

1 UNITED STATES PATENT AND TRADEMARK OFFICE

2  
3 BEFORE THE PATENT TRIAL AND APPEAL BOARD

4  
5 SZ DJI TECHNOLOGY CO., LTD.,

6 Petitioner,

7 v.

8 AUTEL ROBOTICS USA LLC,

9 Patent Owner.

10  
11 Case IPR2019-00846

12 Patent 9,260,184

13  
14  
15 The deposition of CHARLES F. REINHOLZ,  
16 PH.D., called for examination, taken pursuant to the  
17 provisions of the Code of Civil Procedure and the  
18 Rules of the Supreme Court of the State of Illinois  
19 pertaining to the taking of depositions for the  
20 purpose of discovery, taken before DINA G. MANCILLAS,  
21 a Certified Shorthand Reporter within and for the  
22 State of Illinois, CSR No. 84-3400 of said State, via  
23 remote video teleconference, on April 3, 2020, at  
24 9:30 a.m. CST.

1     PRESENT:

2           KING & SPALDING LLP,  
3           (1700 Pennsylvania Avenue, NW,  
4           2nd Floor,  
5           Washington, D.C. 20006-4707,  
6           202-737-0500), by:

7           MS. LORI A. GORDON,  
8           lgordon@kslaw.com,

9           MR. STEVEN PETERS,  
10          speters@kslaw.com,

11                 appeared via video teleconference on behalf  
12                 of the Petitioner;

13

14          STEPTOE & JOHNSON, LLP,  
15          (227 West Monroe Street, Suite 4700,  
16          Chicago, Illinois 60606,  
17          312-577-1300), by:

18          MR. JOHN L. ABRAMIC,  
19          jabramic@steptoe.com,

20                 appeared via video teleconference on behalf  
21                 of the Patent Owner.

22     REPORTED BY:

23           DINA G. MANCILLAS, CSR, RPR, CRR, CLR

24           CSR No. 84-3400

## 1 I N D E X

2 WITNESS EXAMINATION

3 CHARLES F. REINHOLZ, PH.D.

4 By Ms. Gordon 5

5

## 6 E X H I B I T S R E F E R E N C E D

7 NUMBER PAGE

8 Deposition Exhibit 1001, United States 7

9 Patent No. 9,260,184.

10 Deposition Exhibit 1006, Certified 149

11 Translation of Application

12 No. H06-17511.

13 Deposition Exhibit 1007, United States 166

14 Patent No. 5,133,617.

15 Deposition Exhibit 2001, Declaration of 7

16 Dr. Charles F. Reinholtz.

17 Deposition Exhibit 2002, United States 9

18 Patent Publication.

19

20

21

22

23

24

1           THE COURT REPORTER:   Okay.   We are on  
2   the record.

3           The attorneys participating in  
4   this deposition acknowledge that I am not  
5   physically present in the deposition room and  
6   that I will be reporting this deposition  
7   remotely.

8           They further acknowledge that in  
9   lieu of an oath administered in person the  
10   witness will verbally declare his or her  
11   testimony in this matter is under penalty of  
12   perjury.   The parties and their counsel  
13   consent to this arrangement and waive any  
14   objections to this manner of reporting.

15          Please indicate your agreement by  
16   stating your name and your agreement on the  
17   record.

18          MR. ABRAMIC:   This is John Abramic,  
19   counsel for Autel.   I agree.

20          MS. GORDON:   This is Lori Gordon,  
21   counsel for DJI, and I agree.

22          MR. PETERS:   This is Steven Peters, DJI  
23   counsel.   I agree.

24

1 (The witness was duly sworn.)

2

3 CHARLES F. REINHOLTZ, PH.D.,

4 called as a witness herein, having been first duly

5 sworn, was examined and testified as follows:

6 EXAMINATION

7 BY MS. GORDON:

8 Q. Would you please state your full name  
9 for the record?

10 A. Charles Frederick Reinholtz.

11 Q. Thank you. And, Dr. Reinholtz, I want  
12 to start off by thanking you for making yourself  
13 available remotely for this deposition.

14 A. You're welcome.

15 Q. So I'd like to start -- and I know you  
16 and I have been in this position before. So I  
17 know you've been subject to a deposition before,  
18 but I'd like to go through a few ground rules  
19 before we start.

20 First, I'm going to ask you questions,  
21 and I will need you to answer verbally. Is that  
22 understood?

23 A. Yes.

24 Q. And because we're on a video link and

1 we may experience some latency at various points  
2 during the deposition, if, at any point, my  
3 question is unclear or you haven't heard it  
4 completely or you don't understand, just let me  
5 know and I will ask again and try to get the  
6 question through on the record.

7 Does that seem fair?

8 A. Okay. I will -- yes. I will do that.  
9 Thank you.

10 Q. And, Dr. Reinholtz, is there any reason  
11 that you cannot testify truthfully here today?

12 A. No.

13 Q. And do you understand that you are here  
14 to testify regarding the testimony you submitted  
15 by declaration in the United States Patent and  
16 Trademark Office Inter Party's Review Proceeding  
17 of U.S. Patent No. 9,620,184?

18 A. Yes, I do.

19 Q. And for purposes of today's deposition,  
20 can we refer to that patent number as the '184  
21 patent?

22 A. Yes. That will be fine.

23 Q. And, Dr. Reinholtz, you were provided  
24 with a set of exhibits and papers that were filed

1 in the proceeding. I would like to introduce  
2 several of those documents into the deposition now  
3 that we'll be relying on first.

4 And can you access the document marked  
5 as Exhibit 2001 in this proceeding? And this  
6 document is titled "Declaration of Dr. Charles  
7 Reinholtz."

8 A. Yes. I have that in a folder, a  
9 binder.

10 Q. And did you review this document in  
11 preparation for today's deposition?

12 A. I read it, yes.

13 Q. And can you access the document that  
14 was marked as DJI 1001 in this proceeding? And  
15 this document is titled "U.S. Patent  
16 No. 9,260,184."

17 A. Yes. I have that. It's Exhibit 1001.

18 Q. Correct. And can you also access the  
19 document titled "Patent Owner's Motion to Amend  
20 Under 37 CFR 42.121"?

21 A. Could you give me an exhibit number for  
22 that?

23 Q. It is a paper.

24 MS. GORDON: John, do you know the

1 paper number for this?

2 MR. ABRAMIC: Lori, I do not know the  
3 paper number of that offhand, but I don't  
4 think Charles has a copy of that. I think I  
5 sent an email. He's got a copy of the  
6 petition -- all exhibits cited in the  
7 petition and his declaration and all of the  
8 exhibits and documents referred to in his  
9 declaration.

10 So if we want to use the motion,  
11 we'll have to get him a copy.

12 MS. GORDON: Okay. Does he have copies  
13 of the -- all the exhibits filed by patent  
14 owner in the proceeding?

15 MR. ABRAMIC: So he has copies of all  
16 the exhibits filed by patent owner that were  
17 referred to in his declaration.

18 MS. GORDON: Okay. But he just does  
19 not have --

20 MR. ABRAMIC: I'm not sure if that  
21 includes all exhibits that were filed by  
22 patent owner.

23 MS. GORDON: Okay. So we will have  
24 some questions that we could probably just



1 use the Exhibit 2002. And we can avoid using  
2 the motion to amend. If you could send that  
3 to Charles -- or, Dr. Reinholtz, and then we  
4 can take a break so he can print it out when  
5 we need to refer to it.

6 MR. ABRAMIC: Okay. 2002?

7 MS. GORDON: Yeah. That's the -- let  
8 me just double-check that's the one we want.  
9 I think that's the one you cite in your  
10 motion to amend. It's in Exhibit 2002, yes,  
11 which is the publication there referenced.

12 MR. ABRAMIC: Okay. I have  
13 Exhibit 2002 electronically. I can send  
14 it -- I can email it to the witness.

15 MS. GORDON: Okay. And I believe this  
16 is identical to the patent except for the  
17 claim, correct?

18 MR. ABRAMIC: It looks like the patent  
19 publication.

20 MS. GORDON: Right.

21 MR. ABRAMIC: But I can't confirm that  
22 for you.

23 MS. GORDON: Okay. It should be, but  
24 it's probably safer if you send it to him and

1           we can use that when we get to those  
2           questions.

3   BY MS. GORDON:

4           Q.       Dr. Reinholtz, have you seen patent  
5   owner's motion to amend in this proceeding?

6           A.       I don't know that I've seen the entire  
7   document.  If I have it in front of me, I may be  
8   able to confirm that I have or haven't.

9           Q.       Do you recall reviewing that document  
10   when you prepared your declaration?

11          A.       Not specifically, no.

12          Q.       And when you say not specifically, what  
13   do you mean by that?

14          A.       I don't recall that I specifically -- I  
15   reviewed a number of documents where it's  
16   confusing which document is which, but that one, I  
17   can't, in particular, say definitively that I did  
18   review.

19          Q.       Okay.  But you did not review the  
20   motion to amend as filed in preparation for  
21   today's deposition?

22          A.       You mean in the last few days as I  
23   prepared for deposition?  Are you asking if I've  
24   reviewed it recently?

1           Q.       Well, let's start with that. Have you  
2 reviewed it recently as you've been preparing for  
3 this deposition?

4           A.       Well, of course I've seen parts of what  
5 I'm sure are in the motion to amend the revised  
6 claims, or Claims 12 and 13.

7                   I don't know that I've reviewed the  
8 entire document.

9           Q.       And since the -- your declaration was  
10 filed with the Patent Office, were you provided  
11 with a copy of the motion to amend?

12          A.       I am not certain if I was or not. I  
13 have the email from John. Should I go ahead and  
14 open the file and print that out?

15          Q.       Yeah. Why don't you print it out. We  
16 won't be referring to it for a little while, but  
17 if you want to start printing it out, that -- I  
18 think that makes sense.

19                   MR. ABRAMIC: And, Lori, while the  
20 witness is doing that, I will just say that  
21 my intention with the microphone here is to  
22 leave it on mute so that I don't interrupt  
23 the flow of the deposition. So I will leave  
24 it on mute.

1                   And if I want to object, I'll  
2           unmute it. So my objections might be a  
3           little bit more slow than normal. And it's  
4           my understanding that you're okay with that.

5                   MS. GORDON: Yes. That's fine and  
6           understandable.

7   BY THE WITNESS:

8           A.       Okay. I have -- and I've printed it --  
9           Exhibit 2002-c2. It's a PDF file, and it's  
10          sitting on my printer. I can reach over and get  
11          it when you're ready to refer to it.

12   BY MS. GORDON:

13          Q.       Okay. So yeah. We'll be referring to  
14          that in a little bit. You don't have to grab it  
15          quite yet. So let's turn to your declaration.

16          A.       Okay.

17          Q.       Can you turn to Page 36?

18          A.       Okay. I'm there.

19          Q.       Is that your signature on Page 36?

20          A.       Yes, it is.

21          Q.       And you signed this document on  
22          January 10th, 2020?

23          A.       That's correct.

24          Q.       And were there any modifications made

1 to the declaration after you signed the document?

2 A. No, I don't think so.

3 Q. Thanks. So let's turn now back to  
4 Paragraph 1.

5 A. Okay.

6 Q. In this paragraph, you state, "I have  
7 been asked to investigate and opine on the  
8 validity/patentability of claims of U.S. Patent  
9 No. 9,260,184."

10 Which claims of the '184 patent have  
11 you been asked to investigate and opine on their  
12 validity/patentability?

13 A. The focus here is on the revised or  
14 substituted Claims 3 and 4, but of course, those  
15 which are now, as I understand it, Claims 12 and  
16 13, but, of course, they depend on Claim 1.

17 So my opinions were in regard to  
18 those -- those claims.

19 Q. And have you been asked to investigate  
20 and opine on the validity/patentability of Claim 3  
21 of the '184 patent?

22 A. Claim 3 as it existed in the original  
23 patent? Is that what you're asking?

24 Q. Yes.

1           A.       Not as part of this -- no, not as part  
2   of this investigation, no.

3           Q.       But you have been asked to investigate  
4   and opine on the validity of Claim 3 in another  
5   form?

6           A.       Claim 3 -- my -- I haven't looked at it  
7   in a long time. My recollection is pretty vague,  
8   but I believe Claim 3 may have been involved in  
9   the earlier ITC case at some point. I don't think  
10   I've given an opinion on that, if at all, and it's  
11   been some time.

12          Q.       And based on the papers filed in this  
13   proceeding, have you formed an opinion on the  
14   validity or patentability of Claim 3 of the '184  
15   patent?

16          A.       Based on my declaration here and the  
17   work that I did preparing it, I have not  
18   considered the validity of Claim 3.

19          Q.       And have you been asked to investigate  
20   and opine on the validity/patentability of  
21   original Claim 4 of the '184 patent?

22          A.       Not as part of this declaration, no.

23          Q.       And based on the papers filed in this  
24   proceeding, have you formed an opinion on the

1 validity/patentability of Claim 4?

2 A. No, I have not.

3 Q. Thank you. So, Dr. Reinholtz, do you  
4 currently own any unmanned vehicles?

5 A. Yes, I do.

6 Q. And what are those vehicles?

7 A. Well, I have the DJI Phantom drone that  
8 I've owned for some -- some time now. I still  
9 have that.

10 I have an assortment of robotic vacuum  
11 cleaners that I own. I probably wouldn't put  
12 those in the same category, but I think I -- I  
13 think I can limit it to the DJI Phantom that I've  
14 had for quite a while.

15 Q. And when did you purchase the DJI  
16 Phantom product?

17 A. I don't have a clear recollection.  
18 I've had it for several years. Probably since  
19 2015 perhaps.

20 Q. So it was after 2013?

21 A. I believe so, yes. I'm not certain,  
22 but I believe so.

23 Q. And other than the vehicles that you  
24 mentioned, have you owned any other vehicles --

1 let me ask that question again.

2 Other than the DJI Phantom drone, have  
3 you ever owned any UAVs?

4 A. Well, I've owned a number of  
5 toy/hobby-type vehicles over the years, the kind  
6 you would fly around in your living room,  
7 Christmas present kinds of things.

8 I don't think I've owned any others  
9 personally. Of course, I work with a lot at the  
10 university, but I haven't purchased myself and  
11 owned any others.

12 Q. And the toy/hobby vehicles that you  
13 mentioned, did you own any of those before?

14 A. I would say probably yes.

15 Q. And did those toy vehicles have  
16 detachable rotor blades?

17 A. I don't recall even considering that.

18 Q. Do you recall whether you had to attach  
19 or detach the blades when you used those toy  
20 vehicles?

21 A. No, I don't recall.

22 Q. Do you recall who manufactured those  
23 toy vehicles?

24 A. No. I'm sorry.



1 Q. So I'd like to turn to Paragraph 9 of  
2 your declaration.

3 A. Okay. I'm with you.

4 Q. And in this paragraph, you state, "From  
5 2007 to the present, I have been professor at  
6 Embry-Riddle Aeronautical University."

7 A. That's correct.

8 Q. I'm sorry. My screen just went to  
9 sleep.

10 I recall in our last deposition, there  
11 was a specific form we should use when you refer  
12 to your university. Could you remind me of that?

13 A. Sure. I think it's probably an  
14 unnecessary issue I brought up, but the university  
15 likes to be called Embry-Riddle Aeronautical  
16 University, or Embry-Riddle with a hyphen, but  
17 they don't like Embry-Riddle University and I  
18 think I made that point.

19 Nobody is going to police this  
20 deposition to see if we use the right term. So if  
21 you say Embry-Riddle or Embry-Riddle University, I  
22 will be okay.

23 Q. Okay. I just want to make sure we're  
24 not making anybody angry.

1                   And while at Embry-Riddle, did you do  
2   any research on unmanned vehicles?

3           A.       Oh, yes.   Quite a lot.

4           Q.       And did you do research on unmanned  
5   aerial vehicles?

6           A.       Yes, I did.

7           Q.       And can you detail that research from  
8   2007 to May of 2013?

9           A.       It would be very difficult for me to  
10   recall or summarize all of the different projects  
11   that I worked on that involved unmanned vehicles.  
12                   2007 to 2013, every year, just as part  
13   of student competitions, we would design and build  
14   ground vehicle, multiple aerial vehicle systems,  
15   underwater and surface vehicles that were all  
16   autonomous boats.   So there were dozens and dozens  
17   of different projects.

18          Q.       So let's drill down a little bit into  
19   that.

20                   So these were vehicles that your  
21   students designed and built?

22          A.       Typically, yes, under my supervision.  
23   Graduate students or undergraduate students.  
24   That's right.

1 Q. And for the aerial vehicles, do you  
2 recall whether those had blades that could be  
3 attached and detached by a user?

4 A. Are you -- maybe we could focus your  
5 question a little better and I'm going to stretch  
6 my memory, but are you asking about all types of  
7 aerial vehicles?

8 Q. So let's start with the quadcopter or  
9 the helicopter-type UAVs. We don't need to deal  
10 with the fixed-wing version.

11 So did your students do any research  
12 and development of quadcopters, helicopters, or  
13 any of those type of UAVs?

14 A. Yes, we did.

15 Q. And for those UAVs, how were -- I mean,  
16 I know that there could be a few, but do you  
17 recall how the rotor blades were attached to the  
18 driveshaft?

19 A. All of the rotor blades are in some way  
20 detachable because those are items that are often  
21 replaced if there's any kind of a -- any kind of  
22 damage to it at all, but I don't -- I don't have  
23 any specific recollection of particular aircraft  
24 in a particular attachment or detachment method.

1           Q.       So for these vertical takeoff and  
2     landing vehicles that your students researched,  
3     you have no recollection of the coupling mechanism  
4     that they used to attach the rotor blades to the  
5     driveshaft?

6           A.       I have general recollections of how  
7     those couplings are made, but I can't associate  
8     any specific coupling with a specific vehicle.

9           Q.       So what is your general recollection in  
10    that time frame of how the couplings were made?

11          A.       In some cases, couplings are made in a  
12    component that's fixed to a driveshaft coming from  
13    the motor, either an internal combustion engine or  
14    an electric motor, typically.

15                 Some of those connections allow for a  
16    pivot point. So the blades are hinged and can be  
17    folded in and folded back out again.

18                 And then there are typically -- on  
19    those type of designs, there are clamping portions  
20    that use standard kinds of fasteners like screws  
21    and threaded connections to attach the blade to  
22    the outer end of the piece that allows pivoting.

23                 That's one method that's used. The  
24    right- and left-hand screw-on blades are also

1     pretty common. So clockwise and counterclockwise  
2     having the right- and left-hand threads is a  
3     common connection method as well.

4           Q.       And those connection methods that you  
5     mentioned in your answer, those were in use prior  
6     to May 2013?

7           A.       Yes, certainly.

8           Q.       And I recall in your last deposition,  
9     you mentioned developing a toy UAV while at  
10    Embry-Riddle?

11          A.       That's right. We worked with a -- that  
12    is correct. Yes.

13          Q.       And do you recall who that manufacturer  
14    was?

15          A.       I couldn't recall the name in my last  
16    deposition, and I don't recall it now. I have a  
17    mental picture of what the device looked like, but  
18    I don't recall the manufacturer.

19          Q.       And maybe you can walk me through what  
20    the device looked like.

21          A.       Okay. The novel feature that we helped  
22    to develop for that device was, it was fully  
23    caged. And so -- there was an elliptical-shaped  
24    cage that encapsulated -- maybe "encapsulate" is

1 the wrong word, but that surrounded the entire  
2 quadrotor.

3 It was a very small quadrotor, palm  
4 size. You could hold the device in your hands.  
5 It had rotor spans, blade spans, of maybe an inch  
6 or an inch and a half.

7 And the key to that was that it was all  
8 enclosed. And no matter how it landed --  
9 sometimes these things have unexpected landings.  
10 These are designed to fly indoors typically and  
11 would bump into things.

12 And so this would shield the blades  
13 from being hit at a bump, but it also had an  
14 interesting feature that it -- the cage was so  
15 shaped that the -- no matter how the UAV landed,  
16 it would always roll back onto its base again so  
17 it was in the correct orientation to take off.

