

Date: October 22, 2019

Case: Certain Unmanned Aerial Vehicles and Components Thereof

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UNITED STATES OF AMERICA
BEFORE THE
INTERNATIONAL TRADE COMMISSION

- - - - -X
IN THE MATTER OF: : Investigation Number
CERTAIN UNMANNED AERIAL VEHICLES : 337-TA-1133
AND COMPONENTS THEREOF :
- - - - -X

HEARING

Tuesday, October 22, 2019
Courtroom C
U.S. International Trade
Commission
500 E Street, S.W.
Washington, D.C.

The Hearing commenced, pursuant to notice of the Judge, at
9:01 a.m., before the Honorable Charles E. Bullock, Chief
Administrative Law Judge for the United States
International Trade Commission.

<p style="text-align: right;">Page 211</p> <p>1 APPEARANCES:</p> <p>2</p> <p>3 On behalf of the Complainant:</p> <p>4</p> <p>5 TIMOTHY C. BICKHAM, ESQ.</p> <p>6 ANDREW XUE, ESQ.</p> <p>7 MATTHEW N. BATHON, ESQ.</p> <p>8 HUI SHEN, Ph.D., ESQ.</p> <p>9 Steptoe & Johnson, LLP</p> <p>10 1330 Connecticut Avenue, N.W.</p> <p>11 Washington, D.C. 20036-1795</p> <p>12 202.429.5517</p> <p>13 tbickham@steptoe.com</p> <p>14</p> <p>15 MICHAEL E. FLYNN-O'BRIEN, ESQ.</p> <p>16 Steptoe & Johnson, LLP</p> <p>17 One Market Street</p> <p>18 Spear Tower, Suite 3900</p> <p>19 San Francisco, California 94105</p> <p>20 415.365.6713</p> <p>21 mflynnobrien@steptoe.com</p> <p>22</p> <p>23</p> <p>24</p> <p>25 --continued--</p>	<p style="text-align: right;">Page 213</p> <p>1 APPEARANCES (Continued):</p> <p>2</p> <p>3 MICHAEL E. KUDRAVETZ, ESQ.</p> <p>4 Finnegan, Henderson, Farabow, Garrett & Dunner, LLP</p> <p>5 Two Seaport Lane</p> <p>6 Boston, Massachusetts 02210-2001</p> <p>7 617.646.1660</p> <p>8 Michael.Kudravetz@finnegan.com</p> <p>9</p> <p>10 YI YU, Ph.D., ESQ.</p> <p>11 Finnegan, Henderson, Farabow, Garrett & Dunner, LLP</p> <p>12 Two Freedom Square</p> <p>13 11955 Freedom Square</p> <p>14 Reston, Virginia 20190-5675</p> <p>15 571.203.2700</p> <p>16 Yi.Yu@finnegan.com</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p>
<p style="text-align: right;">Page 212</p> <p>1 APPEARANCES (Continued):</p> <p>2</p> <p>3 KATHERINE JOHNSON, ESQ.</p> <p>4 JOHN L. ABRAMIC, ESQ.</p> <p>5 Steptoe & Johnson, LLP</p> <p>6 227 West Monroe Street</p> <p>7 Suite 4700</p> <p>8 Chicago, Illinois 60606</p> <p>9 312.577.1261</p> <p>10 kjohnson@steptoe.com</p> <p>11</p> <p>12 On behalf of the Respondents:</p> <p>13</p> <p>14 SMITH R. BRITTINGHAM, IV, ESQ.</p> <p>15 QINGYU YIN, ESQ.</p> <p>16 KELLY C. LU, ESQ.</p> <p>17 SIMON LU, ESQ.</p> <p>18 Finnegan, Henderson, Farabow, Garrett & Dunner, LLP</p> <p>19 901 New York Avenue, N.W.</p> <p>20 Washington, D.C. 20001-4413</p> <p>21 202.408.5000</p> <p>22 Smith.Brittingham@finnegan.com</p> <p>23</p> <p>24</p> <p>25 --continued--</p>	<p style="text-align: right;">Page 214</p> <p>1</p> <p>2 ALSO PRESENT:</p> <p>3</p> <p>4 For Complainant:</p> <p>5 Jessica Cooper, Senior IP Paralegal</p> <p>6 For Respondents:</p> <p>7 Laura Niu</p> <p>8 Ted Liu</p> <p>9 Yin Cheng</p> <p>10 Wenhao Zhou</p> <p>11 Litian Zheng</p> <p>12</p> <p>13 For ITC:</p> <p>14 Michael Nullet, Esq.</p> <p>15 Amy Ames</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p>

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1 Q Dr. Alonso, you should have a binder in front of
2 you entitled Direct Witness Binder of Juan Alonso. Do you?
3 A Yes, I do. I have it in front of me.
4 Q And if you open that, could you take a look at
5 the document that's been identified as RX-0001C?
6 A Yes, I have it.
7 Q And can you tell me what that is?
8 A Yes, it's my direct witness statement for this
9 case.
10 Q And this is the witness statement where you
11 discussed the validity of the '013 and '184 patents?
12 A That is correct.
13 Q Could you take a look at the last page of the
14 witness statement?
15 A Page 309.
16 Q And is that your signature?
17 A That is my signature.
18 Q Does this witness statement contain your answers
19 to the questions that were posed to you by counsel?
20 A Yes, it does.
21 Q And are the answers true and correct, to the
22 best of your ability?
23 A Yes.
24 MR. BRITTINGHAM: Your Honor, I move to admit
25 RX-0001C.

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1 MR. CUNNINGHAM: No objection.
2 JUDGE BULLOCK: The Exhibit RX-0001C is received
3 in evidence.
4 (Exhibit No. RX-0001C was
5 received in evidence.)
6 MR. BRITTINGHAM: And with that, I pass the
7 witness.
8 CROSS-EXAMINATION
9 BY MR. ABRAMIC:
10 Q Good morning. My name is John Abramic, and I'll
11 be asking you some questions today, Dr. Alonso. It's nice
12 to meet you, sir.
13 A Good to meet you as well.
14 Q I did not expect to have the pleasure of talking
15 to you this early in the week, but we're moving quickly.
16 A So it seems.
17 Q I don't think anybody is upset about that. So,
18 Dr. Alonso, first, I'd like to discuss the '184 patent.
19 MR. ABRAMIC: If we could bring up JX-0002.
20 BY MR. ABRAMIC:
21 Q And if we look at figure 1 of the '184 patent,
22 figure 1 shows what's known as a quadcopter, correct?
23 A That is correct.
24 Q And it has four rotors and four propeller
25 blades?

