this, the parties should consider whether additional explanation, alternative constructions, or evidence (in compliance with our rules) are warranted.

4. *"sump"*

Petitioner proposes construing "sump," recited in claims 1 and 2, as "a reservoir serving as a receptacle for liquid and substances removed from the surface." Pet. 15. Patent Owner proposes construing "sump" in accordance with its definition in the specification, but does not provide that purported definition. Prelim. Resp. 10–11.

For purposes of this Decision, we do not need to construe this term because neither party demonstrates any relevance of the term's construction to any patentability argument (e.g., neither party disputes that Breither and Clemons disclose sumps).

To the extent the parties' claim construction dispute becomes pertinent to the outcome of this trial, we note that Petitioner fails to explain sufficiently why, based on its submitted evidence, the construction of the term should include the phrase "removed from the surface" when that phrase is not part of Petitioner's cited dictionary definition. Pet. 15; Ex. 1011. Also, as discussed above, the parties should cite dictionaries published before the filing date of the '116 patent. Pet. 15; Ex. 1011. In addition, we note that Patent Owner fails to articulate adequately the '116 patent's purported definition for "sump." Prelim. Resp. 10–11. In view of this, the parties should consider whether additional explanation, alternative constructions, or evidence (in compliance with our rules) are warranted.

5. *"connected to"*

Petitioner proposes construing "connected to," recited in claims 1–3 and 6, as "directly or indirectly joined or linked together." Pet. 15. Patent Owner argues that term does not require construction. Prelim. Resp. 11.

For purposes of this Decision, we do not need to construe the term because neither party demonstrates any relevance of the term's construction to any patentability argument.

6. *"coatings"*

Petitioner proposes construing "coatings," recited in claim 1, as "a layer of any substance spread over a surface." Pet. 15–16. Patent Owner

suggests that “coatings” is synonymous with pavement markings. Prelim. Resp. 5–6.

For purposes of this Decision, we do not need to construe the term because the parties’ claim construction dispute is relevant only to Petitioner’s alternative arguments that (i) the combination of Jones and Breither without NLB and (ii) Clemons without NLB disclose coatings. Neither party disputes that NLB discloses the removal of coatings: NLB describes “completely remov[ing] coatings . . . .” Ex. 1006, 2. As discussed in detail below, the parties’ patentability dispute concerns Jones’s “oily fallout, soot, broken glass, and other hazardous materials” and what Petitioner describes as Clemons’s foreign matter. Ex. 1002, 1:9–11; Ex. 1009 ¶ 148. Under Petitioner’s construction, Jones’s oily fallout and soot and perhaps what Petitioner describes as Clemons’s foreign matter would be coatings. Under Patent Owner’s suggested construction, they would not.

To the extent the parties’ claim construction dispute becomes pertinent to the outcome of this trial, we note that Petitioner’s proposed construction of “a layer of any substance spread over a surface” appears to be an unduly broad construction, as it could encompass an evaporating layer of water. On the other hand, Patent Owner’s proposed construction of “pavement markings” appears to be too narrow because if the Applicants of the ’116 patent had wanted to limit the claimed invention to pavement markings, they presumably would have used the term, which appears in the specification, rather than the seemingly broader term “coatings.” Also, as discussed above, the parties should cite dictionaries that were published before the filing date of the ’116 patent. Pet. 15; Ex. 1013. The parties should also consider citing technical dictionaries or technical materials to

support the construction of this term (or any other term) as the definitions in Exhibit 1013 do not seem particularly pertinent to the technology at issue. In view of this, the parties should consider whether additional explanation, alternative constructions, or evidence (in compliance with our rules) are warranted.

7. *“high power vacuum pump”*

Petitioner proposes construing “high power vacuum pump,” recited in claims 1 and 2, as “a vacuum pump having a capability to remove liquid and substances from a surface.” Pet. 16. Patent Owner disagrees, proposes construing that term in accordance with its definition in the specification, but does not provide that purported definition. Prelim. Resp. 10–11.

For purposes of this Decision, we do not need to construe this term because the parties’ claim construction dispute is relevant only to Petitioner’s alternative argument that the combination of Jones and Breither without NLB discloses a high power vacuum pump. Neither party disputes that NLB’s vacuum, which has an intake of 1000 cfm, is a high power vacuum pump. Ex. 1006, 4. The parties’ patentability dispute concerns Jones’s vacuum pump B and Breither’s vacuum pump 22, which are high power vacuum pumps under Petitioner’s proposed construction, and presumably would not be under Patent Owner’s. Pet. 37–38; Ex. 1003, 2; Ex. 1009 ¶¶ 93–94.

To the extent the parties’ claim construction dispute becomes pertinent during the course of the trial, we note that Petitioner’s proposed construction of “a vacuum pump having a capability to remove liquid and substances from a surface” appears to be unduly broad as it could encompass a household vacuum cleaner. In addition, Patent Owner fails to articulate

adequately the '116 patent's purported definition for the term. In view of this, the parties should consider whether additional explanation, alternative constructions, or evidence (in compliance with our rules) are warranted.

8. *“mobile frame”*

Petitioner proposes construing “mobile frame,” recited in claim 1, as “a chassis” or “the base frame of a motor vehicle or other wheeled conveyance.” Pet. 17. Patent Owner proposes construing “mobile frame” as “something composed of parts fitted together and united that are capable of moving or being moved from one place to another.” Prelim. Resp. 11.

For purposes of this Decision, we do not need to construe this term because neither party demonstrates that its construction would be necessary for the resolution of any patentability dispute.

9. *“articulating link”*

Petitioner argues that “articulating link,” recited in claims 1 and 10, should be construed as “a connecting structure that connects two parts in such a way as to permit relative movement.” Pet. 17. Patent Owner argues there is no need to construe this term. Prelim. Resp. 13.

For purposes of this Decision, we do not need to construe this term because neither party demonstrates that its construction would be necessary for the resolution of any patentability dispute.

10. *“controlled movement”*

Petitioner argues that “controlled movement,” recited in claim 10, should be construed as movement in a predetermined path. Pet. 17. Patent Owner argues there is no need to construe this term. Prelim. Resp. 13.



For purposes of this Decision, we do not need to construe this term because neither party demonstrates that its construction would be necessary for the resolution of any patentability dispute.

To the extent that construction of this term becomes pertinent during the trial, we note that Petitioner has not explained why “controlled movement” would require movement in a predetermined path. In view of this, the parties should consider whether additional explanation, alternative constructions, or evidence (in compliance with our rules) are warranted.