18 Q. And that was a quadrotor vehicle?

19 A. That was a quadrotor vehicle, correct.

20 Q. And do you recall whether the rotor  
21 blades were attachable and detachable by a user?

22 A. I do not have a specific recollection.

23 Q. And do you recall whether the design  
24 you developed had any mechanism to mistake-proof

1 the installation of the rotor blades for the user?

2 A. We certainly did not deal with that  
3 part.

4 So, no, I didn't have any part of the  
5 design of the rotors or how they connected.

6 Q. And who designed that part of the  
7 system?

8 A. The company that we were working with  
9 designed that.

10 Q. I see. So your focus was on the cage  
11 mechanism?

12 A. Our focus -- that's generally correct.  
13 Our focus was on the cage mechanism and how it  
14 interacted with the base vehicle.

15 Q. And do you have Appendix A of your CV  
16 in front of you?

17 A. I do, yes.

18 Q. Can you turn to Page 5 of that?

19 A. Okay. I'm there.

20 Q. And in No. 69, you -- I mean -- sorry.  
21 Not 69. No. 59.

22 You mention the development of an  
23 autonomous vehicle for the DARPA Urban Challenge.  
24 Was that an aerial vehicle?

1           A.       No. That was a ground vehicle. It was  
2 a modified Ford Escape, or multiple Ford Escapes,  
3 that we modified to be autonomous.

4           Q.       And going to No. 61, you mentioned  
5 navigation and autonomous control for Nemesis.

6                   What is Nemesis?

7           A.       Nemesis was a tracked vehicle. I think  
8 the base vehicle was a bulldozer, but it had been  
9 modified to do land mine detection, and we  
10 developed the autonomy portion of that.

11          Q.       So that was a ground vehicle as well?

12          A.       That's correct. It was a ground  
13 vehicle.

14          Q.       And No. 63 on Page 6, you mentioned  
15 "Boeing digitally manufactured UAV projects."

16                   Do you see that?

17          A.       I do.

18          Q.       And what did that research entail to  
19 the extent you can discuss it?

20          A.       That was a -- "digitally manufactured"  
21 means 3D-printed. And so I think we were the  
22 first people in the world, the first research  
23 group in the world to actually build a fully 3D  
24 printed air frame for a small unmanned aerial



1 vehicle.

2 It was a fixed-wing UAV.

3 Q. So it was not a vertical takeoff and  
4 landing vehicle?

5 A. No. That was not capable of vertical  
6 takeoff and landing.

7 Q. So then turning to 64, the  
8 reconnaissance and autonomy for small robots, does  
9 that involve aerial vehicles?

10 A. No. That's another ground vehicle.  
11 That's a small tracked vehicle that is intended to  
12 emulate the tasks that a trained dog can perform.

13 Q. Oh, okay. Interesting. I guess that's  
14 why the canine is after that.

15 A. Right.

16 Q. So turning to No. 65, which we'll shift  
17 our questions to submersible unmanned vehicles.  
18 You have "Proposal to Develop an Autonomous  
19 Maritime System."

20 Does that deal with a submersible UAV?  
21 I shouldn't say UAV. A submersible unmanned  
22 vehicle.

23 A. I'm sorry. I want to be sure I'm  
24 clear. You're asking about Item 65 on Page 6 of

1 my resumé?

2 Q. Correct.

3 A. That -- the focus of that competition  
4 is an autonomous surface vehicle, an autonomous  
5 boat, but in the 2014 time frame, we were also  
6 looking at UAVs, vertical takeoff and landing UAVs  
7 that could be deployed from that boat.

8 So the primary focus was on the boat,  
9 but the secondary focus was a small UAV.

10 Q. And did your research team develop a  
11 UAV to land on the boat?

12 A. No. We -- that -- that was eliminated  
13 from the project because of air space  
14 restrictions. They were not going to be able to  
15 allow us to fly. And so they changed the  
16 competition and the project to remove the aerial  
17 vehicle.

18 We did do some testing of aerial  
19 vehicles, but it wasn't part of the project.

20 Q. And do you recall what aerial vehicles  
21 you tested as part of that project?

22 A. Yeah. At some point in time -- and it  
23 might have been after the dates of this project --  
24 I demonstrated landing and takeoff using my

1 personal DJI Phantom drone. Mostly, I was trying  
2 to get good video for the competition and for us  
3 to use in advertising, but I did land the Phantom  
4 on the deck of that boat and took off again.

5 Q. Thank you. And I believe that your  
6 earlier answer, you mentioned submersible vehicle  
7 research that your students had done, is that  
8 correct?

9 A. That's correct.

10 Q. And did any of the submersible unmanned  
11 vehicles use rotor blades coupled to driveshafts?

12 A. We tend not to call them, rotor blades,  
13 when they're on a boat or a submersed vehicle,  
14 propellers, but, yes, they did use propellers.

15 Q. And how were the propellers coupled to  
16 the driveshaft in those submersible vehicles?

17 A. Again, there were a variety of  
18 different submersible vehicles and a variety of  
19 thrusters. The thrusters, of course, the motor  
20 and the propeller together that produce thrust.

21 I have taken those apart for some of  
22 the systems, and I have a -- only a vague  
23 recollection. I think they use a -- like a roll  
24 pin through a hub and a shaft, but my memory is

1 not completely clear on even which thruster that  
2 would have been.

3 Q. Thank you. So while you've been at  
4 Embry-Riddle, has Embry-Riddle purchased any  
5 vertical takeoff and landing vehicles?

6 A. Yes, we have.

7 Q. And can you recall what those vehicles  
8 were?

9 A. I have been involved in a number of  
10 different projects where I've signed off on  
11 purchasing vehicles or vehicle components. I know  
12 we have used the Mariner UAV. I don't recall the  
13 specific details of when or even which projects.

14 We've purchased a number of different  
15 small UAV systems and then scavenged them for  
16 parts where our intent was not to use the entire  
17 UAV, but I don't have specific recollection of  
18 which manufacturers we purchased from.

19 Q. Do you recall any UAVs purchased  
20 between 2007 and 2014 by Embry-Riddle?

21 A. I'm sure that we did purchase vertical  
22 takeoff and landing UAVs in that time. And let me  
23 just clarify here as well.

24 The university is a -- the biggest

1     aviation and aerospace university in the world,  
2     and we have a number of programs and departments  
3     that make those kinds of purchases.

4                 So we have an entire UAV pilot training  
5     program that buys dozens of different UAVs. And I  
6     am not involved in those purchases at all. I've  
7     seen their systems. I've been with some of the  
8     students when those are flown.

9                 So the ones that I purchased would be a  
10    subset of that. I don't have a specific  
11    recollection of -- in the time frame you're  
12    talking about -- you said 2007 to 2014?

13                Q.       Correct.

14                A.       I know very early in my tenure at  
15    Embry-Riddle, we purchased a Bergen Industrial  
16    Twin helicopter. That was a pretty expensive  
17    purchase, and it was one of the early initiatives.  
18    And so I remember that pretty clearly.

19                Q.       And the department that you mentioned  
20    that does UAV pilot training, did that exist  
21    before 2013?

22                A.       I would -- in and about that time frame  
23    the program started, I think it was before 2013.  
24    I was part of a group that wrote the -- that

1     authored the proposal to start the program, but I  
2     don't have specific dates in mind when it started.

3                 I think it was probably around 2010 or  
4     '11, but I'm not sure.

5                 Q.       And does that department train pilots  
6     for vertical takeoff and landing vehicles?

7                 A.       Yes, they do.

8                 Q.       And do they limit the size of the  
9     vehicle? For example, would they train pilots on  
10    smaller UAVs similar to the UAVs at issue in this  
11    proceeding?

12                A.       Yes. They have some UAVs that are that  
13    scale. They, I suspect, have some DJI products.  
14    I don't know if they use those for training, but  
15    I've seen those in their facilities.

16                I think they train on typically up  
17    to -- there's a class of UAVs that goes to 55  
18    pounds. In everything I have seen them operate is  
19    probably in the sub-55-pound class.

20                Q.       And are you personally aware of any  
21    manufacturers of vertical takeoff and landing  
22    vehicles prior to 2014?

23                A.       Well, yeah. I know there were a number  
24    of manufacturers in the business then.

1     Draganflyer was one. Yeah, I -- -- I'd have to go  
2     back and refresh to -- to recall in particular in  
3     that time frame what -- what I had seen, but there  
4     were a number of vertical takeoff and landing  
5     quadrotor-type UAVs in that period of time.

6           Q.        And do you recall any manufacturers  
7     other than Draganflyer that were manufacturing  
8     vertical takeoff and landing vehicles in that time  
9     period?

10          A.        Well, I've already mentioned Bergen,  
11     Bergen helicopter that we purchased. I was pretty  
12     familiar with a platform called the Yamaha R-MAX,  
13     R-M-A-X, that is a larger helicopter, not in the  
14     below 55-pound class.

15                    And I had purchased one of those as  
16     part of research at Virginia Tech, but that stayed  
17     behind and didn't come with me to Embry-Riddle.

18          Q.        And are you aware of any other  
19     manufacturer of vertical takeoff and landing  
20     vehicles in the scale -- the smaller scale, under  
21     the 55-pound class, in that time frame?

22          A.        I couldn't specifically name other  
23     manufacturers in that time frame.

24          Q.        Was Parrot a manufacturer in that time

1 frame?

2 A. I know Parrot, and I just don't know  
3 the date that I first saw Parrot. Would it have  
4 been in that time frame? Probably, but I'm not  
5 sure.

6 Q. How about Unique? Would they have  
7 manufactured in that time frame?

8 A. Perhaps. I know of Unique. My  
9 knowledge of them came probably a little later  
10 than 2014, but I'm not sure.

11 Q. And where would you have looked to find  
12 the listing for information about manufacturers of  
13 the smaller-scale UAVs prior to 2014?

14 A. Well, I probably would do what most  
15 people would do. I would go to the internet and  
16 search generally for UAVs. I could also go back  
17 to our labs.

18 We have some display items that are  
19 older UAVs, and I could try to associate those  
20 with time frames and particular projects that they  
21 were used in.

22 I could also go back and look at  
23 photographs I've had from competitions to see what  
24 UAVs we were flying. That would help refresh my



1 memory.

2 Q. When you were assessing the  
3 patentability of Substitute Claims 12 and 13, did  
4 you consider any of these prior art systems that  
5 you had at Embry-Riddle or any of the photographs  
6 from prior competitions?

7 A. I have that general body of knowledge  
8 in mind, but I didn't go back and look at any  
9 specific aircraft or system.

10 Q. So can you please turn to Paragraph 27?

11 A. Okay. I am there.

12 Q. And in this paragraph, you state that  
13 it is desirable to -- oh, sorry. Start in the  
14 first sentence. You state, "It can be desirable  
15 for a UAV to have removable rotor blades."

16 Do you see that?

17 A. I do.

18 Q. And was that desire true before  
19 May 2013?

20 A. Yes.

21 Q. And would a POSITA have known about the  
22 desirability of having removable rotor blades  
23 before 2013?

24 A. Yes.

1 Q. And turning to Paragraph 70?

2 A. Okay. I'm there.

3 Q. And if you turn to Page 35, in the  
4 second line -- in the second line, it states,  
5 "Drone users typically attach and remove blades  
6 with every use of the drone and, therefore, prefer  
7 a fast and convenient mechanism for blade  
8 attachment."

9 Do you see that?

10 A. I do.

11 Q. And was that true before 2013?

12 A. I don't know if, in -- if earlier in  
13 2013 if I would have used the word "typically."  
14 It's always been necessary to be able to remove  
15 the blades.

16 That they are removed with every use,  
17 probably so. It probably was still typical back  
18 then.

19 Q. And prior to 2013, POSITA would have  
20 known about this stated preference with drone  
21 users?

22 A. I think it was becoming clearer and  
23 clearer in that time period that replacing blades  
24 was going to be a frequent occurrence. More and

1 more people were adopting this technology. People  
2 were transporting them more.

3 So, again, I think the desire to remove  
4 blades and replace them has always existed for all  
5 kinds of aircraft propellers. Typically doing it  
6 every time you use the drone probably evolved a  
7 little bit, and that's certainly true today.

8 Whether it would have been typical in  
9 2010, for example, I'm not sure, but certainly  
10 people knew that blades had to be removed and  
11 replaced.

12 Q. And would you agree that prior to 2013,  
13 a POSITA would have known that a drone user would  
14 prefer a fast and convenient mechanism for blade  
15 attachment?

16 A. Yeah. I think if -- if someone was  
17 aware that there was a good way to quickly and  
18 securely attach and remove a blade, that would  
19 have been desirable. They may not have recognized  
20 that need, but certainly they would have  
21 appreciated that feature.

22 Q. And that's something a person of  
23 ordinary skill in the art would have understood in  
24 2013?

1           A.       It's so much clearer in hindsight, but  
2   I think so.   Certainly a person of ordinary skill  
3   in the art would have appreciated the ability to  
4   remove and attach blades quickly and easily.

5           Q.       You next state in that paragraph that,  
6   "In my experience, it is relatively easy for drone  
7   users to misinstall rotor blades."

8                   Do you see that?

9           A.       I do.

10          Q.       And was that true before 2013?

11          A.       Yes, I believe so.

12          Q.       And prior to 2013, would a POSITA have  
13   known about the frequency of blade misinstallation  
14   by users?

15          A.       I'm not quite sure I'm clear on your  
16   question.   When you say frequency, could you  
17   define what you mean by that?

18          Q.       Yeah.   Let me ask it in a different  
19   way.

20                   Prior to 2013, would a POSITA have  
21   known about the ability of blade misinstallation  
22   by users?

23          A.       I didn't quite hear your question.   I  
24   apologize.   Could you repeat that?

1 Q. Oh, sure. Absolutely. Prior to 2013,  
2 would a POSITA have known about the possibility of  
3 blade misinstallation by users?

4 A. I believe so, yes.

5 Q. And a POSITA would have known prior to  
6 2013 about the consequences of a misinstalled  
7 blade in a UAV?

8 A. I think so, generally, yes. I mean, we  
9 have to distinguish fixed-wing and rotary-wing  
10 here a little bit, but I think in either case, the  
11 consequences may be different, but a person of  
12 ordinary skill in the art would understand that  
13 there are consequences and would know what they  
14 are.

15 Q. Thank you. So I'd like to switch back  
16 to Page 31 of your declaration. And I'm sorry.  
17 It's Paragraph 31.

18 A. Okay. I'm there.

19 Q. In this paragraph, you state, "I  
20 understand that for purposes of this report, the  
21 time of invention of the '184 patent is assumed to  
22 be May 15th, 2013 (i.e., the priority date) for  
23 the '184 patent."

24 How did you obtain that understanding?

1           A.       I don't recall at the moment. I  
2       probably looked at the face of the patent and  
3       looked for the earliest prior publication of it.

4           Q.       And is that your understanding as to  
5       the priority date of Substitute Claim 12 for the  
6       '184 patent?

7           A.       I am not a hundred percent clear on  
8       that. I believe that would be correct.

9           Q.       And did you do any independent  
10      investigation of whether the subject matter of  
11      Substitute Claim 12 was disclosed and enabled by  
12      the earliest filed document?

13          A.       It's certainly enabled and disclosed in  
14      the '184 patent specification, and I have reviewed  
15      the file history for that patent. I have no  
16      reason to think it would have changed.

17                    So the earliest filings that I've seen  
18      all include the features that are important to  
19      these new substitute claims.

20          Q.       And did you review the earliest  
21      Canadian application when you were preparing your  
22      opinion in this declaration?

23          A.       I may have. I just -- I'm not certain  
24      about that.

1           Q.       But you don't cite anywhere to the  
2       earliest filed Canadian application, correct?

3           A.       I don't recall citing that in my  
4       declaration. I do believe I reference file  
5       history of the '184 patent.

6           Q.       And in your opinion or in your view,  
7       that file history included the Canadian priority  
8       document?

9           A.       I don't know for certain that it did.

10          Q.       And going back to that statement in  
11       Paragraph 31 that we discussed, is it your  
12       understanding that May 15th, 2013, is also the  
13       priority of Substitute Claim 13?

14          A.       I think that's more of a legal  
15       question. I generally believe that is true, but  
16       I'm not certain about it.

17          Q.       But in your declaration, you did not do  
18       any independent verification that's the priority  
19       date for Substitute Claims 12 or 13?

20          A.       I didn't try to -- I was given an  
21       understanding by counsel, but I didn't try to do  
22       any investigation on my own.

23          Q.       And that counsel is counsel for Autel?

24          A.       Yes. That's correct.

1           Q.       So can you please access the '184  
2   patent that has been entered into this deposition  
3   and has an exhibit number of 1001.

4                   Dr. Reinholtz, what is the field of  
5   endeavor of the '184 patent?

6           A.       Generally in the area of unmanned  
7   rotary aircraft.

8           Q.       And more specifically, do you have a  
9   different answer?

10          A.       Well, there -- the focus of the patent,  
11   the novel parts have to do with the -- this quick  
12   attachment to slot [lock] mechanism and also with  
13   the -- with the legs, which is not as much of a  
14   focus here.

15          Q.       And you say the "quick attachment to a  
16   slot mechanism," is that correct?

17          A.       I don't -- I don't think I said a  
18   "slot." I think I said a quick attachment and  
19   maybe I said "quick twist mechanism"?

20          Q.       Okay. The transcript says "the quick  
21   attachment to a slot mechanism."

22                   Maybe you said "lock mechanism"? Could  
23   that be --

24          A.       I -- I thought I said a quick -- the



1 quick attachment method, and I think maybe I said

2 "quick twist." I don't recall saying "slot."

3 Q. So let me ask the question again so we  
4 get a clear transcript.

5 And what is the area -- the field of  
6 endeavor of the '184 patent, more specifically,  
7 Dr. Reinholtz?

8 A. Beyond being broadly unmanned aerial  
9 vehicles of the multi-rotor type, the focus is on  
10 quick attachment and detachment of rotor blades,  
11 quick and secure, and also on the arms and legs of  
12 the -- of the aerial platform.

13 Q. Thank you. And in your opinion, what  
14 was the problem faced by the inventors of the '184  
15 patent prior to May 2013?

16 MR. ABRAMIC: Objection; vague.

17 BY MS. GORDON:

18 Q. Do you understand my question,  
19 Dr. Reinholtz, or would you like me to reframe the  
20 question?

21 A. No. I understand your question, I  
22 think, and I am looking to try to, of course,  
23 capture the thinking of the inventors here.  
24 You're asking me about what the inventors

1     understood, and that's described I think pretty  
2     well in the background of the invention.

3           Q.       So based on the background, can you  
4     summarize for me the problem that the '184  
5     inventors were attempting to address in the  
6     patent?

7           A.       At least in part, this is described in  
8     the background and then in the summary of the  
9     invention. The discussion is about the rotors  
10    that rotate in opposite directions to cancel the  
11    torque on the -- on the vehicle, but to continue  
12    to provide lift.

13                   And then in the summary of invention, I  
14    think it captures a number of key points that the  
15    first sentence of the summary of the invention  
16    talks about, "The present disclosure provides a  
17    rotary aircraft apparatus that overcomes problems  
18    in the prior art."

19                   And the last paragraph in the summary  
20    of the invention says, "The rotor blades can  
21    easily detach for transport or storage and cannot  
22    be placed on driveshafts rotating in the wrong  
23    direction."

24                   So there obviously is a key focus of

1 the patent.

2 Q. Thank you. And if we turn to your  
3 Paragraph 18 --

4 A. I'm sorry. Let me get on the same page  
5 as you. You're looking at my declaration,  
6 Paragraph 18?

7 Q. 18 in your declaration.

8 A. Yes.

9 Q. And this is your understanding of  
10 obviousness, is that correct?

11 A. That's correct.

12 Q. And you state here that, "I understand  
13 that obviousness may be shown reconsidering more  
14 than one item of prior art," is that correct?