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1 A That's correct.
2 Q Okay. So I'm going to -- sometimes people refer
3 to the blades as the rotors, but then there is also the
4 moving part of the motor that's also sometimes called the
5 rotor, right?
6 A That is true.
7 Q Okay. So I'm going to try to refer to the
8 propeller as the blade and the rotor as the part of the
9 motor that moves. Is that okay?
10 A That's perfect.
11 Q And if I mess that up, feel free to correct me,
12 but that's what I'm going to try to do.
13 A Okay.
14 Q So in a quadcopter like this, it's common to
15 have two of the rotors spin clockwise and two of the rotors
16 spin counterclockwise, is that right?
17 A I think it's not only common, I think it's
18 necessary.
19 Q You have to do that, right, because if you don't
20 do that, you don't balance out the torque, right?
21 A That's right.
22 Q And you would also agree that propeller blades
23 are designed, such that if they spin in the correct
24 direction, they generate lift, is that right?
25 A That's correct. And the blades are twisted in a

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1 specific way, so they are rotating in a particular
2 direction. They actually produce lift in one direction.
3 They produce lift in the opposite direction, if it rotated
4 in the opposite direction as well.
5 Q Okay. So if all four blades of this quadcopter
6 are spinning in the correct direction, then all four blades
7 are generating lift, right?
8 A When the vehicle is in hover, for example, where
9 the lift has to counteract the weight, that will be
10 correct. When the vehicle is doing some extreme maneuvers,
11 there is a possibility that there may be, you know, a
12 negative lift, or a lack of lift in some of these
13 propellers.
14 Q Sure.
15 A But in general, yes.
16 Q Okay. And to get the vehicles off the ground,
17 the force of that lift has to be greater than the weight of
18 the vehicle, right?
19 A That's right. It needs to be some acceleration
20 in the vertical direction.
21 Q Now, if the blades spin in the incorrect
22 direction, they produce a downward movement, right?
23 A Yes, if by incorrect, we mean the direction it's
24 not designed for, for producing positive flight, then yes.
25 Q And you don't want that as a drone user?

18 (Pages 275 to 278)

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1 A You don't want -- when you're on the ground, you
2 mean?

3 Q Let's say you're flying, and you've got three
4 blades spinning in the correct direction and one blade
5 pinning in the wrong direction, your vehicle is not going
6 to fly very well, is it?

7 A Yes, it would not be a good day.

8 Q Thank you. Now, clockwise blades and
9 counterclockwise blades have a different pitch, is that
10 right?

11 A So the blade pitch, meaning the twist of the
12 actual blade, the total pitch is the same on both. It's
13 just the orientation of it is different.

14 Q Correct. So if I was holding a clockwise blade
15 and a counter clockwise blade in my hand, you would notice
16 that they are not exactly the same, right?

17 A That's correct.

18 Q Now, you would agree with me that the focus of
19 the '184 patent is the mechanism for connecting the rotor
20 blades to the UAV, is that right?

21 A That's part of it. Making sure you can attach
22 and detach relatively easily.

23 Q Okay. So I want to talk briefly about one
24 particular feature of the blade attachment mechanism that's
25 shown in the '184 patent. If we could pull up claim 1 of

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1 to the wrong rotor.

2 Q Can we go to your witness statement? Do you
3 have that in front of you?

4 A I do.

5 MR. ABRAMIC: Can we call up question 63 from
6 Dr. Alonso's witness statement? It's RX-0001C.

7 BY MR. ABRAMIC:

8 Q Do you have that, sir?

9 A Yes, I do.

10 Q So what I'd like to focus in on is the second
11 sentence of that answer. Second sentence. Sorry. There
12 is a "sure," which is the first sentence. The second
13 sentence starts with "the '184 patent specification."

14 "The '184 patent specification teaches at column
15 1, line 55, through column 2, line 7, a lock mechanism for
16 attaching blades to rotors in a UAV that prevents the
17 clockwise rotor blade from being attached to the
18 counterclockwise driveshaft and vice versa." Did I read
19 that correctly?

20 A You did.

21 Q And that was your answer, correct?

22 A That was my answer, correct.

23 Q And then in that answer, you cite to column 1,
24 line 55, through column 2, line 7 of the patent, is that
25 right?

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1 the '184 patent. And we are going to look at a particular
2 limitation here that starts above line 5, so "wherein the
3 clockwise rotor blade is engageable only with." Thank you.
4 So do you see that limitation that has been called out?

5 A Let me just read it to refresh my memory. Yes,
6 I can see that.

7 Q Thanks. I'm going to read that for the record.
8 "Wherein the clockwise rotor blade is engageable only with
9 the clockwise lock mechanism and cannot be engaged in the
10 counterclockwise lock mechanism, and the counterclockwise
11 rotor blade is engageable only with the counterclockwise
12 lock mechanism and cannot be engaged in the clockwise lock
13 mechanism." Did I read that correctly, sir?

14 A I believe you did.

15 Q Okay. And you would agree with me that this
16 limitation means that the attachment mechanism prevents the
17 attachment of a blade to the wrong rotor, is that right?

18 A I think the claim says very specifically,
19 "engageable," so as long as the blade engages or does not
20 engage, I think you are accurate in your statement.

21 Q So let me ask that again. You would agree that
22 this limitation means that the attachment mechanism
23 prevents the attachment of a blade to the wrong rotor, is
24 that right?

25 A I would say prevents the engagement of a blade

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1 A Please repeat that? I was looking. Column 1,
2 line 55.

3 Q Yes.

4 MR. ABRAMIC: Can we pull up column 1, line 55.
5 BY MR. ABRAMIC:

6 Q What I want to focus on is the sentence in the
7 bottom portion of this call out. Do you have the '184
8 patent in front of you, sir?

9 A I do. So which particular line are you talking
10 about in column 1?

11 Q I'm trying to get the actual patent numbers
12 here. So I'm going to direct you to column 2, starting at
13 line 2. It starts with "the clockwise rotor blade is
14 engageable only with the clockwise lock mechanism and
15 cannot be engaged in the counterclockwise lock mechanism,
16 and the counterclockwise rotor blade is engageable only
17 with the counterclockwise lock mechanism and cannot be
18 engaged in the clockwise lock mechanism." Do you see that?

19 A I see that.

20 Q And would you agree that that is a portion of
21 what you cited in your witness statement that we just went
22 over?

23 A I can go through it in detail. It's a portion
24 of it, yes. Until column 2, line 7 is the end of the
25 citation, yes.

19 (Pages 279 to 282)

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1 Q Thank you. And would you agree that that
2 highlighted language that I just read is the same as the
3 claim limitation language that we just read when we first
4 started discussing the patent?

5 A Let me just go back to claim 1.

6 MR. ABRAMIC: Can we put claim 1 of the patent
7 on top of that bottom call out there.

8 THE WITNESS: Are you asking me --

9 BY MR. ABRAMIC:

10 Q No, I'm sorry. I'm directing our graphics folks
11 to help you, but I think you're doing the same thing that
12 I'm doing.

13 A But I was asking you if you're asking me if it's
14 verbatim the exact same wording in one and the other.

15 Q I don't think it's absolutely verbatim, but I
16 think it's pretty close.

17 A Yes, so --

18 Q The claim limitation I'm referring to is
19 "wherein the clockwise rotor blade is engageable only" --
20 that one there.

21 A Like you're saying, it may not be verbatim, but
22 it's pretty close.

23 Q Just the wherein in the claim is the difference?

24 A That's right.

25 MR. ABRAMIC: Okay. Now, if we could just leave

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1 as avoiding misplacement?