#### IV. ALLEGED OBVIOUSNESS

##### *A. Principles of Law*

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are “such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) objective evidence of nonobviousness, i.e., secondary considerations.<sup>3</sup> *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). “To satisfy its burden of proving obviousness, a petitioner cannot employ mere conclusory statements. The petitioner must instead articulate specific reasoning, based on evidence of record, to support the legal

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<sup>3</sup> Patent Owner does not contend in its Preliminary Response that such secondary considerations are present.

conclusion of obviousness.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

*B. Level of Skill in the Art*

Petitioner’s declarant, Mr. Boos, proposes that a person of ordinary skill in the art with respect to the ’116 patent would have had (i) four to five years of experience working with surface cleaning devices and systems and/or a degree in mechanical engineering or an equivalent education and (ii) knowledge of known systems, services, and techniques used in the field, such as those described in the ’116 patent and the prior art references. Ex. 1009 ¶ 11. For purposes of this Decision, Patent Owner accepts this assessment. Prelim. Resp. 2. For purposes of this Decision, we also accept this assessment.

*C. Ground 1*

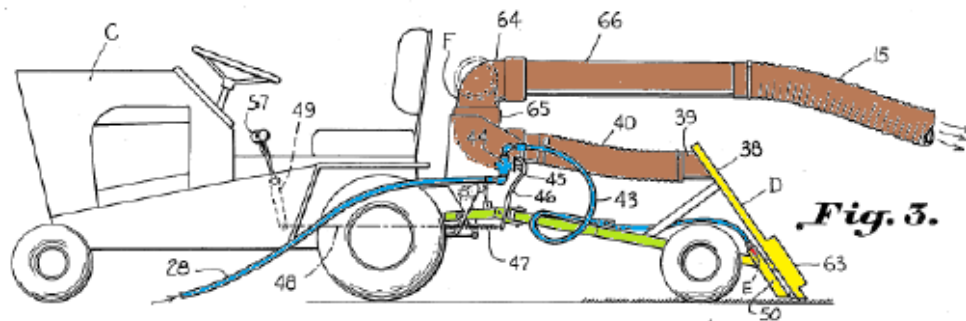
As discussed below, we determine Petitioner demonstrates a reasonable likelihood of establishing that claims 1, 2, and 10 are unpatentable under 35 U.S.C. § 103(a) as obvious over Jones, Breither, and NLB.

For this ground, Petitioner presents alternative arguments that (i) the claims are unpatentable over the combination of Jones, Breither, and NLB and (ii) the claims would also be unpatentable over just Jones and Breither. Pet. 26–47. Because we find Petitioner provides sufficient reasoning for combining Jones, Breither, and NLB, we address only Petitioner’s argument that the claims are unpatentable over the combination of all three references.

*1. Overview of Jones (Ex. 1002)*

Jones discloses a portable device for cleaning artificial turf. Ex. 1002, Abstr. In particular, Jones discloses that oily fallout, soot, broken glass, and

other hazardous materials collect on artificial turf. *Id.* at 1:7–11. To remove those materials, Jones discloses a water jet cleaning system with a service truck and a motorized utility cleaning vehicle. *Id.* at 1:53–64. Figure 3 of Jones, as annotated by Petitioner, is shown below:



Ex. 1009 ¶ 46.

Annotated Figure 3 is a side elevational view of the motorized utility cleaning vehicle of Jones. *Id.* at 1:45–46. As illustrated, the motorized utility cleaning vehicle contains cleaning head D, highlighted in yellow; hose 28, highlighted in blue; and pipe 39, vacuum hose 40, elbows 64 and 65, metallic tubular member 66, and vacuum hose 15, all of which are highlighted in brown. *Id.* ¶ 46. Figure 4 of Jones is reproduced below:

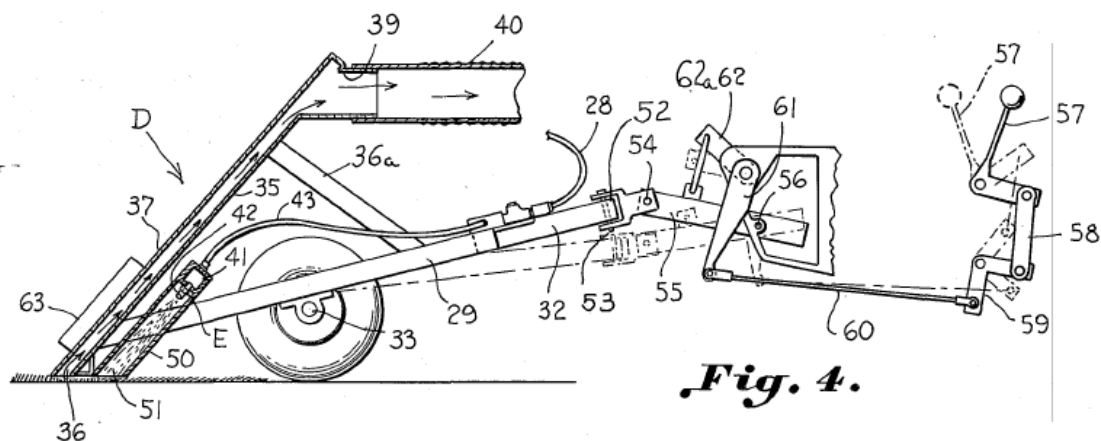
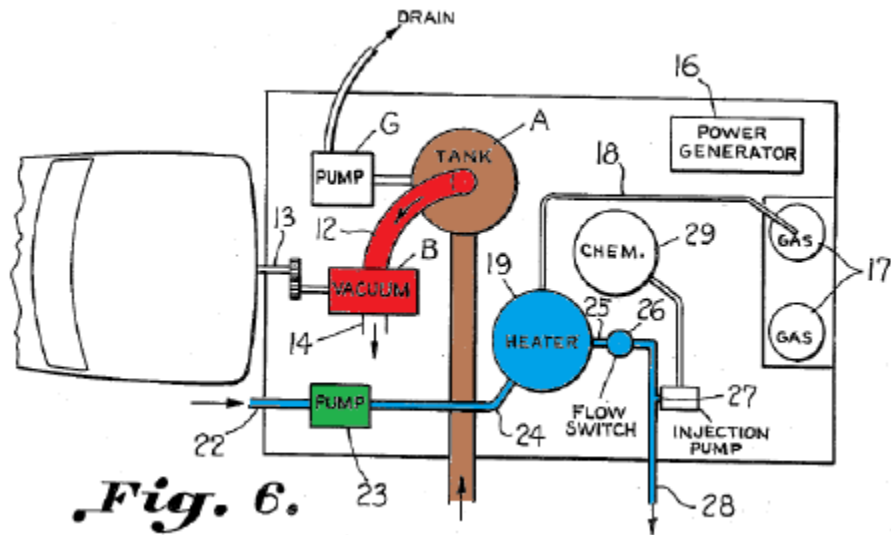


Figure 4 is an enlarged, side elevational view of a portion of the mobile utility cleaning vehicle with cleaning head D. Ex. 1002, 1:48–50.

