

EXHIBIT

Blasters-1018

THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

BLASTERS, INC.,
Petitioner,

v.

WATERBLASTING, LLC,
Patent Owner.

Case: IPR2018-00504

U.S. Patent No. 7,255,116

ORAL DEPOSITION OF
RANDALL KING, Ph.D., P.E.
DECEMBER 12, 2018

ORAL DEPOSITION OF RANDALL KING, Ph.D., P.E.,
produced as a witness at the instance of the Petitioner,
and duly sworn, was taken in the above-styled and
-numbered cause on December 12, 2018, from 10:31 a.m. to
12:29 p.m., before Angela L. Mancuso, CSR No. 4514 in
and for the State of Texas, reported by Stenographic
method, at the offices of Stryker Reporting, 1450 Hughes
Road, Suite 106, Grapevine, Texas, pursuant to the
Federal Rules of Civil Procedure, Notice, and any
provisions stated on the record.

A P P E A R A N C E S

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REPORTER'S NOTE:

Quotation marks are used for clarity and do
not necessarily reflect a direct quote.

P R O C E E D I N G S

(December 12, 2018, 10:31 a.m.)

THE REPORTER: Today is December 12, 2018. The time is approximately 10:31 a.m. This is the deposition of Dr. Randall K. King in the matter of Blasters, Inc., versus Waterblasting, LLC, in the United States Patent and Trademark Office, Before the Patent Trial and Appeal Board, Case Number IPR2018-00504, U.S. Patent Number 7,255,116.

This deposition is being held at Stryker Reporting, 1450 Hughes Road, Suite 106, Grapevine, Texas. My name is Angie Mancuso, certified shorthand reporter, representing Stryker Reporting.

Would all present please state your appearances for the record.

MR. PFEIFER: Nicholas Pfeifer and this is Andriy Lytvyn, and we are here on behalf of the petitioner.

MR. COHEN: Kenneth Cohen and beside me is Edward McHale, here on behalf of Waterblasting, LLC, the patent owner.

(Witness sworn by reporter)

RANDALL KING, Ph.D., P.E.,
having been first duly sworn, testified as follows:

EXAMINATION

1 BY MR. PFEIFER:

2 Q. Good morning.

3 A. Good morning.

4 Q. So first off, have you taken a deposition
5 before?

6 A. Yes.

7 Q. Okay. About how many have you taken?

8 A. Thirty-six times, I believe.

9 Q. Okay. When was your last?

10 A. Couple of weeks ago, three weeks ago,
11 probably.

12 Q. Okay. Were you paid?

13 A. Yes. Well, wait, wait, wait. May not have
14 gotten -- no, I haven't gotten paid on that one. I'm
15 working on it.

16 Q. Good. Well, hopefully, you do.

17 So what percentage of your business is acting
18 as an expert witness?

19 A. Probably about -- historically, it's been
20 about 95 percent has been either things that are related
21 to litigation or things that might -- might turn into
22 litigation.

23 Q. Okay. All right. So given your extensive
24 experience, I'm sure you understand most of the ground
25 rules, but I just kind of want to go over them.

1 So, first, can you agree that if you do not
2 hear one of my questions, that you ask that I repeat the
3 question?

4 A. Yes.

5 Q. Okay. Can we also agree that if you do not
6 understand the question, that you will ask me to
7 rephrase or repeat the question?

8 A. Yes.

9 Q. And you understand that you're under oath to
10 tell the truth today?

11 A. Yes.

12 Q. Are you taking any medications or substances
13 today that might affect your ability to answer
14 truthfully?

15 A. No.

16 Q. And as you are already doing, can you agree to
17 answer verbally to all the questions?

18 A. Yes.

19 Q. All right. Excellent. So what did you do to
20 prepare for today's deposition?

21 A. I looked over my declaration and some of the
22 other case materials. I met with counsel yesterday for
23 probably an hour and a half.

24 Q. Did you review each of the exhibits from both
25 sides, both petitioner and the patent owner?

1 A. Not -- not -- not completely, no.

2 Q. Okay. Did you go over the main references
3 that were cited in the petition?

4 A. Yes.

5 Q. Okay. Each of them, the prior art references?

6 A. Yes.

7 Q. Okay. Is there anything you did outside of
8 the record that you may have reviewed to prepare for the
9 deposition?

10 A. No.

11 Q. Okay. So it's correct that you were hired by
12 or on behalf of Waterblasting, LLC, to sign the expert
13 declaration?

14 A. Yes.

15 Q. And ultimately you signed that declaration?

16 A. That's correct.

17 Q. Is that the same declaration that was
18 submitted?

19 A. Yes.

20 Q. Okay. Did you actually type that declaration?

21 A. Most of it. Actually, I think I typed the
22 large majority of it. It may have been all of it.
23 There may have been a few things I dropped into it.

24 Q. Okay. What kind of software did you use to
25 write the declaration?

1 A. Microsoft Word.

2 Q. Just Word with, like, spellcheck and all that
3 stuff?

4 A. Yes.

5 Q. Okay. Did you read the entire declaration
6 after you wrote it?

7 A. Yes.

8 Q. About how many times did you review it?

9 A. You mean before I signed it?

10 Q. Yes. Correct.

11 A. You're talking about after it was finished,
12 reading the whole document?

13 Q. Uh-huh.

14 A. I don't know. Probably two or three.

15 Q. How would you describe the level of detail
16 with which you reviewed or read over it before signing
17 it after it was completed?

18 A. Very high. Very high level of detail.

19 Q. So is it fair to say that you considered each
20 and every detail of what was included in that
21 declaration?

22 A. Yes.

23 Q. Are you aware that there are several
24 paragraphs that lack punctuation to end the paragraph?

25 A. I did notice when I was reading it to prepare

1 for this that there are -- I did -- I did see some
2 typographical errors that I missed earlier.

3 Q. Okay. But the information in there is
4 complete?

5 A. Yes.

6 Q. Okay. So can you give me a little bit more
7 information about your background related to pressurized
8 pumps or pumps that pressurize fluid?

9 A. I have a Ph.D. degree in mechanical
10 engineering which I did at Oklahoma State University.
11 And while I was pursuing the Ph.D., I worked at an
12 organization there called the Fluid Power Research
13 Center, which does work on fluid power and hydraulics.

14 And so we did R&D on hydraulic components,
15 including pumps, and so I had some experience with --
16 with testing of pumps and writing some papers on pumps
17 and -- and doing testing on other components which
18 involve -- involved building test stands with pumps,
19 hydraulic pumps.

20 And then after I got my Ph.D., I worked for
21 Halliburton Energy Services for ten years, designing and
22 doing R&D on high-pressure fracturing pumps for
23 fracturing oil and gas wells. And that involved a lot
24 of design work, detailed design, involved testing,
25 involved being involved with manufacturing people,

1 visiting vendors to work on manufacturing of different
2 components, laboratory testing, field testing, a wide
3 range of activities, but including a lot of mechanical
4 design of the pumps.

