

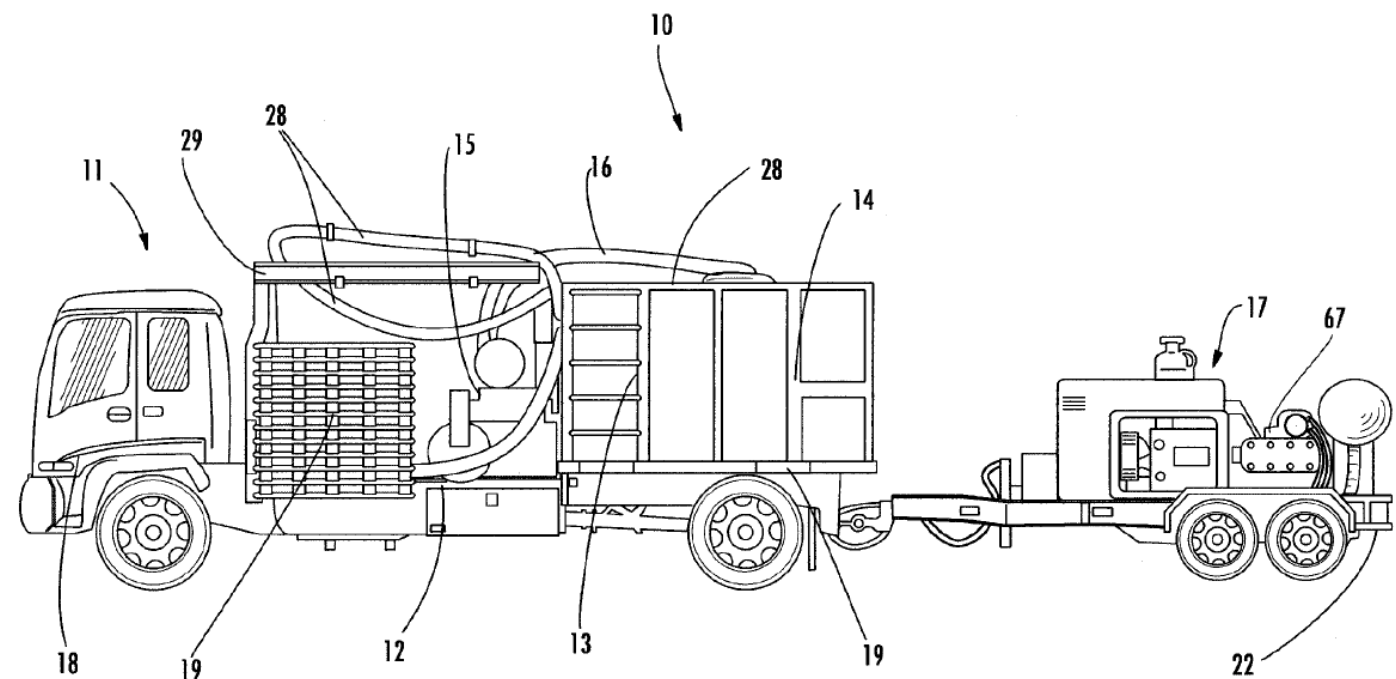
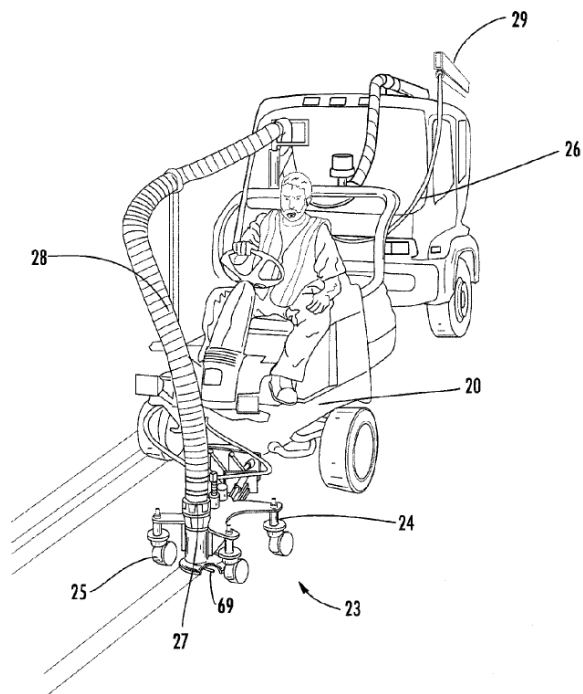
Petitioner's Demonstratives