15 A. That's correct.

16 Q. So you could combine one reference with  
17 another, correct?

18 A. You could. There should be motivation  
19 to do that. You can't just cherry-pick pieces  
20 from one patent and another.

21 Q. And based on your understanding of  
22 obviousness, would a person of ordinary skill in  
23 the art ever look for prior art that is in a  
24 different field of endeavor than the field of

1 endeavor of the claimed invention?

2 A. Your question is would they ever look  
3 in a different field? And I think it's certainly  
4 possible. The more closely related the art, the  
5 more likely a person of ordinary skill in the art  
6 would look to that art.

7 Q. And for inventions involving UAV, would  
8 a person -- a POSITA restrict -- let me strike  
9 that question and let me ask it again.

10 In the context of the '184 patent,  
11 would a POSITA restrict their self to only prior  
12 UAV art?

13 MR. ABRAMIC: Objection; vague.

14 BY THE WITNESS:

15 A. I think the focus would probably be on  
16 prior art and existing devices. It's possible  
17 that the inventors or a person of ordinary skill  
18 in the art might look to closely related fields.

19 The more distant the relationship  
20 between the art being developed and the -- and the  
21 prior art and other fields, the less likely a  
22 person of ordinary skill would find that or look  
23 to it.

24

1 BY MS. GORDON:

2 Q. Thank you. So turning back to UAVs  
3 specifically in the vertical takeoff and landing  
4 type of UAVs, is a UAV rotor blade designed to  
5 rotate around its center of gravity?

6 A. Usually, yes.

7 Q. And is it fair to say that the UAV  
8 motor is designed to rotate around an axis of  
9 rotation?

10 A. In the types of -- I can think of  
11 exceptions, but I think in -- most frequently,  
12 yes, that's true.

13 Q. And what would happen if a rotor blade  
14 was mounted such that its center of gravity was  
15 not aligned with the motor's axis of rotation?

16 A. It depends on the details of the  
17 design.

18 Q. And what details would those be?

19 A. The other -- if there are other rotor  
20 blades, if there are multiple rotor blades, what  
21 is the relationship between the motion of the  
22 various blades?

23 Also aerodynamic considerations could  
24 come into play.

1           Q.       And how would those considerations  
2 alter your answer?

3           A.       I'm not sure at this point what  
4 question I'm answering. So could you give me the  
5 question again? And I will try to frame the  
6 answer in that context.

7           Q.       So the question was, what would happen  
8 if a rotor blade was mounted such that its center  
9 of gravity was not aligned with the motor's axis  
10 of rotation?

11          A.       Okay. Well, if the aircraft is  
12 designed for the center of gravity and the  
13 aerodynamic center to be at the center of the  
14 rotor, then as the blade is mounted off of its  
15 center of rotation, there would be vibrational  
16 forces that would become more severe, the -- more  
17 offset in that distance and the higher the speed  
18 of the rotor.

19          Q.       And is a quadcopter UAV a type of  
20 aircraft that has an aerodynamic center at the  
21 center of the rotor?

22          A.       It might be. I can, again, think of  
23 exceptions.

24          Q.       And what would those exceptions be?

1           A.       Again, it's not required to have the  
2     blade be perfectly balanced. It just needs to be  
3     accounted for in the design.

4                   And so it's possible to build a rotor  
5     craft with a blade that sticks out on one side and  
6     not the other, for example, as long as the forces  
7     from the other blades are balanced. It would be  
8     unusual, but it's not impossible.

9           Q.       So if you -- sorry. Strike that.

10                  MS. GORDON: So we've been going, I  
11     think, an hour and 15 minutes.

12                   Do you want to take a break, or  
13     do you want to keep pushing on?

14                  THE WITNESS: It's 11:39 here. I guess  
15     you're in earlier time zones -- or, I don't  
16     know where you're located.

17                  MS. GORDON: We're in Washington D.C.  
18     So we're 11:39 as well. John is an hour  
19     behind us.

20                  THE WITNESS: Okay. Well, I would be  
21     good taking a short break now. Then we could  
22     come back and maybe split the difference on  
23     lunch when we have a lunch break?

24                   How would that be?

1 MS. GORDON: That sounds good to me.

2 John, is that okay with you?

3 MR. ABRAMIC: Yup. Up to the witness.

4 That's fine with me.

5 MS. GORDON: Okay. So, Dr. Reinholtz,

6 how long would you like for the break?

7 THE WITNESS: Why don't we take -- it's

8 11:40. Why don't we say we'll reconvene at

9 11:50?

10 MS. GORDON: Okay. That sounds good.

11 (A recess was had from

12 10:39 a.m. CST until

13 10:51 a.m. CST.)

14 BY MS. GORDON:

15 Q. So, Dr. Reinholtz, I would like to now  
16 turn your attention to Paragraphs 35 through 37 of  
17 your declaration.

18 A. Okay. I'm there.

19 Q. Thank you. And in these paragraphs,  
20 you talk about the claimed lock mechanism.

21 Can you tell me what the components of  
22 the clockwise lock mechanism of the '184 patent  
23 are?

24 A. I think it might be good to turn to the



1 patent itself to see if it defines what the lock  
2 mechanism comprises.

3 Q. I have that patent in front of me.

4 A. So initially, you may want to dig  
5 deeper than this, but the patent describes in  
6 Column 3, starting at -- I'm reading the paragraph  
7 starting at Line 45, and it talks about there, "To  
8 ensure that the correct position -- to ensure that  
9 the correct positioning, the clockwise rotor  
10 blades 9A and 9B are engageable only with the  
11 clockwise lock mechanism 11AB."

12 And we see, for example, in  
13 Figure 10 -- we see the callout pointing to the  
14 lock mechanism 11AB.

15 Q. And what are the components of lock  
16 mechanism 11AB?

17 A. Reading down below that in the patent,  
18 starting at Line 55 in Column 3, it tells us that,  
19 "Each clockwise lock mechanism 11AB comprises a  
20 shaft lock portion 15A attached to the  
21 corresponding clockwise rotating driveshaft and a  
22 blade lock portion 17A attached to the clockwise  
23 rotor blade." The rotor blade is 9A.

24 Q. Okay.

1           A.       It at least includes those components.

2           Q.       And is the rotor blade part of the lock  
3 mechanism?

4           A.       We're not told that it can't be part of  
5 the lock mechanism, but it's -- the particular  
6 items that are being called out there appear to be  
7 the blade lock portion that's attached to the  
8 blade.

9                    So some portion of the blade that  
10 secures that clearly has to be part of it. There  
11 has to be a connection. Beyond that, we aren't  
12 told, I don't think, if more of the blade is  
13 considered part of the lock mechanism.

14          Q.       I see. But the part of the blade  
15 attached to the blade lock portion, in your view,  
16 would be part of the lock mechanism?

17          A.       It could be some portion of that. It  
18 could be part of the lock mechanism.

19          Q.       And what portion would be part of the  
20 lock mechanism?

21          A.       Well, at least the blade lock portion  
22 has to be secured. And part of the blade, the  
23 exact boundary of where that definition would end,  
24 I don't think is very important to the discussion

1 here.

2 So I haven't tried to draw an exact  
3 boundary.

4 Q. I see. I understand. Thank you.

5 And in the patent and Figure 4, what is  
6 the component that's labeled 25?

7 A. Sorry. I'm looking for the precise  
8 definition of 25 in the patent. I want to make  
9 sure I get it right, and I'm having trouble  
10 finding that callout.

11 Oh, I found it. I'm sorry. Just as I  
12 was saying that.

13 Q. That's okay.

14 A. So there's a bit of confusion because  
15 the figure just calls it "25," but the  
16 specification refers to it as 25A and B being used  
17 to describe the different -- the different rotors.

18 So 25 is clearly something called a  
19 lug.

20 Q. And what is Element 27?

21 A. 27 are the notches.

22 Q. And what is Element 23?

23 A. 23 in the patent specification are  
24 called the slots.

1           Q.       And are the slots formed in the shaft  
2 lock portion?

3           A.       They are formed in the part that is  
4 shaft -- generally the shaft lock portion, yes.

5           Q.       And is -- does the slot have a side  
6 edge?

7           A.       Well, it has a number --

8           Q.       Sorry. Let me ask that a different  
9 way. Does the shaft lock have a side that defines  
10 the side of the slot?

11          A.       Of course we're talking about a  
12 particular embodiment here. The shaft lock  
13 portion has a number of faces that would define  
14 the slot.

15          Q.       And what are those faces?

16          A.       Well, a slot -- the slot would have  
17 a -- it must have at least three faces here. One  
18 would be above the -- if the slot is the opening,  
19 then what's above the slot is a face material.  
20 Below the opening is material. And at the back of  
21 the slot, there is a face that also helps to  
22 define the slot.

23                   The details aren't completely clear of  
24 how the slot is required to be configured.

1 It's -- Figure 4 is to demonstrate the concept,  
2 and all the details of the particular design  
3 aren't shown there, of course.

4 Q. And what's the purpose of the back face  
5 of the slot?

6 A. And when you say back face, just to be  
7 sure, I think we know what you're talking about,  
8 but that's the face that would be in this image or  
9 how we would perceive this image, that would be  
10 the -- the smallest face of the slot that's -- not  
11 the top or the bottom face.

12 That's what you're calling the back  
13 face?

14 Q. Yeah. I think that's what you referred  
15 to as the back.

16 So we have the -- I think you referred  
17 to the top face, a bottom face, and then you  
18 referred to one as the back face, which, in this  
19 picture, would be the smaller length face?

20 A. Okay. Good. I think that's pretty  
21 clear now. Good. And I think that's accurate.

22 And so where there are multiple  
23 purposes to that -- the material that defines that  
24 back face to create structure, one function is to

1 provide structure to secure the top, the top face  
2 on. Another function could be to limit the travel  
3 of the blade itself if it is able to achieve a  
4 position resting against that back face.

5 I'm not sure we know that that would be  
6 true in this embodiment, but it could be.

7 Q. And why don't we know whether that is  
8 true in this embodiment?

9 A. Well, I have to look to see if the  
10 specification tells us that. Let me look and see  
11 if I can find any information about that.

12 I don't think there's any information  
13 in the specification that tells us.

14 Q. So there's no information in the  
15 specification that says that the back face of the  
16 slot limits the travel of the blade itself?

17 A. I do not see that in the specification.  
18 I would have to review it more thoroughly to -- to  
19 see if that description is included. I don't  
20 recall it, though.

21 Q. And isn't that what's depicted in  
22 Figure 5?

23 A. I would say Figure 5, we could --  
24 certainly the blade is now -- a portion of the

1 blade is within the slot. Whether it is able to  
2 achieve a position where there is contact between  
3 the blade and the back face of the slot, I don't  
4 think we can infer that from Figure 5. It's  
5 possible, certainly.

6 Q. And if that back face was not there,  
7 what would happen to the rotor blade when it  
8 rotates?

9 A. Well, if only the -- if the back face  
10 were not there, then there's nothing to hold the  
11 top -- the material above the top face.

12 And so at that point, there's nothing  
13 above the rotor blade -- maybe we should break  
14 this question into parts because I'm not sure I'm  
15 answering what you're asking.

16 Q. So if you had the system that we see in  
17 Figure 4 or a system without that -- without the  
18 back face that we're talking about, would the  
19 blade be stopped in any way from rotating?

20 A. I'm struggling with your question, I  
21 think, because it seems apparent that if you took  
22 away the back of the slot, then you can't have a  
23 top part either.

24 So how would that look?

1           Q.       So the back of the slot would be  
2       necessary in the embodiment we see here in  
3       Figure 4?

4           A.       Well, there has to be material that --  
5       well, the embodiment is what it is. It has a  
6       slot, and presumably that slot has a back face.

7                   What would happen if you removed  
8       that -- I'm not sure -- I think there are several  
9       different possibilities for how you might be able  
10      to form it. I think we're now talking about  
11      possibly a redesign of this.

12                   So I'm just not sure without giving it  
13      a lot more thought.

14          Q.       Thank you. So if you turn to the '184  
15      patent, Column 4, 9 -- I think it's 13 through 16.

16                   It states, "During operation, the shaft  
17      lock portion 15A exerts a force in the direction  
18      of the arrows on the rotor blade to rotate the  
19      same, and this force keeps the blade engaged in  
20      the slots 23."

21                   How is the blade kept engaged in the  
22      slot in this portion of the spec?

23          A.       Well, I think the answer is embedded in  
24      that paragraph. There's a force that keeps it in



1 the slot.

2 "During operation, the shaft lock  
3 portion exerts a force in the direction of the  
4 arrows on the rotor blade to rotate same, and this  
5 force keeps the blade engaged in the slots."

6 Q. And if the back face of the slot was  
7 not present, would that force still keep the blade  
8 engaged in the slot?

9 A. Again, I don't see how you can have a  
10 slot without having that back face. Not having  
11 the back face, at least taking just this  
12 embodiment and trying to remove the back face also  
13 removes the top face. And then you don't have a  
14 slot anymore.

15 Q. And without slots, then you wouldn't be  
16 able to keep the blade engaged during operation,  
17 correct?

18 A. Well, if we take this particular  
19 embodiment and modify it by taking that material  
20 that forms the slot away, it would be hard to keep  
21 the blade engaged during operation. There  
22 probably is an alternate -- maybe an alternate  
23 design that meets the claims of the patent, but if  
24 you take this embodiment and remove the back and

1 the top of that component, the shaft lock portion,  
2 I don't think you could keep the blade on in  
3 operation.

4 Q. So in your Paragraph 35, the last  
5 sentence, you state, "Figure 5 illustrates that  
6 same clockwise lock mechanism but with the rotor  
7 blade engaged and locked."

8 Do you see that sentence?

9 A. I do, yeah.

10 Q. How is the rotor blade engaged in  
11 Figure 5?

12 A. Well, it's -- it's engaging and mating.  
13 So it's mated. And then it's twisted in the  
14 direction of R to be locked in place.

15 Q. And what is it mated to?

16 A. Or attached. I would say the rotor  
17 blade, including -- the blade lock portion is  
18 mated with the shaft lock portion to create this  
19 locked connection, attachment.

20 Q. And what piece of the blade lock  
21 portion is mated with the shaft lock portion?

22 A. The entire blade lock portion is mated  
23 with the shaft lock portion.

24 Q. Can you explain to me what you mean by

1     that?

2           A.       We have components, the blade and the  
3     blade lock portion and the shaft lock portion,  
4     that has a geometry that allows a blade to be laid  
5     into the recess and then engaged by rotating it so  
6     that the blade becomes attached.

7           Q.       And what is the recess you're referring  
8     to in your answer?

9           A.       Again, I want to be sure I'm using the  
10    correct words from the specification so I don't  
11    create any confusion. I think the recess is  
12    called 21, but let me confirm that, if I may.

13          Q.       Okay. Take your time.

14          A.       Yes. So at the bottom of Column 3, on  
15    the top of Column 4, it describes that recess 21.

16                 So the blade -- the shaft lock portion  
17    defines a recess 21 in the middle between the  
18    arrows. The blade lock portion 17A of the lock  
19    mechanism 11A on the clockwise rotor blade is  
20    dropped into this recess 21, and that's what we  
21    see in Figure 4.

22          Q.       And you say the blade lock portion is  
23    mated with the shaft lock portion.

24                 What are you considering to be the

1 blade lock portion in Figures 4 and 5?

2 A. Clearly the blade lock portion,  
3 according to the specification, comprises at least  
4 portion 17A, which is not clearly shown in  
5 Figure 4. That callout isn't in Figure 4, but we  
6 can go back to other figures. For example,  
7 Figure 10 shows 17A.

8 Q. And that's just the raised structure  
9 that's attached to the blade, correct?

10 A. Well, I'm guessing that that's all  
11 formed as an integral piece. It certainly could  
12 be formed as an integral piece. So what part of  
13 the blade at least that supports that or attaches  
14 it, the material -- I'm not quite sure where the  
15 interface boundary would be. I don't think it's  
16 necessary to define that.

17 Q. You said, "I'm guessing that's all  
18 formed as an integral piece."

19 What do you mean by "that's all"?

20 A. Right. That was a bad answer, and I  
21 apologize for it.

22 It could certainly be formed -- the  
23 part that you described, I think as a raised  
24 portion, could be formed integrally with the

1 blade, but we don't have the physical  
2 manifestation of these patent figures. So we  
3 don't know how it would really be formed or how it  
4 could be formed.

5 Q. So I want to go back to your answer  
6 where you were talking about the blade lock  
7 portion being mated with the shaft lock portion.

8 And can you detail for me exactly what  
9 pieces of the blade lock portion are mated with  
10 which pieces of the shaft lock?

11 MR. ABRAMIC: Objection; asked and  
12 answered.

13 BY THE WITNESS:

14 A. Right. We know it has to comprise at  
15 least the 17A as part of the blade lock portion  
16 and at least 15A as the shaft lock portion.

17 BY MS. GORDON:

18 Q. So which -- so I goes could you be more  
19 specific? So if it has 17A and 15A, how are those  
20 two mated together to engage the components?

21 A. They have -- it's hard to be more  
22 specific than what I just described. We see these  
23 two specific components, 15A and 17A, with a  
24 geometry that forms conjugates that allow them to

1 mate together.

2 Q. And when you say conjugates, are you  
3 referring to the lugs and the notches?

4 A. Not specifically. Conjugate means just  
5 related.

6 So there's a relationship between these  
7 shapes, but what's shown here is one particular  
8 embodiment. There might be other embodiments that  
9 have different shapes.

10 So I don't want to limit it to that  
11 necessarily.

12 Q. But if we're looking at Figure 5, which  
13 you refer to in Paragraph 35, what are the  
14 conjugates in Figure 5 that permit the rotor blade  
15 to be engaged?

16 A. Every surface that touches or interacts  
17 with another surface on those elements are  
18 conjugates. They're related in the sense that  
19 they have to fit together.

20 Q. So that would be the lugs and the  
21 notches?

22 A. It certainly could include lugs and  
23 notches.

24 Q. And does it include lugs and notches in

1     what we see in Figure 5?

2             A.       Does what include lugs and notches?

3             Q.       The conjugate you're referring to that  
4     achieves engagement?

5             A.       Yes. I think I would say that the lugs  
6     and the notches are related surfaces for sure.

7             Q.       And is there anything else in the  
8     embodiment we see in Figure 5 that you would  
9     consider related surfaces that achieve engagement?

10            A.       Sure. In Figure 5, all the faces --  
11     again, the faces of the blade and the slot all  
12     could be considered related surfaces or conjugate  
13     surfaces that interact with each other that might  
14     assist with the -- with the engagement or part of  
15     the engagement that creates the attachment.

16            Q.       And are those faces of the blade then  
17     also part of the blade lock mechanism?

18            A.       Well, the specification tells us that  
19     the blade lock mechanism has to comprise at least  
20     17A. It doesn't tell us other elements that could  
21     or couldn't be there.

22            Q.       So in your opinion, could [sic] the  
23     faces of the blade that are in contact with the  
24     slot part of the blade lock portion?

1           A.       I'd have to think more about that. I  
2   don't think the specification or claims exclude  
3   that necessarily, but I have to think more about  
4   it.

5           Q.       So how would a person reading the '184  
6   patent understand where the blade ends and the  
7   blade lock portion begins?

8           A.       Well, we know that what's depicted  
9   shows us that 17A is clearly part of the blade  
10   lock portion. We know that has to be attached  
11   with the blade in some way. It could be formed  
12   integrally, or it could be attached.

13                   Where exactly the interface of those  
14   pieces are, I don't think it's important to  
15   understand that to understand the invention.

16          Q.       So you don't think it's important to  
17   someone who may be accused of infringing this  
18   patent to understand what the difference between  
19   the blade and the blade lock portion is?

20          A.       No. I didn't --

21                   MR. ABRAMIC: Objection to --

22   BY THE WITNESS:

23          A.       Yeah. I didn't mean to say that.

24



1 BY MS. GORDON:

2 Q. So you would agree it would be  
3 important to a person faced with infringement of  
4 this patent to understand where the blade ended  
5 and where the blade lock portion began?

