

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

Patent No. 9,827,568

Inter Partes Review No. IPR2024-01380

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CMS CEP COR LTD., and CMS CEP COR

AMERICAS LLC,

Petitioner,

vs.

SANDVIK INTELLECTUAL PROPERTY AB,

Patent Owner.

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DEPOSITION of HARRI K. KYTOMAA, Ph.D.

Boston, Massachusetts

Reporter: Michael D. O'Connor, RMR, CRR, CRC

Job No. 7809555

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Monday, December 22, 2025
10:26 a.m.

DEPOSITION of HARRI KYTOMAA, Ph.D.,
held at Veritext Solutions, 101 Arch Street,
Boston, Massachusetts, pursuant to notice,
before Michael D. O'Connor, Registered Merit
Reporter, Certified Realtime Reporter,
Certified Realtime Captioner.

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I N D E X

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By Mr. Sanks	5

E X H I B I T S

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Exhibit 1001A	U.S. Patent 9,827,568	13
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P R O C E E D I N G S

HARRI K. KYTOMAA, Ph.D.

having been satisfactorily identified by the production of his driver's license, and duly sworn by the Notary Public, was examined and testified as follows:

EXAMINATION

BY MR. SANKS:

Q. Sir, it's nice to be before you again, and this will be the last time.

I'm going to start off really just asking some general questions about gyratory crushers. Typically what's the purpose of a gyratory crusher?

MR. ARJOMAND: Objection to form.

A. The gyratory crushers that we're talking about here is to reduce the size of rocks of -- potentially various types of rocks from a larger size to a smaller size. In this case, we're talking about rocks about, you know, a foot in diameter to a size that's of the order of an inch or so.

1 Q. Are there other types of crushers
2 out there that can crush rocks?

3 MR. ARJOMAND: Objection to form.

4 A. Yeah. There are systems that are
5 not gyratory that are more, I would say, sort
6 of piston actuated, with various kinds of
7 geometries, that don't have the gyrating shaft
8 design that is unique to gyratory crushers.

9 Q. Okay. When a rock passes through
10 a gyratory crusher, what's the byproduct?

11 MR. ARJOMAND: Objection to form.

12 A. It is -- basically it's reduced in
13 size into multiple smaller rocks.

14 Q. And the process of reducing it in
15 size, does it also create fines?

16 MR. ARJOMAND: Objection to form.

17 A. Mostly not, but it will always
18 create some fines, but that's not its purpose.

19 Q. All right. What is the purpose of
20 a coal pulverizer?

21 MR. ARJOMAND: Objection.

22 A. As the name suggests, it's to
23 pulverize the coal, to create essentially a
24 fine dust that has a particle size that's a
25 little bit above the thickness of your hair

1 that can then be used in multiple applications,
2 but typically in coal-fired boilers as an
3 example.

4 Q. Is coal a rock?

5 A. I mean, it's constitution is very
6 specific, that is what it is made of, but it is
7 something that is found in geological
8 formations. So you can call it a rock, but
9 it's a very specific kind of rock that is, you
10 know, that is rich in carbon.

11 Typical rocks have different
12 constitution, depending on, you know, what
13 their origins are, depending, you know, whether
14 it's a volcanic rock or a rock that is formed
15 from the sedimentation and it's a compaction of
16 ancient coral reefs or materials that are more
17 rich in silicates, for example.

18 So you will have calcium rich
19 rocks, silicate rich rocks, various kinds of
20 chemical compositions.

21 Q. Can coal be crushed with a
22 gyratory crusher?

23 MR. ARJOMAND: Objection to form.

24 A. Yes. Larger, let's say, larger
25 mined rocks from coal mines could be placed in

1 the gyratory crusher. There are various other
2 kinds of crushers. Like, for example, bore
3 mills are also used to reduce the size of coal.

4 Q. So if coal is crushed through a
5 gyratory crusher, would it be reduced to fines?

6 MR. ARJOMAND: Objection to form.

7 A. No. It would be reduced -- so the
8 gyratory crusher, by virtue of its geometry and
9 the way it operates, will typically reduce
10 large particles into like something of the size
11 of about a foot, maybe a little less, to
12 something of the order of about an inch in
13 size.

14 The various kinds of rocks can be
15 placed into a gyratory crusher of various
16 compositions, including coal. But the gyratory
17 crushers will essentially reduce from the
18 larger size to the smaller size that I just
19 mentioned, pulverizers are an entirely
20 different class.