5 Q. Okay. And were these pumps strictly for
6 fracturing, or were they used for other applications?

7 A. They were used for other similar type of
8 applications such as pumping acid into oil wells,
9 cementing oil wells, although the particular pump I
10 spent most of the time on was not used for cementing,
11 but it's a very similar type of pump. And I did a
12 little bit of work on a pump that was used for
13 cementing.

14 Q. So the pump that you spent the most amount of
15 time on, what was that used for?

16 A. For fracturing oil wells.

17 Q. Okay. What is fracturing of oil wells?

18 A. That is if you have a well -- and generally
19 the oil down in the ground is contained in rocks. And
20 so a lot of the rocks are very porous, and it's easy to
21 get the oil out; and a lot of them are very hard, and
22 it's very hard to get the oil out.

23 So if you have a situation where the rocks are
24 not porous and it's very hard to get the oil and the gas
25 out of them, what you do is you -- you have some

1 material that you run down in the wells and you seal off
2 the wellbore so that there is a certain zone that you've
3 isolated.

4 And then you pump -- you pump with a
5 high-pressure pump, you pump different fluids,
6 generally, water-based gels, down into the well. And
7 you create such a high pressure that you crack the
8 rocks, and you create a large fracture or a series of
9 large fractures that run -- say, if this is the well,
10 the cracks run out into the rock, and so they open up.

11 And then what you do after you get the cracks
12 opened up is you pump a sand slurry. So it's a
13 water-based gel that you blend sand in with it, make a
14 slurry, and you pump that sand slurry out into the
15 cracks. And then when you take the pressure off, those
16 cracks are open and they're full of sand, which props
17 the cracks open. And now so you have these cracks that
18 have this porous sand that allow the oil and gas to get
19 back to the well.

20 Q. Interesting. So you said that's a water-based
21 fluid?

22 A. Typically. It's a very wide range of fluids,
23 but typically a water-based gel or sometimes they use a
24 diesel -- diesel-oil-based gel, and sometimes they would
25 put liquid CO2 into it, inject that into -- in there

1 also. And there is a lot of -- lot of different
2 magic -- magic substances they put in it.

3 Q. And you mentioned that those pumps were high
4 pressure.

5 So what pressure was that fluid being
6 discharged at?

7 A. For -- there were different ranges. The pumps
8 that I mainly worked with were either 10,000 psi or
9 15,000 psi. And the little bit of work with another
10 pump, that was a 20,000 psi pump.

11 Q. So have you ever operated a pump that's
12 strictly for water?

13 A. Yes.

14 Q. And what was that used for?

15 A. I had a case a couple of years ago involving a
16 centrifugal pump that was involved in an accident in
17 which a guy was burned really badly. And we bought one
18 of those pumps and did -- did a lot of testing with it.
19 It was a pump for pumping water, and it had a
20 25-horsepower motor that drove it.

21 Q. What kind of pressures did that --

22 A. I think it was about two -- 250, something
23 like that.

24 Q. 250 psi?

25 A. Yes.

1 Q. Okay. Have you ever used a water pump that
2 expels pressures greater than 250 psi?

3 A. I have -- I have operated pressure washers. I
4 have a pressure washer. I've rented them and operated
5 them at various pressures. I don't recall what the
6 pressures are. Probably 2,000 psi or somewhere in that
7 range.

8 Q. Now, is that the -- is that device the one
9 that you would see, like, cleaning cars or a driveway or
10 something like that?

11 A. Yes.

12 Q. But that doesn't remove the paint from the
13 car, correct?

14 A. Correct. That's -- that's -- that's the idea.
15 It just washes it.

16 Q. Okay. Have you ever operated a water pump
17 that expels fluid around 20,000 psi?

18 A. I have -- as part of the manufacture of the
19 Halliburton pumps, the pumps that we -- that we designed
20 were these big pumps that had crankshafts, like a car
21 has a crankshaft. And the one that I spent most of my
22 time working on was driven by a 1,500-horsepower diesel
23 engine. And it was -- the length of it was 8 and a half
24 feet, which is exactly the longest you can make it and
25 have it fit on the back of a semi-trailer.

1 And so the one end of it is called the power,
2 and it has a crankshaft, which has connecting rods, like
3 a car engine. And then the other end is the fluid end,
4 which actually pumps the water. It has plungers that go
5 back and forth, and they're driven by the crankshaft,
6 but they go back and forth.

7 And the -- the -- the body there that they are
8 operating, generally it's just called the fluid end.
9 And it's a large piece of forged, high-strength steel,
10 very high-strength steel. And inside of it you've got
11 this one bore going through it where the plunger goes
12 back and forth, and then there is another bore that
13 intersects that going up and down that's got valves in
14 it.

15 And so at the intersection of those two bores
16 is a very weak spot in the pump. It's got a stress
17 concentration. It's a very weak spot, and that's where
18 you get cracks. And so what we would do -- we did a
19 process that's called autofrettage -- it's
20 a-u-t-o-f-r-e-t-t-a-g-e -- or also called pre-stressing,
21 and we would intentionally pump the -- seal the pumps
22 off, seal that fluid off, and pump it up to a very high
23 pressure that's much higher than the pressure that the
24 pump would operate at, generally three times or four
25 times the operating pressure.

1 And the idea was that on all those places
2 where you had the weak point, you would actually yield
3 the steel so that the steel is now taking a permanent
4 deformation, and you would really drive that steel into
5 a yield situation. And then when you release the
6 pressure, the steel would actually be stronger there.

7 So -- so to do that, we had a series of test
8 cells that had high-pressure pumps that operated -- I
9 believe one pump, we ran it up to 45,000 psi. And
10 another pump, the one I spent most of my time on, we ran
11 it up to 60,000 psi.

12 Q. Now, you mentioned that you ran them higher
13 than their intended operating pressure.

14 So were those pumps rated for lower pressure?

15 A. They were rated -- the one I spent most of the
16 time on was rated for 15,000 psi. And so we would -- we
17 would do this pre-stress operation at 60,000 psi, so
18 four times the working pressure.

19 Q. Wow.

20 A. So we're intentionally -- we're intentionally
21 putting a permanent stretch on the inside of that pump,
22 and then when you take the pressure off, it kind of --
23 the material on the outside hasn't been stretched, and
24 so it kind of pulls it back down into shape, and it
25 leaves that a lot stronger on the inside.

1 Q. How did you increase the pressure four to six
2 times?

3 A. We used a very high-pressure pump that was
4 specifically for that manufacturing operation. We
5 didn't use the actual pump that we were processing. We
6 just had that one part off of it. So we didn't have the
7 whole pump there. We just had that one part that held
8 the pressure, and then we had plugs to seal off all the
9 openings. And then we had this other test pump that we
10 used to pump it up to the high pressure that was part of
11 the manufacturing facility there.

12 Q. So I want to make sure that I understand this.
13 So it's like a pump unit where you've removed
14 the pump and replaced it with a pump that can produce
15 greater pressures, and then you ran it to stress the
16 fluid end of the pump unit? Is that correct
17 terminology?