6 MR. ABRAMIC: Objection; vague.

7 BY THE WITNESS:

8 A. I think it's important to understand  
9 that there is a blade lock portion that, in this  
10 embodiment, is depicted as 17A. Where the exact  
11 interface between that and the blade below it  
12 occurs does not seem to me to be very important to  
13 understanding the invention or to an infringer or  
14 potential infringer.

15 BY MS. GORDON:

16 Q. But you would agree that the claims use  
17 both the terms "blade" and "blade lock portion"  
18 separately, correct?

19 A. Well, the term "blade" appears. "Rotor  
20 blade" appears not in juxtaposition with lock  
21 portion, but it doesn't tell us that part of the  
22 blade can't be part of the blade lock portion, but  
23 the words -- there are places where the word  
24 "blade" is used in isolation from the word "lock

1     portion," to the words "lock portion." That's  
2     true.

3           Q.       So you used the terms engaged and  
4     locked separately in Paragraph 34.

5                    Can you explain what distinction you're  
6     making from something being -- a blade being  
7     engaged versus a blade being locked?

8           A.       I think you just referred me to  
9     Paragraph 34, but I'm not sure what you're looking  
10    at there.

11          Q.       Paragraph 35. Sorry. I said  
12    Paragraph 34. That was my mistake. The last  
13    sentence in Paragraph 35 that we've been  
14    discussing, you say, "but with the rotor blade  
15    engaged and locked."

16                    And I'd like to understand the  
17    distinction you're making between a rotor blade  
18    that's engaged versus a rotor blade that's locked.

19          A.       I think the engagement is the meshing  
20    so that the components are meshed together. And  
21    locked, I think we would say refers to the removal  
22    of the motion between the blade and the motor and  
23    shaft that are driving it.

24          Q.       And how is the motion between the blade

1 and the motor and shaft that's driving it removed  
2 in the example we see in Figure 5?

3 A. By the interaction of faces, material,  
4 that -- that must interfere with each other to  
5 prevent motion in the vertical and horizontal  
6 direction and take away the degrees of rotation  
7 that might otherwise be possible with a -- with  
8 some other attachment form or some other way of  
9 partially securing.

10 Q. And that would include the top, bottom,  
11 and back face of the slot we were talking about?

12 A. I don't think it has to include what  
13 we're referring to as the back face, but I  
14 struggle in answering that question again because  
15 without the back face, you can't have a top face.

16 Q. But would the back face stop rotation  
17 of the blade?

18 A. It could. I don't think the patent  
19 specification tells us that that happens.

20 Q. And you don't think that section we  
21 talked about in Paragraph 4, Lines 13 through 16,  
22 where we're talking about the shaft lock portion  
23 exerting a force in the direction of the arrows on  
24 the rotor blade keeps the blade engaged in slots

1 23 has anything to do with the back face of the  
2 slot?

3 MR. ABRAMIC: Objection; form.

4 BY THE WITNESS:

5 A. Well, it could.

6 BY MS. GORDON:

7 Q. And how could it?

8 A. It could. Well, if the blade --

9 MS. GORDON: I'm sorry. I think John  
10 wanted to make an objection. Did you, John?

11 MR. ABRAMIC: I just objected to form  
12 on the previous question.

13 BY THE WITNESS:

14 A. The -- if the blade, as it's being  
15 engaged, it's rotated in Figure 4 in the direction  
16 R and a portion of the blade enters slot 23, the  
17 specification doesn't confirm or tell us that that  
18 blade can rotate far enough in the direction --  
19 rotational direction R to -- to actually touch the  
20 back of the slot. It's certainly possible that it  
21 could, but we're not told that in the  
22 specification.

23 If it did touch the back of the slot,  
24 then that would also help to form a constraint.

1 BY MS. GORDON:

2 Q. And what structure in Figure 5 would  
3 prevent the blade when rotated in direction R from  
4 touching the back of the slot?

5 A. Well, potentially at least, the top and  
6 bottom faces of the slot.

7 Q. Would the lugs and notches prevent that  
8 as well?

9 A. They certainly could.

10 Q. And in the embodiment we see in  
11 Figures 4 and 5, could rotation still occur in the  
12 direction opposite R?

13 A. And let's try to be clear on this so  
14 I'm answering the right question. I think you are  
15 making the assumption that the shaft lock portion  
16 is fixed and now we're only talking about the  
17 engagement of the blade and its motion and the  
18 shaft lock portion is not moving? Is that the  
19 frame of your question?

20 Q. Correct. So in the figure we see in  
21 the -- the structure we see in Figure 4, can the  
22 blade still be moved in the rotation that's  
23 opposite R, which is -- appears to be the  
24 clockwise direction?

1           A.       It might be able to move a little. I  
2       don't think we know enough about the details of  
3       the structure. It wouldn't move very far, I don't  
4       think, but it could -- it could move a little bit.

5           Q.       So let's turn to Paragraph 37 of your  
6       declaration.

7           A.       Okay.

8           Q.       And in this paragraph, you state, in  
9       Line 3, "A user attaches the rotor blade by  
10      rotating the blade about the axis of the  
11      driveshaft by a fraction of a revolution."

12                   Do you see that?

13          A.       I just caught up with you. I'm sorry.  
14      It starts after the comma?

15          Q.       Correct.

16          A.       Right. Yes. That's correct.

17          Q.       And can the rotor blade be rotated a  
18      full revolution?

19          A.       I don't think that's possible. I think  
20      it has to be a fractional revolution.

21          Q.       And is there anywhere in the '184  
22      patent that describes the mechanism that would  
23      allow the rotor blade to be rotated a full  
24      rotation?

1           A.       And, again, you're I think asking,  
2       could the rotor blade be rotated a full rotation  
3       relative to the shaft lock portion when it's being  
4       engaged?

5           Q.       Correct.

6           A.       And I'm sorry. Could you clarify the  
7       question? Is the question, does it tell us that  
8       it can be rotated a full rotation?

9           Q.       Right. So I'm asking about the context  
10      that we're talking about in 37, which is the  
11      engagement between the rotor blade and the shaft  
12      lock portion.

13                   And in here, you talk about the user  
14      attaching the blade by rotating it about the axis  
15      by a fraction of the revolution.

16                   My question is, is there any disclosure  
17      in the '184 patent that would permit a user to  
18      attach a rotor blade or engage a rotor blade with  
19      a lock mechanism where the rotor blade would be  
20      rotated a full revolution?

21           A.       I don't think so.

22           Q.       And what modifications would need to be  
23      made to allow the rotor blade to be rotated a full  
24      rotation in order to engage the rotor blade and

1 the lock mechanism?

2 MR. ABRAMIC: Objection to form.

3 BY THE WITNESS:

4 A. It -- at least for the embodiments that  
5 are depicted, I don't think it could be modified  
6 and not keep -- not in keeping the basic concept  
7 of the invention, but I'd have to think about that  
8 more.

9 Maybe there's some way, but I can't see  
10 it.

11 BY MS. GORDON:

12 Q. Thank you. And if we look at the  
13 embodiment we see in Figure 5, what would happen  
14 if the blade was only rotated, for example, one  
15 degree in the direction of R?

16 A. And are you asking not modifying the --  
17 this embodiment to have a different geometry? In  
18 other words, not considering the full scope of the  
19 claims, but just looking at this particular  
20 embodiment what might happen?

21 Q. Yeah. I'm looking at what's actually  
22 taught in the specification 245 we see in this  
23 embodiment. So the embodiment that we see here in  
24 Figure 4, what would happen if you rotated the



1 blade only one degree?

2 A. Well, I guess I'll start with  
3 disagreeing with the premise of your question.  
4 What's described in the specification I don't  
5 think limits us to this particular precise  
6 geometry.

7 Q. And we can turn back to that in a  
8 minute. So let's look at this geometry.

9 So you would agree that this is the  
10 only geometry that's explicitly described in the  
11 specification, or shown in the specification?

12 A. Right. I would say that there is one  
13 embodiment shown in the figures that's discussed  
14 in the specification.

15 Q. And in the embodiment that's shown in  
16 the figures, what would happen if the rotor blade  
17 was only rotated one degree in the direction of R?

18 A. We're now getting into the realm of  
19 clearances and tolerances and what -- would one  
20 degree, could it be engaged with one degree  
21 rotation or does it need more than that?

22 And I just don't -- I don't know what  
23 would happen. I think the "what would happen"  
24 part you're looking for is, would it be -- could

1 it be fully engaged with a one-degree rotation?

2 I'm not even sure what your question  
3 is, I guess, at this point. What do you want to  
4 know about what's happening?

5 Q. Right. That was going to be my next  
6 question.

7 So would there be engagement of the  
8 blade in the lock mechanism that we see in  
9 Figure 4 if there was only one degree of rotation?

10 A. I would say for this embodiment, it  
11 would not be fully engaged. It may be partially,  
12 but there's nothing in the specification that  
13 contemplates just rotating it one degree.

14 Q. And when you say partial engagement,  
15 how are you characterizing partial engagement  
16 versus full engagement?

17 A. In these particular figures that depict  
18 one embodiment -- for example Figures 4 and 5 --  
19 the blade is rotated in the direction R by some  
20 fairly substantial amount. It might be 90  
21 degrees. We're not told that, and I don't think  
22 the precise number is important.

23 And so whatever it takes to get it from  
24 where it is in Figure 4 to Figure 5, I would say

1     that's fully engaged.   Some tiny fraction of a  
2     rotation one degree, I probably wouldn't say, with  
3     respect to Figures 4 and 5, that that would be --  
4     a person of ordinary skill in the art would think  
5     about that as full engagement.

6                     So it's something less than that.

7             Q.       Well, what distinguishes partial  
8     engagement from not engaged at all?

9             A.       Figure -- well, the engagement process  
10    is putting the blade down in the slot and then  
11    rotating it in the direction of R.

12                    So if you want the extremes, when the  
13    blade is held in your hand, it's not being engaged  
14    at all.   And then there's some sequence that  
15    occurs where the surfaces move with respect to  
16    each other where Figure 5 shows it to be fully  
17    engaged.

18            Q.       So in Figure 4, is the blade engaged in  
19    the lock mechanism?

20            A.       I don't think we could say that it's  
21    fully engaged.   It might be that we could say that  
22    there's a part of the engagement sequence is where  
23    we are in Figure 4, that the blade is dropped into  
24    the slot.

1 I'm not sure the specification tells us  
2 exactly where engagement begins, but dropping it  
3 into the slot seems to be part of that process.

4 Q. So dropping it into the slot, you would  
5 consider as engagement?

6 MR. ABRAMIC: Objection to form.

7 BY THE WITNESS:

8 A. No. I -- yeah. I don't -- I didn't  
9 say that.

10 BY MS. GORDON:

11 Q. So when you dropped the blade into the  
12 recess, would you consider that to be partial  
13 engagement?

14 A. I think the blade is clearly not  
15 engaged when it's separated -- the blade lock  
16 portion in the blade separated from the shaft lock  
17 portion. The sequence of engagement involves  
18 placing the blade and the blade lock portion into  
19 the recess 21 and then rotating it.

20 So, again, the two extremes are -- the  
21 two components not touching each other and then  
22 Figure 5 where they're fully engaged. What's in  
23 between, I don't think the specification tells us  
24 that this is some fractionally engaged position.

1           Q.       Well, I think it -- it becomes  
2   important, right, because it's -- the blade lock  
3   portion is only the raised piece we see there in  
4   the center, then it is only engaged in the -- it  
5   only touches the shaft lock portion when the lugs  
6   are engaged in the notches, correct?

7                   MR. ABRAMIC:  Objection to form.

8   BY THE WITNESS:

9           A.       I don't read that in the specification,  
10   that it can't touch in Position 4.

11   BY MS. GORDON:

12          Q.       So you're saying, in Position 4, the  
13   raised portion could be touching the shaft lock  
14   portion?

15          A.       It's possible.  I don't think the  
16   specification tells us that it can't touch.

17          Q.       Does that mean that then they're  
18   engaged?

19                   MR. ABRAMIC:  Objection to form.

20   BY THE WITNESS:

21          A.       Figure 4 shows part of the engagement  
22   process where the blade has been put into the  
23   recess.

24

1 BY MS. GORDON:

2 Q. And, therefore, when the blade is put  
3 in the recess, would you consider the blade to be  
4 partially engaged in the lock mechanism?

5 A. I don't see that there's a necessity to  
6 draw that distinction. I think somebody could say  
7 that it's partially engaged or that the engagement  
8 process has begun, but I don't see a reason to  
9 define a particular position where, again, there's  
10 some level of engagement.

11 There's a process for engaging.

12 Q. Right. So you're going back to my  
13 original question. I believe when we were talking  
14 about what happens if you only rotate the blade  
15 one degree, and you said that's partial  
16 engagement.

17 So I'm trying to understand, when  
18 you're using the term "partial engagement," when  
19 we're looking at Figures 4 and 5, what starts  
20 partial engagement of the blade in the lock  
21 mechanism?

22 A. Well, certainly, when you have started  
23 to rotate the blade in the direction R, you're in  
24 the engagement process. And so I think that could

1 be said to be partially engaged, but not fully  
2 engaged.

3 Q. So let me step back because I'm still  
4 having trouble understanding what you mean when  
5 you're using the term "partial engagement."

6 So if a user starts to rotate the blade  
7 and, say, maybe it's not even 1 percent  
8 rotation -- maybe it's .1 percent rotation -- you  
9 would consider that partial engagement?

10 MR. ABRAMIC: Objection; asked and  
11 answered.

12 BY THE WITNESS:

13 A. I don't know what you mean by  
14 "percent."

15 BY MS. GORDON:

16 Q. All right. Let me take that -- so let  
17 me go back to your answer.

18 You said, "When you have started to  
19 rotate the blade in the direction R, you're in the  
20 engagement process."

21 So I think you could -- I think that  
22 could be said to be partially engaged. So your  
23 answer was, when I start the rotation, I'm  
24 partially engaged. So when I start the rotation,

1 I could be rotating the blade maybe .1 degree.

2 In your opinion, is that partial  
3 engagement?

4 MR. ABRAMIC: Objection; asked and  
5 answered.

6 BY THE WITNESS:

7 A. Figure 5 shows the blade engaged and  
8 attached to the shaft lock portion.

9 What's in between where you start in  
10 Figure 5, again, I don't think it's necessary to  
11 try to assign some fractional amount of engagement  
12 there.

13 BY MS. GORDON:

14 Q. Well, you're the one who was using the  
15 term "partial engagement," and I'm trying to  
16 understand where partial engagement starts in what  
17 we see in Figures 4 and 5.

18 So can you explain to me when partial  
19 engagement starts in the '184 patent between the  
20 rotor blade and the lock mechanism?

21 MR. ABRAMIC: Objection; asked and  
22 answered several times.

23 MS. GORDON: No. I don't think it has  
24 been. That's why we're asking it again.



1 BY MS. GORDON:

2 Q. So can you explain to me where partial  
3 engagement starts in the '184 patent between the  
4 blade and the lock mechanism?

5 MR. ABRAMIC: Same objection.

6 BY THE WITNESS:

7 A. So to be clear, the patent, as far as I  
8 recall, does not tell us there's partial  
9 engagement. It shows that the blade is engaged  
10 in -- fully engaged in Figure 5.

11 Now you're asking me to go beyond  
12 what's disclosed in the specification and to put  
13 some partial or fractional amount of engagement.

14 I think it's clear that when the blade  
15 is not in the recess, it's not at all engaged.  
16 When it is fully seated as it is in Figure 5, then  
17 it's fully engaged.

18 The amount -- what fraction it is in  
19 between, I don't think -- it's not discussed in  
20 the specification. It's not, as far as I know,  
21 part of the patent in any way, this idea of  
22 partial engagement.

23 BY MS. GORDON:

24 Q. Well, you used that terminology in your

1 answer, correct?

2 A. I did. That's correct.

3 Q. And is it your opinion that the claims  
4 would cover what you consider to be partial  
5 engagement?

6 MR. ABRAMIC: Objection; form, vague.

7 BY THE WITNESS:

8 A. I don't know what you mean by that  
9 question.

10 What are you asking me if the claims  
11 cover?

12 BY MS. GORDON:

13 Q. So the claims use the term "engage,"  
14 correct?

15 MR. ABRAMIC: Objection; vague.

16 BY THE WITNESS:

17 A. That's -- that is correct.

18 BY MS. GORDON:

19 Q. And now you've introduced in your  
20 answers this concept of a range of engagement from  
21 partial to full engagement, correct?

22 A. I have used the words "partially  
23 engaged."

24 Clearly there is a point in time or

1 geometry where there is no engagement and there is  
2 the Figure 5 where it's fully engaged.

3 My use of the word "partially engaged"  
4 was the -- the positions of those components in  
5 between. And I didn't mean to infer anything or  
6 imply anything beyond that.

7 Q. So do we see anywhere in the '184  
8 patent a point in time where there's no engagement  
9 between the blade and the lock mechanism?

10 A. We don't see it in the figures, but of  
11 course we see it in the words of the specification  
12 that tell us that, "The blade lock portion 17A of  
13 the lock mechanism on the clockwise rotor blade 9A  
14 is dropped into the recess 21."

15 So at the point where it's about to be  
16 dropped, it's clearly not engaged at all.

17 Q. But the figure we see shown in  
18 Figure 4, you would argue that -- strike that.  
19 Let me ask that again.

20 So the structure you see in Figure 4,  
21 you would say that there is engagement between the  
22 rotor blade and the lock mechanism in Figure 4?

23 MR. ABRAMIC: Objection; asked and  
24 answered.

1 BY THE WITNESS:

2 A. I would say they're engaged in  
3 Figure 5. Anything in between, I don't think is  
4 discussed in the patent.

5 BY MS. GORDON:

6 Q. So I think this is a yes-or-no  
7 question.

8 In Figure 4, is the rotor blade engaged  
9 in the lock mechanism?

10 MR. ABRAMIC: Objection; asked and  
11 answered.

12 BY THE WITNESS:

13 A. It is not fully engaged.

14 BY MS. GORDON:

15 Q. Is it engaged to any degree in  
16 Figure 4?

17 MR. ABRAMIC: Same objection.

18 BY THE WITNESS:

19 A. It's in the process of being engaged in  
20 Figure 4.

21 BY MS. GORDON:

22 Q. I'm not sure -- again, I think this is  
23 a pretty clear question here.

24 At what point -- if it's in the process

1 of being engaged in Figure 4 -- so Figure 4 is the  
2 starting point for the process of engagement?

3 Would that be a fair statement?

4 MR. ABRAMIC: Objection; asked and  
5 answered.

6 BY THE WITNESS:

7 A. I think the start of the engagement  
8 process is when the blade is dropped into the  
9 slot. When the blade is engaged is what's shown  
10 in Figure 5.

11 BY MS. GORDON:

12 Q. So the blade is not engaged if it's not  
13 in the -- if it's not as shown in Figure 5?

14 MR. ABRAMIC: Objection; form, asked  
15 and answered.

16 BY THE WITNESS:

17 A. It's not fully engaged until it's in  
18 the position of Figure 5.

19 BY MS. GORDON:

20 Q. So here's the problem, is we're back to  
21 you using the term "fully engaged" to distinguish  
22 between engaged and I think we're entitled to  
23 understand what you mean from something that's  
24 fully engaged, from partially engaged, to not

1 engaged.

2 So if we look at Figure 4, in Figure 4,  
3 is the rotor blade not engaged in the lock  
4 mechanism?

5 MR. ABRAMIC: Objection; asked and  
6 answered.

7 BY THE WITNESS:

8 A. It's engaged in the position in  
9 Figure 5.

10 BY MS. GORDON:

11 Q. I'm asking about Figure 4. Is the  
12 rotor blade engaged in the lock mechanism when it  
13 is in the position we see in Figure 4?