As illustrated, cleaning head D includes sprayer means E, spray nozzles 42, and suction nozzle 36. *Id.* at 3:23–37.

Figure 6 of Jones, as annotated by Petitioner, is shown below:



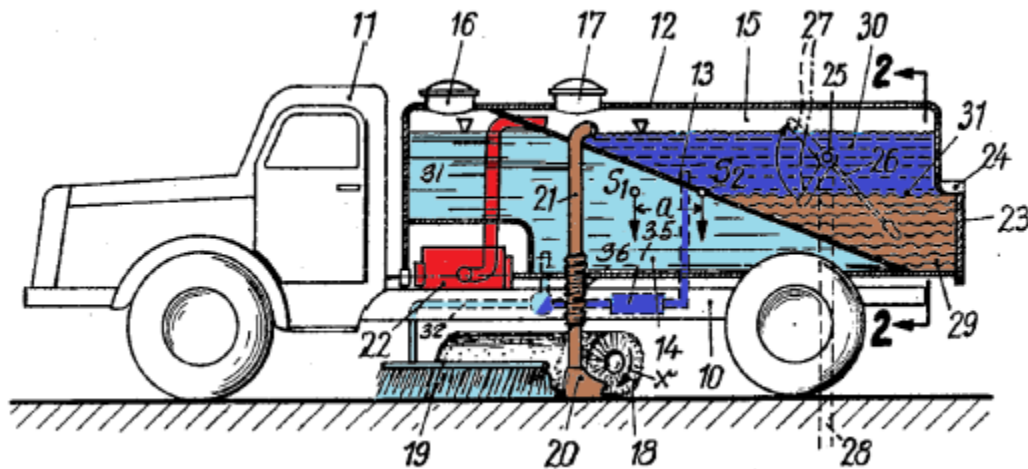
Ex. 1009 ¶ 47.

Annotated Figure 6 illustrates locations of various components on, and the flow of air and cleaning medium in, the service truck of Jones. *Id.*; Ex. 1002, 1:53–54. As illustrated, the service truck has tank A, highlighted in brown; vacuum B, highlighted in red; pump 23, highlighted in green; and heater 19, piping 25, flow control switch 26, and hose 28, all of which are highlighted in blue. Ex. 1009 ¶ 47; Ex. 1002, 2:57–62. Cold water is supplied to line 22, where pump 23 builds the water pressure to approximately 200 pounds per square inch. Ex. 1009 ¶ 47; Ex. 1002, 2:57–62.

## 2. Overview of Breither (Ex. 1003)

Breither discloses a vehicle for cleaning streets. Ex. 1003, 1:3.

Figure 1 of Breither, as annotated by Petitioner, is shown below:



Pet. 21.

Figure 1 is a side view of Breither's truck with chassis 10 and tank 12. Ex. 1003, 2:13–24. Tank 12 has partition 13, which divides front container 14, which contains fresh water and is highlighted in light blue, from rear container 15, which contains mud and is highlighted in brown and dark blue. Pet. 21; Ex. 1003, 2:21–35. Water is supplied from front container 13 to spraying device 19, which sprays water jets onto the road. *Id.* at 2:43–46. Pipe 31 connects vacuum pump 22, highlighted in red, to rear container 15. *Id.* at 2:56–60. The vacuum created by pump 22 extends to suction device 20 via pipe 21. *Id.*

### 3. Overview of NLB (Ex. 1006)

NLB is a brochure that describes two water jetting systems that deliver “ultra-high pressure” water (up to 40,000 psi) to remove pavement markings. Ex. 1006, 1–2. The StarJet system is designed for long-line jobs, whereas the StripeJet system is compact and is designed for short-line jobs, like parking decks and intersections. *Id.* NLB notes advantages of water jetting versus grinding to remove pavement markings. *Id.*

An image of the tractor for the StripeJet system is shown below:



Ex. 1006, 4.

The above image depicts the StripeJet vehicle and nozzle assembly.  
Ex. 1006, 4. The nozzle assembly has a rotating seal with up to 16 nozzles.  
*Id.*

*4. Petitioner’s Proposed Combination of Jones, Breither, and NLB*

Petitioner argues that an ordinarily skilled artisan would have been motivated to combine teachings from Jones, Breither, and NLB. Petitioner argues that the references are related in that each discloses a self-propelled cleaning system that removes foreign substances from a surface by spraying a liquid on the surface, uses a vacuum to remove the liquid and the foreign matter, and conveys them to a vacuum tank. Pet. 23.

According to Petitioner, Jones discloses that water for its cleaning system “is supplied . . . from any suitable source.” Pet. 24; Ex. 1002, 2:57–58. Petitioner asserts that an ordinarily skilled artisan would have been motivated to make Jones’s cleaning independent from an external water supply, increasing its portability. Pet. 24; Ex. 1009 ¶ 59. Petitioner contends that Breither discloses a solution for achieving this desired

independence: supplying water for a cleaning system from a liquid reservoir mounted on a truck. Pet. 24; Ex. 1003, 2:21–35. According to Petitioner, when making this modification, an ordinarily skilled artisan would follow Breither’s teachings of disposing a liquid reservoir and the mud reservoir in a single partitioned tank to maintain a consistent center of gravity and enable water collected in the mud reservoir to be used by the water reservoir. Pet. 24; Ex. 1003, 3:35–39, 67–72; Ex. 1009 ¶ 60. Petitioner argues an ordinarily skilled artisan would do so by replacing Jones’s vacuum tank with Breither’s partitioned tank and then coupling hoses of Jones’s cleaning system to the liquid reservoir and mud container portions of Breither’s tank. Pet. 25; Ex. 1009 ¶ 62. According to Petitioner, Breither’s mud container would function as a sump, and these modifications would be straightforward, would not require undue experimentation, and would produce predictable results. Pet. 25; Ex. 1009 ¶ 62.