2 A No, I think preventing attachment is stronger.
3 Misplacement, I think, means you can place it on top, but
4 not necessarily attach it. Preventing attachment seems
5 like it requires that there is some kind of locking between
6 the two pieces.

7 Q Okay. Thank you.

8 A Uh-huh.

9 Q So we talked about how the '184 patent prevents
10 attachment of the wrong rotor blade, correct?

11 A Are you talking about the claim that's still up
12 in here?

13 Q I'm talking about your testimony that we went
14 over.

15 A Yes.

16 Q So the '184 patent, the design of the UAV in the
17 '184 patent prevents the attachment of the wrong rotor
18 blade, correct?

19 A Yes, we talked about that.

20 Q And you would agree, it accomplishes that by
21 having a locking mechanism that has a different
22 configuration for a clockwise rotor blade versus a
23 counterclockwise rotor blade, is that right?

24 A I think that's the essence.

25 Q Okay. I'd like to turn to your validity

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1 the claim up for a minute, please, James. And can we
2 highlight the "wherein the clockwise rotor blade is
3 engageable."

4 BY MR. ABRAMIC:

5 Q And, Dr. Alonso, you were here for DJI's opening
6 witness statement. Do you recall that?

7 A I was here, yeah.

8 Q You may not recall this, but at one point, this
9 claim was put up, and there was a fancy graphic that got
10 interlaid over this particular claim limitation that's
11 highlighted. And there was a phrase that DJI's counsel put
12 over that claim limitation. Do you recall that?

13 A I don't recall. Can you remind me what exactly
14 it was?

15 Q It said, "avoid misplacement." Do you recall
16 that?

17 A Uh-huh.

18 Q Do you think that's an appropriate phrase to use
19 for that claim limitation?

20 A I think "engages" is a little bit stronger than
21 misplacing, right, but --

22 Q What about prevent attachment?

23 A Prevent attachment? What about prevent
24 attachment?

25 Q Do you think preventing attachment is the same

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1 opinions on the '184 patent. So you have opined in this
2 case that the '184 patent claims, the asserted claims are
3 anticipated and obvious, is that right?

4 A I have said that, yes, with various different
5 approaches, uh-huh.

6 Q Okay. And you'd agree that those opinions are
7 generally based on three different primary references. The
8 Microdrones manual, the Sasaki publication, and the Zhou
9 patent?

10 A That's correct.

11 Q So first, I want to talk about Microdrones, if
12 we could do that.

13 A Please.

14 Q If you could look at the exhibit in your
15 cross-examination binder that's given the number RX-0036.
16 Do you have that document, sir?

17 A I have it, yes.

18 Q And you would agree that this document is the
19 Microdrones manual?

20 A This is the user manual for the md4-200
21 Microdrones drone.

22 Q And can we look at page 2 of that manual?

23 A Page 2 of the manual itself or the exhibit?

24 Q Page 2 of the manual, it's RX-0036.0032. I'm
25 sorry, it's .0032.

20 (Pages 283 to 286)

<p style="text-align: right;">Page 287</p> <p>1 A 0032.</p> <p>2 Q It's not page 2. It's the bottom hand portion</p> <p>3 of the document?</p> <p>4 A I have it now.</p> <p>5 Q You have it. Okay. Thank you. And there is a</p> <p>6 figure 18 on that document. Do you see that?</p> <p>7 A I see it.</p> <p>8 Q And would you agree that, looking at figure 18</p> <p>9 on this page, that this depicts the Microdrones device?</p> <p>10 A Yes, I would. In particular, that model I</p> <p>11 describe, the md4-200.</p> <p>12 Q Okay. So I'm going to ask you several questions</p> <p>13 about this product manual. I just want to make clear at</p> <p>14 the outset that unless I say otherwise, my questions about</p> <p>15 Microdrones are about what this manual, this particular</p> <p>16 document, teaches about the product. Is that all right?</p> <p>17 A Sure. It's all right.</p> <p>18 Q That's a yes?</p> <p>19 A That's a yes.</p> <p>20 Q Thank you. So this photo here depicts a UAV</p> <p>21 with four rotors and four blades, is that right?</p> <p>22 A It looks right.</p> <p>23 Q And in the UAV depicted here in figure 18, you</p> <p>24 would agree that the rotors are contained within bulb-like</p> <p>25 structures that are at the end of each arm of the UAV,</p>	<p style="text-align: right;">Page 289</p> <p>1 installed on the correct rotor, the leading edge of the</p> <p>2 blade in the direction of rotation is going to be higher</p> <p>3 than the trailing edge of the blade. Is that right?</p> <p>4 A That would be true. You'll have a positive</p> <p>5 angle of attack, we call it. But yes, indeed.</p> <p>6 Q Okay. Thank you. So maybe -- it might be a</p> <p>7 little bit difficult to see in the photo in figure 18, but</p> <p>8 would you agree that based on observing the pitch of the</p> <p>9 blades and assuming that these blades are attached to the</p> <p>10 correct rotors, that the rotor furthest to the right in the</p> <p>11 photo --</p> <p>12 MR. ABRAMIC: Can we go to the rotor furthest to</p> <p>13 the right?</p> <p>14 THE WITNESS: Yes.</p> <p>15 BY MR. ABRAMIC:</p> <p>16 Q That would appear to be a clockwise blade and</p> <p>17 rotor?</p> <p>18 A If you are looking from the top of the drone, I</p> <p>19 think that blade -- it's hard to tell because of the</p> <p>20 perspective, but it would be rotating clockwise to produce</p> <p>21 positive lift.</p> <p>22 Q And you can make that determination based on the</p> <p>23 pitch of the blade, right?</p> <p>24 A It's hard to see the right side of the blade,</p> <p>25 because you can't tell exactly how it's twisted. But if</p>
<p style="text-align: right;">Page 288</p> <p>1 right?</p> <p>2 A What leg structures?</p> <p>3 Q I'm calling them bulb-like structures?</p> <p>4 A Bulb-like.</p> <p>5 Q Bulb-like structures. Do you see those?</p> <p>6 A Sure. If you characterize them as such. They</p> <p>7 are at the end of the arms, and they are attached to the</p> <p>8 arms.</p> <p>9 Q And would you call those the rotor assemblies?</p> <p>10 A I would call the rotor assembly the part that</p> <p>11 includes the blade and the motor itself. There is, you</p> <p>12 know, a carbon fiber looking structure that you can see in</p> <p>13 that picture that envelops that rotor assembly in this</p> <p>14 case.</p> <p>15 Q And you're referring to the black --</p> <p>16 A The black.</p> <p>17 Q -- carbon fiber? And in a UAV, we talked about</p> <p>18 this, two of the rotors are going to spin clockwise and two</p> <p>19 will spin counterclockwise, right?</p> <p>20 A Correct. That's true for all quadcopters.</p> <p>21 Q Okay. Now, we talked a little bit about how the</p> <p>22 clockwise blades will look different than the</p> <p>23 counterclockwise blades, right?</p> <p>24 A Yes.</p> <p>25 Q And you would agree that when a blade is</p>	<p style="text-align: right;">Page 290</p> <p>1 you look at the left blade and the inner portion, it</p> <p>2 appears from this perspective that, indeed, it's slanted in</p> <p>3 one particular direction.</p> <p>4 Q Okay. But the piece of information that you're</p> <p>5 relying on to determine the spin of the blade is the actual</p> <p>6 blade configuration itself, right?</p> <p>7 A Yes, the twist of the blade has to be right, in</p> <p>8 order to produce positive lift in a particular direction or</p> <p>9 rotation, so yes.</p> <p>10 Q Okay. So now let's back out, and see the whole</p> <p>11 photo. So now, I want you to assume that the blades in</p> <p>12 this photo are gone. Can you make that assumption? There</p> <p>13 is no blades on the device?</p> <p>14 A It's a hypothetical, sure.</p> <p>15 Q But they still have those bulb-like structures</p> <p>16 at the end of the arms, which are the rotor assemblies,</p> <p>17 right?</p> <p>18 A You're just asking me to remove, in my mind, the</p> <p>19 blades from that, yes.</p> <p>20 Q Correct.</p> <p>21 A Okay. So everything else remains except for the</p> <p>22 blades?</p> <p>23 Q Correct. Right. So if that were the case,</p> <p>24 there would be no way to tell, just by looking at the rotor</p> <p>25 assemblies in the photo, whether or not a particular rotor</p>