14 A. It's in the process of being engaged,  
15 but it's not engaged until it reaches the position  
16 in Figure 5.

17 Q. So it's not engaged in any way until it  
18 reaches the position on Figure 5?

19 A. Engagement is the mating of the  
20 surfaces. So it's being engaged in Figure 4.  
21 It's early in the engagement process. And  
22 Figure 5 is where it's engaged.

23 Q. So you would say if a system didn't  
24 reach the point of Figure 5, then it wouldn't

1     infringe the claim?

2                   MR. ABRAMIC:  Objection; vague, form.

3     BY MS. GORDON:

4           Q.       Well...

5           A.       What the specification tells us is that  
6     it's engaged as shown in Figure 5.  It doesn't  
7     describe what state it's in in Figure 4 in terms  
8     of the word "engage" or "engagement."

9           Q.       So in Figure 4, you would say that the  
10    blade is not engaged in the lock mechanism until  
11    the rotation starts?

12                   MR. ABRAMIC:  Hold on a second.  I just  
13    want to make an objection for the record.  
14    We're asking the same question over and over  
15    and over and over again.  He's answered the  
16    question over and over and over again.

17                   You can say you are entitled to  
18    an answer, but you're not entitled to keep  
19    asking the same question if you don't like  
20    the answer.

21                   That's my objection.

22                   MS. GORDON:  And, Mr. Abramic, I would  
23    remind you that your objections are limited  
24    to a single word.  You're not allowed to do a

1 speaking objection.

2 And I am entitled to understand  
3 the basis for the expert's opinion that he  
4 stated in his declaration in here today, and  
5 he has not been clear. I am entitled to ask  
6 him questions until his position is made  
7 clear.

8 And I remind you again that your  
9 objections are limited to a single word. And  
10 I would expect you to follow that.

11 MR. ABRAMIC: I disagree with what you  
12 just said.

13 BY MS. GORDON:

14 Q. So, Dr. Reinholtz, there is a question  
15 pending for you.

16 A. Could you please repeat it?

17 Q. Yes. Let me figure out how to scroll  
18 back up.

19 Looking at Figure 4, you would say that  
20 the blade is not engaged in the lock mechanism  
21 until the rotation starts, is that correct?

22 A. No.

23 Q. So you would say the blade, as shown in  
24 its position in Figure 4, is engaged in the lock



1 mechanism?

2 MR. ABRAMIC: Objection; asked and  
3 answered.

4 BY THE WITNESS:

5 A. No. No, I wouldn't say that either.

6 BY MS. GORDON:

7 Q. So how would you describe the position  
8 of the blade that we see in Figure 4?

9 A. Figure 4 shows the engagement -- in the  
10 engagement process where the blade has been  
11 dropped into the recess and the arrow -- curved  
12 arrow R shows us that it's rotated to the point  
13 where it's engaged as shown in Figure 5.

14 That's what we know from the  
15 specification.

16 Q. So the blade is not engaged until it's  
17 in the position we see in Figure 5?

18 MR. ABRAMIC: Asked and answered.

19 BY THE WITNESS:

20 A. I would say it's not fully engaged, but  
21 the engagement process is shown in Figure 4, part  
22 of the engagement process.

23 BY MS. GORDON:

24 Q. So would you consider components that

1 are in the engagement process to be engaged with  
2 one another?

3 MR. ABRAMIC: Objection to form.

4 BY THE WITNESS:

5 A. What do you mean by "components that  
6 are in the engagement process"?

7 BY MS. GORDON:

8 Q. Well, you're using the phrase  
9 "engagement process."

10 What do you mean by "engagement  
11 process"?

12 A. The engagement process is what's  
13 described in the specification as placing the  
14 blade in the recess and then rotating it in the  
15 direction R until it's engaged as shown in  
16 Figure 5.

17 Q. And in that process -- okay. So you  
18 say that the engagement process is placing the  
19 blade in the recess, correct?

20 A. No.

21 Q. So the engagement process starts when  
22 you place the blade into the recess?

23 A. I think that's probably correct.

24 Q. And at that point, is the blade

1 partially engaged in the lock mechanism?

2 MR. ABRAMIC: Asked and answered.

3 BY THE WITNESS:

4 A. I think you could say that it's  
5 partially engaged, and then it's rotated to  
6 continue the engagement until the position in  
7 Figure 5.

8 BY MS. GORDON:

9 Q. Which you consider to be fully engaged?

10 A. Figure 5 is fully engaged. Correct.

11 Q. Thank you. So let me ask a few more  
12 questions, and then we can take a break for lunch.

13 In Paragraph 37, in the portion that's  
14 on Page 15, the second line down, you state, "This  
15 type of lock mechanism, which I will refer to as a  
16 twistlock mechanism, allows a user to quickly and  
17 conveniently attach a rotor blade to a  
18 driveshaft."

19 Do you see that sentence?

20 A. I do.

21 Q. What makes the mechanism quick?

22 A. It takes a short period of time to  
23 perform the interconnection and removal.

24 Q. And is there, you know, in terms of

1 seconds, a difference between something that's  
2 quick and not quick?

3 A. I think we could take extremes and say  
4 that if it took an hour to install, to lock the  
5 blade in from its originally removed position,  
6 that would not be quick.

7 There probably are some boundaries that  
8 we don't need to say six seconds is quick and ten  
9 seconds is not quick, but it can't take an hour.

10 I think we could look at extremes. It  
11 can't be done instantly.

12 Q. So would you consider something that  
13 took three to four seconds to be quick?

14 A. Probably, but I'd probably need to  
15 examine the physical device and see -- if you have  
16 to install multiple blades, three to four seems  
17 pretty quick, but I would have to think about  
18 that.

19 Q. But if we're talking about an  
20 individual blade -- so if one coupling mechanism  
21 took one second versus another coupling mechanism  
22 took three to four seconds, would you consider one  
23 to be quick and one to not be quick?

24 A. Some of that may depend on the

1     experience of the user. So installing a blade on  
2     a driveshaft or drive motor requires not just the  
3     physical act of installation, but the knowledge of  
4     which blade goes on which rotor.

5             For example, in certain kinds of  
6     configurations, you would have to be more specific  
7     to know what -- what the differences are and what  
8     else takes place.

9             I think it's a pretty open-ended  
10    question you're asking me, in other words. We  
11    don't have a physical device for me to say, "Yes,  
12    this is quick," or, "No, it isn't."

13            Q.     When you use the term "quick"  
14    describing the twist -- I'm trying to get an  
15    understanding from you where something would be  
16    not quick to the extent that a user would find it  
17    undesirable.

18            So let me -- if you're attaching the  
19    same -- the correct rotor blade to the correct  
20    driveshaft, if you have a coupling mechanism that  
21    takes one second versus a coupling mechanism that  
22    takes three to four seconds, would you consider  
23    the longer -- that longer time period to be not  
24    quick?

1           A.       Relatively, I might, depending on the  
2     different designs we're sparing, but I think it's  
3     a relative term.

4                   Clearly, the design that's shown in the  
5     preferred embodiment and described in the  
6     specification is very fast. A second to lock it  
7     in is probably reasonable.

8                   Other designs where propellers have to  
9     be screwed on in comparison seem to take a long  
10    time even though they may only be several seconds.

11          Q.       So you would say -- so in your opinion,  
12    something that takes several seconds, say three to  
13    four seconds, is not quick compared to a mechanism  
14    that would take one second?

15          A.       I haven't timed out installing these  
16    blades, but I don't want to put a numerical figure  
17    on it. If you would like me to examine a  
18    particular device, I could tell you relative to  
19    things that have these quick lock -- twistlock  
20    blade attachments, if it seems quick or it doesn't  
21    seem quick, but I don't think it's necessary to  
22    define a precise boundary of, three seconds is  
23    quick and four seconds isn't quick anymore.

24          Q.       I see. But -- so when you're looking

1 at it, you're looking at it from the perspective  
2 of an expert.

3 Do you have any data on what a normal  
4 user would consider quick versus not quick?

5 A. I actually was thinking about it in  
6 terms of a way of a person of ordinary skill in  
7 the art, a user, would think about installing a  
8 blade. I think it's commonsense that these  
9 twistlock mechanisms are very quick. Where you  
10 have to thread the rotor blade on, by comparison,  
11 seems pretty slow.

12 Although, compared to other art that  
13 may -- when you have to get hand tools out and  
14 attach a blade, that would be even slower.

15 So they're relative times, but clearly  
16 the design here is quick compared to other devices  
17 and designs that I've seen.

18 Q. And does the '184 patent invent  
19 twistlock coupling mechanisms?

20 A. In the context of the claims, yes.

21 Q. No. I'm asking did the '184 patent  
22 invent the concept of the twist and lock coupling  
23 mechanism?

24 MR. ABRAMIC: Objection to form.

1 BY THE WITNESS:

2 A. I think twistlock coupling mechanisms  
3 or devices that could be so described have been  
4 known for a long time.

5 BY MS. GORDON:

6 Q. Can you estimate, based on your  
7 experience, how long twistlock mechanisms have  
8 been known?

9 A. I don't have a historical time frame on  
10 this, but they've been around for quite a while.

11 Q. Would it be fair to say they've been  
12 around for centuries?

13 A. I think that may be true. I would say  
14 a century is probably reasonable. Maybe several  
15 centuries, maybe more than that.

16 Q. Thank you.

17 A. In some form.

18 Q. Thanks.

19 MS. GORDON: All right. So I think  
20 we've gone over an hour now. So why don't we  
21 take our lunch break.

22 Since none of us are going out  
23 for lunch, how long would you like for your  
24 lunch?



1 THE WITNESS: Well, it's 1:09 by my  
2 clock. Do you want to say -- we could say 2  
3 or we could say 1:45. I could probably -- I  
4 could do either.

5 MS. GORDON: I'm fine with 1:45. We  
6 could get this done more quickly.

7 I don't see us going, like I  
8 said, past two to three hours more today. So  
9 1:45 is great for me.

10 John, does that work for you?

11 MR. ABRAMIC: Fine with me.

12 MS. GORDON: Okay. All right. So 1:45  
13 eastern time, we will be back online.

14 THE WITNESS: Okay. Sounds good.  
15 Thanks.

16 (WHEREUPON, at 12:08 p.m. CST,  
17 the deposition was recessed  
18 until 12:45 p.m. CST this date,  
19 April 3, 2020.)

20 BY MS. GORDON:

21 Q. Dr. Reinholtz, I'd like to now turn to  
22 a discussion of the claim and specifically  
23 Substitute Claims 12 and 13.

24 I think the easiest way to do that is

1 to direct your attention to Pages 15 and 16 of  
2 your declaration.

3 A. Okay.

4 Q. Then starting with Substitute Claim 12,  
5 do you see that Substitute Claim 12 from Claim 1,  
6 is that correct?

7 A. That's correct.

8 Q. And you include the language of Claim 1  
9 in your declaration, correct?

10 A. That's correct.

11 Q. And in Claim 1, do you see the  
12 limitation, which is reproduced in Page 16 of your  
13 declaration, that says "wherein a clockwise rotor  
14 blade is releasably attached to the first  
15 driveshaft by engagement in a clockwise lock  
16 mechanism"?

17 A. I wasn't quite with you when you  
18 started. Where is that limitation? I'm sure I'll  
19 find it.

20 Q. Yeah. So it's on Page 16, and it's the  
21 second "wherein" clause that you see on Page 16?

22 A. Okay. Yes.

23 Q. And then if we look at Claim 12, you  
24 see the claim states, "Wherein the blade lock

1 portion of the clockwise lock mechanism is  
2 configured to engage by partial counterclockwise  
3 rotation with respect to the shaft lock portion  
4 thereof to releasably attach the clockwise rotor  
5 blade to the first driveshaft."

6 Do you see that?

7 A. I do.

8 Q. So is the phrase "to releasably attach  
9 the clockwise rotor blade to the first driveshaft"  
10 of Claim 1, in your opinion, related to the  
11 limitation in Claim 1 -- I'm sorry.

12 Is the phrase "to releasably attach the  
13 clockwise rotor blade to the first driveshaft" of  
14 Claim 12 related to the limitation "wherein a  
15 clockwise rotor blade is releasably attached to  
16 the first driveshaft" that we see in Claim 1?

17 A. Did you ask, is it related?

18 Q. Yes.

19 A. Well, Claim 12 depends from Claim 1.  
20 So there's clearly a relationship.

21 Q. Right. So Claim 12 has a phrase that  
22 says "thereof to releasably attach the clockwise  
23 rotor blade to the first driveshaft."

24 Do you see that?

1           A.       I do, yes.

2           Q.       And Claim 1 includes the language  
3       "wherein a clockwise rotor blade is releasably  
4       attached to the first driveshaft by engagement in  
5       a clockwise lock mechanism."

6                    Do you see that?

7           A.       I do see that.

8           Q.       So in your opinion, is Claim 12  
9       referring to that limitation of Claim 1?

10          A.       Claim 12 refers back to -- and depends  
11       from all limitations from Claim 1.

12          Q.       So let's look at the language again.

13                    So Claim 12 says "to releasably attach  
14       the clockwise rotor blade to the first  
15       driveshaft."

16                    Do you see that?

17          A.       I do.

18          Q.       And we see in Claim 1, the "wherein"  
19       clause, it says, "A clockwise rotor blade is  
20       releasably attached to the first driveshaft."

21                    Do you see that?

22          A.       I do.

23          Q.       So they're using essentially the same  
24       language, correct?

1           A.       It's similar language, not identical.

2           Q.       And in your opinion, is the releasable  
3 attachment between the clockwise rotor blade and  
4 the driveshaft of Claim 12 the same releasable  
5 attachment between the clockwise rotor blade and  
6 driveshaft that we're seeing in Claim 1?

7           A.       Okay. I think they're referring to the  
8 same releasable attachment.

9           Q.       Now, in Claim 12, the language as  
10 amended recites "as the clockwise lock mechanism  
11 is configured to engage by partial  
12 counterclockwise rotation."

13                   What does the blade lock portion of the  
14 clockwise lock mechanism engage with in Claim 12?

15           A.       It seems clear it has to engage with at  
16 least the shaft lock portion.

17           Q.       You say that it's clear. Is that  
18 recited anywhere in Claim 12?

19           A.       Well, Claim 12 says, "Engage by partial  
20 counterclockwise rotation with respect to the  
21 shaft lock portion thereof."

22                   So, I think so.

23           Q.       So you're saying with respect to -- the  
24 shaft lock portion isn't defining the direction of

1 rotation, but, rather, the component that the  
2 blade lock portion engages with?

3 MR. ABRAMIC: Objection to form.

4 BY THE WITNESS:

5 A. I don't think I understand your  
6 question.

7 BY MS. GORDON:

8 Q. So what's your understanding of the  
9 language "with respect to the shaft lock portion"?  
10 What's the purpose of that in this  
11 claim?

12 A. It's describing -- it's making clear, I  
13 think, something that can be confusing. What --  
14 does rotation occur with respect to the air  
15 vehicle -- for example, the UAV, the rotary-wing  
16 aircraft -- or is the rotation occurring with  
17 respect to some other component?

18 And clearly the rotation occurs with  
19 respect to the shaft lock portion.

20 Q. And it's your position that that phrase  
21 also defines what the blade lock portion is  
22 configured to engage with?

23 A. Well, I think that's made clear in  
24 Claim 1.

1 Q. Okay. Where in Claim 1 is that made  
2 clear?

3 A. Well, I think in the entirety of  
4 Claim 1, it's clear.

5 Q. Can you explain how it's clear based on  
6 the entirety of Claim 1?

7 A. Are you asking me to pick and choose  
8 words or phrases out of Claim 1 that clarify what  
9 Claim 12 is referring to?

10 Q. I'm asking you to explain your answer  
11 where you said you think what the blade lock  
12 portion is engaging with in Claim 12 is clear from  
13 Claim 1, and I'm asking you to explain your  
14 opinion.

15 A. Well, I think probably the last claim  
16 element of Claim 1 is helpful.

17 It says, "Wherein the clockwise lock  
18 mechanism comprises a shaft lock portion attached  
19 to the first driveshaft and the blade lock portion  
20 attached to the clockwise rotor blade, the shaft  
21 lock portion defining notches configured to engage  
22 corresponding lugs on the blade lock portion."  
23 That's helpful.

24 I'm still not quite sure I understand

1     what your question is. Are you just simply asking  
2     what's the shaft lock portion?

3             Q.       No. I was asking you to explain your  
4     answer to my question.

5                     So we have the language of Claim 12  
6     that said, "The blade lock portion of the  
7     clockwise lock mechanism is configured to engage  
8     by partial clockwise rotation," but it doesn't  
9     recite what it's configured to engage with.

10                    And you indicated that in your opinion,  
11    it was clear that it's configured to engage with  
12    the shaft lock portion. And my question to you  
13    was, what makes that clear to you?

14             A.       I think I may have been confused by  
15    your earlier question, and I probably said that.  
16    And then what you just said was even more  
17    confusing.

18                    Maybe you misread Claim 12?

19             Q.       I did not misread -- no, I did not  
20    misread Claim 12.

21                    Claim 12 states that, "The blade lock  
22    portion of the clockwise lock mechanism is  
23    configured to engage by partial clockwise --  
24    counterclockwise rotation."



1           A.       That's where the confusion was. I  
2       thought you said "clockwise" a minute ago.

3           Q.       If I did, that was a mistake. I was  
4       simply reading from the language of the claim.

5                    So --

6           A.       But what you -- you read "clockwise," I  
7       think. Maybe I misheard you, but I thought you  
8       said "clockwise."

9           Q.       So I --

10          A.       "The partial clockwise rotation" is  
11       what I heard.

12          Q.       So I will restate the question again so  
13       it's clear for the record.

14                    Claim 12 recites, "The blade lock  
15       portion of the clockwise lock mechanism is  
16       configured to engage by partial counterclockwise  
17       rotation."

18                    Do you see that?

19          A.       Correct. Yes.

20          Q.       But the claim doesn't indicate what  
21       it's configured to engage with, correct?

22          A.       No. It just says with respect -- it's  
23       defining the direction of the rotation. With  
24       respect to the shaft lock portion. That's

1 correct.

2 Q. And I believe in your earlier  
3 discussion, you said that it was clear that it's  
4 configured to engage with the shaft lock portion.

5 Am I understanding your answer  
6 correctly?

7 A. I think at least the blade lock portion  
8 engages with the shaft lock portion. That's true.

9 Q. Right. And you referred back to  
10 Claim 1 as supporting your understanding.

11 And so my question earlier was, what  
12 limitation of Claim 1 informed your opinion that  
13 it was clear that the blade lock portion engages  
14 with the shaft lock portion in Claim 12?

15 A. Well, there's a limitation that starts,  
16 "Wherein the clockwise rotor blade is engageable  
17 only with a clockwise lock mechanism and cannot be  
18 engaged in the counterclockwise lock mechanism,  
19 and the counterclockwise rotor blade is engageable  
20 only with counterclockwise lock mechanism and  
21 cannot be engaged in the clockwise lock  
22 mechanism."

23 And then the limitation below that  
24 tells us that, "The clockwise lock mechanism

1 comprises/includes the shaft lock portion attached  
2 to the first driveshaft and the blade lock portion  
3 attached to the clockwise rotor blade."

4 I think that makes it clear.

5 Q. So in the portions of Claim 1 that you  
6 refer to, it's -- the first one says that, "The  
7 rotor blade is engageable with the clockwise lock  
8 mechanism."

9 Do you see that?

10 A. I see those words. "Clockwise rotor  
11 blade is engageable only with a clockwise lock  
12 mechanism." That's true.

13 Q. Right. So it's talking about the  
14 engagement of the blade and the lock mechanism,  
15 correct?

16 A. Well, it's talking about -- you can  
17 only install the clockwise rotor blade on a  
18 clockwise driveshaft.

19 Q. Right. But on -- I'm asking you to  
20 look at the precise language of the claim as  
21 written.

22 It's talking about engagement of the  
23 blade with the lock mechanism, correct?

24 A. That's correct.

1 Q. And Claim 12 --

2 A. Only -- it is talking about that. I  
3 think you may have said "only."

4 It's talking about more than that, but  
5 it does say that the clockwise rotor blade is  
6 engageable only with the clockwise lock mechanism.  
7 That's true.