18 A. Yeah. So what we have is -- we have a
19 facility there, and it has this test cell in it that's
20 got these really thick walls with all this steel and
21 big, old wood beams and everything. And so we got this
22 cell. It's this little room. And part of this facility
23 is a very high-pressure pump. So we have this pump that
24 will go up to 60,000 psi.

25 And so we have this pump that we're

1 manufacturing -- and this is before it's even built or
2 anything. We take this one part of it, which is the
3 part that contains all the pressure, and then we take
4 that into the pressure cell and we hook the
5 high-pressure hose up to it or the high-pressure tubing
6 from the -- from the high-pressure pump and we pressure
7 that one part up by itself before it's assembled into
8 the whole pump.

9 Q. What's that part called that you're
10 pressurizing?

11 A. The fluid end.

12 Q. The fluid end?

13 A. Uh-huh.

14 Q. So on a device intended to pressurize pumps,
15 is there -- there is a pump, obviously, that produces
16 high pressure. Then there is the fluid end.

17 A. Uh-huh.

18 Q. Are there any other components on that?

19 A. There are different pieces that attach on to
20 the fluid end to assemble -- to seal all the openings in
21 it.

22 Q. Okay. So because it's a test cell, we want to
23 seal everything and then increase the pressure?

24 A. Right.

25 Q. Gotcha. So have you ever used one of these

1 pumps and actually expelled water from them?

2 A. One of which pumps?

3 Q. One of the high-pressure pumps. Have you ever
4 used a high-pressure pump and then actually discharged
5 water out of, like, a high-pressure tubing?

6 A. Well, when you -- I mean, you pressure the
7 fluid end up, it discharges water out of it to get the
8 pressure built up, so it does discharge a bit of water.

9 Q. But only -- you've only used them in testing
10 situations?

11 A. Well, as part of the manufacturing process.

12 Q. Okay.

13 A. But in that situation, yeah.

14 Q. So have you ever used one of these pumps to
15 remove stripes from a highway?

16 A. No.

17 Q. So in your opinion, you were an expert in
18 these cleaning devices in 2004?

19 A. Yes.

20 Q. What about now?

21 A. Yes.

22 Q. Okay. What is your definition of water
23 blasting or hydro blasting as of 2004?

24 A. I think probably the best definition I could
25 give for it would be the definition I give for the term

1 "cleaning process" in my declaration. I don't know if
2 you have that where I could refer to that.

3 Q. Sure. If you want to look it over and just
4 verify it's the same one.

5 MR. PFEIFER: Here is a copy for you as
6 well.

7 MR. COHEN: I don't need a paper copy of
8 this.

9 MR. PFEIFER: Okay.

10 A. So repeat the question again.

11 Q. (BY MR. PFEIFER) So as of 2004, what was your
12 definition of water blasting or hydro blasting?

13 A. I believe that is a method that's used to
14 remove coatings that are applied and bonded to a hard
15 surface by blasting them with sufficiently high-pressure
16 liquid so as to erode away the coating, penetrating
17 below the outer layer to remove parts of the coating
18 embedded beneath the outer layer of the surface without
19 removing the outer layer of the surface, which is the
20 definition I gave for "cleaning system" in my report. I
21 think that -- I think that's what the cleaning system
22 basically is water blasting, as I understand it, for
23 this application.

24 Q. Can you provide some examples of the types of
25 coatings that might be removed?

1 A. The types of coatings would be very durable
2 paints for highway -- for highway -- highway paints and
3 thermoplastic-type coatings that are used for road
4 stripes would be some examples.

5 Q. Do you have any other examples?

6 A. They're also used for removing rubber that
7 builds up on aircraft runways. There may be another
8 example in my declaration, but I don't recall it
9 offhand. Oh, epoxy paint. The report lists -- the
10 report actually quotes the '116 patent: Traffic paint,
11 thermoplastic, epoxy paint, and preformed tapes. And it
12 also notes that they are designed to be as durable and
13 permanent as possible, which also quotes the patent.

14 Q. You mentioned rubber buildup on runways.

15 What exactly is rubber buildup on runways?

16 A. Well, planes, of course, have rubber tires on
17 the landing gear, and they're landing at high speeds,
18 and the tires tend to slip and scrub, and so little bits
19 of rubber are worn off of the tires at very high
20 temperatures.

21 I mean, if you think about seeing a video of a
22 plane landing, you can see the smoke coming off the
23 tires, and you can hear that squeal of the tires as
24 they're being accelerated by the sudden impact with the
25 runway. And so you have this very hot rubber which --

1 which generates particles of -- I'm not sure if it's
2 particles. That's maybe not a good word for it. But
3 anyway, some of the rubber -- some of the very hot
4 rubber comes off the tires and gets bonded onto the
5 runway.

6 Q. Okay. Is that -- what kind of rubber is that?
7 Do you know?

8 A. I probably don't have an expert opinion on
9 that. I believe that -- I believe it's probably natural
10 rubber reinforced with carbon black, but I probably
11 don't have an expert opinion on that.

12 Q. All right. Do you know about how many
13 companies were involved in surface cleaning using
14 pressurized water in 2004?

15 A. No.

16 Q. Are you aware that the '116 patent identifies
17 several parties who are involved in that type of
18 technology?

19 A. I am aware of a few -- or I'm aware of one or
20 two.

21 Q. So would an expert have personal knowledge of
22 the systems that are described as prior art in the '116
23 patent?

24 A. An expert could have -- I mean, that's --
25 that's one possibility. I don't think that's a

1 requirement for an expert.

2 Q. Did you have personal knowledge of the
3 devices --

4 A. No.

5 Q. -- as described?

6 I'm going to hand you the '116 patent. It's
7 Exhibit Blasters-1001.

8 A. Okay.

9 MR. PFEIFER: Ken, would you like to see
10 a copy, or are you good?

11 MR. COHEN: I'm good.

12 Q. (BY MR. PFEIFER) Is that the '116 patent that
13 you're familiar with in your review for this deposition?

14 A. Yes.

15 Q. If you could turn to claim 2, please.
16 Actually, column 1, line 52.

17 A. Okay. Okay.

18 Q. It mentions the NLB Corporation.

19 A. Yes.

20 Q. Were you familiar with NLB in 2004?

21 A. No.

22 Q. Would an expert have been familiar with NLB in
23 2004?

24 A. Some experts could have been, but not all
25 experts.

1 Q. Were you personally familiar with any cleaning
2 systems in 2004?

3 A. Are you talking about cleaning systems as
4 described in this patent?

5 Q. Cleaning systems that use pressurized water to
6 clean a hard surface.

7 A. I was familiar with -- with small handheld
8 systems for -- for high pressure -- well, not high
9 pressure as we're talking about here, but for using
10 pressurized water to clean things. And I was also
11 familiar with some industrial applications of those same
12 type of things.

13 Q. Did you ever personally use any of those that
14 you were familiar with?

15 A. Yes.

16 Q. Which ones?

17 A. Used small handheld pressurized water sprayers
18 to clean concrete. And I painted a house one time where
19 I used one to knock a bunch of the old paint off of the
20 house.