Petitioner further argues that an ordinarily skilled artisan would have been further motivated to increase the power of the vacuum pump and pressure of the cleaning system achieved by the combination of Jones and Breither to expand its capabilities to a wider array of applications, in including applications described by NLB, like floor coating removal. Pet. 25; Ex. 1009 ¶ 63. According to Petitioner, an ordinarily skilled artisan would have been motivated to replace Jones’s vacuum pump, with NLB’s high power, 1,000 CFM vacuum pump and replace Jones’s water pump, and nozzles with NLB’s ultra-high-pressure water pump, water hose and nozzles, which are designed for pressures up to 40,000 psi. Pet. 26; Ex. 1009 ¶ 63. Petitioner argues that these modifications would be straightforward, would

not require undue experimentation, and would produce predictable results. Pet. 26; Ex. 1009 ¶ 63.

Patent Owner argues that Petitioner has not set forth an adequate basis for combining Jones, Breither, and NLB, but does not identify any specific flaws with Petitioner's reasoning. Prelim. Resp. 14–20.

For purposes of this Decision, we find Petitioner provides sufficient reasoning for its combination of Jones, Breither, and NLB.

### 5. Claim 1

Below we address the parties' arguments regarding whether the combination of Jones, Breither, and NLB teaches or suggests every limitation of claim 1.

*[a] A cleaning system for removing coatings from  
a hard surface by high pressure liquid<sup>4</sup>*

Petitioner relies on Jones, Breither, and NLB for the preamble recitations of claim 1. Pet. 26–28. Petitioner argues Jones, Breither, and NLB all disclose cleaning systems, and when combining Jones with Breither and NLB, an ordinarily skilled artisan would have been motivated to use NLB's ultra-high pressure water of up to 40,000 psi to remove coatings from a concrete floor. *Id.* at 23, 27–28; Ex. 1009 ¶ 58. Patent Owner does not address these arguments by Petitioner, other than disputing that an ordinarily skilled artisan would have combined NLB with Jones and Breither. Prelim. Resp. 14–15.

We find Petitioner provides a sufficient showing for the preamble of claim 1. As Petitioner notes, Jones, Breither, and NLB are directed to

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<sup>4</sup> Both parties treat the recitations in the preamble of claim 1 as limiting. For purposes of this Decision, we do as well.



cleaning systems. Pet. 23. Jones is titled “Artificial Turf Cleaner.” Ex. 1002, 1. Breither is titled “Vehicle for Cleaning Streets.” Ex. 1003, 1. NLB describes heads “for cleaning paths” where the cleaning leaves “the concrete clean at every level.” Ex. 1006, 4. And NLB discloses “completely remov[ing] coatings” while “leav[ing] concrete and asphalt undamaged.” *Id.* at 2. The ’116 patent itself indicates that “highways, runways, and parking decks” are hard surfaces and notes that “[c]ommon pavement surfaces are asphalt and concrete.” Ex. 1001, 1:5–8, 15–16. NLB discloses the use of ultra-high pressure water of up to 40,000 psi, which neither party disputes is a high pressure liquid. Ex. 1006, 2.

*[b] a liquid reservoir connected to a high pressure pump*

Petitioner relies on Jones, Breither, and NLB for limitation (b). Pet. 28–29. Petitioner argues that, in Jones, pressure boosting pump 23 is connected to a water supply. *Id.* at 28. Petitioner further argues that an ordinarily skilled artisan would have been motivated to add Breither’s tank 12 with its freshwater container 14 to Jones’s truck and connect that freshwater container to pump 23. Pet. 28–29; Ex. 1009 ¶¶ 71–72. According to Petitioner, an ordinarily skilled artisan also would have been motivated to replace Jones’s pump with NLB’s ultra-high pressure pump to clean surfaces with varying levels of debris. Pet. 29; Ex. 1009 ¶¶ 74–75. Patent Owner does not present any counterargument, other than arguing that Petitioner has not set forth a sufficient basis for combining the teachings of NLB with those of Jones and Breither. Prelim. Resp. 15.

We find Petitioner provides a sufficient showing for limitation (b). As discussed above, we find Petitioner provides sufficient reasoning for combining Breither’s freshwater container 14, NLB’s ultra-high pressure

pump, and Jones's truck. Fresh-water container 14 is a liquid reservoir, and neither party disputes that NLB's ultra-high pressure pump, which provides water pressure of up to 40,000 psi, is a high pressure pump.

*[c] said pump connected to a mobile blast head  
by a high pressure hose*

Petitioner relies on Jones and NLB for limitation (c). Pet. 30–31. Petitioner argues that, in Jones, hose 28 connects pump 23 to the cleaning head D, which has sprayer means E with nozzle 42. *Id.* at 30–32. Petitioner further argues an ordinarily skilled artisan would have been motivated (i) to replace hose 28 with the hose in NLB for water at 40,000 psi and (ii) to replace nozzles 42 with the nozzles designed for ultra-high pressure fluids in NLB. *Id.* Patent Owner does not present any counterargument, other than arguing that Petitioner has not set forth a sufficient basis for combining the teachings of NLB with those of Jones and Breither. Prelim. Resp. 16.

We find Petitioner provides a sufficient showing for limitation (c). As discussed above, Petitioner provides sufficient reasoning for combining NLB's ultra-high pressure hose and ultra-high pressure nozzles with Jones's cleaning head. Further, neither party disputes that NLB's ultra-high pressure hose and nozzles are for high pressure. And neither party disputes that Jones's sprayer means with NLB's ultra-high pressure nozzles constitutes a blast head.

*[d] said blast head having at least one high pressure nozzle for  
delivering high pressure liquid onto a hard surface*