8 Q. And in Claim 12, it's talking about  
9 engagement of the blade lock portion, correct?

10 A. It does talk about that. That's  
11 correct.

12 Q. So what's the difference between  
13 engagement of the blade in the lock mechanism and  
14 engagement of the blade lock portion?

15 A. Well, the words are different. The  
16 discussion or the -- the claim is clearly talking  
17 about engaging the blade along with its blade lock  
18 portion onto the -- onto the rotor so they become  
19 locked together.

20 Q. So you're saying the claim is clear,  
21 but the claim just says "engaging the blade with  
22 the lock mechanism," correct?

23 A. Which claim are you reading?

24 Q. I'm reading Claim 1, which is portion

1     you first recited back to me, "when the clockwise  
2     rotor blade is engageable only with the clockwise  
3     lock mechanism."

4           A.       That's accurate.

5           Q.       And are you saying that we should read  
6     this to mean that the rotor blade should encompass  
7     the blade lock mechanism as well?

8           A.       I guess I wouldn't say it that way. I  
9     wouldn't try to say that the blade encompasses the  
10    blade lock portion. Certainly the blade is  
11    attached to the blade lock portion.

12          Q.       I'm trying to understand the  
13    distinction, and you're opining on Claim 12  
14    versus -- in this declaration.

15                  So in your view, what's the distinction  
16    between Claim 1 reciting a blade that's engaged  
17    with a lock mechanism and Claim 12 reciting the  
18    blade lock portion is engaged?

19          A.       Well, the lock mechanism includes the  
20    blade lock portion and the shaft lock portion. So  
21    I think that's encompassed in the limitation we've  
22    been talking about.

23          Q.       Which limitation are you referring to  
24    in your answer?

1           A.        "Wherein the clockwise rotor blade is  
2   engageable only with the clockwise lock mechanism  
3   the lock mechanism comprises a shaft lock portion  
4   attached to the first driveshaft and a blade lock  
5   portion attached to the clockwise rotor blade."

6           Q.        But the blade has to be engaged with  
7   the lock mechanism.

8                    So how is the blade engaged with the  
9   lock mechanism that has a shaft lock portion and a  
10  blade lock portion?

11          A.        I don't understand your question.

12          Q.        So I'm trying to understand your  
13  answer.

14                    Does the blade engage with the blade  
15  lock portion of the lock mechanism?

16          A.        The blade lock portion of the lock  
17  mechanism is structurally coupled to the blade  
18  itself, of course.

19          Q.        So the limitation wherein the rotor  
20  blade is engageable only with the clockwise lock  
21  mechanism, how is the blade engaged with the lock  
22  mechanism?

23          A.        Well, the lock mechanism, part of it is  
24  part of the blade. So when the blade is engaged,

1 then the lock mechanism is engaged, and the blade  
2 lock portion is engaged.

3 Q. What do you mean in your answer when  
4 you say "when the blade is engaged"?

5 A. Well, when the assembly is engaged, we  
6 take the rotor blade and the blade lock portion  
7 together, and those are engaged as a unit with the  
8 shaft lock portion, and when they're fully  
9 engaged, then the blade and blade lock portion are  
10 attached to the shaft lock portion.

11 Q. So in that example, the rotor blade is  
12 engaged in the lock mechanism by engagement of the  
13 shaft lock portion with the blade lock portion?

14 A. That would have to include at least the  
15 blade lock portion, yes.

16 Q. So Claim 12 then is reciting the blade  
17 lock portion of the blade is configured to engage  
18 by partial clockwise rotation.

19 Is that your understanding?

20 A. Well, I'm going to read the claim as  
21 it's written.

22 "The blade lock portion of the  
23 counterclockwise lock mechanism is configured to  
24 engage by partial counterclockwise rotation with

1     respect to the shaft lock portion."

2                   I don't think it's necessary to read  
3     any additional words into that.

4           Q.       But I'm trying to get your  
5     understanding of the difference between the blade  
6     lock portion being engaged and the blade being  
7     engaged in the lock mechanism.

8           A.       Well, Claim 12 talks about the blade  
9     lock portion of the counterclockwise lock  
10    mechanism being engaged. It doesn't say blade  
11    lock -- the blade -- it doesn't have just the word  
12    "blade" independently in that claim.

13                   So, again, I'm not quite sure what your  
14    question is with respect to Claim 12.

15          Q.       So my question is with respect to  
16    Claim 12, which includes Claim 1, which we agreed  
17    earlier that Claim 12 depends on Claim 1.

18                   So what's the difference between the  
19    clockwise rotor blade being engaged in the lock  
20    mechanism and the limitation now we see where the  
21    clockwise -- where the blade lock portion of the  
22    clockwise lock mechanism is engaged?

23          A.       Well, the second one follows from the  
24    first because when the blade is engaged, then the



1 black lock portion is also engaged.

2 So 12 follows pretty naturally from  
3 Claim 1.

4 Q. So is there anything else that would be  
5 engaged when the blade is engaged in the lock  
6 mechanism?

7 A. I don't think Claim 1 prohibits  
8 anything else. Other things could be engaged, I  
9 suppose. That's not prohibited.

10 Q. So looking at the language "configured  
11 to engage by partial counterclockwise rotation,"  
12 do you see that?

13 A. Yes.

14 Q. So does the claim prohibit the blade  
15 lock portion of the clockwise lock mechanism from  
16 rotating?

17 A. Could you ask that again?

18 Q. So the claim -- let me step back.

19 So the claim recites that, "The blade  
20 lock portion of the clockwise lock mechanism is  
21 configured to engage by partial counterclockwise  
22 rotation."

23 Do you see that?

24 A. I do.

1 Q. Does the claim cover the circumstance  
2 where the blade lock portion is not rotated?

3 A. So I think what you're asking me is to  
4 read out the words "engage by partial  
5 counterclockwise rotation" or maybe read out the  
6 words "by partial counterclockwise rotation" and  
7 does the claim cover that as well? Is that what  
8 you're asking?

9 Q. No. I'm asking you to explain to me  
10 your understanding of the scope of this claim.

11 So the claim uses the language  
12 "configured to engage by partial counterclockwise  
13 rotation," correct?

14 A. It does. That's right.

15 Q. And my question to you is whether this  
16 claim language would cover the circumstance where  
17 the blade lock portion is not rotated.

18 A. I guess I don't understand your  
19 question because that seems to be what I just  
20 asked you. It seems to read out the part of the  
21 claim that talks about the rotation.

22 Am I misunderstanding your question  
23 still?

24 Q. Yeah.

1           A.       You are saying it doesn't rotate. So  
2       it's reading out part of the claim.

3           Q.       Well, so let me step back because this  
4       is important because it's the basis of your  
5       opinion in this declaration, is your understanding  
6       of this claim language.

7                    So what's your understanding of a  
8       component that's configured to do something?

9                    MR. ABRAMIC:  Objection to form.

10       BY THE WITNESS:

11           A.       Broadly and maybe the general context,  
12       something that's configured to do something is  
13       maybe something that's configured to perform or  
14       to -- what's my understanding of configured to do  
15       something?

16                    Configured to perform that something  
17       would be my understanding.

18       BY MS. GORDON:

19           Q.       So maybe let's -- can you pull up  
20       original Claim 184 -- I mean, Patent '184, and  
21       that original Claim 3?

22           A.       Okay.  I have it.

23           Q.       And originally, Claim 3 recites  
24       "wherein the blade lock portion of the clockwise

1 lock mechanism is rotated counterclockwise."

2 Do you see that?

3 A. Yes, I do.

4 Q. And the amendment that's being proposed  
5 here is that, "The blade lock portion of the  
6 clockwise lock mechanism is configured to engage  
7 by partial counterclockwise rotation."

8 Do you see that?

9 A. I do.

10 Q. So is it your opinion that -- well, let  
11 me rephrase that.

12 In Substitute Claim 12, is the blade  
13 lock portion required to be rotated?

14 MR. ABRAMIC: Objection to form.

15 BY MS. GORDON:

16 Q. I can ask it a different way. In  
17 Substitute Claim 12, does the blade lock portion  
18 have to be rotated?

19 MR. ABRAMIC: Objection to form.

20 BY THE WITNESS:

21 A. Well, it has to be configured to be  
22 engaged by clockwise rotation. The claim doesn't  
23 say the act of rotating. It has to be configured  
24 to engage by partial clockwise rotation.

1 BY MS. GORDON:

2 Q. So the claim does not require that the  
3 blade lock portion be rotated, correct, Substitute  
4 Claim 12?

5 A. It requires it to be configured to be  
6 engaged by partial counterclockwise rotation.

7 Q. So I'll ask my question again.

8 The claim does not -- Substitute  
9 Claim 12 does not require that the blade lock  
10 portion be rotated?

11 MR. ABRAMIC: Asked and answered.

12 BY THE WITNESS:

13 A. The claim requires that it be  
14 configured to engage by partial counterclockwise  
15 rotation. I think that's clear as it can be.

16 BY MS. GORDON:

17 Q. Well, I think my question was a  
18 yes-or-no question. I'm going to ask it again to  
19 see if you can answer it as a yes-or-no question,  
20 which it is.

21 Does Substitute Claim 12 require the  
22 blade lock portion to be rotated?

23 MR. ABRAMIC: Same objection.

24

1 BY THE WITNESS:

2 A. I do not see that as a yes-or-no  
3 question. I see that as, if it's being rotated,  
4 then the installer, the user, has to rotate it.  
5 That's not what the claim says.

6 So that word -- the words you just used  
7 are not in the claim. I would agree with that.

8 BY MS. GORDON:

9 Q. So you would agree that Claim 3  
10 required that the blade lock portion be rotated,  
11 correct?

12 A. I think I do agree with that.

13 Q. And in Substitute Claim 12, would a  
14 system that had a blade lock portion that was not  
15 rotated meet Substitute Claim 12?

16 MR. ABRAMIC: Objection to form.

17 BY THE WITNESS:

18 A. As long as it's configured to engage by  
19 partial a counterclockwise rotation, then I think  
20 it meets the limitations of Claim 12.

21 BY MS. GORDON:

22 Q. Even if it's not rotated?

23 A. Well, an apparatus that takes on  
24 different states can infringe in one state even

1     though it may take on other states. I think  
2     that's what we're talking about here.

3             So, sure, the user doesn't have to  
4     rotate it before it infringes this claim. The  
5     claim requires that it be configured in a certain  
6     way.

7             Q.       If we look at Claim 13, it uses the  
8     same configured language.

9             Do you see that?

10            A.       With the exception of the direction of  
11    rotation being different, but, yes.

12            Q.       And would your answer then be the same  
13    for claim 13 regarding whether rotation is  
14    necessary for a component that's configured to  
15    engage by partial rotation?

16            A.       I don't see a different answer. I  
17    don't see any reason to answer differently. So I  
18    suppose so, yes.

19            Q.       So what -- in your opinion, what  
20    structural limitation does the phrase "configured  
21    to engage by partial rotation" add to the claim?

22            A.       It has to -- the device that will be  
23    covered by this claim would have to be configured,  
24    meaning it would have to have, for example,

1 geometry and structure that would allow it to  
2 engage by partial counterclockwise rotation.

3 Q. And is there any other structural  
4 limitation that would be implied by the added  
5 claim language?

6 A. Well, the entirety of Claim 12 has  
7 structural language in it. It's got the shaft  
8 lock portion, the rotor blade, the driveshaft.

9 So there's a lot of structure recited  
10 in there that all fits together with that small  
11 piece that we've been talking about.

12 Q. Right. But my question -- and let me  
13 ask it a different way -- is, what structural  
14 requirement, in addition to the blade lock portion  
15 and the shaft lock portion, are added based on the  
16 phrase "configured to engage by partial  
17 counterclockwise rotation"?

18 MR. ABRAMIC: Objection to form.

19 BY THE WITNESS:

20 A. I think the phrase "configured to  
21 engage by partial counterclockwise rotation" in  
22 Claim 12 limits what the lock mechanism could be  
23 configured to look like, for example.

24 So it imposes limitations that are



1 clearly described in the specification on how this  
2 mechanism works.

3 BY MS. GORDON:

4 Q. So what are those limitations?

5 A. Well, that it has to -- it has to be  
6 configured such that it engages by partial  
7 counterclockwise rotation, for one.

8 Q. Well, it seems like your answer is  
9 circular there, right?

10 So you're telling me that the phrase  
11 "configured to engage by partial counterclockwise  
12 rotation" imposes limitations that are clearly  
13 described in the specification.

14 And you used the language "clearly  
15 described in the specification." So I would like  
16 to understand from you what these clearly  
17 described limitations are from the specification.

18 And if you could point them out to me  
19 by column and line number as well as elements in  
20 the figures, that is what I would like you to do  
21 in answer to my question.

22 MR. ABRAMIC: Objection to the  
23 characterization and form.

24

1 BY THE WITNESS:

2 A. Well, I think let's start with the  
3 figures. I think that is pretty easy. This is a  
4 preferred embodiment, but Figures 4 and 5 are a  
5 good example of a structure of the -- at least the  
6 blade lock portion and the shaft lock portion that  
7 would not permit the full rotation. It would have  
8 to be a partial rotation.

9 And those figures are clearly described  
10 in the specification -- in fact, a lot of the  
11 specification describes those figures and how this  
12 engagement occurs.

13 BY MS. GORDON:

14 Q. So let's look at Figures 4 and 5. You  
15 say those are a good example of the structure that  
16 would not permit the rotation.

17 So what components of the structure in  
18 Figures 4 and 5 prevent full rotation?

19 A. The blade lock portion and the shaft  
20 lock portion to include the elements 11AB and all  
21 the elements that included in 11AB and what's  
22 discussed in the specification that supports that.

23 Q. What elements are included in 11AD?

24 A. It sounded like you said "11AD," and I

1 intended to say "11AB," as in "boy."

2 Q. Yes. So 11AB is just the lock  
3 mechanism, right?

4 A. It's the shaft lock portion and the  
5 blade lock portion. That's correct.

6 Q. So what specific structures in Figure 4  
7 prevent full rotation of the blade?

8 A. The slots 23 potentially -- potentially  
9 the slots 23, potentially the lugs and notches  
10 could prevent full rotation and then the structure  
11 of the blade itself interfering with other  
12 material that's in the shaft lock portion could --  
13 would prevent full rotation.

14 I think it's pretty obvious on  
15 inspection that you can't rotate this fully when  
16 you're installing it.

17 Q. So those are the examples of further  
18 structural requirements to the claim lock  
19 mechanism that would be implied by the configured  
20 to engage language?

21 MR. ABRAMIC: Objection to form.

22 BY THE WITNESS:

23 A. Well, the -- yeah. Let's be clear  
24 because I think what you were asking me about was

1 partial rotation and how it would be clear that --  
2 well, that whole limitation, "engaged by partial  
3 counterclockwise rotation," and those figures are  
4 part of a bigger body of evidence that makes it  
5 clear that you can't make a full rotation on --  
6 when you're engaging these blades.

7 BY MS. GORDON:

8 Q. Right. So I'm trying to understand  
9 your opinion and the arguments that were made in  
10 the motion to amend.

11 So is it your opinion that the  
12 limitation "configured to engage by partial  
13 counterclockwise rotation" adds further structural  
14 requirements to the claimed lock mechanism?

15 MR. ABRAMIC: Objection; asked and  
16 answered.

17 BY THE WITNESS:

18 A. I think it does limit what could be  
19 used for the blade lock portion and the shaft lock  
20 portion, yes.

21 BY MS. GORDON:

22 Q. And how does it further limit what  
23 could be used for the blade lock portion and the  
24 shaft lock portion?

1 MR. ABRAMIC: Asked and answered.

2 BY THE WITNESS:

3 A. Just perhaps by way of example, we  
4 could envision in Figures 4 and 5 a helical slot  
5 where the blade could be rotated multiple times in  
6 the absence of a lot of the features that are  
7 here. It wouldn't permit that as a solution.

8 BY MS. GORDON:

9 Q. But would original Claim 3 have  
10 permitted that as a solution?

11 A. I haven't, in this declaration, been  
12 asked to give an opinion on Claim 3. Claim 3 does  
13 not -- as far as I read it sitting here doesn't  
14 limit the rotation to be partial.

15 Q. So you're saying the specification in  
16 original Claim 3 would support a mechanism that  
17 had more than one rotation?

18 MR. ABRAMIC: Objection to form.

19 BY THE WITNESS:

20 A. I would need to think about it more. I  
21 don't, looking at the specification, see anything  
22 that limits the rotation to be -- the examples are  
23 a partial rotation, to be sure, but I don't know  
24 that I see any discussion that specifically limits

1 it to a particular angular range.

2 So maybe, I think.

3 BY MS. GORDON:

4 Q. So a system that uses right-hand and  
5 left-hand nuts and screws would then need it  
6 because if you could do more than one rotation,  
7 then why couldn't that meet the limitation of  
8 Claim 3?

9 A. Well, I would say the specification  
10 clearly describes partial -- an engagement by  
11 partial rotation. There's no discussion of  
12 anything more than that.

13 So I think the specification clearly  
14 supports the idea of a partial rotation for  
15 installation. My comment was simply that I don't  
16 see where it limits the angular range, but clearly  
17 the intent is a partial rotation.

18 Q. So is partial rotation anything less  
19 than 360 degrees?

20 A. I think that's reasonable. I think  
21 getting close to 360 degrees might be physically  
22 difficult to implement, but partial rotation  
23 technically is anything up to 360 degrees, but not  
24 including 360 degrees.

1           Q.       Would 90-degree rotation be a partial  
2 rotation?

3           A.       Yes.

4           Q.       Is a 1 degree rotation a partial  
5 rotation?

6           A.       As long as it meets the other  
7 requirements of the claims, yes.

8           Q.       So anything greater than zero would be  
9 a partial rotation -- anything greater than zero  
10 and less than 360 would be a partial rotation?

11          A.       That's true, but we have to think  
12 pragmatically as a person of ordinary skill would,  
13 that you wouldn't consider a tenth of a degree  
14 rotation to be meaningful probably in the context  
15 of this assembly.

16                 So a reasonable rotation that creates  
17 the required engagement, I think that meets the  
18 requirements of the claim.

19          Q.       Right, but the claims don't state a  
20 reasonable partial rotation. They just say  
21 partial rotation, correct?

22          A.       That's true, but the claims require the  
23 engagement to occur, and a person of ordinary  
24 skill in the art would understand that the -- that

1 the device that's being used of infringing would  
2 have to undergo some rotation that would cause  
3 engagement.

4 Q. But we're not -- but what level of  
5 engagement? We're back to the discussion of  
6 partial versus full.

7 So when you say some rotation that  
8 would cause an engagement, in your opinion, what  
9 causes engagement?

10 A. Well, certainly, rotation is the  
11 rotation of the blade lock portion relative to the  
12 shaft lock portion is necessary, and it's part of  
13 the engagement process.

14 We haven't seen examples of things that  
15 rotate a fraction of a degree or close to 360  
16 degrees.

17 Q. So when you're considering the  
18 patentability of the substitute claims that merely  
19 say "partial rotation," did you put any reasonable  
20 amount of rotation associated with that  
21 limitation?

22 MR. ABRAMIC: Objection to form.

23 BY THE WITNESS:

24 A. I did not try -- I did not try to put a



1 numerical upper bound or lower bound, and I don't  
2 think it's necessary to do that.

3 BY MS. GORDON:

4 Q. So you don't think that would be  
5 important for somebody accused of infringing to  
6 understand?

7 A. Well, I think we can see the  
8 specification showing a rotation close to 90  
9 degrees. The devices that are being accused of  
10 infringing have significant rotations.

11 A person of ordinary skill in the art  
12 would understand this, I think, without having to  
13 say 1 degree is not, but 2 degrees is.