IPR2018-00504

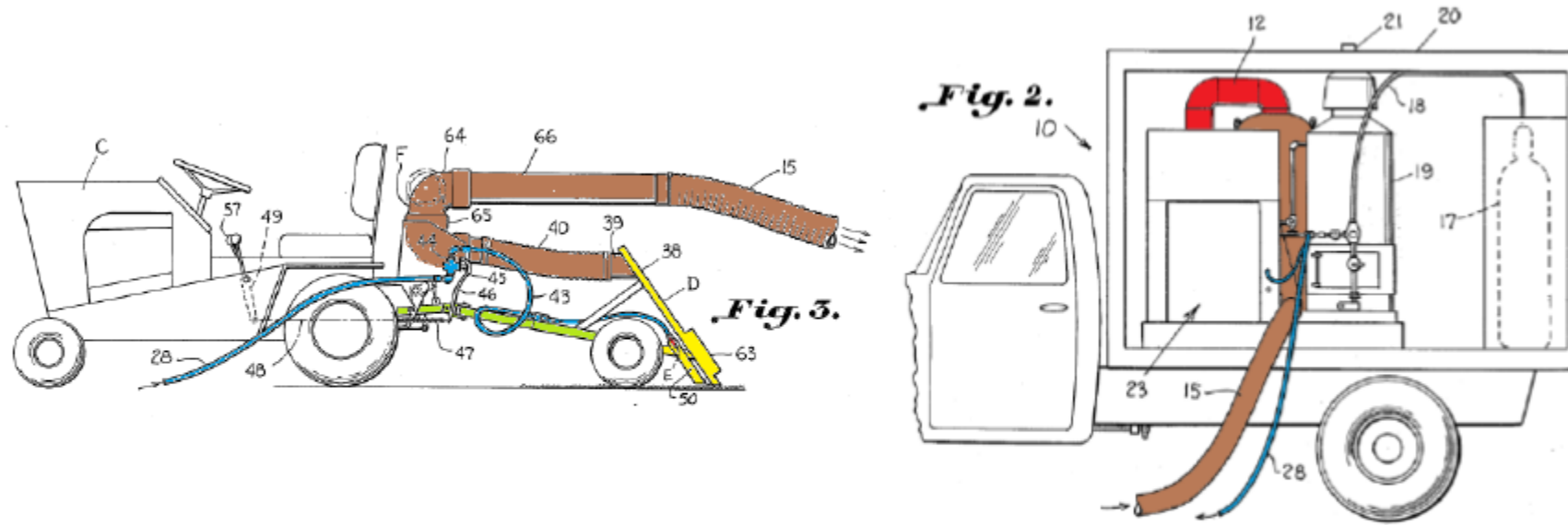
Patent 7,255,116 B2

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

The '116 system



Jones



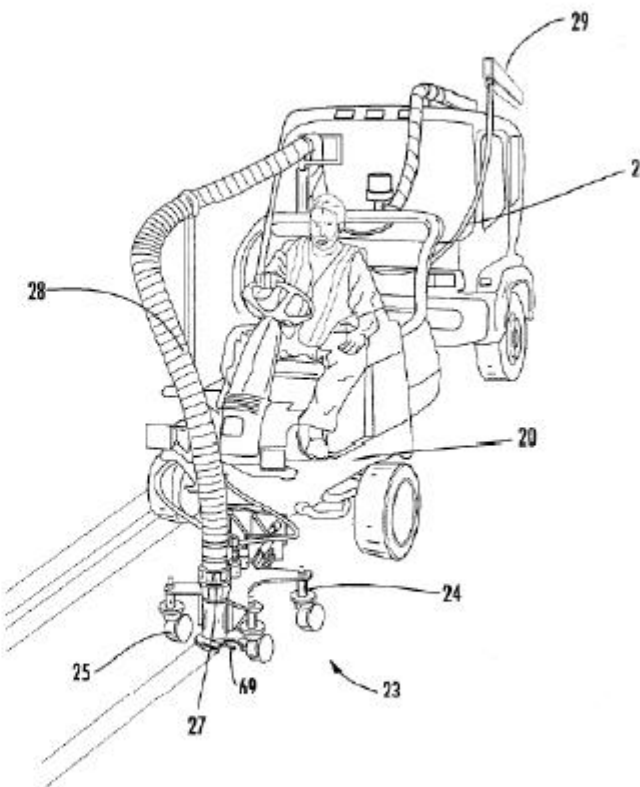
Blasters-1002 at FIGS. 3 and 2 (annotated)