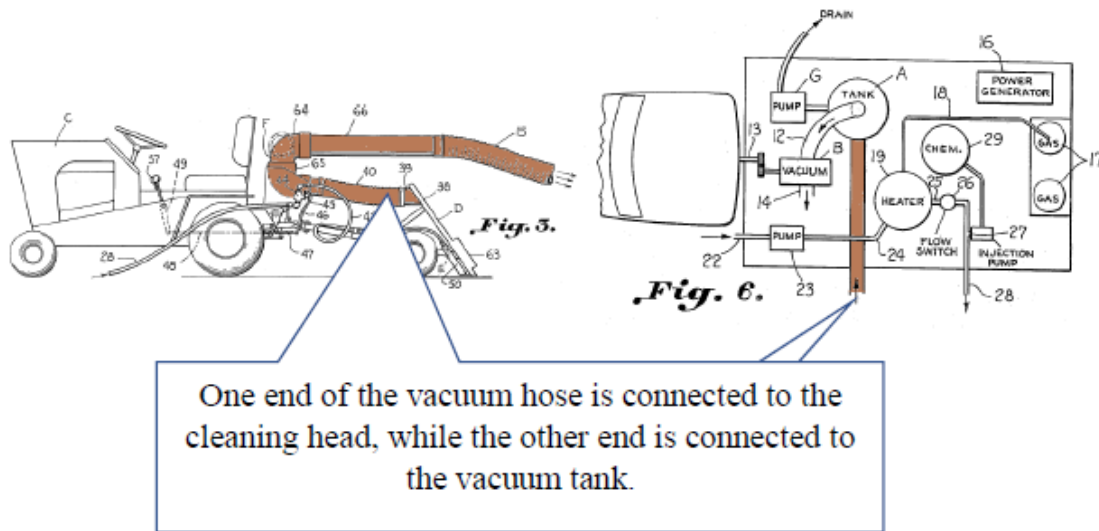
Petitioner relies on Jones and NLB for limitation (d). Pet. 31–32. As discussed above, Petitioner argues an ordinarily skilled artisan would have been motivated to replace nozzles 42 in Jones with the ultra-high pressure nozzles in NLB. Petitioner further argues that the resulting sprayer

means would be a blast head having at least one high pressure nozzle for delivering high pressure liquid on a hard surface. *Id.* at 31–32. Petitioner also argues that Jones’s artificial turf is a hard surface. *Id.* at 27. Patent Owner does not present any counterargument, other than arguing that Petitioner has not set forth a sufficient basis for combining the teachings of NLB with those of Jones and Breither. Prelim. Resp. 16.

We find Petitioner provides a sufficient showing for limitation (d). As discussed above, no party disputes that the cleaning head that results from the combination of Jones’s spray means with NLB’s high pressure nozzles is a blast head having at least one high pressure nozzle for delivering high pressure liquid. And neither party disputes that Jones’s artificial turf or the surfaces described in NLB are hard surfaces.

*[e] a waste removal hose connected at one end to said blast head and at the other end to a sump for collection of liquid and coating*

Petitioner relies primarily on Jones and Breither for limitation (e). Pet. 32–33. (As discussed above, Petitioner also relies on NLB for the said blast head having a high pressure nozzle and a coating.) Petitioner argues that, in Jones, vacuum hose 15 extends from the bottom of tank A to cleaning head D, quoting Jones’s disclosure that “[c]ommunicating with the bottom of the tank A is an elongated vacuum hose 15 which extends to the cleaning head D carried by the motorized vehicle C.” Pet. 33; Ex. 1002 2:41–43. Copies of Figures 3 and 6 of Jones, as annotated by Petitioner to highlight hose 15, are shown below:



Pet. 33.

The above figures are annotated copies of Figures 3 and 6 of Jones, where hose 15 is highlighted in brown. The brown highlighting and the text from Jones quoted by Petitioner indicate that hose 15 extends to cleaning head D. As depicted, however, hose 15 appears to attach to metallic tubular member 66, which attaches to elbow 64, which attaches to lower elbow 65, which attaches to flexible vacuum hose 40, which attaches to pipe 39, which attaches to cleaning head D. Therefore, Jones apparently describes both extending hose 15 from tank A to cleaning head D as well as to just metallic tubular member 66.

Mr. Boos indicates that hose 15 is a waste removal hose because it provides the foreign matter and liquid removed from the surface Jones is cleaning (e.g., artificial turf) to vacuum tank A. Ex. 1009 ¶ 83. (Jones describes tank A as receiving “the spent cleaning solution collected from the field being cleaned.” Ex. 1002, 2:28–30.)

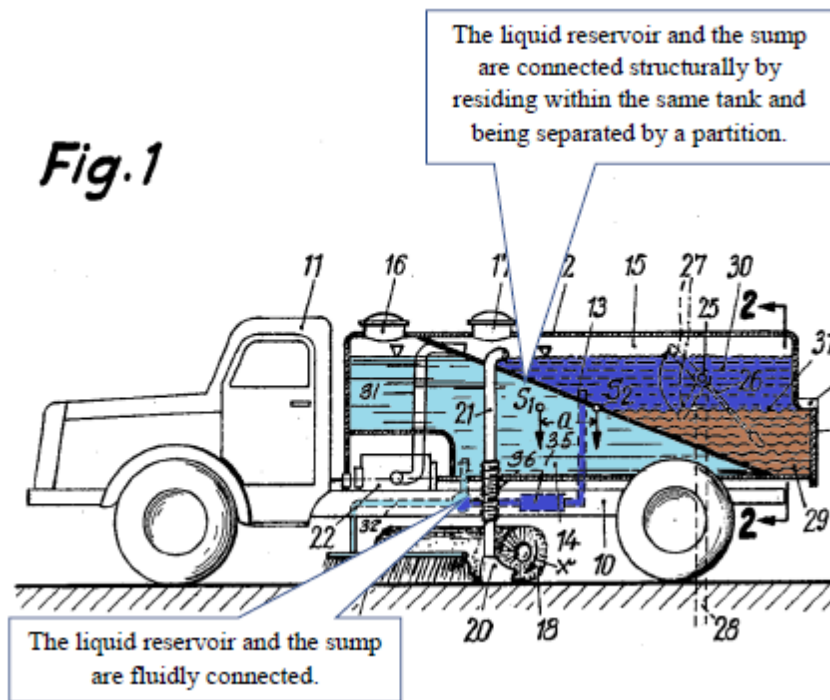
Petitioner argues that an ordinarily skilled artisan would have been motivated to replace tank A of Jones with mud container 15 of Breither,

which Petitioner argues is a sump. Pet. 33. Patent Owner does not provide any counterargument, other than arguing that the combination of just Jones and Breither does not teach or suggest this limitation. Prelim. Resp. 17.

We find Petitioner provides a sufficient showing for limitation (e). As Petitioner notes, Jones describes extending hose 15 from cleaning head D to tank A. Ex. 1002, 2:41–43. And the testimony of Mr. Boos supports Petitioner’s argument that hose 15 is a waste removal hose, Breither’s mud container 15 is a sump, and one of the hoses in the combination of Jones, Breither, and NLB would collect both liquids and coatings. Ex. 1009 ¶¶ 83–85.