21 Q. So you never used one where you could remove
22 stripes from a highway?

23 A. The systems that I used may have been able
24 to -- may have been able to do that very, very slowly,
25 certainly not on the scale that the patent is

1 discussing.

2 But -- but, yeah, if you really -- if you had
3 a little stripe and you wanted to get it off, you could
4 have probably removed it with those systems.

5 Q. Which systems would that have been?

6 A. Just a handheld sprayer with pressurized water
7 and a -- and the -- and a nozzle.

8 MR. PFEIFER: Would you guys mind if we
9 take a break?

10 MR. COHEN: Sure.

11 (Recess from 11:03 a.m. to 11:07 a.m.)

12 Q. (BY MR. PFEIFER) So back to the prior art
13 systems disclosed in the '116 patent, did you say that
14 you were familiar with NLB Corporation?

15 A. Not in 2004, no.

16 Q. Okay. Are you currently aware of them?

17 A. Yes.

18 Q. Are they one of the main companies in the
19 water blasting industry?

20 A. They are a major supplier of the pumps that
21 are used for this type of water blasting, and they
22 also -- they also have -- you know, have the systems
23 that are described in the patent, the prior art.

24 Q. You're referring to the StripeJet and the
25 StarJet device?

1 A. Yes.

2 Q. Did you have any knowledge of the StripeJet in
3 2004 or shortly thereafter?

4 A. No.

5 Q. What about the StarJet?

6 A. No.

7 Q. So it's safe to say you didn't operate either
8 of those prior to 2004?

9 A. That's correct.

10 Q. And I believe you mentioned that you haven't
11 actually used any similar devices prior to 2004?

12 A. Correct.

13 Q. Do you currently understand the device that is
14 identified as a StripeJet?

15 A. I understand what I know about it. We don't
16 have a whole lot of information on it that I've seen,
17 but I understand what I've seen on it.

18 Q. Can the same be said about the StarJet?

19 A. Yes.

20 Q. Okay. Have you ever observed the StarJet or
21 the StripeJet in operation?

22 A. No.

23 Q. Would a person of ordinary skill in the art or
24 an expert understand how these devices work?

25 A. Yes.

1 Q. So I am going to hand you the exhibit
2 Blasters-1006. I'm just going to refer to it as the NLB
3 brochure.

4 A. Okay.

5 MR. PFEIFER: I don't know if you want to
6 look at that first.

7 Q. (BY MR. PFEIFER) Let me know if you recognize
8 that.

9 A. Yes, I do.

10 Q. And you've reviewed that?

11 A. Yes.

12 Q. Okay. When did you first gain knowledge of
13 the NLB Corporation?

14 A. I believe it was during the work on this case.

15 Q. Okay. Can you please go to the last page of
16 that document. Can you read underneath The NLB
17 Advantage, just the first paragraph.

18 A. "Pavement marking removal is another
19 innovative use of water jetting by NLB Corporation, a
20 leader in the technology for 30 years."

21 Q. Can you keep going, please.

22 A. "Contractors and industrial companies around
23 the world depend on NLB pumps and accessories to
24 remove [sic] difficult challenges in product removal,
25 surface preparation, hydrodemolition, and much more."

1 Keep going?

2 Q. No, that's fine.

3 A. Okay.

4 Q. Do you generally agree with what's stated
5 there?

6 A. I have no reason to disagree with it.

7 Q. Okay. Take a look at the fourth page of that
8 document. There is page numbers in the bottom
9 right-hand corner.

10 A. Okay.

11 Q. Is that the StripeJet that you see there?

12 A. Yes.

13 Q. Can you explain to me how you understand --
14 strike that.

15 Can you please explain to me how the StripeJet
16 works.

17 A. What I understand -- I have -- I have a
18 feeling of how it works, and a lot of that is not based
19 on specific information because we don't have a lot of
20 specific information given. But what I believe is that
21 it works by -- by having a high-pressure nozzle.

22 It says it has a nozzle assembly with a
23 rotating nozzle with up to 16 nozzles. And the nozzle
24 assembly is located at the front of this device in the
25 photographs. And the nozzle assembly has some -- some

1 casters on it so that it rolls on the -- the surface
2 that you're cleaning. And then it's got a -- it says
3 it's hydraulically lowered or raised, so it's got a
4 little hydraulic device in there to -- to lower it and
5 raise it.

6 And so basically what they do is they supply
7 high-pressure water to it, to those nozzles, and they do
8 water jetting on the road with those nozzles.

9 Q. Does it include a vacuum recovery?

10 A. Yes, it does. It does. Actually, it says the
11 vacuum is optional. The device shown in the photograph
12 has what appears to be a large vacuum hose, and
13 apparently that's an optional feature that comes with
14 it.

15 Q. How would an expert or a person of ordinary
16 skill in the art supply high-pressure water to the
17 nozzle assembly?

18 A. You would have an ultra-high-pressure pump.
19 You would have to have a power source to drive the pump,
20 a large power source to drive the pump. And you'd have
21 to have a source of water for the pump. And the pump
22 would produce ultra-high pressure. And then you would
23 have an ultra-high-pressure hose to bring the water to
24 the -- to the nozzle, nozzle assembly.

25 Q. Is an example of that pump shown on page 6?

1 A. I believe so. I'm not sure it exactly says
2 that, but that does show a pump. It does say that it's
3 rated 40,000 psi, 6 gallons per minute. So that appears
4 to be -- well, it says it's an ultra-high-pressure pump.
5 And appears to be a pump that would be suitable for --
6 for this.

7 Q. Now, looking at that picture, it looks like
8 there's several components.

9 Which component is the pump itself?

10 A. Okay. The pump in this picture is -- you see
11 there is a trailer, black trailer with two -- two tires
12 on it, and directly above the tires there is a gray
13 device. Everything else is green, but there is a gray
14 piece right above the two tires, and that is the pump.
15 That looks like the fluid end of the pump.

16 Q. So it's about half the height of the big green
17 box to the left?

18 A. Yes. Yes.

19 Q. Okay. What are the other -- what are the
20 green and the black components shown in there?

21 A. Okay. Starting on the left-hand side, the
22 large green box that you referred to is the power
23 source, which it identifies as -- well, it's a diesel
24 engine. It doesn't seem to specifically identify it as
25 that, but it certainly looks like a diesel engine.

1 Actually, over in the text, it says diesel and electric
2 models are available. So this would be the diesel
3 model. So that would be a large diesel engine.

4 The black thing that's just to the right of it
5 looks like a -- it's probably the drive from the -- from
6 the motor to the pump. Looks like it might be a chain
7 drive or -- or might be a belt drive. I don't know.
8 Some -- some method of getting the power from the
9 pump -- or from the engine to the pump.

10 And then on the back of the trailer there is a
11 couple of green things. I'm not sure what those are.
12 Might be a water filter or might be a suction dampener.
13 It's hard to tell exactly what those are. Some sort of
14 accessory, probably some sort of a pump accessory to
15 help possibly smooth out the flow or to filter the
16 incoming water or some other function to aid the pump.