NLB

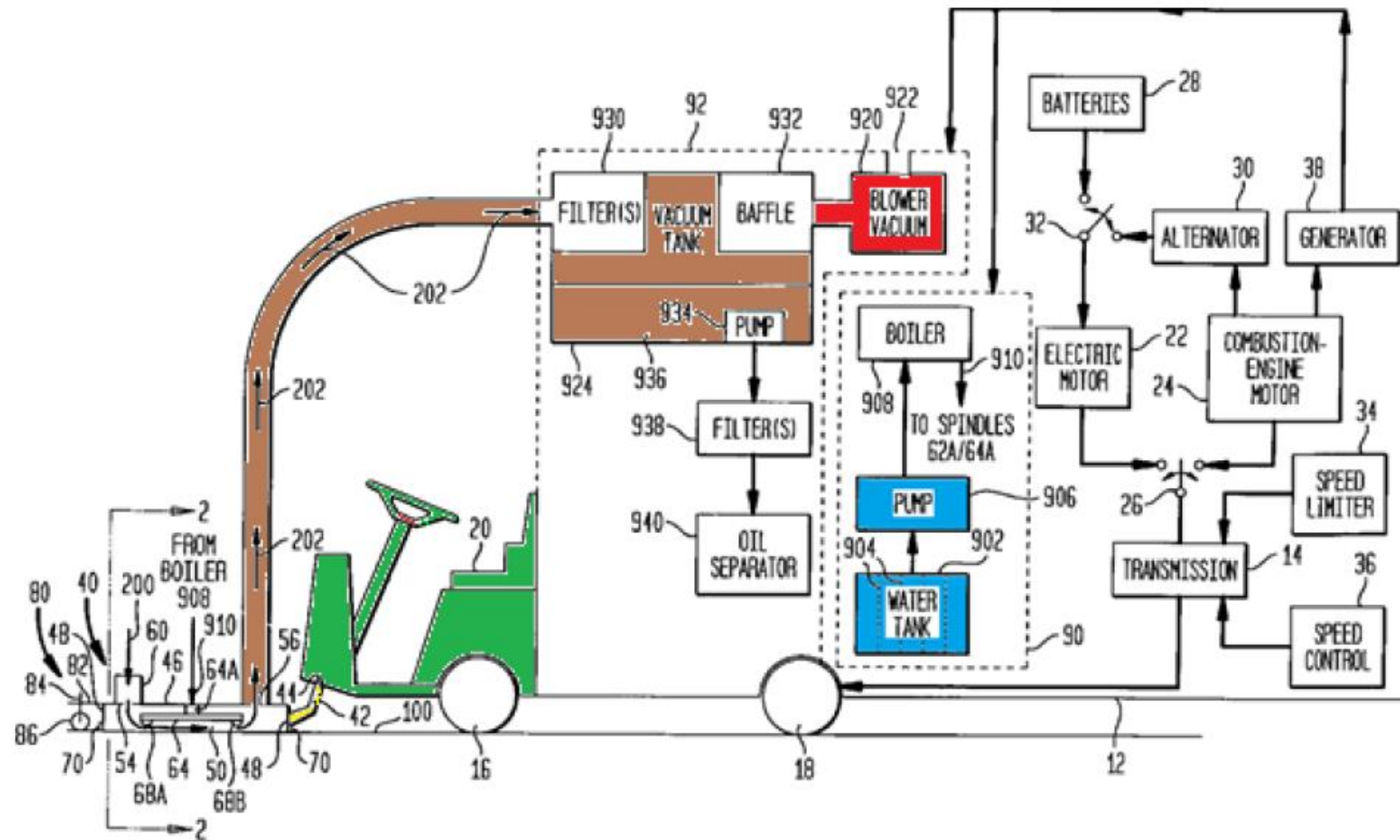
NLB StripeJet™
(Blasters-1006 at 5)