21 (Document marked as Exhibit 1018
22 for identification)

23 Q. Prior to being involved with this
24 case, did you have any experience working with
25 or opining on coal pulverizers?

1 A. Yes.

2 Q. Could you elaborate on your
3 experience?

4 A. Yeah. My involvement with coal
5 pulverizers is really in the context of
6 coal-fired power plants. The most recent
7 project that I've worked of that kind was in
8 Brazil, where there were issues associated with
9 the pulverizer, but generally there were issues
10 with the power plant. That was just one of the
11 issues.

12 Q. What I've handed you is Exhibit
13 1018, which is the Piepho reference that we've
14 talked about before. In this reference, does
15 it teach the intended input size of coal?

16 MR. ARJOMAND: Objection to form.

17 A. So this is the Piepho -- Piepho --
18 I'll call it Piepho if that's okay with you.

19 Q. That's fine.

20 A. I'm not quite sure what the
21 correct pronunciation is. '026 patent assigned
22 to the Babcock & Wilcox Company.

23 So this invention is in the
24 context of Babcock & Wilcox pulverizers,
25 specifically Type E and Type EL pulverizers.

1 I've specifically looked into the
2 specifications associated with these
3 pulverizers, and the answer to your question
4 is, yes, there is a specific size range that is
5 relevant to these types of pulverizers.

6 Q. Just so I'm clear, there's the
7 specific size relevant to the B&W Type EL
8 pulverizer?

9 A. That's correct. And I cite to
10 that in my declaration.

11 Q. As used in Piepho, can you explain
12 how coal is broken down into approximately the
13 one-inch size to be fed into the pulverizer?

14 MR. ARJOMAND: Objection to form.

15 A. That's not what I said.

16 MR. SANKS: Scratch that question.

17 Q. In your declaration, you state
18 that the coal particles -- is the Piepho
19 reference limited to just having coal between
20 the size of .75 to one inch to be inputted into
21 it?

22 MR. ARJOMAND: Objection to form.
23 Counsel, if you're reading from his
24 declaration --

25 MR. SANKS: No, I'm not reading

1 from it. If I read from it, the
2 question would have sounded better.

3 A. So the field of invention of
4 Piepho relates to an improved main shaft for a
5 coal pulverizer, and more particularly, to an
6 improved main shaft for use in the Babcock &
7 Wilcox Type E and EL pulverizers.

8 So it's very specific to what this
9 invention is intended for. And so, that
10 defines, that is Babcock & Wilcox Type E and
11 EL, defines the intended use of the product,
12 and it is a coal pulverizer.

13 If I may supplement the question.
14 The claims of the patent are also very specific
15 to pulverizing coal.

16 Q. Could Piepho be applicable to
17 other pulverizers other than just the --
18 scratch that.

19 Could Piepho be applicable to
20 other pulverizers other than B&W Type EL
21 pulverizer?

22 MR. ARJOMAND: Objection to form.

23 A. The field of the invention is
24 specific to the Babcock & Wilcox Type E and EL
25 coal pulverizer, but the claims of the patent

1 speak to coal pulverizers, and it is broader
2 than just this brand of Babcock & Wilcox or the
3 Type E and EL. It is slightly broader, but it
4 is limited to coal pulverizers.

5 (Document marked as Exhibit 1001B
6 for identification)

7 Q. So what I've handed you is one of
8 the patents at issue. This is the Bergman --
9 excuse me. Just a minute. I've handed you the
10 wrong one. You can set that one aside. We'll
11 come back to that.

12 COURT REPORTER: Should I take the
13 sticker off?

14 MR. SANKS: No, you can leave the
15 sticker on.

16 COURT REPORTER: Do you want to
17 leave it marked as 1001?

18 MR. SANKS: Yes. I don't know how
19 we marked -- we marked both of them
20 initially -- you can leave ...

21 MR. ARJOMAND: Do it as A and B
22 for the purpose of this deposition if
23 it's easier.

24 MR. SANKS: Do that one as B. So
25 this will be Exhibit 1001A.

1 (Document marked as Exhibit 1001A
2 for identification)

3 Q. So this will be Exhibit 1001A.
4 I'm going to refer to this one as Aberg. Do
5 you call it Aberg or Aberg?

6 A. Aberg is fine.

7 Q. For Aberg, does it teach the
8 supply size of rock to be crushed?

9 MR. ARJOMAND: Objection to form.

10 A. In the context of this matter,
11 there are specific components that are part of
12 the gyratory crusher shaft assembly. And so in
13 the context of those specific components that
14 I've looked at that are manufactured both by
15 Sandvik and CMS, the answer is yes.