17 Q. What sort of pump accessories are you familiar
18 with?

19 A. Well, you might have -- you might have a
20 filter for the incoming water. Typically, on a real
21 ultra-high-pressure water pump like this, the valves
22 have to seal extremely high pressure, and generally they
23 have a metal-to-metal -- they rely a lot on a
24 metal-to-metal-type seal. And so they can be very
25 sensitive to contaminants. So you may well have a

1 filter there to filter the incoming water; or if not,
2 you probably have a more coarse-type filter which might
3 be called a suction strainer.

4 You might have -- you might have a dampener to
5 smooth out the flow of the pump. You probably -- there
6 is probably -- in this application, you probably would
7 not have a need for a cooler for that water or -- so I
8 wouldn't expect to see that. That's the only things
9 that come to mind.

10 Q. Okay.

11 A. As far as the output of the pump, you would
12 probably have a relief valve which may -- it may be part
13 of the pump. It may come as a package that's part of a
14 pump. But you would have a relief valve to protect you
15 from getting pressure that's -- that's too high. That
16 would relieve the pressure if something happened and the
17 pressure got too high and it was not safe.

18 Q. So what does a relief valve do?

19 A. It basically has a device in there that's
20 monitoring the pressure. Normally you would use it on
21 the discharge side, which is the high-pressure side that
22 the pump is discharging. So if the pressure gets too
23 high, say if your nozzle -- normally you're pumping
24 through a nozzle.

25 Say if that got plugged up or if somebody

1 closed a valve or something, so now you're just trying
2 to pump into a -- like pumping into a closed stop. This
3 type of pump is a positive displacement pump, which
4 means that if you pump -- if you pump into a closed stop
5 where the pressure -- the fluid can't keep moving, the
6 pump will still keep pumping, and it will keep building
7 up pressure either until the power source -- power
8 source stalls out and the pump stops or until something
9 breaks, which is not good if you have 40,000 psi.

10 So a relief valve measures that pressure on
11 that high-pressure side, and if it gets to a certain set
12 point, then the valve opens and allows that fluid to
13 flow out and releases that pressure.

14 Q. Is that something that a person would have to
15 operate, or is that like an automatic?

16 A. It's automatic.

17 Q. So how would it -- how does that work, I
18 guess?

19 A. There is -- there is a large number of
20 different varieties of mechanisms how they work. But
21 generally a simple one would have a piston with a spring
22 on it, and the water pressure is pushing that piston up
23 against the spring, and as the pressure gets higher, it
24 pushes that piston farther in and compresses that spring
25 more. And once the pressure gets high enough, the

1 piston moves far enough where it opens its -- it'll open
2 a port or open a valve there to let the water go on out.

3 Q. Interesting. Is that a normal component?

4 A. Yes. Yes. That's extremely common, a relief
5 valve. It's also called a pop-off valve or a safety
6 relief valve. There's -- there's a number of different
7 names for it in different type of industries, but that's
8 very common in a lot of different industries.

9 Q. Would it be used for pumps of different
10 pressures? I mean, if it's like -- if 40,000 is your
11 max, then it wouldn't really work on, like, say, a
12 10,000?

13 A. Well, you'd have different -- you'd have a
14 different one, probably, for a 10,000 psi. But -- but
15 you would generally -- and generally these are
16 adjustable. So if you had a 40,000 psi pump, you would
17 set it for the pressure that you wanted it to operate
18 at.

19 Q. Oh.

20 A. So, you know, you might set it for 40,000, or
21 maybe if you felt comfortable going 10 percent over
22 that, you might set it a little high or -- or, you know,
23 you might go a little low if you wanted to do that.

24 Q. Okay.

25 A. And you might -- you might adjust it to

1 different settings for different situations.

2 Q. Okay. So can you take a look at the StarJet
3 on page 5.

4 A. Okay.

5 Q. Can you walk me through how that device works.

6 A. Well, the text here says that the nozzle
7 assembly is mounted to the front of a truck. So here
8 this -- this device has a high-pressure nozzle assembly
9 that's similar to the one that we just discussed on the
10 StripeJet. And that's mounted on the front of the
11 truck. And it says the nozzle assembly is hydraulically
12 raised and lowered and can be positioned to the right or
13 left. So -- so the operator can hydraulically move that
14 nozzle assembly around.

15 And the text here says that the truck carries
16 the NLB pump. And so we can see, in the back of this
17 truck in this photograph, the green box here, which --
18 which would be the -- looks like a diesel engine, and
19 then behind that looks like a little gray pump directly
20 above the rear tire. So -- so your ultra-high-pressure
21 pump would be on the truck.

22 And then the text says that it tows -- the
23 truck tows the water tank. So the tank is not actually
24 on the truck. It's on a trailer that's behind the
25 truck. So the pump is pulling the water out of this

1 trailer, and then it's, presumably, pumping it through
2 an ultra-high-pressure hose up to this nozzle assembly
3 on the front of the truck.

4 And then there is a vacuum hose that comes out
5 of that nozzle assembly and goes to a vacuum -- a vacuum
6 pump, probably a vacuum tank with a vacuum pump, which I
7 think some of these big white pieces on the -- on the
8 middle of the truck looks like it possibly could be a
9 vacuum tank.

10 Q. So other than the water tank, it looks like
11 the StarJet has all the other components for it to
12 operate?

13 A. Yes.

14 Q. And that StarJet would remove stripes from a
15 highway; is that correct?

16 A. Yes. I believe that's what it's marketed for.

17 Q. What about rubber? Would it remove rubber
18 from a runway?

19 A. Yes. I believe -- yes, the very first page
20 here says Solutions for Removing Pavement Markings and
21 Runway Rubber.

22 Q. What about the StripeJet? Would that also
23 remove paint stripes and rubber buildup?

24 A. I believe so.

25 Q. Have you ever used a -- one of these cleaning

1 devices that used pressurized water to remove runway
2 buildup?

3 A. No.

4 Q. Would an expert in the field have personal
5 knowledge of cleaning systems that remove runway rubber?

6 A. He might do, but wouldn't be required to.

7 Q. Are you personally aware that the FAA holds
8 technology transfer conferences on a regular basis?

9 A. Yes, I believe so.

10 Q. Have you ever been to one of those?

11 A. No.

12 Q. Do you know what would be discussed at such a
13 conference?

14 A. I believe a very wide -- wide variety of
15 different things.

16 Q. What about -- strike that.

17 Do you know what individuals are typically
18 selected to speak at such conferences?

19 A. I assume someone who has done work in a
20 particular area that they will be speaking on, something
21 that's of interest to the FAA and that they want to
22 disseminate to -- to the public.

23 Q. Would they likely be an expert in the field?

24 A. I would think so. Hope so.

25 Q. Let's go back to -- we discussed the amount of

1 pressure -- well, we discussed the amount of pressure
2 that would not remove paint from a vehicle.

3 Do you know what the maximum pressure of water
4 is so that the paint would not be removed from a vehicle
5 when cleaning it?

6 A. No, not specifically. It would depend on --
7 depend on other conditions, primarily how -- how close
8 the nozzle was to the surface that you're spraying and
9 how fast the nozzle was moving. So if you were really
10 close and you were really moving very slowly, you could
11 have a lower pressure than if you were farther away and
12 moving quickly.