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1 was clockwise or counterclockwise, correct?

2 A You would not be able to tell by looking at the
3 motors themselves whether it's rotating in one direction or
4 another. But in this particular case, there is some
5 mounting plates that you can barely see here, that would
6 have different configurations, which would tell you that
7 the intent was to have them rotate in one direction or the
8 other.

9 Q You can't see the mounting plates in this photo,
10 correct?

11 A No, I think you would -- there are better
12 pictures in the manual, if you want to refer to those, but
13 it is very hard to tell there. It's very grainy and low
14 resolution.

15 Q Okay. So now I want you to remove the blades
16 and the mounting plates.

17 A Okay.

18 Q Would you agree with me that just by looking at
19 the rotor assembly, with the blades and the mounting plates
20 removed, that you would not be able to tell if it was a
21 clockwise or counterclockwise rotor?

22 A I think that's probably true, because it could
23 invert the voltage and make the motor rotate in one
24 direction or the other.

25 Q Are you saying that -- are you saying that's a

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1 Q And in the first photo, you can see that the
2 blade has two knobs on the bottom of the blade, right?

3 A I can see those.

4 Q And there is a hole in between knobs, right?

5 A That's right.

6 Q And that hole is meant to fit over the
7 driveshaft, right?

8 A You're correct.

9 Q Okay. And that's the cylinder that was just
10 circled, protruding up out of the motor, is that right?

11 A Indeed.

12 Q Okay. Now, looking at that first photo, there
13 is a flat piece of metal referred to in the reference as a
14 rotor mounting plate. I think you were talking about the
15 mounting plate just a minute ago.

16 A Yes, I can see that.

17 Q Okay. And that sits on top of the rotor, right?

18 A That's -- yeah, I mean, on top of the motor,
19 rotor. I mean, are you referring that the rotor as the
20 propeller blade or as --

21 Q Sure. What I'm talking about is the silver
22 piece that has those wing tips on the end of it?

23 A Yes.

24 Q Okay. And it has a circle or a cutout in the
25 middle of it that fits over the driveshaft, right?

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1 "yes" to my question?

2 A Can you repeat the question again, please?

3 Q Sure. This picture -- we were just looking at
4 this photo. You're removing the blades and you're removing
5 the mounting plates, in your mind. Just by physically
6 looking at the rotor assemblies, would you be able to tell
7 whether or not they spin counterclockwise or clockwise?
8 And that's a yes or no question.

9 A I don't think you can tell, and so I'm agreeing
10 with you.

11 Q Okay. Can we turn to page 27 in the manual?
12 It's RX0036.0037.

13 A Yes, I have it.

14 Q You would agree that this page of the manual
15 relates to how the blades are attached to the rotors, is
16 that correct?

17 A Yes, the section is titled Assembling the
18 Rotors.

19 Q And you see on this page, there is a figure 25
20 that includes five different photos?

21 A I can see that.

22 Q And looking at the first photo, you see that
23 this shows a blade prior to being attached to the rotor,
24 correct?

25 A That's correct.

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1 A That's right.

2 Q And it's resting on top of the motor, right?

3 A Yes.

4 Q What would you call those wing tip pieces there,
5 if we could agree on a phrase? Can we call them wings?

6 A You can call them wings if you want. They are
7 the piece of the mounting plate where the O-rings attach
8 to, right. So maybe attachment points, anchoring points.

9 Q Okay. And now there is two holes drilled in
10 that mounting plate that are referred to in the manual as
11 holes, is that right?

12 A That's correct.

13 Q And those holes are intended to match up with
14 the knobs on the blade, correct?

15 A That's correct.

16 Q So when a proper blade is attached, those knobs
17 sink down into those holes, is that right?

18 A That's correct. When the mechanism essentially
19 is engaged, you have those two protrusions on the bottom
20 side of the blade that the manual calls the knobs, sitting
21 inside the holes, if you want to call them that way, or the
22 actual structures of the manual calls them holds.

23 MR. ABRAMIC: Now, if we can back out and see
24 figures -- the first two photos there. Actually, the
25 three. All three of -- the first three there.

22 (Pages 291 to 294)

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1 BY MR. ABRAMIC:

2 Q So to attach a blade to a rotor, a user first
3 has to set the blade on the mounting plate, correct? So
4 that the hole in the blade goes over the driveshaft, right?

5 A Yes.

6 Q And then the knobs of the blade sit down in the
7 holes, like you just said, right?

8 A Yes.

9 Q And that's shown in the second photo on figure
10 25, right?

11 A Second photo. Yes, I mean, it's hard to tell,
12 but, yes, the idea is you put the driveshaft through the
13 hole in the blade and the knobs are sitting engaged with
14 the holes.

15 Q And then after the blade is set on that mounting
16 plate, as shown in the second photo there, a user takes an
17 elastic O-ring, hooks it on one wing, and then stretches it
18 over and connects it to the other wing on the mounting
19 plate, correct?

20 A That's correct.

21 Q And so those O-rings are used to secure the
22 blade, correct?

23 A Together with the other elements of the
24 mechanisms that you've just been describing, the O-rings
25 provide the last bit of locking that is necessary to make

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1 correct?

2 A Yes, I see.

3 Q And it states there, "to avoid accidental
4 misplacement, both directions of turning use individual
5 distances between these knobs," right?

6 A Yes.

7 Q And so if we go back to the first photo, it's
8 talking about the knobs that are on the blade there, right?

9 A Yes.

10 Q Okay. And so what the manual is saying is for a
11 clockwise blade, the distance between those two knobs is
12 going to be different than the distance between the two
13 knobs on a counterclockwise blade, right?

14 A That's correct. The radial distance along --
15 along the long axis of the blade itself, yes.

16 Q Okay. And so because the knobs have to fit into
17 the holes on the mounting plate, the holes for a clockwise
18 rotor will match up exactly, in terms of distance apart
19 from each other with the distance between the knobs on a
20 clockwise blade, correct?