16 With respect to whether this
17 patent, '568 patent, provides that information,
18 I would need to take a quick look. I don't
19 believe that it provides a specific size in the
20 body of the patent itself.

21 However, a person of ordinary
22 skill in the art would understand that rock
23 crushers crush rocks and create an end product
24 by virtue of the crushing process that are much
25 larger than what a pulverizer would put out.

1 Q. So you would agree that Aberg does
2 not teach or disclose the intended output size
3 of the rock once run through a gyratory crusher
4 as claimed in Aberg?

5 MR. ARJOMAND: Objection to form.

6 A. By virtue of it being a rock
7 crusher, it doesn't pulverize a rock. It
8 simply crushes a rock into smaller rocks.

9 So to some extent, it does, but it
10 doesn't give you a specific dimension. But if
11 you go to the specification of the piece of
12 equipment in dispute in this case, then you can
13 make that determination with some degree of
14 accuracy.

15 Q. Can gyratory rock crushers accept
16 rocks greater than 9.8 inches wide?

17 A. The maximum -- both the maximum
18 size and the size to which gyratory rock
19 crushers crush is defined by the geometry of
20 the crushing zone, if you will, mantel, the
21 alta and the inner mantles.

22 Actually, to be more specific,
23 these are labeled 105 and 106 in the '568
24 patent, and in the patent they are called --
25 the first crushing shell and the second

1 crushing shells.

2 So their geometry and separation,
3 and indeed, the gyrating trajectory of the main
4 shaft, defines ultimately the size that the
5 gyratory rock crusher accepts and is able to
6 crush to, because those three things THAT I
7 just mentioned define ultimately the gaps at
8 the opening, and the size that can enter the
9 crushing zone, and as well as the gap size of
10 the exit, which defines the size of the rocks
11 that can leave.

12 Q. Is there any stated limitations in
13 Aberg as to the size or dimensions of the outer
14 mantel?

15 MR. ARJOMAND: Objection to form.

16 A. I don't believe the '568 patent
17 issued to Aberg provides a specific size. But
18 by virtue of being a rock crusher, a person of
19 ordinary skill in the art would understand that
20 it is a rock crusher.

21 Q. Does Aberg teach a particular
22 dimension or size of the outer mantel?

23 MR. ARJOMAND: Objection. Form.

24 A. I don't believe that Aberg
25 provides a size for the outer mantel, but

1 generally speaking, I wouldn't necessarily
2 expect patents to be limit to any specific
3 size, in my experience.

4 Q. Does Aberg state or describe
5 dimensions for physical size of the inner
6 mantel?

7 MR. ARJOMAND: Objection to form.

8 A. I don't believe it does. And as I
9 just said a moment ago, I wouldn't expect it to
10 either.

11 Q. Now, let's go back to Exhibit
12 1001B, and I'll refer to this one as Bergman.

13 Does Bergman teach the size rock
14 to be used with this invention?

15 MR. ARJOMAND: Objection to form.

16 A. Bergman is directed at a gyratory
17 crusher which generally would inform a person
18 of ordinary skill in the art as to what this
19 piece of equipment does and specifically,
20 therefore, a broad range of size of rocks that
21 it crushes.

22 But I don't believe, and I don't
23 expect, it to actually provide specific
24 dimensions in the patent.

25 Q. Does Bergman disclose an intended

1 output size of crushed rock?

2 MR. ARJOMAND: Objection to form.

3 A. I don't believe it does, and I
4 don't expect it to either.

5 Q. Is it possible to use the
6 invention of Bergman in a gyratory crusher that
7 accepts rocks larger than 9.8 inches wide?

8 MR. ARJOMAND: Objection to form.

9 A. The dimension of the rock crusher
10 or that is the dimension of the rocks that the
11 rock crusher can accommodate are defined
12 ultimately by geometrical characteristics of
13 the crushing components.

14 So these are the ones that I
15 identified before as items labeled 105 and 106
16 in the '568 patent. Actually also, the
17 numbering is identical in the '090 patent.

18 If you look at Figure 1, Figure 1
19 is a figure that is common to both patents. As
20 of the size, the size of particles that the
21 crusher accepts, which is, I think, your
22 question, is defined by sort of the entrance
23 geometry of the space that is defined by items
24 105, 106, as well as the eccentric nature of
25 the gyration of the main shaft.

1 Q. Is it possible to use Bergman to
2 produce a gyratory crusher that accepts rocks
3 -- scratch that.

4 Is it possible to apply Bergman to
5 a gyratory crusher that has an adjustable
6 output size greater than .3 to 1.8 inches?