Blasters-1001 at FIG. 1



Clemons

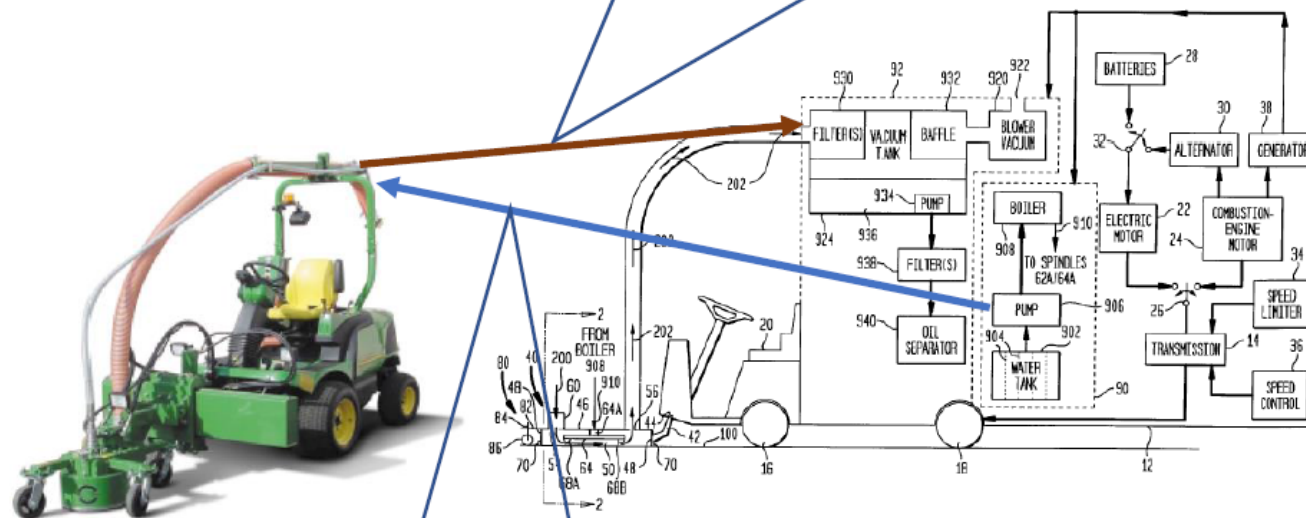


Blasters-1008 at FIG. 1 (annotated)

Combination of Clemons and NLB

The free end of the waste removal hose of NLB is coupled to the vacuum tank of Clemons. Blasters-1009 at ¶ 145.

FIG. 1



The free end of the water supply hose of NLB is coupled to the water pump of Clemons. Blasters-1009 at ¶ 145.

Blasters-1006 at 4; Blasters-1008 at FIG. 1 (annotated)

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Independent Claim 1

What is claimed is:

- 35 1. A cleaning system for removing coatings from a hard surface by high pressure liquid comprising in combination a liquid reservoir connected to a high pressure pump, said pump connected to a mobile blast head by a high pressure hose, said blast head having at least one high pressure nozzle
40 for delivering high pressure liquid onto a hard surface, 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, said sump connected to said liquid reservoir, whereby liquid is pumped through said high pressure hose
45 from said reservoir and exits said high pressure nozzle onto the hard surface for removing coatings therefrom, 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, said liquid reservoir, said sump and
50 said high power vacuum pump being mounted on a mobile frame, said mobile frame forming an integral part of a truck having a bed portion and a cab portion, said truck being self-propelled, said mobile blast head being mounted at a distal end of an articulating link, a proximal end of said
55 articulating link secured to a tractor, said tractor including an engine for propulsion thereof, wherein said high pressure hose and said waste removal hose extend between said truck and said tractor and whereby said tractor is utilized to maneuver said blast head.

Exhibit 1001 at 6:34-59

PO's Response

Patent Owner's (PO's) points of contention include the following erroneous allegations:

1. The prior art references are not cleaning system.
2. The prior art references don't disclose an articulating link.
3. A POSA would not combine the prior art systems with NLB based on PO's definition of "high pressure."

The prior art references are cleaning systems

Jones, Breither, and NLB:

As the Board Correctly found in the Institution Decision:

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.

Institution Decision at pg. 25

Clemons:

As the Board Correctly found in the Institution Decision:

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.