*[f] said sump connected to said liquid reservoir*

Petitioner relies on Breither for limitation (f). Pet. 34–35. Petitioner argues that, in Breither, mud container 15, which Petitioner identifies as a sump, is connected to freshwater container 14, which Petitioner identifies as the liquid container. *Id.* Petitioner quotes Breither that “the fresh water remaining in container 14 or the soiled water from container 15 [can] be used alone or [can] be mixed with each other.” Pet. 34, quoting Ex. 1003, 3:73–75. Figure 1 of Breither, as annotated by Petitioner to illustrate the connection between these containers, is shown below:



Pet. 34.

The above annotated figure depicts liquid reservoir 14 in light blue and mud container 15 in both dark blue and brown. Ex. 1009 ¶ 49. The annotated figure also identifies partition 13 separating reservoir 14 and container 15 and identifies the fluid connection between the liquid reservoir and pump. The figure highlights switching valve 36 in dark blue and pipe 32 in light blue.

Patent Owner does not provide any counterargument regarding limitation (f), other than arguing that the combination of just Jones and Breither does not teach or suggest this limitation. Prelim. Resp. 17.

We find Petitioner provides a sufficient showing for limitation (f).

*[g] whereby liquid is pumped through said high pressure hose from said reservoir and exits said high pressure nozzle onto the hard surface for removing coatings therefrom*

Petitioner relies on Jones, Breither, and NLB for limitation (g). Pet. 35–36. Petitioner argues that, in Jones, water is supplied to line 22 through pump 23 through hose 28 to cleaning head D with nozzles 42. *Id.* As discussed above, Petitioner argues that an ordinarily skilled artisan would have been motivated to replace pump 23, hose 28, and nozzles 42 with NLB’s ultra-high pressure pump and hose and would have been motivated to use Breither’s freshwater reservoir as the water supply. *Id.* Petitioner argues that this combination teaches or suggests limitation (g). *Id.* Patent Owner does not provide any counterargument, other than arguing that the combination of Jones and Breither alone do not teach or suggest this limitation. Prelim. Resp. 17.

We find Petitioner provides a sufficient showing for limitation (g).

*[h] said liquid and coatings conveyed through said waste removal hose to said sump via a high power vacuum pump, said coatings collected in said sump*

Petitioner relies on Jones, Breither, and NLB for limitation (h). Petitioner argues that, in Jones, vacuum 14 conveys foreign matter and liquid through hose 15 to tank A. Pet. 37–38. Petitioner argues an ordinarily skilled artisan would have been motivated to substitute NLB’s 1000 CFM high-power vacuum pump and Breither’s mud container 15 for vacuum 24 and tank A in Jones, respectively. *Id.* at 38. Petitioner argues this combination teaches or suggests limitation (h). Patent Owner does not present any counterargument, other than arguing that Petitioner has not set forth a sufficient basis for combining NLB’s high-power vacuum pump with Jones’s truck and Breither’s mud container. Prelim. Resp. 17–18.

We find Petitioner provides a sufficient showing for limitation (h).

*[i] said liquid reservoir, said sump and said high power vacuum pump being mounted on a mobile frame*

Petitioner relies on Jones, Breither, and NLB for limitation (i). Pet. 38–41. Petitioner argues that Jones’s service truck has a chassis that is its base frame that carries its vacuum tank and vacuum pump. *Id.* at 42. Further, Petitioner asserts that Breither mounts tank 12 on its chassis. *Id.* at 39. According to Petitioner, in light of these teachings, an ordinarily skilled artisan would have been motivated to mount Breither’s tank 12 with its mud container 15 on Jones’s chassis and substitute NLB’s high vacuum pump for Jones’s pump. *Id.* at 38–41. Petitioner argues that Jones’s chassis is a mobile frame and that this combination teaches or suggests limitation (i). *Id.*

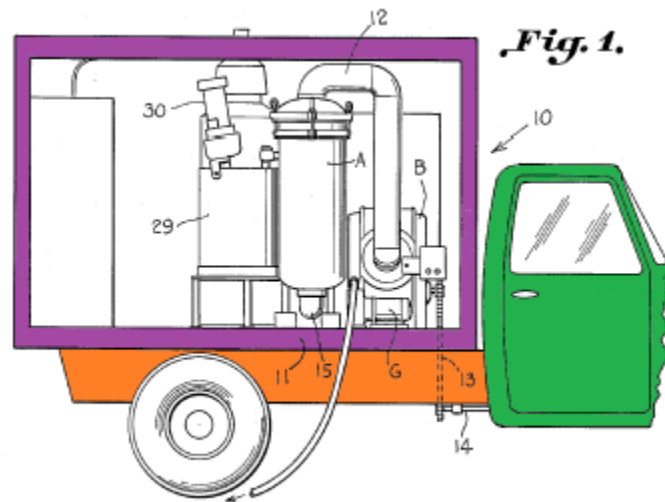
Patent Owner argues that, for this limitation, Petitioner relies on an erroneous construction for “mobile frame” and an unreasonable definition for the term “mounted.” Prelim. Resp. 18–19. Patent Owner, however, does not explain why, with its proposed construction for “mobile frame” or with the definition it cites for “mounted,” Jones, Breither, and NLB do not teach or suggest limitation (i). Prelim. Resp. 18–19 & n. 6; Ex. 2009.

We find Petitioner provides a sufficient showing for limitation (i).

*[j] said mobile frame forming an integral part of a truck having a bed portion and a cab portion, said truck being self-propelled*

Petitioner relies on Jones for limitation (j). Petitioner provides the following annotated copy of Figure 1 of Jones:





Pet. 41.

In this annotated copy, Petitioner highlights the cab portion of Jones's truck in green, the chassis (mobile frame) in orange, and the bed portion in purple. The identified bed portion includes flatbed body 11. Petitioner argues that the chassis is the base frame of and, therefore, an integral portion of the truck. Pet. 42. Further, Mr. Boos testifies that Jones's truck has an engine and is, therefore, self-propelled. Ex. 1009 ¶ 107. Petitioner argues that this combination of disclosures teaches or suggests limitation (j). Pet. 41–42. Patent Owner repeats its argument that Petitioner relies on an erroneous proposed construction for “mobile frame.” Prelim. Resp. 19.

We find Petitioner provides a sufficient showing for limitation (j).

*[k] said mobile blast head being mounted at a distal end of an articulating link, a proximal end of said articulating link secured to a tractor*

Petitioner relies on Jones for limitation (k). Petitioner maps the recited articulating link to Jones's swivel joint 52. Pet. 42–43. Petitioner argues cleaning head D (mobile blast head) and Jones's utility vehicle (tractor) are connected to the distal and proximal ends of the swivel joint 52,

respectively. *Id.* at 42. Petitioner argues these disclosures teach or suggest limitation (k). *Id.* at 42–43. Patent Owner argues that Petitioner does not provide a sufficient basis for its argument that it would have been obvious, in view of the prior art references, to combine limitations (k)–(n) in the way the claimed invention does. Prelim. Resp. 19–20.