7 MR. ARJOMAND: Objection to form.

8 A. Your question is, is it possible
9 for the output size to be greater than .3 to .8
10 inches?

11 Q. 1.8 inches.

12 A. I'm sorry, yes.

13 MR. ARJOMAND: Objection to form.

14 A. So in principle, the output size
15 of the gyratory crusher is defined by the
16 geometries that I've described, whether you can
17 adjust the output size or you have to actually
18 swap out certain components, whether it is the
19 sleeve, the eccentric sleeve that controls the
20 gyratory motion, or the shape and dimension of
21 items 105 and 106.

22 We need to swap them out or adjust
23 is not something that I've looked at. So I'm
24 not sure whether you can actually adjust.

25 Q. If you can go back to Exhibit

1 1018, Piepho. Does Piepho teach a tapered
2 shaft?

3 MR. ARJOMAND: Objection to form.

4 A. It teaches a tapered shaft as well
5 as a straight shaft.

6 Q. In the comminution mill, are
7 tapered shafts known or well known prior to
8 2010?

9 MR. ARJOMAND: Objection to form.

10 A. I would say generally speaking,
11 tapered shafts were known, as well as straight
12 shafts. So specifically in the field of
13 pulverizers, which is the field of endeavor of
14 Piepho, it talks about straight shafts and
15 tapered shafts.

16 Q. In the comminution equipment mill,
17 were tapered friction fit shafts and sleeves
18 known prior to 2010?

19 A. Tapered and straight shafts were
20 known generally on the one hand, and more
21 specifically, they were known before 2010 in
22 the field of pulverizers.

23 Q. Pulverizers are in the comminution
24 equipment mill?

25 MR. ARJOMAND: Objection to form.

1 A. Yes. So pulverizers are in the
2 field of comminution equipment.

3 Q. Are tapered shafts known greater
4 than the comminution equipment fill in the
5 mechanical arts?

6 MR. ARJOMAND: Objection to form.

7 A. Yes.

8 Q. And have they been known prior to
9 2010?

10 A. Yes.

11 Q. Can you identify other examples of
12 where they have been used?

13 MR. ARJOMAND: Objection to form.

14 A. I mean, they have been used, you
15 know, we've seen prior art mentioned in
16 association with the use of tapered shafts with
17 gear or tooth -- their attachment to gear or
18 tooth wheels as an example. But there would be
19 other examples as well.

20 Just to be clear, I've not
21 undertaken an effort to research the variety of
22 applications of tapered shafts.

23 Q. Understood. In Piepho, is the
24 tapered shaft designed to handle the same
25 forces around the full circumference of the

1 tapered shaft?

2 MR. ARJOMAND: Objection to form.

3 A. I'm not sure I understand your
4 question.

5 Q. Let me try to ask it this way.
6 I've asked certain parts.

7 So Piepho, they teach a tapered
8 shaft, correct?

9 A. Both a tapered and straight shaft,
10 but, yes.

11 Q. And at a given location on the
12 shaft around that circumference, is that area,
13 that circumference, designed or developed to
14 handle the same force level going around the
15 full circumference?

16 MR. ARJOMAND: Objection to form.

17 A. Yeah, so the design of the shaft
18 for Piepho is in the context of the Babcock &
19 Wilcox pulverizers, and the pulverizers in
20 their normal operation will impose loads at the
21 end of the shaft, and those loads will tend to
22 not be sideways forces so much. They will be
23 -- they will tend to be bending type forces
24 because of the, let's say, the act of
25 pulverizing.

1 So essentially the ball is rolling
2 in those two races, the upper and lower race of
3 the pulverizer, and can constitute, let's say,
4 a little bit of a bumpy ride for the balls, and
5 that bumpiness is then relayed to the top of
6 the shaft in the form of bending moments.

7 So those bending moments really
8 are caused by -- let's see. Those bending
9 moments in the specific orientation is derived
10 by where is it that the balls are having to
11 ride over material that is being crushed.

12 So it would be a sort of like, if
13 you will, a situation where the ball has to
14 rise over material that is being crushed, and
15 as a result, creates a twisting of the lower
16 race, and then the structure that supports it.

17 So it will be mostly sort of
18 bending type loads that are experienced in this
19 pulverizer design, but those bending loads will
20 occur all the way around, but they don't
21 necessarily occur all the way around, that is
22 at different angles at the same time. It's
23 distributed in time and also distributed in
24 sort of angular orientation covering all
25 angular orientations.