13 Q. Well, let's assume that it is a -- like a
14 handheld wand, and let's say you're 4 to 6 inches away
15 from the vehicle when you're cleaning it off.

16 What sort of pressure -- and it can be a
17 range -- would you expect to not remove the paint from
18 the vehicle?

19 A. You're just asking me for an estimate kind
20 of -- I mean, I don't have -- I don't have specific
21 experience with -- with that, so I could give you kind
22 of an estimate.

23 Q. Estimate is fine.

24 A. I would -- I would think if you had a -- I
25 don't know. If you came out to wash my car and you had

1 a 3,000 psi system, I think I'd be -- I think I would be
2 nervous about it.

3 Q. So it may remove like a top coat but --

4 A. I don't know. I don't know. I mean, when
5 you're talking about car paint, if it's a brand-new car
6 with original paint, it's very, very durable. If it's
7 an old car and an unknown history, then you better be
8 careful.

9 Q. What about like -- I have a friend who owns,
10 like, a used car shop, and they often clean the vehicles
11 with these pressure washers.

12 A. Uh-huh.

13 Q. And sometimes they'll get box trucks and
14 they'll remove, like, decals off that, but they always
15 try to leave on the paint.

16 A. Uh-huh.

17 Q. Do you have a rough guess as to, you know,
18 what kind of ranges we're talking there?

19 A. I don't know. Couple of thousand, maybe.
20 Maybe a thousand. I don't know.

21 Q. Okay.

22 A. Especially if you're talking about a truck box
23 paint, that's probably not a real -- it's not up to the
24 quality of a car paint. So, yeah, I think you -- I
25 wouldn't think you'd want to go over a thousand or

1 somewhere in that neighborhood.

2 Q. Okay. What about --

3 A. But, you know, again, that's just a guess.
4 I'm speculating.

5 Q. Sure. At what pressure would you need water
6 to be to remove dirt from, like, asphalt or concrete?

7 A. One can do a pretty good job with -- with your
8 garden hose, you know, 50 to 100 psi, depending on how
9 fast you want to do it.

10 Q. What if I wanted to, like, clean a street, you
11 know, I had a street cleaner and I just wanted to use
12 pressurized water?

13 A. I don't know. You'd probably want to go to at
14 least 100, maybe 200. I don't know. Again, it would
15 depend on -- depend on your system and your situation.

16 Q. Let's go -- let's look at it from a different
17 angle.

18 At what pressure is the street cleaner going
19 to be removing the highway markings, the road striping?

20 A. I don't know that I could give you a number
21 for that. That would probably be something that you
22 would need to determine by experience because you
23 have -- you have a wide variety of markings. You have
24 some very durable things that are very hard to remove;
25 and then you probably have some old, old paint that's

1 pretty easy to get off, but you'd like it -- you don't
2 want to take it off. So you'd probably need to
3 determine that by experience.

4 Q. Okay. What about minimum pressure to remove
5 the runway rubber buildup?

6 A. I don't really have a very good feel for that.
7 Yeah, I don't really know that. Don't really know. I
8 would think it could be hard to get off because it's --
9 the rubber -- it can be applied at pretty high
10 temperature. So I don't have a good feel for it.

11 Q. Okay. In your declaration, you describe the
12 '116 patent as having tiny, looks like
13 six-one-thousandths of an inch diameter nozzles capable
14 of producing water having an exit velocity greater than
15 a bullet. Do you remember that?

16 A. Yes.

17 Q. Where did you come up with that nozzle
18 diameter?

19 A. I'm trying to remember if that is in the
20 patent. I don't believe it actually is.

21 I believe I heard that from the chief engineer
22 of Waterblasting, Steve. I can't remember his last
23 name. Is it Steve? Anyway, I visited their plant and
24 observed their technology. And that's one of the sizes
25 they use. They use a variety of different sizes,

1 though, based upon the application.

2 Q. Was this in 2004, or was this recently?

3 A. Say that again.

4 Q. Did you get that information recently, or was
5 that back in 2004?

6 A. I got that information recently.

7 Q. Okay. So you mentioned that there were
8 different size nozzles.

9 A. Yes.

10 Q. What sort of range of nozzle are available?

11 A. I don't -- I don't know that he actually gave
12 a range. I know that one of the references that I list
13 in the report is a table showing different water jet
14 nozzles, and it has a pretty wide range, going down to,
15 I think, three-thousandths of an inch, up to pretty big,
16 like maybe an eighth of an inch. It's a pretty wide
17 range.

18 Q. So based on your expertise, are there nozzles
19 greater than an eighth of an inch in diameter?

20 A. I would expect -- I would expect there are a
21 very wide range of nozzles available because there is
22 just a lot of different applications. I have a case
23 right now involving a -- some guys that were cleaning
24 out a separator on an oil field location, and they
25 were -- they were jetting water, and I think the nozzle

1 was a little larger than an eighth of an inch, but it
2 was at a lot lower pressure.

3 Q. So generally what would happen to the exit
4 velocity of the water if the diameter of the nozzle is
5 increased?

6 A. The exit velocity of the water is a direct
7 function of the pressure. So if you have -- if you're
8 pumping water at 40,000 psi, it's going to have -- well,
9 I calculated -- I calculated a velocity in the report,
10 which I believe is 1,700 feet per second, something like
11 that. That is the velocity you get by putting
12 40,000 psi on this nozzle. And if you put a bigger
13 nozzle in it, then it takes more flow rate to get
14 40,000 psi.

15 So say if you've got -- say if you -- say you
16 start out with a small nozzle and you're pumping very
17 slowly. You're going to have a low pressure. As you
18 speed your pump up and increase your flow rate, your
19 pressure goes up. So once you get to a certain flow
20 rate, then it'll take 40,000 psi to push that water
21 through that nozzle at that flow rate.

22 Q. Okay.

23 A. But if you get a bigger nozzle, say you take
24 that nozzle and you get a bigger model, you can go back
25 to that same flow rate that you were just using that

1 gave you 40,000 psi. Well, it won't give you 40,000
2 anymore. Maybe it only gives you 20,000. So you just
3 speed your pump up.

4 You keep going faster and faster until you get
5 to 40,000. So when you're at 40,000 psi, then that
6 velocity is the same as the velocity as it was with the
7 small nozzle. It's directly proportional to the
8 pressure drop across the nozzle.

9 Q. Okay. But if you kept running it at a
10 slower -- the pump at a slower rate, you wouldn't have
11 the same pressure coming out of the bigger nozzle?

12 A. Right. Right.

13 Q. Okay. I think I understand that.

14 A. It takes a few minutes to kind of get your
15 head around it. I mean, it's very simple once you kind
16 of get it, but it's -- you have to think about it for a
17 few minutes.

18 Q. Yeah. What about if you have more nozzles?
19 Does that -- and the same flow rate? Will that affect
20 your pressure?