21 A I think that's what the manual says.

22 Q And the same would be true for the
23 counterclockwise blade, right?

24 A Correct.

25 Q And the manual doesn't say exactly what that

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1 sure that those blades are properly attached.

2 Q And that's shown in the third picture here,
3 correct?

4 A Yes.

5 Q Let's talk about those O-rings very briefly.
6 It's your understanding that the O-rings are elastic and
7 made of rubber, correct?

8 A That's right.

9 Q And they are essentially like rubber bands?

10 A Pretty much. Maybe a little bit stiffer than a
11 normal rubber band, but yes.

12 Q And it's your understanding, based on the
13 Microdrones manual, that those O-rings are separate?

14 A They are attached as a separate component,
15 that's right.

16 Q And would you agree that Microdrones tells its
17 users to install two O-rings on each blade, correct?

18 A I agree with that characterization of what the
19 manual says.

20 Q Okay. So let's turn to this issue that we were
21 talking about, accidental blade misplacement, okay?

22 A Uh-huh.

23 Q If you go back to page 27 in the Microdrones
24 manual, you can see that it describes a feature for helping
25 a drone user avoid accidental misplacement of a blade,

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1 distance is, correct?

2 A I don't recall that it says that. It just says
3 they are individual distances, meaning they are different,
4 but it doesn't specify whether it's 5 millimeters or 10
5 millimeters.

6 Q Okay. So that means that if you take a blade
7 and you drop it -- or set it on the wrong rotor, the knobs
8 are not going to line up with the holes on the mounting
9 plate, correct?

10 A That's my understanding.

11 Q And so then that blade isn't going to sit down
12 flush with the mounting plate in that instance, correct?

13 A If the knobs are not aligned with the holes,
14 then, yes, you are correct. There will be an inability for
15 those knobs to penetrate through the mounting plate, and
16 therefore, it won't sit properly attached.

17 Q Okay. Now, you'd agree that if you put a
18 clockwise blade on a counterclockwise motor, there might be
19 some overlap between the holes and the knobs, correct?

20 A I think that would depend entirely on the
21 distances that one chooses, but I would imagine a
22 well-designed drone would have chosen distances that are
23 significantly different, so that situation that you're
24 discussing does not occur.

25 Q Okay. So you're saying if someone was going to

23 (Pages 295 to 298)

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1 design a drone that way, they would make sure that the two
2 holes are separate enough to where there wouldn't be
3 overlap if you misplaced the wrong blade, right?

4 A Well, there wouldn't be significant overlap. I
5 mean, you want to make sure, since the manual tells you
6 that you're trying to avoid accidental misplacement by the
7 individual distances of the knob, you'll try to make sure
8 that you cannot accidentally misplace. So therefore, the
9 overlap has to be either minimal or nonexistent. Yes.

10 Q Sure. But you would agree that we don't have
11 enough information from the Microdrones reference itself
12 concerning the distances between the holes on a clockwise
13 mounting plate versus a counterclockwise mounting plate to
14 know whether or not, if you misplaced the blade, there
15 would be no overlap between the knobs and the holes,
16 correct?

17 A My recollection -- I mean, I would have to read
18 through the manual again. I mean, I read it a few times,
19 but I don't think it specifies the individual distances or
20 whether or not there is an overlap or not. My guess is
21 somebody who designs drones would have tried to avoid that
22 overlap.

23 Q Okay. Now, in order to avoid that overlap on
24 this device -- so the amount of area that we're working
25 with here, and we can leave this figure up, and this is the

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1 Q And I know you're not going to be able to tell
2 me exact distances here, but just by eyeballing it, would
3 you agree that the diameter of the hole in the mounting
4 plate here is -- let me ask that question a different way.

5 The length of a line that I described from the
6 shaft to the edge of the mounting plate isn't substantially
7 greater than the diameter of the hole, correct?

8 A I'd have to say it's a terrible picture, so it's
9 really quite hard to tell exactly, you know, where the
10 circle -- where the actual intersection with the top
11 surface of the mounting plate starts and ends, and what's
12 inside and what's outside.

13 Q So you can't tell, right?

14 A It's really hard, yes.

15 Q But you would agree that at least this circle
16 for this particular mounting plate appears to be kind of in
17 the middle of that line that we just described, right?

18 A It appears to be, in that picture, yes.

19 Q Can we look at figure 25 again.

20 MR. ABRAMIC: And back out, James.

21 BY MR. ABRAMIC:

22 Q I want to draw your attention to the bottom two
23 photographs.

24 A I can see that.

25 Q Do you see those? Okay. So you would agree

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1 first photo, figure 25, correct?

2 A Correct.

3 Q So what we are talking about here is this -- we
4 are going to look at this hole right here, one of the holes
5 on the mounting plate. Do you see that one that I'm kind
6 of pointing to? You might have to look up on the screen
7 behind you.

8 A I see where you're pointing on this screen, too.

9 Q So now what we are talking about is designing
10 the mounting plate, so that you wouldn't have overlap
11 between the holes, correct? But in order to do that, we
12 are talking about the distance on the mounting plate from
13 here, where the mounting plate touches the shaft, to the
14 edge of the mounting plate. A straight line from the shaft
15 to the edge of the mounting plate over that hole. Can you
16 envision that line that I'm describing?

17 A Yes, I can see what you're -- what you're trying
18 to do.

19 Q So in order to make sure that there is no
20 overlap between the holes, you would have to have one hole
21 on a clockwise plate that doesn't overlap at all with the
22 hole on the counterclockwise plate, correct?

23 A Yes. If you wanted zero overlap at all, no
24 minimal overlap, then you would have to make sure that
25 those holes are distinct, yes.

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1 with me that the bottom photograph in Microdrones, the one
2 with the big green check mark, do you see that?

3 A Yes.

4 Q That shows a correctly installed blade, is that
5 right?

6 A I think that's what the manual intends to show,
7 yes.

8 Q All right. And you would also agree that the
9 use of that big green check mark is an indicator to the
10 reader of the manual that the photo shows a properly
11 installed blade, correct?

12 A Yes, I would agree with that, uh-huh.

13 Q And you'd also agree that in that photograph,
14 the last one with the big green check mark, you'd agree
15 that the blade appears to be resting flush with the
16 mounting plate, correct?

17 A I do agree, yes.

18 Q And there is a big green arrow that's pointing
19 at the location on that photo where the blade is resting
20 flush with the mounting plate, correct?

21 A That's correct. There is no gap -- or there
22 appears to be no gap in that picture between the bottom of
23 the blade and the top of the mounting plate.

24 Q Okay. Let's talk about the fourth photo from
25 figure 25. Do you see that one, the one with the big red X

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1 on it?

2 A Sure.

3 Q You would agree that the use of the big red X is
4 an indicator to the reader of the manual that this photo
5 shows a blade that is not properly installed, correct?

6 A I would say that's the case, yes.

7 Q And you would also agree that in this photo with
8 the big red X, the blade is not sitting flush with the
9 mounting plate, right?

10 A I can see a gap between the bottom of the blade
11 and the top of the mounting plate.

12 Q And again, there is a big green arrow pointing
13 to where the blade is not flush with the mounting plate,
14 right?