1 Q. Going back to Aberg, was the
2 tapered shaft designed to experience forces all
3 the way around its tapered shaft?

4 MR. ARJOMAND: Objection to form.

5 A. The forces that Aberg shaft
6 experiences, and specifically at its very top,
7 are mostly sideways forces. So very different
8 loading from the Piepho loading.

9 The Piepho loading derives from
10 the significant moment arm associated with the
11 lower race in which the balls sit.

12 There is no such moment arm in the
13 Aberg '568 patent, and the loads that the top
14 of the Aberg shaft has to withstand are mostly
15 side loads, and there will always be side loads
16 from one side at a time, and the side load
17 really has to do with the gyrating motion of
18 the shaft that defines where the crushing zone
19 is, and the location of the crushing zone, or
20 specifically the angular position of the
21 crushing zone, then defines where that side
22 force is coming.

23 What I just described, and
24 specifically the location of side forces, in
25 Aberg '568 patent, does not arise at all in the

1 '026 Piepho patent.

2 Q. I'd like to ask a couple of
3 questions about the POSITA or person of
4 ordinary skill in the art.

5 In prior declarations there's been
6 discussions about the POSITA -- really, the
7 question is, is the POSITA the same for the
8 Aberg patent and the Piepho patent?

9 MR. ARJOMAND: Objection to form.

10 A. My understanding is that opposing
11 expert, Mr. Smith, has proposed a POSITA for
12 this matter. That person of ordinary skill in
13 the art would be the person essentially
14 reviewing all of these patents.

15 There is no distinction, that I
16 understand, of, let's say, a different
17 definition in accordance with the different
18 patent that is cited in this suit.

19 Q. How about would it be different
20 with respect to your representation of a
21 pulverizer versus a gyratory crusher?

22 MR. ARJOMAND: Objection to form.

23 A. No. In this matter, but other
24 intellectual property matters that I've worked
25 on, the size would agree on the definition of a

1 person of ordinary skill in the art, and that's
2 not dependent on one reference versus another.

3 Q. Piepho mentioned that the shaft
4 could be either cylindrical or tapered. Did
5 one configuration come before the other one in
6 development of coal pulverizers?

7 MR. ARJOMAND: Objection to form.

8 A. I've not reviewed the history of
9 coal pulverizers with respect to the choice of
10 shaft, but in accordance with Piepho, both are
11 acceptable.

12 And since Piepho is really not an
13 invention associated with whether the shaft has
14 a tapered or straight shaft, but rather, it is
15 an invention associated with a specific kind of
16 coating that can be applied to a preexisting
17 shaft, both are acceptable.

18 MR. SANKS: Could we take a
19 ten-minute break?

20 MR. ARJOMAND: Sure.

21 (Recess taken at 11:21 a.m. and
22 reconvening at 11:32 a.m.)

23 BY MR. SANKS:

24 Q. I wanted to ask a couple more
25 general questions about you're at a coal mine.

1 They mine the coal. The coal that's mined, do
2 they put it directly into the type of crusher
3 -- scratch that and let me back up and get this
4 straight.

5 Once coal is mined, does it
6 typically go into the B&W Type EL pulverizer?

7 MR. ARJOMAND: Objection to form.

8 A. No.

9 Q. Can you explain the process, how
10 it works?

11 A. Sure. Essentially you'll start
12 with, depending on the mining operation, you'll
13 start with a broad range of sizes, and there
14 may be sort of a, let's say, a coarse size
15 classification that allows smaller components
16 to -- let's say, smaller pieces of rock to move
17 on, and larger ones may get crushed by some
18 kind of crusher that accommodates large rocks.

19 But ultimately, the coal has to be
20 reduced in size small enough for the pulverizer
21 to accept. And before the pulverizer, there
22 may be, for example, a bore mill. A bore mill
23 that then reduces the size to a size that's
24 sufficient for the pulverizer to accept.

25 So there will be multiple steps,

1 typically two or three, that also includes a
2 classification of size. So larger rocks will
3 need to be crushed by a different kind of
4 equipment than the smaller rocks, and the
5 classification will direct different sizes to
6 different pieces of equipment.

7 Q. Okay. How about the gyratory rock
8 crusher, and how it's used at a quarry or a
9 mine, is it a similar process?

10 MR. ARJOMAND: Objection to form.

11 A. I would expect it to be a similar
12 process, but I have not really looked at quarry
13 mine operations with respect to other pieces of
14 equipment and exactly what sizes are available
15 from the initial mining process.