21 A. Yes. That will give you a lower pressure
22 because you have to pump more fluid so that -- so -- so
23 if you take -- say if I'm pumping 6 gallons per minute
24 through one nozzle and that gives me 40,000 -- it takes
25 40,000 psi to do that, okay, so if I double that, now I

1 have to double that flow rate, so that that first nozzle
2 I have to get back where I'm now doing 6 gallons a
3 minute through that nozzle again. And then I'm also at
4 that -- so I will also be doing 6 gallons a minute
5 through the second nozzle.

6 Q. Okay. So I guess you'd be doing a total of
7 12 gallons?

8 A. Yeah. Yeah.

9 Q. Okay.

10 A. I mean, all that first nozzle cares about is
11 it's got 6 gallons a minute going through it. And if
12 you keep adding more nozzles --

13 Q. You get, like, 16 nozzles?

14 A. Yeah. Yeah. Each nozzle doesn't care about
15 the other ones. All it knows is how much fluid is going
16 through it.

17 Q. Okay. So your definition of high pressure,
18 that is the definition that you expect from 2004, right?

19 A. Yes.

20 Q. Okay. Has that definition changed since 2004?

21 A. No.

22 Q. What about prior to 2004?

23 A. I don't know. I don't know. My sense is it
24 probably started out lower and then got up to a certain
25 level and this is what really works well and then it

1 hasn't changed since then. But I don't have a lot of
2 specific information to base that on.

3 Q. Okay. I mean, what do you think about just
4 like ten years, like 1994? Generally the same?

5 A. I don't know. I don't know.

6 Q. Okay. I think -- correct me if I'm wrong. I
7 think we've established that there were pumps capable of
8 expelling water at 40,000 psi in 2004?

9 A. Yes.

10 Q. Okay. So there likely existed the hoses and
11 the nozzles and the other stuff that comes with that.
12 All that high pressure is to deal with the 40,000 psi?

13 A. Correct. Actually, one of the things that the
14 report references is a brochure by Waterblasting that
15 was produced in 2004 which discloses a complete system
16 that operates at 40,000 psi.

17 Q. Okay. How do high-pressure hoses work?

18 A. They are just -- well, basically the way a
19 high-pressure hose works is you have a -- the inner core
20 of it would be a liner, which would be a rubber hose or
21 a synthetic rubber hose, and then it has reinforcement,
22 typically, a braid of a reinforcing fiber that's wound
23 around the hose, a large number of fibers that are wound
24 around in an interlocking pattern, and then there will
25 be several layers. Well, depending on the pressure,

1 there may be several layers of these reinforcing fibers.
2 And there might be some -- some sort of a layer that
3 goes between the -- the -- the layers of the -- the
4 reinforcement, and then there will be a cover on the
5 outside of it.

6 Q. Is there any difference between the -- the
7 lumen of, like, a high-pressure hose and a standard
8 pressure hose?

9 A. Say it again.

10 Q. Is there any difference in, like, the internal
11 bore, the lumen for a high-pressure hose versus a
12 regular pressure hose?

13 A. Well, generally any -- any pressure rating --
14 you buy the hose for a certain pressure rating, and
15 there will be different size hoses that you can get for
16 that. Typically they're really -- very high-pressure
17 hoses are -- they have a very small internal diameter,
18 and then they have a lot of reinforcement. So if you
19 look at the outside of them, they look like a pretty big
20 hose, but the inside of them is very small.

21 Q. Interesting.

22 MR. PFEIFER: Would you guys mind if we
23 take a break?

24 THE WITNESS: Sure.

25 (Recess from 11:49 a.m. to 11:58 a.m.)

1 Q. (BY MR. PFEIFER) So now I would like to give
2 you the Jones reference, which is Exhibit Blasters-1002.

3 A. All right.

4 Q. Does that look like the Jones reference?

5 A. It does.

6 Q. Okay. Perfect. Can you just walk me through
7 your understanding of the Jones reference?

8 A. My understanding is that it's a turf cleaner.
9 It calls it an artificial turf cleaner. So basically
10 it's for cleaning artificial turf, like on a sports
11 field. And it has a little tractor which pulls a spray
12 nozzle.

13 So what it does, it basically sprays water
14 and -- or sprays hot water with cleaner, like hot soapy
15 water, onto the field. And then it sucks it up with a
16 vacuum cleaner -- or with a vacuum. And it has a
17 support vehicle, which is a truck which has a vacuum
18 pump and a low-pressure pump for the spray water.

19 It does not have a tank or reservoir to carry
20 its own water. So it gets water from a hose, probably
21 from, like, a water hydrant or some kind of an external
22 source. Brings the water in. Has a water heater that
23 heats the water up. And it has an injection system
24 where it injects the detergent or whatever it is into
25 the water. And then it pumps it out through a hose that

1 runs over to the little tractor.

2 And the operator of the tractor has a valve
3 where he can turn the spray off and on, and then it
4 sprays down onto the -- the turf. And there is a
5 suction nozzle that is connected to a vacuum hose. And
6 so the truck has a -- has a vacuum pump on it and a
7 vacuum tank.

8 So the vacuum tank's connected to this -- to
9 this suction hose, and so it sucks the water up off the
10 field and pulls it over into this vacuum tank. And I
11 assume they will dispose of it at some other point.

12 Q. Okay. Do you see the handle on the tractor?
13 Let's see what that reference number is. 57.

14 A. Yes.

15 Q. What exactly is that?

16 A. That is a -- that's a handle that goes to a
17 lever that pulls a cable that's reference number 60.
18 And the cable is attached onto a link that raises the
19 nozzle -- raises the nozzle assembly up and down. It
20 lifts it up off the field so that you can drive around,
21 and then it puts it down on the field to spray it.

22 Q. Is that what's shown in Figures 3 and 4, it
23 looks like?

24 A. Yes.

25 Q. Okay. And then Figure 5 shows it at an angle;

1 is that correct?

2 A. Yes.

3 Q. Okay. So looking at Figure 4, can you
4 describe how those links are connected in there? 55 --

5 I don't know if this is the right reference number --
6 but 32 and then that connection there that you see.

7 A. Yes. So basically there are two bars. They
8 look like they're probably square tubing. If you
9 look -- if you look at Figure 5, it shows a top view of
10 it.

11 Q. Uh-huh.

12 A. And it shows that the spray nozzles are at the
13 top of the picture, and it shows an axle with a couple
14 of wheels and tires on it that are on a frame. So
15 basically what it is is a little trailer. So Figure 5,
16 we're looking at a little trailer. And then down at the
17 bottom of the picture, in 55, would be the back end of
18 the tractor.

19 And so going back to Figure 3, on the right
20 side of the picture, you've got -- you've got a couple
21 of tires that are sitting down here on your field, and
22 those are the trailer tires that you see in Figure 5.
23 And so from that tire that you see, there is a -- there
24 is a straight bar that goes up -- upward and to the left
25 coming from that tire going over to the tractor.

1 And so that's basically the -- well, if you
2 look back at Figure 5, basically what you're looking at,
3 you're looking at that item number 30, which is the
4 frame of the trailer, and then 32, which is what you
5 could call the tongue of the trailer. Okay.