15 A Correct.

16 Q Now, you understand that Dr. Reinholtz has
17 testified that this fourth photo here, with the big red X,
18 is depicting a blade installed on the wrong rotor, correct?

19 A I don't remember the exact wording, but, yes, I
20 think he has testified to that effect.

21 Q Okay. And you addressed this issue. We are
22 going to turn back to your witness statement. We are going
23 to go to question and answer 111 in your witness statement,
24 if you can turn there.

25 A Yes, I'm there.

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1 because the pitch of the blades in both photos is the same,
2 correct?

3 A That's correct. Well, the sentence -- the
4 specific sentence where I say that these figures do not
5 show the wrong blade being attached to the wrong motor,
6 that's where I'm using those angles, yes.

7 Q Right. So in the -- let's look at the bottom
8 picture there. That's a properly installed blade, right?

9 A That's correct.

10 Q And based on the pitch of the blade in that
11 picture, you would agree that it appears that that blade is
12 a clockwise blade, correct? I'm sorry, counterclockwise?

13 A I would say counterclockwise.

14 Q Counterclockwise, because the lead edge is going
15 to be higher if it's rotating counterclockwise, right?

16 A That's correct.

17 Q So we assume that the blade in the fifth picture
18 is a counterclockwise blade, correct?

19 A It seems like the blade in both pictures is a
20 counterclockwise blade, yes.

21 Q Because they have the same pitch, right?

22 A To the extent that you can see from that cropped
23 out picture, yes.

24 Q But without the blades in those pictures,
25 without the mounting plates in those pictures -- I'm sorry,

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1 Q I want to direct you to one particular sentence
2 in your answer in 111. Do you see where it says, "these
3 figures do not show the wrong blade being attached to the
4 wrong rotor, as Dr. Reinholtz claims, and that is clear
5 from the angle of the blade in both figures."

6 Do you see that sentence?

7 A Yes.

8 MR. ABRAMIC: Now, can we go back to pictures 4
9 and 5 in Microdrones?

10 BY MR. ABRAMIC:

11 Q Now, when you were saying the angle of the blade
12 is the same in both pictures, these are the two pictures
13 you were referring to, correct?

14 A Let me just reread my answer to refresh my
15 memory, if you don't mind. Yes. Could you repeat your
16 question, then?

17 Q When you referred to "these figures do not show
18 the wrong blade being attached to the wrong rotor," "these
19 figures" in your statement referred to the two figures on
20 the screen now, which are photos 4 and 5?

21 A Yes.

22 Q In figure 25 of Microdrones, correct?

23 A I think so. Because that was in the previous
24 page of my statement, yes.

25 Q And the reason that you draw that conclusion is

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1 without the blades, you can't tell whether or not a rotor
2 in the fourth picture is a counterclockwise rotor, correct?

3 A Well, if you hypothetically remove the O-rings
4 on the blades -- is that what you're saying? Can I tell if
5 the top picture is rotating clockwise or counterclockwise?

6 Q Without the blade on picture 4, you can't tell
7 whether or not that is a counterclockwise or a clockwise
8 rotor, correct?

9 A I think what I said before, you would -- if you
10 could see the mounting holes in the plate, you will realize
11 that they are either both clockwise or one clockwise, one
12 counterclockwise, but you could not tell the specific
13 direction or rotation.

14 Q So that's a "yes" to my question?

15 A "Yes" to the original question, yes.

16 Q I'd like to go back to the subject of the
17 O-rings just for a minute.

18 A Okay.

19 Q You would agree --

20 MR. ABRAMIC: And we can take this picture off
21 the screen.

22 BY MR. ABRAMIC:

23 Q You would agree that back at the time of the
24 priority date of the '184 patent, which is May 2013, a
25 person of ordinary skill in the art would have known that

25 (Pages 303 to 306)

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1 it was not uncommon for UAVs to use O-rings with their
2 connection mechanism, is that right?

3 A I think by that point in time, there were many
4 different types of mechanisms to attach propeller blades,
5 O-rings being one of them.

6 Q You would have been familiar at that time with
7 drones that used O-rings for their connection mechanism
8 other than Microdrones?

9 A I don't have a specific recollection myself.
10 Yeah, I'm trying to remember. We've had many drones in the
11 lab that I don't recall, to be honest, that far back.

12 Q You would agree that O-rings can sometimes be
13 lost by a UAV user?

14 A Yes, during the process of installation and
15 de-installation, they can fall off in the field.

16 Q You'd also agree that sometimes O-rings can
17 break?

18 A Yes, of course, like any other structural
19 component.

20 Q And if a user has a UAV that uses an O-ring for
21 its attachment mechanism and the O-ring is lost or broken,
22 if the user wants to keep flying that UAV, he or she needs
23 a new O-ring, right?

24 A That's correct, yes. Normally, the person
25 flying these drones will have a tool box with him or her.

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1 component that helps secure the blade. If for some
2 reason -- and this is coming from the fact that I have
3 opined that the shaft lock portion and blade lock portion
4 of the claims of the patent are construed by Autel as being
5 the only pieces that are needed.

6 So this particular question just goes back to
7 say, if the proper understanding is that only those two
8 pieces, the shaft lock portion and the blade lock portion,
9 are needed to secure the blade to the driveshaft, then one
10 skilled in the art could have very quickly said, instead of
11 putting the O-rings over, let me just build them straight
12 into the blade, or to the mounting plate. That's what I
13 believe that question is asking and answering.

14 Q Okay. And so you're saying that a person of
15 ordinary skill in the art could have attached an O-ring to
16 the blade to make it integral, right?

17 A They could have, yes.

18 Q And you're also saying they would have. They
19 would have been motivated to do so, correct?

20 A There may be some rationale by which integrating
21 those O-rings into the either the mounting plate or the
22 blade could be beneficial.

23 Q You're saying there may be some rationale, but
24 are you saying that a person of ordinary skill in the art
25 would have been motivated at the time to attach an O-ring

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1 And normally, you will carry some additional components,
2 including O-rings.

3 Q Because sometimes a user might have to replace
4 an O-ring while, you know, out in the field, while they are
5 operating the drone, correct?

6 A If you were to lose one, and you wanted to keep
7 flying the drone, then yes.

8 Q And so for that reason, they might carry extra
9 O-rings, right?

10 A Yes, as you would carry screwdrivers, extra
11 batteries, maybe other pieces, blades, et cetera, et
12 cetera, yes.

13 Q Can we turn to page -- or I'm sorry, question
14 and answer 103 of your witness statement.

15 A Yes, I'm here.

16 Q So we talked about the fact that in Microdrones,
17 the O-rings are separate components, right?

18 A Yes.

19 Q And in your answer to 103, would you agree that
20 you're opining here that a person of ordinary skill in the
21 art would have found it obvious to integrate an O-ring into
22 the blade or driveshaft of Microdrones, so that it was an
23 integral part of the UAV?

24 A Well, this is part of a longer set of questions,
25 but the basic idea is that the O-rings are an extra

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1 to make it integral to Microdrones?

2 A I think these attachment mechanisms, as a
3 convenience, to be able to attach the propeller blade to
4 the shaft more quickly is often useful, but is not the only
5 design driver in a drone, so some people may have different
6 priorities.