We find Petitioner provides a sufficient showing for limitation (k).

*[l] said tractor including an engine for propulsion thereof*

Petitioner relies on Jones for limitation (l). Pet. 43–44. Petitioner argues that Jones discloses that its motorized vehicle C can be a tractor and that the term “motorized” signifies that the utility vehicle has an engine for propulsion. *Id.* Therefore, Petitioner argues that Jones teaches or suggests limitation (l). *Id.* Patent Owner argues that Petitioner does not provide a sufficient basis for its argument that it would have been obvious, in view of the prior art references, to combine limitations (k)–(n) in the way the claimed invention does. Prelim. Resp. 19–20.

We find Petitioner provides a sufficient showing for limitation (l).

*[m] wherein said high pressure hose and said waste removal  
hose extend between said truck and said tractor*

Petitioner relies on Jones and NLB for limitation (m). Pet. 44–45. Petitioner argues that Jones’s vacuum hose 15 (water removal hose) and water hose 28 extend between Jones’s truck and utility vehicle (tractor). *Id.* Petitioner further argues that an ordinarily skilled artisan would have been motivated to substitute NLB’s ultra-high pressure hose for water hose 28. *Id.* Petitioner argues that, therefore, Jones and NLB teach or suggest limitation (m). *Id.* Patent Owner argues that Petitioner does not provide a sufficient basis for its argument that it would have been obvious, in view of

the prior art references, to combine limitations (k)–(n) in the way the claimed invention does. Prelim. Resp. 19–20.

We find Petitioner provides a sufficient showing for limitation (m).

*[n] whereby said tractor is utilized to maneuver said blast head*

Petitioner primarily relies on Jones for limitation (n). Pet. 45.

Petitioner, however, also argues that Jones in combination with NLB provides the recited blast head. *Id.* at 32. Petitioner asserts that Jones’s cleaning head is connected to and pulled by Jones’s motor vehicle, which can be a tractor. *Id.* at 45. Petitioner also argues that an ordinarily skilled artisan would substitute NLB’s high pressure nozzles for Jones’s nozzles. *Id.* at 32. Petitioner argues that these disclosures teach or suggest limitation (n). Patent Owner argues that Petitioner does not provide a sufficient basis for its argument that it would have been obvious, in view of the prior art references, to combine limitations (k)–(n) in the way the claimed invention does. Prelim. Resp. 19–20.

We find Petitioner provides a sufficient basis for limitation (n).

In view of the foregoing, we determine Petitioner demonstrates a reasonable likelihood of prevailing on its contention that claim 1 is unpatentable as obvious over Jones, Breither, and NLB.

#### *6. Claims 2 and 10*

Patent Owner does not argue dependent claims 2 and 10 separately from claim 1. Prelim. Resp. 20. For the reasons discussed above for claim 1 and based on our review of Petitioner’s arguments and evidence directed to the additional limitations of claims 2 and 10, we determine Petitioner demonstrates a reasonable likelihood of prevailing in its contention that claims 2 and 10 are unpatentable as obvious over Jones, Breither, and NLB.

*D. Ground 2*

Petitioner argues that claims 3 and 4 are unpatentable under 35 U.S.C. § 103 as obvious over Jones, Breither, NLB, and Herhold. Pet. 47.

Claim 3 depends on claim 2 and adds the limitation of “wherein a shroud is connected to said blast head, said shroud surrounds said at least one nozzle and forms a negative pressure chamber.” Petitioner argues that Herhold in combination with Jones teaches or suggests this added limitation. *Id.* at 47–49.

Claim 4 depends on claim 3 and adds the limitation of “wherein said mobile blast head is attached to a wheeled chassis for maneuvering over the hard surface.” Petitioner argues that Jones teaches or suggests this added limitation. *Id.* at 49–50.

Patent Owner does not argue claims 3 and 4 separately from claims 1 and 2. Prelim. Resp. 21. For the reasons stated for claim 1 above and based on our review of Petitioner’s arguments and evidence directed to the additional limitations of claims 2–4, we determine Petitioner demonstrates a reasonable likelihood of prevailing in its contention that claims 3 and 4 are unpatentable as obvious over Jones, Breither, NLB, and Herhold.

*E. Ground 3*

Petitioner argues that claims 5 and 6 are unpatentable under 35 U.S.C. § 103 as obvious over Jones, Breither, NLB, Herhold, and Schrunk. Pet. 50.

Claim 5 depends from claim 4 and adds the limitations “wherein said wheeled chassis is attached to said tractor” and “said mobile blast head and tractor are of a size for removably docking transversely on said bed portion of said truck.” Petitioner argues that Jones and Schrunk teach or suggest these additional limitations. *Id.* at 50–56.

Claim 6 depends from claim 5 and adds the limitation that “said bed portion includes a ramp, said ramp pivotally connected to said bed portion for raising and lowering said ramp, said ramp sized to support said tractor for docking transversely on said bed.” Petitioner argues that Jones and Schrunk teach or suggest this additional limitation. *Id.* at 56–58.

Patent Owner does not argue claims 5 and 6 separately from claims 1–4. Prelim. Resp. 21–22. For the reasons stated for claim 1 based on our review of Petitioner’s arguments and evidence directed to the additional limitations of claims 2–6, we determine Petitioner demonstrates a reasonable likelihood of prevailing in its contention that claims 5 and 6 are unpatentable as obvious over Jones, Breither, NLB, Herhold, and Schrunk.

#### *F. Ground 4*

Petitioner argues that claims 1–4 and 10 are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Clemons and NLB. Pet. 58, 81–82.

##### *1. Overview of Clemons (Ex. 1008)*

Clemons discloses a cleaning system for removing debris from a hard surface, such as a runway or a street. Ex. 1008, Abstr., 1:54–59. The system includes a cleaning head mounted onto the front of a self-propelled vehicle via a pivoting arm and a vacuum reclamation system for recovering the spent liquid and debris. *Id.* at Abstract, 3:36–38. Both the liquid delivery system and the vacuum recovery system are mounted on the vehicle frame and are fluidly coupled to the cleaning head. *Id.* at 4:46–48.