Institution Decision at pg. 37

The prior art references disclose an articulating link

Jones:

“Jones discloses an articulating link that enables the cleaning head to move in a horizontal plane, a vertical plane, and be flipped up and back.”
Petitioner’s Reply at pg. 15.

Combination of Clemons and NLB:

“The combination of Clemons and NLB teaches an articulating link that allows the blast head to move left and right, up and down, and be flipped up and back. . . .” *Petitioner’s Reply* at pg. 18.

Construction of “articulating link”

Proper Construction:

Under BRI, the ordinary meaning of the term “articulating link” is “a connecting structure that connects two parts in such a way as to permit relative movement.” Exhibit 1009 at ¶ 33; Exhibit 1015; Exhibit 1012.

PO’s Construction:

In its Response, PO erroneously alleges that “articulating link” should be narrowly construed as a “structure . . . [that] allows the blast head to have at least two transitional degrees of freedom and at least one rotational degree of freedom.” PO Response at pg. 12.

Analysis:

As the Board correctly noted, “[a]ny special definition for a claim term must be set forth in the specification with reasonable clarity, deliberateness, and precision.” *Institution Decision* at pg. 8 (citation omitted).

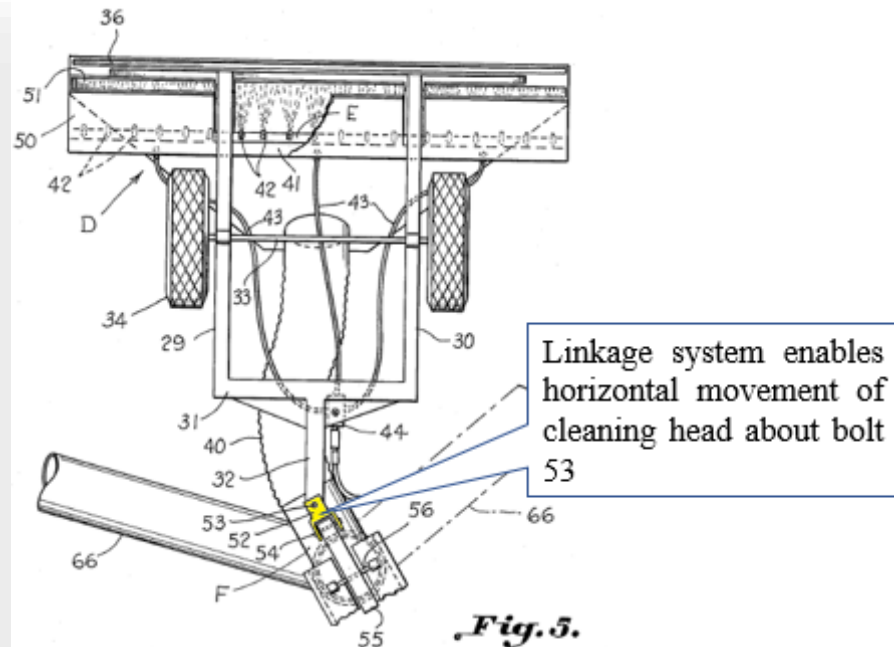
The specification of the ‘116 patent describes various embodiments of an articulating link, but does not provide any special definition of “articulating link” with reasonable clarity, deliberateness, and precision. *Petitioner’s Reply* at pg. 9.

Conclusion:

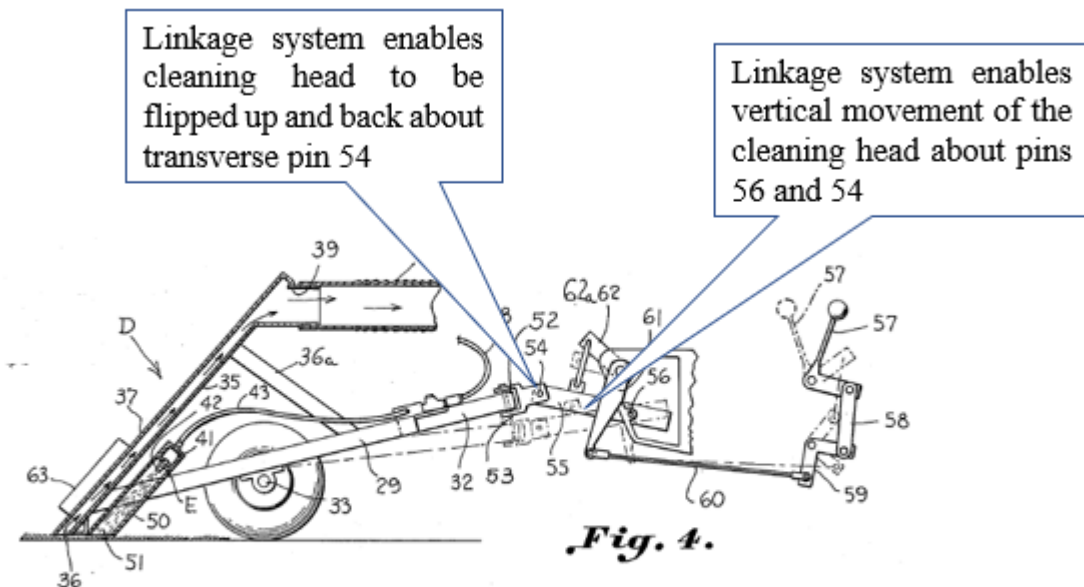
Regardless, the combination of the prior art discloses an articulating link even under PO’s untenably narrow definition of the term.

Jones discloses an articulating link

“Specifically, Jones discloses ‘a swivel joint 52 which is pivotally connected by means of a bolt 53,’ ‘a transverse pin 54,’ and ‘a pin 56.’ Blasters-1002 at 3:64–68 and 4:3-7. As depicted below, the linkage mechanism disclosed in Jones enables the cleaning head to move horizontally about bolt 53, vertically via pin 56 and pin 54, and also be flipped up and back about pin 54.” *Petitioner’s Reply* at pg. 15.

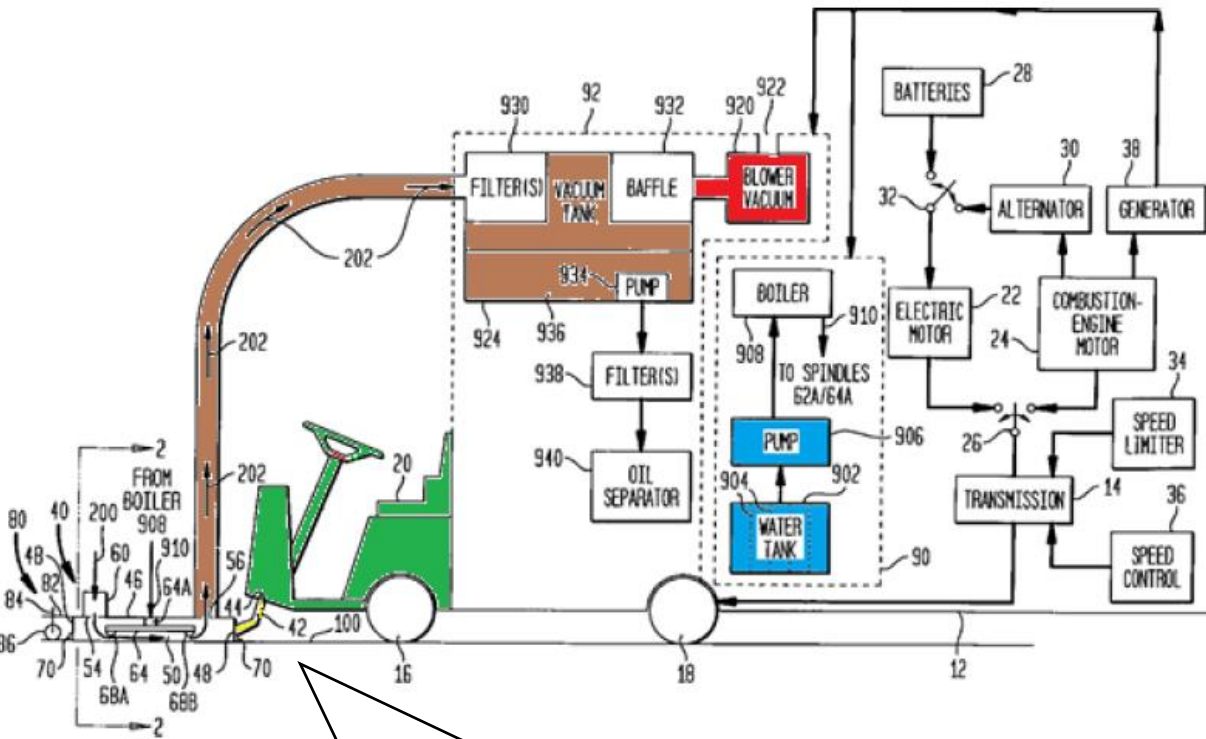


Blasters-1002 at FIG. 5 (annotated)