16 What I do know is that the end
17 product ultimately is classified into size
18 ranges that are, you know, essentially then
19 sold for end use.

20 Q. And from your experience, do you
21 know if they sell the fines that result from --
22 that result from, say, a gyratory crusher?

23 MR. ARJOMAND: Objection to form.

24 Outside the scope of his testimony.

25 A. What I do know is that, just as an

1 example, granite. Granite is sold in a broad
2 range of size ranges, and each of those have
3 very different end uses, whether it is used as
4 aggregate, for example, in concrete or used as
5 -- think of it as sand. So when particles are
6 of the order of, let's say, perhaps of the
7 order of one millimeter in diameter or so.

8 The finer particles that I've just
9 described will not be the typical product
10 associated with gyratory rock crushers. There
11 will be other processes downstream of the
12 gyratory rock crusher to create the finer
13 products.

14 Now, to the extent there's a small
15 amount of fines that arise out of the, let's
16 say, the act of using the gyratory rock
17 crusher, those will ultimately be sent to the
18 appropriate size range of product that is then
19 sold on the market.

20 Q. Turning back to Piepho, you've
21 discussed that it teaches both cylindrical main
22 shaft as well as a tapered main shaft. Is
23 there a preferred embodiment discussed in
24 Piepho?

25 MR. ARJOMAND: Objection to form.

1 A. Piepho states that both are
2 acceptable, and as I pointed out, the invention
3 of Piepho addresses a specific problem related
4 to fretting, and it provides a solution for new
5 and preexisting shafts that are either tapered
6 or straight.

7 The patent itself indicates both
8 are acceptable, and it does say that tapered
9 are preferred. But it also states that the
10 coating can be applied to other.

11 Q. I'm going to ask you to look at
12 Aberg again. That's the '568 patent. Can you
13 point me to the description in Aberg that
14 states that the second end of the shaft is
15 freely rotatable about a longitudinal access of
16 the shaft within the bearing assembly?

17 MR. ARJOMAND: Objection to form.
18 Counsel, for the record you have been
19 asking Dr. Kytomaa questions for over an
20 hour without having provided him his
21 declarations in this case.

22 Do you intend to give him his
23 declarations or not?

24 MR. SANKS: I can give them to
25 him.

1 Q. Pause on that question until I
2 give you a declaration.

3 A. Okay. Thank you.

4 MR. ARJOMAND: If it helps, I have
5 copies of his declaration.

6 MR. SANKS: That would be great.

7 MR. ARJOMAND: You can take a look
8 at them, first, if you want. This is
9 the fourth and fifth declaration.

10 MR. SANKS: Do you have an extra
11 copy for him or shall I have him make a
12 copy?

13 MR. ARJOMAND: That's fine. I can
14 pull up an electronic copy. This is the
15 fourth and fifth declaration in the
16 01381 proceeding. Let me give you the
17 second and third declaration in the
18 01380 proceeding.

19 Q. Let me know when you're ready.

20 A. I'm ready.

21 MR. ARJOMAND: Do you want to
22 reask the question?

23 MR. SANKS: Yeah, I waited until
24 he said he was ready.

25 Q. Can you identify to me in the

1 Aberg patent where it teaches second end of the
2 shaft is freely rotatable about a longitudinal
3 -- that's not the question. Hold on. Scratch
4 that.

5 Could you point out to me in Aberg
6 where it teaches that the second end of the
7 shaft is freely rotatable about a longitudinal
8 axis of the shaft within the bearing assembly?

9 A. The first appearance of -- let me
10 make sure that I've got the papers here. In
11 Aberg, if you look at -- the very end of Column
12 3 in the '568 patent, it says, "A very
13 uppermost end 117 of shaft 107 is maintained in
14 an axially rotatable position by a top bearing
15 assembly 112."

16 So those geometries to a person of
17 ordinary skill in the art are such that you
18 would understand that it is a freely rotatable
19 connection, and that is also the case for the
20 bottom drive of the shaft, which only imposes
21 the eccentric trajectory of the shaft, but
22 allows it to freely rotate.

23 So a person of ordinary skill in
24 the art would understand that by virtue of the
25 descriptions, one of which I just provided to

1 you, in the '568 patent, as well as the figures
2 of the '568 patent, which is the Aberg patent,
3 a person of ordinary skill in the art would
4 understand that the shaft is freely rotatable.