7 Q So it's your opinion that a person of ordinary
8 skill in the art would have decided to attach an O-ring to
9 the blade in Microdrones, correct?

10 A I'm saying that somebody could. I wouldn't say
11 would.

12 Q You're not saying they would?

13 A I'm not saying that all the time, they would
14 have done that, right. I'm saying they could have thought
15 of doing it, if they thought it was beneficial to the
16 particular drone and the customer that will use that drone.

17 Q Okay. Let's go to question and answer 105 in
18 your witness statement.

19 A Uh-huh.

20 Q And in this question and answer, would you agree
21 with me that you are talking about different ways that a
22 person of ordinary skill in the art might accomplish making
23 an O-ring integral with the blade or shaft portion of
24 Microdrones?

25 A Yes, there are some ideas as to how that could

26 (Pages 307 to 310)

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1 happen.

2 Q And you mentioned forming a groove, press
3 fitting, fusing, or gluing one component to another, is
4 that right?

5 A I believe that's -- yes, some of the methods
6 that I describe in that answer, yes.

7 Q Okay. So let's just talk about one of those
8 examples. So let's say you've got a Microdrones UAV where
9 the O-rings have been glued to the blades.

10 A Glued?

11 Q Glued to the blades, because that's one of the
12 examples you used, right?

13 A Yes, uh-huh.

14 Q And that user is out in a remote location
15 getting ready to fly the Microdrones drone that has the
16 O-rings glued to the blade, right?

17 A Okay.

18 Q And they go to stretch the O-ring over the wings
19 on the mounting plate and the O-ring breaks, okay?

20 A Okay.

21 Q In that instance, they would need a new O-ring,
22 right, in order to fly?

23 A That's correct, yes.

24 Q So they would have to carry additional O-rings
25 for that possibility, right?

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1 propeller with a glued O-ring already, and do that repair
2 that way.

3 Q Then you'd be bringing another glued propeller,
4 right?

5 A Well, another propeller that's ready to be
6 assembled with the drone, yes.

7 Q Would you agree with me that you've never
8 actually designed a propeller locking mechanism like those
9 that are at issue in this case?

10 A In my professional career, you mean?

11 Q Correct.

12 A Yeah, I don't think I have done that. I've used
13 different propeller blade locking mechanisms in different
14 drone projects that I worked on at Stanford, but typically,
15 these have been off-the-shelf components.

16 Q I want to change subjects here. If you recall,
17 we had talked about your invalidity opinions being based on
18 three different primary references, and one of those is the
19 Sasaki publication. Do you remember that?

20 A Yes.

21 Q And that is Exhibit RX-0037.

22 A Yes.

23 Q Would you agree that is the Sasaki publication?

24 A That is it.

25 Q And your opinions based on Sasaki are

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1 A Or additional propellers with the O-rings
2 already formed or glued to them, yes.

3 Q And if they wanted to make it integral with the
4 blade while they were out in the field, they would have to
5 have a glue gun with them, right?

6 A If the specific methodology is the glue, then,
7 yes, you would have to do that. But probably when you're
8 flying out there, if that's happening, you could design it
9 so you just put the O-rings the way the original manual
10 specified, right?

11 Q Okay. So at that point, you'd just say, forget
12 the integral part of it, let's put on a separate O-ring?

13 A I think it depends on what is it you're doing.
14 Do you have a time critical thing you want to do with the
15 drone, and you cannot go back to the lab or get another
16 propeller, or are you right there trying to do something
17 that requires that you, in the field, perform a repair,
18 essentially.

19 Q Can you imagine an instance where a Microdrones
20 user with the glued on prop that we're describing, the
21 O-ring -- I'm sorry, the glued on O-ring that we're
22 describing, the O-ring breaks where a user would decide to
23 glue it on out in the field?

24 A It just seems cumbersome, right. But you could
25 do it. But I would imagine that I would bring another

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1 obviousness opinions, correct?

2 A Right, correct.

3 Q And you would agree that Sasaki was published on
4 January 14th, 1991?

5 A I believe that's the case, yes.

6 Q And you would agree that Sasaki relates to a
7 UAV, correct?

8 A Yes, a flying toy UAV, uh-huh.

9 Q A flying toy is a UAV, right?

10 A I think I make a slight distinction, right? I
11 don't think the word "UAV" is mentioned in Sasaki's patent,
12 and the words "flying toy" are.

13 Q If we could go to RX-0037.007.

14 A Yes.

15 Q You see there on that page, I want to direct you
16 to the portion with the heading that says, "problem to be
17 solved by the present invention." Do you see that?

18 A That's at the bottom of -- around line 40 of
19 column 1, yes.

20 Q And below that heading, at the bottom of the
21 page, it refers to a figure 8. Do you see that?

22 A It does refer to figure 8, yes.

23 Q And here Sasaki describes a blade attachment
24 mechanism. Would you agree with that?

25 A In figure 8, you mean?

27 (Pages 311 to 314)