14 Infringement doesn't hinge on the  
15 difference between 1 degree or 2 degrees. They're  
16 zero and one.

17 Q. Well, I think it could, depending on  
18 how you're defining "engagement," correct?

19 A. Well, I think engagement has been  
20 well-defined.

21 Q. I think you and I have a fundamental  
22 disagreement here because from your earlier  
23 answers, I don't think we have a clear  
24 understanding of what you mean by "partial

1 engagement" versus "full engagement," but we don't  
2 have to investigate that any further here today.

3 A. Okay.

4 Q. So can you -- sorry. Can you access  
5 the document that has been marked as Exhibit 2002  
6 to this proceeding?

7 A. Yes. I'm on that tab.

8 Q. And can you have Claims 12 and 13 up  
9 next to you as we're talking through this portion  
10 of the deposition?

11 MR. ABRAMIC: I just want to make sure  
12 Dr. Reinholtz has the correct document. He  
13 referred to a tab, but I think the document  
14 she wants to talk about is the one that you  
15 printed out this morning.

16 MS. GORDON: That is -- that is  
17 correct.

18 MR. ABRAMIC: I just want to make sure  
19 you have the right one.

20 THE WITNESS: Oh, I think I'm looking  
21 at what might be the file history. That's  
22 also called Exhibit 1002.

23 BY MS. GORDON:

24 Q. Yeah. I said 2002.

1           A.       My apologies. Okay. I have that  
2 document.

3           Q.       So before we turn to that, going back  
4 to Claim 12 and the "configured to engage"  
5 language, is it your opinion that those claims  
6 require full engagement?

7           A.       The document I have doesn't have the  
8 new revised claims in there, I don't think.

9           Q.       In your declaration on Page 16, you  
10 have the Substitute Claims 12 and 13.

11          A.       Okay. I'm sorry. I thought you were  
12 directing me to this patent document.

13          Q.       Sorry. Yeah. I'm going ask you a few  
14 more questions about Substitute Claim 12 before we  
15 turn to the 2002.

16          A.       Okay.

17          Q.       Again, the language of Claim 12 says  
18 "configured to engage by partial counterclockwise  
19 rotation."

20                   In your opinion, is the engagement  
21 recited in Claim 12 what you would refer to "full  
22 engagement"?

23          A.       Well, when the -- when the blade is  
24 installed, it would be fully engaged, yes.

1     There's a process of installing it that involves  
2     counterclockwise rotation.

3           Q.       But I'm talking about our earlier  
4     discussion when you were using the language  
5     "partial" and "full engagement."

6                   And you said the figure of Figure 5  
7     illustrated full engagement. Do you remember  
8     that?

9           A.       I do, yes.

10          Q.       So is it your opinion that Claim 12 is  
11     limited to full engagement?

12          A.       What do you mean when you say "is  
13     limited to full engagement"?

14          Q.       So would Claim 12 cover what you  
15     referred to earlier as "partial engagement"?

16          A.       As long as the blade could be engaged  
17     and attached fully, I think it could cover --  
18     certainly that intermediate position where it's  
19     partially installed or partially engaged.

20          Q.       Well, you're using two different terms,  
21     "installed" and "engaged," and those do not mean  
22     the same thing.

23          A.       My apologies. Say "engaged."

24          Q.       So you're saying in your opinion,

1 Claim 12 would cover what you're referring to as

2 "partial engagement," is that correct?

3 MR. ABRAMIC: Asked and answered.

4 BY THE WITNESS:

5 A. The end result of the assembly is that  
6 the blade and the blade lock portion and the shaft  
7 lock portion are fully engaged.

8 That's the way I understand Claim 12.

9 BY MS. GORDON:

10 Q. But does Claim 12 cover a system where  
11 the blade lock portion is configured to partially  
12 engage by clockwise rotation, but not fully  
13 engage?

14 A. I haven't seen a system that you can --  
15 the word "partially" implies that there's a  
16 "fully."

17 So how could there be a system that  
18 could only be partially -- I can have my pants  
19 partially on, but I can't put them all the way on?  
20 The question doesn't make sense to me.

21 Q. Well, I'm trying to -- again, this is  
22 your language, "partially" and "fully engaged,"  
23 and it looks like we're back there again.

24 So if you look at Claim 4 and 5 again,

1 and now we're talking about the blade lock portion  
2 and the shaft lock portion.

3 So in Figure 4, is the blade lock  
4 portion engaged in the shaft lock portion?

5 A. I think the --

6 MR. ABRAMIC: Objection; asked and  
7 answered.

8 BY THE WITNESS:

9 A. The analogy I just gave is probably a  
10 good one. You're trying to get me to say, if I'm  
11 putting my pants on, I have them all the way off  
12 or I have them all the way on.

13 You're trying to drill down and say,  
14 "Well, when you have them partially on, when  
15 they're up around your knees, are they on or are  
16 they off?"

17 Well, I'm saying that a person of  
18 ordinary skill in the art would understand when  
19 the blade is engaged.

20 And there's some process of getting it  
21 there where it could be partway in between  
22 disengaged and fully engaged. It's, to me, pretty  
23 simple.

24

1 BY MS. GORDON:

2 Q. Well, I think, that, again, we disagree  
3 there because the claim language says "engaged,"  
4 and we're trying to assess whether prior art  
5 invalidates and whether a potential accused  
6 product infringes.

7 So it's very important to understand  
8 the scope of how you're reading the term "engaged"  
9 in these claim elements.

10 So, you know, my question is, and  
11 continues to be, if we look at Figure 4 versus  
12 Figure 5, at what point does the blade lock  
13 portion engage the shaft lock portion?

14 MR. ABRAMIC: Objection; asked and  
15 answered over and over again.

16 Lori, why do you keep --

17 MS. GORDON: Mr. Abramic, I will remind  
18 you that you have to limit your objections to  
19 one word.

20 If you continue in this way, we  
21 will suspend the deposition, and I will call  
22 the board. So I will remind you to conform  
23 to the rules of depositions and I will ask  
24 this question --

1           MR. ABRAMIC: The rules of the  
2 deposition --

3           MS. GORDON: -- until I get --

4           MR. ABRAMIC: -- don't allow you to  
5 harass him. Go ahead.

6           MS. GORDON: I will ask this question  
7 until I get a clear answer from the witness.

8                   I'm entitled to understand his  
9 opinion and what he means by his opinion.

10 So -- okay.

11           MR. ABRAMIC: Are you done? Are you  
12 finished?

13           MS. GORDON: No. Are you finished?  
14 Your objections should be one word going  
15 forward.

16           MR. ABRAMIC: No. I just --

17           MS. GORDON: No. Listen, if you want  
18 to go off the record and discuss this, I'm  
19 fine with that, but on the record in front of  
20 the witness, we will limit your objections to  
21 one word.

22                   I'm entitled to understand the  
23 meaning of his opinion and the basis for his  
24 opinions, and I will ask the questions that



1 I'm entitled to.

2 MR. ABRAMIC: And I'm entitled to point  
3 out when he's answered a question multiple  
4 times.

5 MS. GORDON: No, you're not. You are  
6 entitled to make one-word objections. That  
7 is what you are entitled to, and that's the  
8 extent of what you're entitled to.

9 BY MS. GORDON:

10 Q. All right. Going back to my question.  
11 I'm trying to understand what you mean by "partial  
12 engagement."

13 So in Figure 4 versus Figure 5, when  
14 does the blade lock portion become engaged with  
15 the shaft lock portion using these two figures as  
16 examples to explain your answer?

17 A. It's fully engaged in Figure 5.

18 Q. I understand that part of your answer.

19 My question is, you've used the term be  
20 "partial engagement" with respect to the example  
21 of you putting on your pants in the morning.

22 So in your understanding of how you're  
23 using "partial engagement," looking at Figure 4,  
24 at what point is the blade lock portion, in your

1 opinion, partially engaged with the shaft lock  
2 portion?

3 MR. ABRAMIC: Objection; asked and  
4 answered.

5 BY THE WITNESS:

6 A. Figure 4 shows a partial engagement as  
7 the blade is dropped into the recess and then  
8 rotated. That's all part of the installation  
9 process, and along the way, it's partially  
10 engaged.

11 BY MS. GORDON:

12 Q. So in your opinion, Figure 4 is showing  
13 partial engagement of the blade lock portion and  
14 the shaft lock portion?

15 A. I think it's part of the engagement  
16 process. That's right.

17 Q. So your answer to my question was  
18 different language that means different things.

19 You said Figure 4 shows "partial  
20 engagement as the blade is dropped into the recess  
21 and then rotated." That was the exact language of  
22 your answer.

23 What partial engagement were you  
24 referring to there?

1           A.       By "partial engagement," I mean that it  
2   is in the engagement process.  It's not fully  
3   disengaged, and it's not yet fully engaged, and  
4   that is the definition of what I mean by "partial  
5   engagement."

6           Q.       So when two components are in the  
7   process of engagement, you would consider them to  
8   be partially engaged?

9           A.       I think that's a good definition of  
10  partial engagement.  They're in the process of  
11  being engaged.

12          Q.       Thank you.  I think we now understand  
13  your position.

14                   So can we turn --

15           MS. GORDON:  Well, we've been going an  
16   hour.  I should ask if you would like a break  
17   at this point.

18           THE WITNESS:  I'm good for maybe  
19   another 15 minutes.

20           MS. GORDON:  Okay.

21           THE WITNESS:  Anybody else need a  
22   break?

23           MR. ABRAMIC:  I appreciate taking five  
24   minutes to use the washroom.

1 MS. GORDON: That's fine. I think when  
2 we come back, we should be able to finish in  
3 an hour after this.

4 MR. ABRAMIC: Do you want to take ten?

5 MS. GORDON: It's up to you.

6 MR. ABRAMIC: I'm fine with five, but  
7 if we're going to go for another hour, I just  
8 want to see if the witness wants ten.

9 MS. GORDON: Well, why don't we say ten  
10 because it's -- I find that attorneys very  
11 rarely can make five minutes work. So --

12 MR. ABRAMIC: I would take that as it  
13 counts. So let's take ten.

14 THE WITNESS: So, 2:56.

15 MS. GORDON: That sounds good. All  
16 right.

17 (A recess was had from  
18 1:45 p.m. CST until  
19 1:57 p.m. CST.)

20 BY MS. GORDON:

21 Q. So, Dr. Reinholtz, I'd like to turn now  
22 to Exhibit 2002.

23 A. Okay.

24 Q. If you could keep Claim 12 open as

1 well?

2 A. Okay. I'm ready.

3 Q. Can you turn to Page 1, Paragraph 8, of  
4 Exhibit 2002?

5 A. Okay.

6 MR. ABRAMIC: Did you say Page 1, Lori?

7 MS. GORDON: Page 1, Paragraph 8.

8 BY THE WITNESS:

9 A. Page 6 of the exhibit.

10 BY MS. GORDON:

11 Q. Page 1 of the exhibit. Oh, sorry. I  
12 didn't realize you put different page numbers on.  
13 Page 1 of the exhibit, Paragraph 8.

14 Do you see Paragraph 8?

15 A. I do.

16 Q. So if you count down nine lines, I'd  
17 like to direct your attention to the sentence that  
18 starts, "A clockwise rotor blade is releasably  
19 attached to the first driveshaft by engagement in  
20 a clockwise lock mechanism and generates a  
21 vertical lift force when rotated in the clockwise  
22 direction. And a counterclockwise rotor blade is  
23 releasably attached to the second driveshaft by  
24 engagement in a counterclockwise lock mechanism

1 and generates a vertical lift force when rotated  
2 in the counterclockwise direction."

3 Does the portion of Paragraph 8 that I  
4 read support the claim language wherein the blade  
5 lock portion of the clockwise lock mechanism is  
6 configured to engage by partial counterclockwise  
7 rotation?

8 A. I don't see anything contradictory in  
9 the material that you read. I think it would  
10 generally support Claim 12, amended Claim 12.

11 Is that what you're asking?

12 Q. I'm asking, yes -- I want to understand  
13 now how, in your opinion, that sentence supports  
14 Claim 12.

15 A. And maybe "support" was the wrong word,  
16 but I don't see anything contradictory in here to  
17 Claim 12, but let's see first.

18 "A clockwise rotor blade is releasably  
19 attached." So the "first driveshaft by engagement  
20 in a clockwise lock mechanism and generates a  
21 vertical lift force." Claim 12 doesn't include  
22 the requirement of -- the claim itself doesn't  
23 include the lift force, of course.

24 Okay. I don't quite understand what

1     you're asking me about here.    Could you maybe try  
2     again?

3           Q.       For Claim 12 requires that the blade  
4     lock portion of the clockwise lock mechanism is  
5     configured to engage by partial counterclockwise  
6     rotation, correct?

7           THE WITNESS:   I'm sorry.   I -- my  
8     connection was just interrupted.   May I try  
9     to re-connect again?

10          MS. GORDON:   Your video connection?

11          THE WITNESS:   Yes.   My video connection  
12     is lost.

13          MS. GORDON:   Okay.   Sure.   You can try  
14     to reconnect.

15          THE COURT REPORTER:   Should we go off  
16     the record, folks?

17          MR. ABRAMIC:   Yeah.   Let's go off the  
18     record.

19                               (A recess was had from  
20                               2:03 p.m. CST until  
21                               2:05 p.m. CST.)

22          MS. GORDON:   Let's go back on the  
23     record now.

24

1 BY MS. GORDON:

2 Q. So, Dr. Reinholtz, I'd like to again to  
3 go back to the sentence we were talking about from  
4 Paragraph 8 and the language of Claim 12.

5 So Claim 12 recites that the blade lock  
6 portion of the clockwise lock mechanism is  
7 configured to engage by partial counterclockwise  
8 rotation.

9 So in the sentence we read from  
10 Paragraph 8, does it mention the blade lock  
11 portion anywhere?

12 A. Not explicitly, but the clockwise lock  
13 mechanism includes the blade lock portion, which  
14 is discussed in that passage.

15 Q. And does it say that the blade lock  
16 portion engages with anything in that section?

17 A. It doesn't use those words, no.

18 Q. And in your opinion, is there anything  
19 in that portion that would indicate that the blade  
20 lock portion engages with another component?

21 A. Yes.

22 Q. What is that?

23 A. That is the clockwise lock mechanism  
24 which includes the blade lock portion and the



1 shaft lock portion.

2 Q. And what about that tells you that the  
3 blade lock portion is engaging with something?

4 A. That we have a clockwise lock mechanism  
5 that has a blade lock portion and a shaft lock.  
6 We know the blade lock portion is attached to the  
7 rotor blade.

8 So the locking occurs by -- at least in  
9 part by the locking of the blade lock portion and  
10 the shaft lock portion.

11 Q. So you're saying the term "lock  
12 mechanism" is what discloses the blade lock  
13 portion being engaged with another component?

14 MR. ABRAMIC: Objection to form.

15 BY THE WITNESS:

16 A. Well, if we restrict the discussion to  
17 only the sentences you read, it's not completely  
18 clear -- I mean, those sentences alone, standing  
19 by themselves, don't tell us that the clockwise  
20 lock mechanism includes the blade lock portion and  
21 the shaft lock portion and how they interlock, but  
22 that's, I think, clear in the other parts of the  
23 specification.

24

1 BY MS. GORDON:

2 Q. And does this sentence that you're  
3 discussing mention partial rotation anywhere?

4 A. No, it does not.

5 Q. Let's turn to Paragraph 30. And the  
6 second sentence in that paragraph states, "Each  
7 clockwise rotor blade 9A, 9B is releasably  
8 attached to the corresponding driveshaft 13 by  
9 engagement in a clockwise lock mechanism 11AB, and  
10 each counterclockwise rotor blade 9C, 9D is  
11 releasably attached to the corresponding  
12 driveshaft 13 by engagement in a counterclockwise  
13 lock mechanism 11CD."

14 Do you see that?

15 A. I do.

16 Q. Does that sentence disclose partial  
17 rotation?

18 A. The sentence doesn't use the words  
19 "partial rotation."

20 Q. Would that sentence support the claim  
21 limitation that requires partial rotation?

22 A. Well, it does not use the words partial  
23 rotation, but it supports other parts of the  
24 claim. It certainly doesn't contradict the claim.

1 Q. So turning to Paragraph 34. If you  
2 could read the entirety of that paragraph?

3 A. Okay. I finished it.

4 Q. Does that paragraph describe the laid  
5 back portion being engaged with another component?

6 A. It talks here about -- where it uses  
7 the word "engaged" is the blade engaged in the  
8 slots 23.

9 Q. Right. But the question related to the  
10 blade lock portion, not the blade. Does the --

11 A. I guess it depends.

12 Q. Sorry. Go ahead.

13 A. Yeah. In this Paragraph 34, it doesn't  
14 use the word "engage" when it talks about -- in  
15 the preliminary part of the paragraph, in the  
16 first sentence, it doesn't talk -- it you doesn't  
17 use the word "engage" when it's talking about the  
18 lock mechanism.

19 Q. And does this paragraph describe  
20 partial rotation?

21 A. Yes.

22 Q. And how so?

23 A. Because the clear discussion with  
24 respect to the figure, how the blade -- so this is

1 in particular with reference to Figures 4 and 5  
2 and how the blade is engaged in the slots and 23,  
3 and clearly the illustration shows us that this  
4 has to be a partial rotation for that engagement.

5 Q. So you're saying the paragraph, in  
6 combination with the figure, illustrates the  
7 content of the partial rotation?

8 A. Well, I'm saying that the paragraph  
9 describes what the figure shows. Figure 4 -- the  
10 two figures together -- as I read this, the  
11 discussion here is about -- in particular about  
12 Figures 4 and 5 and what those figures show.

13 Q. But without the figure, it would be --  
14 it could be possible that it wasn't describing  
15 partial rotation, correct?

16 A. I have trouble seeing what -- I can't  
17 forget the figures.

18 So that's -- divorcing the figures from  
19 the discussion of the figures seems ill-advised,  
20 but even just reading the words, if I never saw  
21 the figures, I think I would have a pretty clear  
22 understanding that this had to be a partial  
23 rotation.

24 Q. So I thought earlier you had -- you had

1 an embodiment -- strike that. Let me ask that  
2 again.

3 I thought earlier you mentioned a  
4 hypothetical configuration where you would have a  
5 helical slot where you wouldn't be limited to a  
6 partial rotation?

7 A. Yes, and I think I was responding to a  
8 question, could you have more than 360 degrees?  
9 And I was brainstorming how that might occur, but  
10 it doesn't fit within the boundaries of the  
11 specification.

12 Q. Thank you. So we can put Exhibit 2002  
13 aside.

14 A. Okay.

15 Q. And I'd like to have you access what's  
16 been marked as 1006 to this proceeding which is  
17 the certified English language translation of  
18 Application No. H06-17511, Sasaki.

19 A. Okay.

20 Q. So, Dr. Reinholtz, let me know when you  
21 have the document in front of you.

22 A. I have Sasaki in front of me.

23 Q. Can you turn to Figure 7 of Sasaki?

24 A. Yes. I'm there.

1           Q.       And would you agree that Figure 7  
2 illustrates a quadrotor UAV?

3           A.       Yes.

4           Q.       And you would agree that the quadrotor  
5 UAV has two clockwise rotors and two  
6 counterclockwise rotors, correct?

7           A.       Looking at that figure, there's no  
8 indication of it that I see. We could turn to the  
9 specification and see the discussion.

10          Q.       Okay. We can certainly do that. And I  
11 would direct your attention to discussion starting  
12 at the bottom of Column 1 through Column 2. And I  
13 guess Figure 7 is also discussed on Column 4.

14                   Actually, probably the Column 4  
15 discussion is more relevant.

16          A.       Okay. And here, it talks about one  
17 group of propellers. One is facing diagonally,  
18 rotates -- one group of propeller -- propeller is  
19 one.

20                   There's probably some issues with the  
21 translation here because one is used above the  
22 propeller, "facing diagonally rotates in the  
23 direction opposite to the direction of rotation of  
24 the other group of propellers."