5 In addition to this, give me two
6 seconds so that I can give you a clear answer.

7 Q. Take your time.

8 A. And here I make reference to what
9 I just described in my disclosure, dated
10 October 31, 2025 on Page 9, Paragraph 11, and
11 it spills into Page 10 as well.

12 Q. Is the term "freely rotatable"
13 expressly stated anywhere in Aberg?

14 MR. ARJOMAND: Objection to form.

15 A. Can you ask that question again,
16 please?

17 Q. I was asking is the term "freely
18 rotatable" used in I where in Aberg?

19 A. As I understand it, or as I
20 recall, the term --

21 MR. ARJOMAND: Objection to form.

22 Sorry to interrupt.

23 A. -- the term "rotatable" does
24 appear in Aberg. And I think Mr. Smith and I
25 both agree that it is free to rotate within the

1 bearing assembly at the top of the shaft.

2 Q. My question is, does the term
3 "freely rotatable" appear in the patent?

4 MR. ARJOMAND: Objection to form.

5 A. I think I just -- I tried to
6 answer that. I thought I did, and so I'll just
7 repeat my answer.

8 So I don't believe that those
9 exact words appear in the patent, but Mr. Smith
10 and I both agree that the shaft is free to
11 rotate.

12 Q. I will direct you back to the
13 Bergman patent. In your declaration, you
14 stated that Shigley explains that the stress
15 concentrations can arise from a single groove.

16 Do you remember stating that? Is
17 that --

18 MR. ARJOMAND: Objection to form.

19 A. Going from memory, I don't know
20 whether those are the exact words, but in
21 general, if you point me to that, then I can
22 confirm.

23 Q. I just need it in general.

24 A. But in general, yes, single groove
25 will create or can create stress

1 concentrations.

2 Q. Okay. And can a groove also --
3 scratch that.

4 Can fretting wear also occur due
5 to a groove being put in an object?

6 MR. ARJOMAND: Objection to form.

7 A. It will depend on the specific
8 loading conditions associated with the mating
9 surfaces, in one of which there is a groove.
10 But fretting can occur also as a result of
11 stress concentration that is created by a
12 groove.

13 Q. Is the stress concentration based
14 on the dimensions of the groove?

15 MR. ARJOMAND: Objection to form.

16 A. There are many factors that come
17 into play, including one of which is the
18 dimension of the groove.

19 Q. Can you identify some of the other
20 factors that come into play?

21 A. Yes. For example, what Piepho
22 teaches is that fretting wear can arise due to
23 surface roughness. In fact, the coatings in
24 Piepho are intended to smoothen, if you will,
25 the surface, so as to provide a different

1 surface, a characteristic. That is one.

2 Then the nature of the load, so
3 that you have axial, radial bending loads,
4 where their magnitudes are, and then also both
5 the diameter and the axial extent -- so the
6 length, if you will -- of the bearing surfaces
7 in question, all of those will ultimately
8 influence whether you can get fretting wear or
9 not. And, of course, the magnitude of the
10 loads, not just the different types of the
11 loads.

12 And then finally, the choice of
13 material, you know, what materials are in
14 question. You have two surfaces. You may have
15 the same material on both surfaces, you may
16 have different materials on the surfaces, and
17 those also have an influence.

18 Q. So could a POSITA use all of those
19 factors in determining whether to place a
20 groove?

21 MR. ARJOMAND: Objection to form.

22 A. I don't believe so. I think that
23 a POSITA would recognize that the existence of
24 the factors that I just outlined. But I don't
25 think that a POSITA would necessarily be in a

1 position to make a determination as to whether
2 fretting wear would occur or not or even to
3 redesign a part so as to avoid fretting wear.

4 (Document marked as Exhibit 1040
5 for identification)

6 Q. So before you is Exhibit 1040. I
7 will call it Yagi. Patent number 8,302,754.
8 Does Yagi teach the use of a groove?

9 A. Yes.

10 Q. Does Yagi teach an internal
11 passage that routes to a groove?

12 A. Yes.

13 Q. Does Yagi teach an internal oil
14 path that extends to a groove where the groove
15 has an axial conduit and a radial conduit to
16 the groove?

17 MR. ARJOMAND: Objection to form.

18 A. Can you read that back, please?

19 Q. Yes. Does it teach an internal
20 oil path that extends to a groove where the
21 groove has an actual conduit and a radial
22 conduit to the groove?

23 MR. ARJOMAND: Objection to form.

24 A. Yagi teaches an oil path that has
25 an axial conduit and two radial conduits to the

1 groove.