Blasters-1002 at FIG. 4 (annotated)

Combination of Clemons and NLB discloses an articulating link



"[a]rm 42 can be manually pivoted or pivoted via a motorized force to raise/lower cleaning head 40." Blasters-1008 at 3:38-41.



The blast head is depicted in a first position.



The blast head is depicted in a second position, wherein the blast has moved along the horizontal support member.

Combination of Clemons and NLB discloses an articulating link cont.

Dr. King explained that NLB discloses that the blast head can be “hydraulically lowered or raised.” *Exhibit 1018* at 28:2-5; *Petitioner’s Reply* at pg. 18. Dr. King also confirmed that “the blast head [in NLB] is shown attached to a fixed support that can move left or right by the support sliding along the plate track on the front of the device.” *Exhibit 2012* at ¶ 60; *Petitioner’s Reply* at pg. 18.

“A POSA would have recognized that the articulating link in NLB could have been further improved by including pivoting arm 42 of Clemons to enable a POSA to adjust the forward-to-rear pitch angle of the blast head relative to the surface being cleaned. *Blasters-1009* at ¶ 173.” *Petitioner’s Reply* at pg. 18.

“Thus, the combination of Clemons and NLB teaches an articulating link that allows the blast head to move left and right, up and down, and be flipped up and back.” *Id.*

Construction of “high pressure”

In its Response, PO repeated its previous argument that “high pressure” refers to pressure greater than 25,000 psi. *PO Response* at pg. 10.

As the Board already determined in the Institution Decision, “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.” *Institution Decision* pg. 11.

Regardless, “high pressure” does not need to be construed because as the Board correctly found in the Institution Decision, “**neither party disputes the pressure of 40,000 psi in NLB is ‘high pressure.’**” *Institution Decision* pg. 10.

The combination of Jones, Breither, and NLB is proper

1. A POSA would have been motivated to modify Jones in view of NLB to produce cleaning system with improved characteristics and increased capabilities. *Petition* at pg. 25-26; *DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1368 (Fed. Cir. 2006).
2. Both experts testified that a pump can be set to a specific discharge pressure for different situations. *Exhibits 1018 and 1023*.

Motivation to modify Jones in view of NLB

A POSA would understand that the cleaning system achieved by the combination of Jones and Breither can be further improved by increasing the power of the vacuum pump and the pressure of the cleaning solution, which would expand the capabilities of the cleaning system to a wider array of applications. *Id.* at ¶ 63. A POSA have been aware of NLB's StripeJet™ system, which is designed for "ultra-high pressure water (up to 40,000 psi ...)," and is capable of "[f]loor coating removal." *Blasters-1006* at 4; *Blasters-1009* at ¶ 63. A POSA would have been motivated to combine Jones and Breither with NLB to achieve a cleaning system

25

having improved characteristics and increased capabilities. See *DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1368 (Fed. Cir. 2006); *Blasters-1009* at ¶ 63. *Petition* at pg. 25-26

"Indeed, we have repeatedly held that an implicit motivation to combine exists not only when a suggestion may be gleaned from the prior art as a whole, but when the "improvement" is technology-independent and the combination of references results in a product or process that is more desirable, for example because it is stronger, cheaper, cleaner, faster, lighter, smaller, more durable, or more efficient. Because the desire to enhance commercial opportunities by improving a product or process is universal—and even common-sensical—we have held that there exists in these situations a motivation to combine prior art references even absent any hint of suggestion in the references themselves. In such situations, the proper question is whether the ordinary artisan possesses knowledge and skills rendering him capable of combining the prior art references." *DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1368 (Fed. Cir. 2006); see also *Ericsson Inc. v. LLC*, No. IPR2014-00963, 2019 WL 575731, at *14–15 (P.T.A.B. Feb. 12, 2019).