1 I think the translation is a little  
2 weak. I think we could infer that there are  
3 blades that rotate clockwise and blades that  
4 rotate counterclockwise.

5 Q. Okay. And the clockwise rotors would  
6 have the different pitch than the counterclockwise  
7 rotors, correct?

8 A. Same pitch probably. That's not  
9 disclosed, I don't think that level of detail, but  
10 they would be the opposite hand. One would be  
11 right hand, and one would be left hand, but  
12 probably the same pitch.

13 Q. And the user of Sasaki would need to  
14 attach the correct rotor blade to the correct  
15 driveshaft for the UAV to operate properly,  
16 correct?

17 A. For the UAV to operate correctly, yes.

18 Q. So turning to Figure 9 and Column 1,  
19 Line 40, of Sasaki.

20 A. Yes.

21 Q. In this paragraph, Sasaki explains  
22 that, "The propeller is configured by connecting  
23 two wing pieces (23) with a connecting tool (24),  
24 and when a lift force is applied by means of

1 rotation, the wing pieces are bent upward from  
2 base end sides thereof, and twisted deformation  
3 that reduces a suppressed angle occurs so that a  
4 predetermined performance cannot be maintained,  
5 nor can stable flight be expected."

6 In that discussion of Sasaki, what is  
7 the suppressed angle?

8 A. It is not completely clear to me. I  
9 think the general context of what he's talking  
10 about in this paragraph I think I understand, but  
11 what he exactly means by "suppressed angle," I  
12 might have to speculate if you want me to try to  
13 answer that.

14 Q. So what's your understanding of the  
15 general context of what Sasaki is describing in  
16 this paragraph?

17 A. He's basically telling us that in this  
18 prior art, the wing pieces 23 -- they're flexible,  
19 and as the lift forces are generated, those blades  
20 can deflect, deform.

21 And because of that deformation, it's  
22 hard to maintain a known stable performance or  
23 stable flight.

24 Q. And that's a problem that Sasaki has



1 identified with the prior art configuration,  
2 correct?

3 A. Yes. That is one -- one of the  
4 problems Sasaki identifies with that particular  
5 piece of prior art.

6 Q. So if we look at Figure 8, and do you  
7 see the rotor blade and the driveshaft?

8 A. I do see Figure 8.

9 Q. Please describe how a blade with the  
10 design of Figure 8 would be installed on the  
11 driveshaft.

12 A. Yeah. Sasaki describes this pretty  
13 well, but it's the -- it's a screw-on-type  
14 connection with right-hand and left-hand -- two  
15 shafts with right-hand thread and two shafts with  
16 left-hand thread, and the blades are threaded on,  
17 and the force -- aerodynamic forces continue to  
18 tighten the blades.

19 So those had just screw-on blades with  
20 a threaded connection.

21 Q. And how would you uninstall a blade  
22 having this design?

23 A. In that design, you would have to  
24 unscrew it by rotating it in the opposite

1 direction that the aerodynamic forces would apply  
2 to it.

3 Q. So in your understanding, the  
4 uninstallation requires rotation in the opposite  
5 direction of installation?

6 A. That's correct.

7 Q. So looking at the coupling mechanism,  
8 Figure 8, if a user only turns the blade a quarter  
9 of a turn, would the blade be attached to the  
10 driveshaft?

11 A. That's not the intent here. The intent  
12 of this type of design is to thread it on a number  
13 of threads. At what point it's attached to the  
14 point where you would be able to generate lift is  
15 not that clear.

16 Of course, there are no real details of  
17 this. It's a very small simple schematic.

18 Q. But my question was more basic than  
19 not -- it didn't have to deal with lift.

20 My question is, if you turn the blade a  
21 quarter of a turn, would the blade be attached to  
22 the driveshaft?

23 A. In some way, I think you could say it's  
24 attached.

1           Q.       And if the user turns the blade a  
2   half-turn, would the blade be attached to the  
3   driveshaft?

4           A.       I think in some way, you could say it's  
5   attached.

6           Q.       And is there ways you would say it  
7   wasn't attached?

8           A.       Well, attachment -- for it to be  
9   attached, you have to be able to generate lift  
10   with the blade. That's the purpose of the blade.

11                   And so if the blade pulls off, then  
12   it's certainly not securely attached. It may be  
13   attached for some purpose, but not for the purpose  
14   of flight.

15          Q.       So in your view, attachment can have a  
16   lot of different meanings depending on context?

17          A.       I think in the art that we're talking  
18   about, when a blade is attached, it's ready for  
19   flight, and it can hold the forces that are needed  
20   due to the lift.

21          Q.       And how is that distinguished from when  
22   a blade is installed?

23          A.       I think attach and install are pretty  
24   similar. Installation is a process. So I think

1     you could say the blade was installed to some  
2     extent, but maybe not sufficient to generate lift  
3     with the rotor. I think it would be similar.

4           Q.       So if a blade in Sasaki was only a  
5     half-turn, it could be attached, but not installed  
6     from the perspective -- hold on. Let me see --  
7     let me strike that and start again.

8                    So in Sasaki, if the blade was only  
9     turned a half-turn, it may be attached, but not  
10    installed sufficiently to generate lift with a  
11    rotor?

12          A.       No. I think you misinterpreted my  
13    answer.

14          Q.       Can you help me understand what my  
15    mistake was?

16          A.       Yes. I hope so. We'll see.

17                    If it's threaded on a small fraction of  
18    a rotation, a quarter of a turn, it could be  
19    attached for some purpose, or it could be  
20    installed for some purpose, but that may not be  
21    sufficient in the attachment or installation to  
22    generate lift, but think in the sense of this art  
23    that we're talking about where a blade could be  
24    either installed or attached, it has to be able to

1 hold the lift forces -- allow the vehicle to fly.

2 Q. And is that explained anywhere in the  
3 '184 patent, that concept?

4 A. I think it's explained throughout the  
5 patent about generating vertical lift forces and  
6 so forth.

7 Q. But you're assigning a meaning for  
8 "attachment." I'm just trying to understand where  
9 that's coming from.

10 A. I'm describing, I think, what the  
11 person of ordinary skill in the art would  
12 understand that we may be able to set the blade on  
13 there and give it a small twist that partially  
14 starts a thread, that if we try to lift it up,  
15 it's going to strip out and come off.

16 That wouldn't be attached. I'm not  
17 trying to define the words here. I'm just trying  
18 to interpret the way a person of ordinary skill in  
19 the art would understand this.

20 Q. And I'm just trying to understand what  
21 the basis in the specification of that  
22 interpretation is.

23 So if we turn to Paragraph 46 of your  
24 declaration?

1 A. Okay.

2 Q. In this paragraph, you talk about a  
3 left-hand-threaded nut.

4 A. I heard -- I'm probably looking at the  
5 wrong paragraph.

6 Q. Paragraph 46.

7 A. Oh, okay. Okay. I'm with you.

8 Q. What is a left-hand-threaded nut?

9 A. Right- and left-hand threading refer to  
10 the direction of the pitch of the threads, and  
11 we're all quite familiar with right-hand threads.  
12 Those are the most common.

13 So when I turn a screw or a bolt to  
14 tighten it, most people know the rule,  
15 "righty-tighty, lefty loosey." Well, that applies  
16 to the right-hand-threaded fasteners, but it's  
17 just the opposite for a left-hand-threaded  
18 fastener or nut.

19 Q. And in 2013, would a POSITA have known  
20 how to make a left-hand-threaded nut?

21 A. Oh, yes.

22 Q. And in 2013, would a POSITA have known  
23 how to make a right-hand-threaded nut?

24 A. Yes.

1           Q.       So turning to Paragraph 47 of your  
2   declaration?

3           A.       Yes.

4           Q.       In the first sentence, you say, "One  
5   drawback of the screw-on-type blade attachment  
6   mechanism described in Sasaki is that a user must  
7   rotate the blade several full rotations in order  
8   to tighten and attach the blade to the  
9   driveshaft."

10          A.       Correct.

11          Q.       And then you conclude that, "Installing  
12   a blade in this fashion is time-consuming and  
13   cumbersome."

14                 And why is rotating the blade several  
15   full rotations, in your view, time-consuming?

16          A.       Well, because I've done it with the DJI  
17   product that I have and other UAVs, and it's --  
18   it's -- it's a process that -- nobody that flies  
19   likes to have to put their propellers on. It  
20   takes longer than it should, and it's always  
21   possible to misthread them.

22                 So you have to be careful in doing it.

23          Q.       How many seconds could it possibly take  
24   to rotate a blade to two rotations?

1           A.       Well, installing the blade is, of  
2       course, matching the thread type, and that takes  
3       some time. It's not -- they're small components,  
4       and it's easy to misthread.

5                    So part of the installation is making  
6       sure you're matching a clockwise blade to a  
7       clockwise rotor. And then the several  
8       revolutions, it may only take ten seconds, but  
9       compared to the twistlock-type design, it seems  
10      painful. It's slow.

11                   And anybody that flies a quadrotor, I  
12      think, would get that.

13           Q.       Is there any evidence in the record  
14      from people that have flown a quadrotor to support  
15      your opinion?

16                   MR. ABRAMIC:   Objection to form.

17      BY MS. GORDON:

18           Q.       I can ask it again. Do you have any  
19      evidence, other than your conclusion, that normal  
20      users find it time-consuming? And I'm asking  
21      about evidence that's currently in the record.

22           A.       Well, you're asking me to cover a lot  
23      of material that I think it's common knowledge and  
24      it's probably embedded in the documents.



1           And I think it's -- I'm looking for the  
2   specific references in Sasaki that might help us  
3   to understand that, and they may be later in the  
4   documents, but clearly Sasaki is teaching away  
5   from this type of screw-on connection.

6           Q.       Because it's time-consuming?

7           A.       I think, in part. You have to make  
8   several rotations of the -- of the rotor blade  
9   with respect to the shaft.

10          Q.       So, turning to Paragraph 52.

11          A.       Yes.

12          Q.       You state that, "Because this material  
13   is soft and the driveshafts are much harder metal,  
14   it is relatively easy to thread a clockwise rotor  
15   blade on a motor shaft intended for a  
16   counterclockwise blade, and vice versa."

17                 My question is, if the threading  
18   material in the propeller was made from a harder  
19   material, such as metal, would it still be  
20   possible to install a blade on the wrong  
21   driveshaft with a threaded design?

22          A.       It may -- it would be more difficult.  
23   The harder the blade material, the more difficult  
24   it could be to misthread it. I think we've all

1     probably misthread a nut and a bolt. Those are  
2     both made of hard material, but it's undesirable  
3     to make the part that's the part of the propeller  
4     harder material because that would result in  
5     damaging the driveshaft, the threaded part of the  
6     driveshaft, which is a much more serious mistake.

7             Blades are disposable components. We  
8     replace those pretty often. You don't want to  
9     have to replace the motor and the driveshaft. So  
10    typically, you would make it out of softer  
11    material.

12            Q.     But my question was not a  
13    hypothetical -- well, my question was very simply,  
14    if the threading material in the propeller was  
15    made from the harder material such as metal, would  
16    it be possible to install a blade on the wrong  
17    driveshaft?

18            And I believe your answer was, it would  
19    be harder, is that correct?

20            A.     But it's certainly possible. Yes.

21            Q.     But it would be more difficult to do?

22            A.     Incrementally, perhaps. It depends on  
23    a lot of other factors, the pitch of the thread  
24    and so forth, but it's certainly possible. The

1 harder the material gets, maybe the more difficult  
2 it gets.

3 Q. So you mentioned the pitch of the  
4 thread.

5 How would that impact the ability to  
6 install a blade on the wrong rotor?

7 A. Fine-pitched threads of the type that  
8 we see on these devices and looking at the figure  
9 in Sasaki, the threads are close together, meaning  
10 they have a fine pitch, the finer the pitch, the  
11 easier it is to misthread the elements.

12 Q. And have you ever tried to screw a  
13 right-hand-threaded metal screw into a  
14 left-hand-threaded nut?

15 A. I have to admit it, but, yes.

16 Q. So you tried to do that on purpose?

17 A. No. If you work on certain kinds of  
18 devices, left-hand threads are pretty common, and  
19 it's a real common mistake to misthread a  
20 right-hand-threaded -- male-threaded fastener into  
21 a female left-hand thread, and it is possible to  
22 misthread those.

23 Q. And what devices are you referring to  
24 in your answer?

1           A.       The most common one that we all -- we  
2   have some sense of is -- are the pedals on a  
3   bicycle or an exercise bike, anything that has  
4   pedals, because one of the pedals, if you have two  
5   right-hand-threaded studs on the pedals where the  
6   pedals attach to the crank shaft, if they're both  
7   threaded right-hand, then one of them is trying to  
8   unscrew all the time and it will come out.

9                   And the other one is trying to tighten,  
10   and it tends to overtighten times. So it's a  
11   problem. And they're fine-pitched. So it's  
12   pretty easy to misthread those.

13          Q.       So I'm trying to understand the bicycle  
14   example.

15                   So the bicycle would have a  
16   left-hand-threaded side and a right-hand-threaded  
17   side?

18          A.       That's correct. The pedal on the right  
19   is -- has a stud that sticks out that threads into  
20   a crank shaft, the arm that comes out of the  
21   center crank of the bike, that has a left-handed  
22   thread, and the left-hand -- I hope I've got this  
23   right. The left-hand pedal has a right-hand  
24   thread.

1           Q.       So the bike would use left- and  
2   right-hand-threaded nuts in this -- at the same  
3   time? In other words --

4           A.       Not quite. I don't -- I haven't  
5   painted a great picture for you maybe, but the  
6   crank itself has a threaded hole in it.

7                    So that's the equivalent of the nut.

8           Q.       Okay.

9           A.       So a crank sticks up and has -- at the  
10   end, it enlarges a little bit, and there's a hole  
11   in the crank. And that hole is threaded, and one  
12   side is always threaded right-hand, and the other  
13   side is threaded left-hand.

14                   Anything that rotates like this, it's  
15   typical to use threaded connections that are  
16   right-hand and left-hand to make sure that they  
17   don't under-thread when you're operating the  
18   device.

19                   The only thing that has a crank would  
20   have something like this potentially.

21           Q.       I see. Okay. And so bikes have had  
22   this mechanism for connecting before 2013?

23           A.       I'm sorry. I don't understand -- maybe  
24   I didn't hear you clearly enough.

1 Q. Let me restate. There's a lawnmower  
2 behind me that's distracting me.

3 So the coupling mechanism you talked  
4 about for the bike, was that in existence before  
5 2013?

6 A. Yes.

7 Q. Okay. So I want to turn quickly to the  
8 Sokn reference, and if you could access what's  
9 been marked as Exhibit 1007 to this proceeding,  
10 which is U.S. Patent No. 5,133,617, the Sokn.

11 A. Yes. I have that.

12 Q. If you turn to Column 3, Line 57.

13 A. Okay. I'm there.

14 Q. So in Column 3, Line 57, it's  
15 discussing Figure 3?

16 A. Yes. Okay.

17 Q. So it states at Line 57, "When this is  
18 accomplished, rotation of the ring assembly 19 9  
19 degrees with respect to socket 25 results in a  
20 secure and aligned interconnect connection there  
21 between."

22 Can you tell by looking at Figure 3  
23 whether the rotation of the ring assembly would be  
24 clockwise or counterclockwise?

1           A.       There may be a problem with Figure 3  
2       that I haven't made note of in my declaration.

3                   The "ring 19" that you're referring to  
4       appears to have a left-hand thread, but the  
5       socket -- I guess the piece that's generally  
6       labeled as "15" that has the socket and which is  
7       the housing of the dryer, that looks like it has a  
8       right-hand thread.

9                   So I think there's a mistake, and this  
10      probably wouldn't work as it's configured.

11          Q.       So there was a draftsman error in the  
12      figure?

13          A.       I'd be speculating about that, but the  
14      figure -- unless I'm misinterpreting something, it  
15      looks to me like one piece has a right-hand thread  
16      and one piece has a left-hand thread.

17                  MS. GORDON: Thank you. I think if you  
18      could give us a few minutes to consult over  
19      email, I think we may not have any further  
20      questions for you.

21                  So I can put you on mute and jump  
22      back on unless you wanted to go offline.

23                  THE WITNESS: I'll do what you would  
24      like. We could stay online for a few minutes

1 if you want to go consult.

2 BY MS. GORDON:

3 Q. Okay. So before I do that, just one  
4 standard question for you.

5 At any point today during this  
6 deposition, did you consult with counsel on the  
7 substance of your testimony?

8 A. No, I didn't consult with counsel at  
9 all. No discussion whatsoever.

10 MS. GORDON: Thank you. So we're going  
11 to go on mute and hopefully jump back on in a  
12 minute or two.

13 THE WITNESS: Okay. Sounds good.

14 (A recess was had from  
15 2:46 p.m. CST until  
16 2:50 p.m. CST.)

17 MS. GORDON: Dr. Reinholtz, at this  
18 time, subject to redirect, we have no further  
19 questions.

20 MR. ABRAMIC: I have no questions.

21 Thank you very much, both of you,  
22 for doing this and stay healthy and safe.

23 MS. GORDON: Thanks, John. Thank you,  
24 Mr. Abramic, for setting this remote



1 deposition up and being flexible with  
2 scheduling and, of course, Dr. Reinholtz who  
3 we very much appreciate your time.

4 And my sentiments are to  
5 everyone. Stay safe and healthy, and  
6 hopefully we'll see each other under more  
7 favorable circumstances.

8 THE WITNESS: I hope so, too. Thank  
9 you very much. Have a nice day and nice  
10 weekend.

11 MS. GORDON: Thanks. You, too.

12 MR. ABRAMIC: Take care.

13 (WHEREUPON, the deposition was  
14 concluded at 2:51 p.m. CST.)  
15  
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24

1 UNITED STATES PATENT AND TRADEMARK OFFICE

2 BEFORE THE PATENT TRIAL AND APPEAL BOARD

3

4 SZ DJI TECHNOLOGY CO., LTD., )

5 Petitioner, )

6 v. ) Case No.

7 AUTEL ROBOTICS USA LLC, ) IPR2019-00846

8 Patent Owner. ) Patent 9,260,184

9

10 I hereby certify that I have read the  
11 foregoing transcript of my deposition given at  
12 the time and place aforesaid, and I do again  
13 subscribe and make oath that the same is a true,  
14 correct and complete transcript of my deposition so  
15 given as aforesaid, and includes changes, if any, so  
16 made by me.

17

18

19

20 CHARLES F. REINHOLZ, PH.D.

21 SUBSCRIBED AND SWORN TO before me

22 this day of , A.D. 2020.

23

24 NOTARY PUBLIC

1 CERTIFICATE  
2 OF  
3 SHORTHAND REPORTER  
4

5 I, DINA G. MANCILLAS, a Certified  
6 Shorthand Reporter of the State of Illinois,  
7 CSR License No. 084-003400, do hereby certify:

8 That previous to the commencement of the  
9 examination of the aforesaid witness, the witness was  
10 duly sworn and/or duly affirmed by me to testify the  
11 whole truth concerning matters herein;

12 That the foregoing deposition transcript  
13 was stenographically reported by me and was  
14 thereafter reduced to typewriting under my personal  
15 direction and constitutes a true and accurate record  
16 of the testimony given and the proceedings had at the  
17 aforesaid deposition;

18 That the said deposition was taken before  
19 me at the time and place specified;

20 That I am not a relative or employee or  
21 attorney or counsel for any of the parties herein,  
22 nor a relative or employee of such attorney or  
23 counsel for any of the parties hereto, nor am I  
24 interested directly or indirectly in the outcome of

1 this action.

2 IN WITNESS WHEREOF, I do hereunto set my  
3 hand at Chicago, Illinois, this 4th of April, 2020.

4

5

6

7

8

A handwritten signature in blue ink, appearing to read "Dina G. Mancillas", is written over a horizontal line.

9

DINA G. MANCILLAS, CSR, RPR, CRR, CLR

10

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