2 Q. So Yagi has at least one radial
3 conduit to the groove?

4 MR. ARJOMAND: Objection to form.

5 A. I think it always shows two. I
6 don't think -- it talks about at least one.
7 I've reviewed Yagi and I've always seen two
8 radial conduits that are essentially going in
9 opposite directions to any one groove.

10 Q. Okay. Have you ever applied for a
11 U.S. patent as an inventor?

12 A. I have.

13 Q. How many times?

14 A. Twice that I know of.

15 Q. Did either one of them issue?

16 A. Yes. One issued.

17 Q. Do you remember what the
18 technology was?

19 A. It was a fuel cell technology --
20 sorry. Hydrogen production technology.

21 Q. How about the other one?

22 A. The other one related to
23 characterization of fine particular materials
24 and their size distribution. Yeah, that was
25 the field of endeavor.

1 Q. Okay. For the patent that issued
2 -- well, did the patent office issue any office
3 actions?

4 A. I don't recall. I'm a named
5 inventor, but I actually didn't do the -- I
6 wasn't engaged in the back and forth with the
7 patent office. So I don't know.

8 Q. Were there other people named?

9 A. Yes.

10 Q. Do you know if they were engaged
11 with the patent office?

12 A. I actually don't know who was
13 doing the legwork.

14 Q. How about for the one that did not
15 issue? For the one that did not issue, do you
16 know if an office action issued?

17 A. So I don't really know. I haven't
18 thought about that in a long time. I don't
19 know what actions there were. All I know is
20 that the collaborators I was working with
21 ultimately did succeed, but I don't know --

22 MR. ARJOMAND: I just didn't want
23 him to unnecessarily disclose any
24 attorney-client communications in terms
25 of that application.

1 MR. SANKS: Okay. Let's just take
2 a five-minute break. I'm about to wrap
3 up, I think.

4 MR. ARJOMAND: Okay.

5 (Recess taken at 12:08 p.m. and
6 reconvening at 12:15 p.m.)

7 MR. SANKS: I have no further
8 questions. The witness is yours.

9 MR. ARJOMAND: We don't have any
10 questions.

11 COURT REPORTER: A regular
12 delivery transcript?

13 MR. SANKS: We would like to get
14 it sooner. I thought we had requested
15 the next day. Is it possible to get
16 next day?

17 COURT REPORTER: Yes. And you,
18 Mr. Arjomand?

19 MR. ARJOMAND: We don't need next
20 day. Regular is fine. We would like a
21 rough.

22 (Whereupon the deposition
23 concluded at 12:16 p.m.)
24
25

E R R A T A

I, HARRI K. KYTOMAA, Ph.D., do hereby
 certify that I have read the foregoing
 transcript of my testimony, and further
 certify that it is a true and accurate
 record of my testimony (with the exception
 of the corrections listed below):

Page	Line	Correction
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Signed under the pains and penalties of
 perjury this day of ,
 2025.

HARRI K. KYTOMAA, Ph.D.

C E R T I F I C A T E

I, Michael O'Connor, Registered
Merit Reporter/Certified Realtime Reporter,
do hereby certify:

That HARRI K. KYTOMAA, Ph.D., the
witness whose testimony is hereinbefore set
forth, was duly sworn by me and that such
testimony is a true and accurate record of
my stenotype notes taken in the foregoing
matter to the best of my knowledge, skill
and ability.

IN WITNESS WHEREOF, I have hereunto
set my hand and Notarial Seal this 23rd day
of December 2025.



MICHAEL O'CONNOR, RMR, CRR, CRC
Notary Public

My Commission expires:
November 9, 2029

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Massachusetts Rules of Civil Procedure

Part V. Deposition and Discovery

Rule 30

(e) Submission to Witness; Changes; Signing. When the testimony is fully transcribed the deposition shall be submitted to the witness for examination and shall be read to or by him, unless such examination and reading are waived by the witness and by the parties. Any changes in form or substance which the witness desires to make shall be entered upon the deposition by the officer with a statement of the reasons given by the witness for making them. The deposition shall then be signed by the witness, unless the parties by stipulation waive the signing or the witness is ill or cannot be found or refuses to sign. If the deposition is not signed by the witness within 30 days of its submission to him, the officer shall sign it and state on the record the fact of the waiver or of the illness or absence of the witness or the fact of the refusal to sign together with the reason, if any, given therefor; and the deposition may then be used as fully as though signed, unless on a motion to suppress under Rule 32(d)(4) the court holds

that the reasons given for the refusal to sign
require rejection of the deposition in whole or in
part.

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