##### *2. Petitioner’s Proposed Combination of Clemons and NLB*

Petitioner argues that Clemons and NLB disclose systems that employ pressurized water to remove coatings from a hard surface and utilize a

vacuum recovery system to remove spent liquid and dislodged coatings. Pet. 59; Ex. 1008, Abstr, 1:60–63; Ex. 1006, 2.

According to Petitioner, one shortcoming of the cleaning system disclosed in Clemons is the inability of its large vehicle to efficiently clean areas with limited access or areas that need a vehicle with a tight turning radius. Pet. 59; Ex. 1009 ¶ 143. Petitioner argues an ordinarily skilled artisan would have understood that the cleaning system of Clemons can be improved by including a secondary “compact and maneuverable” utility vehicle, such as the StripeJet tractor disclosed in NLB, which is specifically designed to clean “areas with limited access (e.g., parking lots, garages, intersections).” Pet. 59–60; Ex. 1006, 4–5; Ex. 1009 ¶¶ 143–44.

According to Petitioner, NLB discloses that the StripeJet system has a high-pressure nozzle assembly and a vacuum recovery system. Pet. 60; Ex. 1006, 4. And Petitioner argues NLB depicts the StripeJet system as having a vacuum hose and a high-pressure water supply hose. Pet. 60; Ex. 1009 ¶ 143. Further, Petitioner asserts one end of each hose is coupled to the blast head, while the other end is shown as free. Pet. 60; Ex. 1006, 4; Ex. 1009 ¶ 143. According to Petitioner, the free end of the vacuum hose must be connected to a vacuum tank, and the free end of the high-pressure water hose must be connected to a high-pressure water pump to achieve a complete, functioning cleaning system. Pet. 60; Ex. 1006, 2; Ex. 1009 ¶ 143.

Thus, according to Petitioner, the StripeJet of NLB readily avails itself for being combined with the cleaning system disclosed in Clemons, which teaches a truck carrying a vacuum tank coupled to a vacuum pump and a water tank coupled to a high-pressure pump. Pet. 61; Ex. 1008, Fig. 1. Citing the testimony of Mr. Boos, Petitioner further asserts that combining

these two cleaning systems would have been within the ordinary skill in the art. Pet. 61; Ex.1009 ¶¶ 144–46. Petitioner explains that, in this combination, the free ends of the water and vacuum hoses of StripeJet system disclosed in NLB are coupled to Clemons’s water pump and vacuum tank, respectively, thereby tethering the tractor of NLB to the truck of Clemons. Pet. 61; Ex. 1009 ¶ 145.

Petitioner argues this improved system of Clemons combined with NLB would remain self-contained and operable by a single person, thereby meeting key objectives of Clemons and NLB. Pet. 62; Ex. 1009 ¶ 142. According to Petitioner, an ordinarily skilled artisan would have been motivated to further improve the cleaning system of Clemons in view of NLB by replacing the vacuum pump, the water pump, the water supply hose, and the spray nozzles of Clemons with the high-power, 1,000 CFM vacuum pump and “ultra-high pressure” water pump, water supply hose, and spray nozzles of NLB, which are specifically designed for a pressure of up to 40,000 psi. Pet. 62–63; Ex. 1006, 2, 4; Ex. 1009 ¶ 147. Petitioner explains this additional improvement would extend the capabilities of the cleaning system to a wider array of applications including “[f]loor coating removal.” Pet. 63; Ex. 1005, 4; Ex. 1009 ¶ 147.

Patent Owner argues that Petitioner has not set forth an adequate basis for combining Jones and Clemons, but does not specifically identify any specific flaws with Petitioner’s reasoning. Prelim. Resp. 22–26.

We find Petitioner provides sufficient reasoning for its combination of Clemons and NLB.

*3. Claim 1*

Petitioner sets forth its arguments that the combination of Clemons and NLB teaches or suggests every limitation of claim 1. Pet. 63–76. As part of those arguments, Petitioner asserts that both Clemons and NLB teach or suggest the “coatings,” “hard surface,” and “high pressure liquid,” recited in claim 1. *Id.* at 63–64. For Clemons, Petitioner maps the recited “coating,” “hard surface,” and “high pressure liquid” to the foreign matter residing on a surface; “runways, streets, sidewalks, parking surfaces, decks of ships and industrial floor areas”; and water at a pressure of approximately 4,000 psi, respectively. *Id.* For NLB, Petitioner maps those same recited items to coatings; a concrete floor; and water at a pressure of 40,000 psi, respectively. *Id.* at 27–28; 63–64.

Patent Owner disputes that Clemons teaches or suggests the recited “coatings,” “hard surface,” and “high pressure liquid.” Prelim. Resp. 23–24. Patent Owner also disputes that Petitioner provides sufficient reasoning for combining Clemons and NLB. *Id.* at 23–26.

For purposes of this Decision, we do not need to address whether Petitioner provides a sufficient basis for asserting that Clemons teaches or suggests the recited “coatings,” “hard surface,” and “high pressure liquid” because it is not disputed that NLB teaches or suggests those items. And as discussed above, we find Petitioner provides sufficient reasoning for combining the teachings of Clemons and NLB.

Based on our review of the parties’ arguments and evidence for claim 1, we determine Petitioner demonstrates a reasonable likelihood of prevailing in its contention that claim 1 is unpatentable over Clemons and NLB.



*4. Claims 2–4 and 10*

Patent Owner does not argue claims 2–4 and 10 separately from claim 1. Prelim. Resp. 26–27. For the reasons stated above for claim 1 and based on our review of Petitioner’s arguments and evidence for the additional limitations of claims 2–4 and 10, we determine Petitioner demonstrates a reasonable likelihood of prevailing in its contention that claims 2–4 and 10 are unpatentable over Clemons and NLB.

*G. Ground 5*

Petitioner argues that claims 5 and 6 are unpatentable under 35 U.S.C. § 103 as obvious over Clemons, NLB, and Schrunk. Pet. 82–86.

Petitioner does not argue claims 5 and 6 separately from claims 1–4. Prelim. Resp. 27–28. For the reasons set forth above for claim 1 and based on our review of Petitioner’s arguments and evidence directed to the additional limitations of claims 2–6, we determine Petitioner demonstrates a reasonable likelihood of prevailing in its contention that claims 5 and 6 are unpatentable over Clemons, NLB, and Schrunk.

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 1–6 and 10 of the ’116 patent is instituted, based on all claims challenged in and all grounds set forth in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4(b), *inter partes* review of the ’116 patent shall commence on the entry date of this Order, and notice is hereby given of the institution of a trial.

IPR2018-00504  
Patent 7,255,116 B2

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