6 Okay. So then going back to Figure 4, okay,
7 Figure 4 is like Figure 3, except it's flipped over;
8 it's a mirror image. So it's like we're standing on the
9 other side of the tractor, looking back at it.

10 So if you find item 32 right kind of in the
11 middle of the picture, that is the tongue of the trailer
12 that's coming up from those wheels. And so the tongue
13 of the trailer comes up, and it has a little fitting on
14 the end of it, and the fitting has a bolt -- a pin or a
15 bolt; it's probably a bolt with a nut on it -- that's
16 item number 54, and that connects it to another bar
17 that's 55. And 55 is mounted on the back of the
18 tractor.

19 And so if we go down to the other end of that
20 bar 55, there is another bolt here, 56, and that's what
21 mounts this bar 55 onto the trailer is that little bolt
22 right there. And so this bar 55 can pivot up and down
23 on that bolt 56. So when this guy's pulling the -- that
24 lever 57, it goes through this linkage and this cable,
25 and as he pulls that lever back and forth, it raises --

1 or it pivots that bar 55. It pivots it up and down, and
2 it's pivoting about that bolt 56.

3 And so as -- so if we go to the other end of
4 the bar, where the bolt 54 is, that moves up and down as
5 he actuates that lever, and that pivots the trailer
6 frame 32 up and down. So the position that is shown in
7 Figure 4 is it's shown in the position where the -- that
8 front end of the trailer tongue where the bolt 54 is,
9 that's up.

10 And that pivots the back end of the trailer
11 down, which puts the nozzle down onto the turf. And
12 then if he pushes the lever the other way, that pushes
13 the tongue of the trailer down and it picks up the back
14 end of the trailer, picks the nozzles up off of the turf
15 so that you can drive it around without dragging them on
16 the turf.

17 Q. And then what about pin 53? What is that?

18 A. Okay. Pin 53 -- so the tongue of the trailer
19 32 is connected to this little fitting 52. Yeah, 52 is
20 this fitting. I'm not sure what you would call it.
21 It's kind of like a clevis.

22 Q. It's like a linkage or something?

23 A. Yeah, it's like a linkage. You might call it
24 a link. Probably a link is a good word for it. So it's
25 connected to that fitting or that link. And then if we

1 look over at Figure 5, we can see looking down on it.
2 So that link is connected to the tongue of the trailer
3 by the bolt 53, and it's connected to the tractor by the
4 bolt 54.

5 And so what the purpose of that link is is it
6 allows -- the whole trailer assembly on the back, it
7 allows it to pivot right and left with respect to the
8 tractor as shown in Figure 5. So Figure 5 shows it
9 pivoting. So if you're driving a tractor, that would be
10 pivoting to the left. So that allows the tractor to be
11 able to turn corners and go around in circles without --
12 without dragging those tires sideways. It just lets
13 them trail along behind the tractor.

14 Q. Okay. Let's also look at the Clemons
15 reference as well. This is Exhibit Blasters-1008.
16 Please let me know if that is the reference that you are
17 familiar with and have reviewed.

18 A. Yes. This is the Clemons reference, Clemons
19 patent.

20 Q. Can you please explain how the Clemons device
21 operates.

22 A. The Clemons device has a -- has a spray
23 nozzle, has a head with spray nozzles on it, and they're
24 mounted on the front of this little truck. And the
25 spray nozzles -- well, the spray nozzles are on this

1 head which is mounted on the front of the truck. There
2 is a link 42 which mounts them onto the truck. And the
3 truck has a pump -- the truck basically has a water
4 reservoir, and it has a water heater, and it has a pump.

5 And so the water from the pump comes out
6 through a hose to the nozzles on this spray head, and it
7 sprays the floor, sprays water on the floor. I believe
8 it also has a cleaning solution that's in the water.
9 And then there is a vacuum nozzle, a suction nozzle with
10 a suction hose or pipe that goes back to the truck, and
11 there is a vacuum tank and a vacuum pump -- actually, it
12 calls it a vacuum blower -- that sucks the air out of
13 the pump and pulls the -- pulls the water up off of the
14 floor into the vacuum tank.

15 MR. PFEIFER: Okay. All right. We are
16 going to rest for now. Hand it over to you guys, if
17 you're ready.

18 MR. COHEN: Can you give us about ten
19 minutes or so?

20 MR. PFEIFER: Of course.

21 (Recess from 12:13 p.m. to 12:29 p.m.)

22 MR. COHEN: We don't have any redirect
23 questions of Dr. King at this time.

24 THE REPORTER: Would you put on the
25 record if he is going to read and sign and where I

1 should send it.

2 MR. COHEN: Yes, he'll read and sign. I
3 guess you can send the -- you can send it to our office
4 that's listed on my business card.

5 (Proceedings adjourned at 12:29 p.m.)

6 (Per Federal Rule of Civil Procedure
7 30(e)(1), signature was requested by
8 Counsel before completion of the
9 deposition)

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CHANGES AND SIGNATURE

RANDALL KING, Ph.D., P.E. - DECEMBER 12, 2018

PAGELINE

CHANGE/REASON

SIGNATURE OF WITNESS

STATE OF _____ X

COUNTY OF _____ X

SUBSCRIBED AND SWORN TO by the said witness,
RANDALL KING, Ph.D., P.E., on this the _____ day of
_____, 2019.

Notary Public in and for
the State of _____.

My commission expires: _____

THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

BLASTERS, INC.,
Petitioner,

v.

WATERBLASTING, LLC,
Patent Owner.

Case: IPR2018-00504

U.S. Patent No. 7,255,116

REPORTER'S CERTIFICATION
ORAL DEPOSITION OF RANDALL KING, Ph.D., P.E.
DECEMBER 12, 2018

I, Angela L. Mancuso, Certified Shorthand Reporter
in and for the State of Texas, hereby certify to the
following:

That the witness, RANDALL KING, Ph.D., P.E., was
duly sworn by the officer and that the transcript of the
oral deposition is a true record of the testimony given
by the witness;

That the original deposition was delivered to
Mr. Kenneth W. Cohen for examination and signature by
the witness;

That the time used by the parties is as follows:

MR. NICHOLAS R. PFEIFER: 1 hour, 29 minutes

MR. KENNETH W. COHEN: 0 hours, 0 minutes

That a copy of this certificate was served on all
parties and/or the witness shown herein on


1 I further certify that pursuant to FRCP Rule
2 30(e)(1) that the signature of the deponent:

3 X was requested by the deponent or a party before
4 the completion of the deposition and that the signature
5 is to be before any notary public and returned within
6 30 days from date of receipt of the transcript. If
7 returned, the attached Changes and Signature page
8 contains any changes and the reasons therefor.

9 was not requested by the deponent or a party
10 before the completion of the deposition.

11 I further certify that I am neither attorney or
12 counsel for, nor related to or employed by, any of the
13 parties to the action in which this deposition is taken,
14 and further that I am not a relative or employee of any
15 attorney or counsel employed by the parties hereto, or
16 financially interested in the action.

17 Certified to by me on this the 28th day of
18 December, 2018.

19 

20 _____
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