Expert testimony is not required in determining motivation to combine

PO argues that no weight should be given to Petitioner's expert, however:

“[I]t is well settled that, in certain cases, expert testimony concerning motivation to combine is unnecessary. *Wyers v. Master Lock Co.*, 616 F.3d 1231, 1239 (Fed. Cir. 2010), citing *KSR*, at 427.

KSR and our later cases establish that the legal determination of obviousness may include recourse to logic, judgment, and common sense, in lieu of expert testimony.” *Ericsson Inc. v. LLC*, No. IPR2014-00963, 2019 WL 575731, at *15 (P.T.A.B. Feb. 12, 2019).

Experts agree pumps can operate at different pressures for different situations

Dr. King: (Exhibit 1018)	Mr. Boos (Exhibit-1023)
A pump has a pressure relief valve (31:14), which is an “extremely common” component (33:4) and “if you had a 40,000 psi pump, you would set it for the pressure that you wanted it to operate at” (34:16-18). “You might adjust it to different settings for different situations.” (33:25-34:1)	A pump’s operating pressure can be adjusted by using “a flow control bypass valve.” (38:1-4)
Bigger nozzles will reduce discharge pressure. (42:23-43:3)	A pump’s operating pressure can be adjusted by using larger nozzles. (37:22-23)
“[more nozzles] will give you a lower pressure.” (43:18-22)	A pump’s operating pressure can be adjusted by using more nozzles. (37:22-23)
A pump can run at a slower speed/rate. (43:9-12)	“NLB uses up to 40,000 psi, but it's a range. It can be throttled down or throttled up, but the maximum would be up to 40,000 psi.” (35:9-12)

The combination of Clemons and NLB is proper

1. Clemons is a cleaning systems. *Institution Decision* at pg. 37
2. A POSA would have been motivated to modify Clemons in view of NLB to produce cleaning system with improved characteristics and increased capabilities. *Petition* at pg. 61-63; *DyStar* at 1368.
3. Mr. Boos provided proper rational as to why a POSA would have been motivated to combine Clemons and NLB. *Exhibits 1009* at ¶ 144-147.

Clemons is a cleaning systems

As the Board Correctly found in the Institution Decision:

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.

Institution Decision at pg. 37

Motivation to modify Clemons in view of NLB

vehicle with a tight turning radius. Blasters-1009 at ¶ 143. A POSA would have understood that the cleaning system of Clemons can be improved by inclusion of a secondary “compact and maneuverable” utility vehicle, such as the StripeJet™ tractor disclosed in NLB, which is specifically designed to clean “areas with limited

59

access (e.g., parking lots, garages, intersections).” Blasters-1006 at 4, 5; Blasters-1009 at ¶ 143-44.

Petition at pg. 59-60

Clemons and NLB. Blasters-1009 at ¶ 142. Furthermore, for the same reasons explained in Part VIII(B)(4), *supra*, it would have been obvious to further improve the cleaning system of Clemons in view of NLB by replacing the vacuum pump, the

62

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 pressure of up to 40,000 psi. Blasters-1006 at 2, 4; Blasters-1009 at ¶ 147. This additional improvement would extend the capabilities of the cleaning system to a wider array of applications including “[f]loor coating removal.” Blasters-1005 at 4, Blasters-1009 at ¶ 147.

Mr. Boos provided rational for combination

146. Accordingly, a POSA would have been motivated to modify the Clemons device to include a compact vehicle, which can be transported on the bed portion of the primary cleaning vehicle and then unloaded and employed to clean areas having limited access or areas requiring a vehicle with a tighter turning radius.

Exhibit 1009 at ¶ 142-146

147. Furthermore, it would have been obvious to further improve the cleaning system of Clemons in view of NLB by replacing the vacuum pump, water pump, water supply hose, and spray nozzles of Clemons with the high-power, 1,000 CFM vacuum pump, water pump, water supply hose, and spray nozzles of NLB, which are specifically designed to operate with “ultra-high pressure water” of up to 40,000 psi. Blasters-1006 at 2, 4. This modification would create a system having a

84

*Inter Partes Review of U.S. Patent No. 7,255,116
Declaration of Scott F. Boos (Blasters-1009)*

greater level of applicability in cleaning various surfaces and removing various coatings.

Exhibit 1009 at ¶ 147