<p style="text-align: right;">Page 315</p> <p>1 Q Yes, figure 8.</p> <p>2 A Yes. This is a -- you know, the problem that</p> <p>3 Sasaki has that he is trying to solve, so, yes, that's a</p> <p>4 blade attaching mechanism.</p> <p>5 MR. ABRAMIC: Could we pull up figure 8?</p> <p>6 BY MR. ABRAMIC:</p> <p>7 Q And this mechanism described in figure 8 is a</p> <p>8 simple screw-on connection mechanism, correct?</p> <p>9 A Yes, it's a directional screw on the shaft and a</p> <p>10 directional nut buried in the propeller hub, as you can see</p> <p>11 there by number 8.</p> <p>12 Q So the top of the shaft there, which is</p> <p>13 designated with the number 73, has threads on it, is that</p> <p>14 right?</p> <p>15 A That's right.</p> <p>16 Q And then there is a nut buried in the propeller</p> <p>17 that has threads that allow you to just screw the prop onto</p> <p>18 the shaft, right?</p> <p>19 A Yes, there are right-turning or left-turning</p> <p>20 screws, essentially, and thread.</p> <p>21 Q The way you screw it on is spinning it multiple</p> <p>22 revolutions, just like you're putting a nut on a bolt,</p> <p>23 correct?</p> <p>24 A Essentially, yes.</p> <p>25 Q Now, when you're using this type of connection</p>	<p style="text-align: right;">Page 317</p> <p>1 propellers essentially would come loose.</p> <p>2 Q And you don't want propellers coming loose when</p> <p>3 you're flying a drone, is that correct?</p> <p>4 A No, I don't think we want that.</p> <p>5 Q Now, Sasaki explains that this type of design</p> <p>6 has a problem. Would you agree with me?</p> <p>7 A Yes.</p> <p>8 Q Because it causes the blades to overtighten,</p> <p>9 right?</p> <p>10 A That's what he mentions.</p> <p>11 Q So a user flies the drone, gets done flying the</p> <p>12 drone, and the blades are hard to get off, right?</p> <p>13 A Yes, you have to exert more force or torque to</p> <p>14 remove them if you need to store the drone.</p> <p>15 Q So let's talk about, now you've got a UAV like</p> <p>16 that that we're talking about with Sasaki, that has this</p> <p>17 threaded attachment mechanism. And let's say it has</p> <p>18 threads in one direction for the clockwise blade, threads</p> <p>19 in the other direction for a counterclockwise blade, okay?</p> <p>20 A Yes.</p> <p>21 Q And let's say, for example, that a user tries to</p> <p>22 install a clockwise blade on a counterclockwise shaft,</p> <p>23 okay?</p> <p>24 A Okay. So the blade on the wrong shaft,</p> <p>25 essentially.</p>
<p style="text-align: right;">Page 316</p> <p>1 mechanism with the UAV that has both clockwise and</p> <p>2 counterclockwise rotating blades, you have to make sure</p> <p>3 that the threads for the clockwise blade are opposite the</p> <p>4 threads for the counterclockwise blade, correct?</p> <p>5 A Correct.</p> <p>6 Q And you do that --</p> <p>7 A That they match from the propeller to the shaft,</p> <p>8 obviously, in their direction of winding, uh-huh.</p> <p>9 Q And the reason you do that is because of the</p> <p>10 torque caused by the spinning blade, you want it to have a</p> <p>11 tightening effect, as opposed to a loosening effect,</p> <p>12 correct?</p> <p>13 A That's correct.</p> <p>14 Q So if designed correctly, when you're operating</p> <p>15 a drone of this type, the blades will self-tighten,</p> <p>16 correct?</p> <p>17 A That's the idea.</p> <p>18 Q And the reason you use the opposite threads is</p> <p>19 that if you didn't do it that way, two of the blades, there</p> <p>20 would be a loosening effect when you operate the drone,</p> <p>21 right?</p> <p>22 A Assuming, like we said, that you have two</p> <p>23 propellers rotating in one direction, and the other two</p> <p>24 propellers rotating in the opposite direction. If they</p> <p>25 were all threaded in the same direction, then two of the</p>	<p style="text-align: right;">Page 318</p> <p>1 Q Blade on the wrong shaft, right. So let's just</p> <p>2 say a right-threaded nut onto a left-threaded shaft?</p> <p>3 A Fair enough.</p> <p>4 Q I believe you said in your deposition that if</p> <p>5 both the nut and the shaft are made of metal, that someone</p> <p>6 would not be able to hand screw a blade onto a shaft in</p> <p>7 that fashion, correct?</p> <p>8 A So you can't screw in properly. I mean, you</p> <p>9 could exert a lot of force and torque and possibly strip</p> <p>10 either the nut or the threads on the shaft.</p> <p>11 Q If you used enough force?</p> <p>12 A Torque. Yes, I mean, you've probably done this</p> <p>13 yourself, I imagine, when you screw things on, but that</p> <p>14 would render the lock mechanism useless.</p> <p>15 Q Okay. Now, I want to change one detail of this</p> <p>16 hypothetical.</p> <p>17 A Uh-huh.</p> <p>18 Q The threads in the propeller are now plastic</p> <p>19 instead of metal, okay?</p> <p>20 A The threads on the propeller, so the nut inside</p> <p>21 the propeller is made out of plastic.</p> <p>22 Q Correct.</p> <p>23 A Okay.</p> <p>24 Q All right. You would agree with me, would you</p> <p>25 not, that in that scenario, it's possible for a user to</p>

<p style="text-align: right;">Page 319</p> <p>1 hand tighten a blade on the wrong shaft, correct?</p> <p>2 A And the shaft threads are still made out of</p> <p>3 metal, or what's the hypothetical?</p> <p>4 Q Yes, the shaft.</p> <p>5 A So the shaft is metal, the nut is plastic?</p> <p>6 Q Correct.</p> <p>7 A It is possible that you could screw that in and</p> <p>8 destroy the threads that were in the original plastic nut</p> <p>9 and --</p> <p>10 Q Is it possible that in that scenario, you could</p> <p>11 screw the wrong blade on the shaft and have it attach?</p> <p>12 A You could probably do it, but I don't think it</p> <p>13 will be securely attached, because you would have stripped</p> <p>14 the threads of the original plastic nut.</p> <p>15 Q So you're saying it wouldn't be securely</p> <p>16 attached?</p> <p>17 A Well, it's very hard to tell, but obviously, as</p> <p>18 you screw a metal piece into a plastic thread in the</p> <p>19 opposite thread, you're going to strip all those threads</p> <p>20 relatively quickly. And then there may not be any force</p> <p>21 keeping the propeller together with the shaft.</p> <p>22 Q So you're saying if I did that on a drone and</p> <p>23 held the drone upside down, the blade would fall off?</p> <p>24 A Possibly, yes.</p> <p>25 Q Possibly?</p>	<p style="text-align: right;">Page 321</p> <p>1 Q And we'll talk about those two particular</p> <p>2 references in a minute, but let's first turn to the third</p> <p>3 primary reference that we talked about, the Zhou patent?</p> <p>4 A Okay.</p> <p>5 Q And this is Exhibit RX-0038.</p> <p>6 A I have it in front of me.</p> <p>7 Q You pronounce it Zhou?</p> <p>8 A That's what I've been told, so I've been trying</p> <p>9 to pronounce it Zhou, yes.</p> <p>10 Q And this reference, you would agree, discloses a</p> <p>11 UAV with four propeller blades?</p> <p>12 A Correct.</p> <p>13 Q And Zhou, other than stating that the propeller</p> <p>14 blades are mounted to the motors, you would agree with me</p> <p>15 that Zhou provides no description of how the blades are</p> <p>16 mounted to the motors, wouldn't you?</p> <p>17 A I think when you read the patent, there is no</p> <p>18 specific detail. We know they are mounted, because it's</p> <p>19 obviously a UAV, and it has to fly. And I think it also</p> <p>20 speaks about the different directions of rotation.</p> <p>21 Q So all we know about the connection of the</p> <p>22 blades to the shaft is that they are mounted, correct?</p> <p>23 A They are mounted and rotated in different</p> <p>24 directions, yes.</p> <p>25 Q And you would agree that Zhou, the patent,</p>
<p style="text-align: right;">Page 320</p> <p>1 A You're asking a hypothetical question. I don't</p> <p>2 know the details of the nut and the thread, but I think</p> <p>3 you'll strip it off, and most likely, it will fall off,</p> <p>4 yes.</p> <p>5 Q Do you think it's possible that it would stay</p> <p>6 on?</p> <p>7 A It is always possible that it may stay on, but</p> <p>8 probably not with enough force to then be able to spin that</p> <p>9 propeller that produces a lift force that would then sort</p> <p>10 of rip it apart from the actual shaft, because there is no</p> <p>11 longer the threading that's holding that propeller in</p> <p>12 place.</p> <p>13 Q Well, it wouldn't be producing lift force in</p> <p>14 that instance. It would be producing a downward force,</p> <p>15 wouldn't it?</p> <p>16 A Depending on which direction you rotated the</p> <p>17 motors, right. Yeah. I mean, if it's rotating in the</p> <p>18 original direction, and then you misplace that blade in the</p> <p>19 manner in which you describe, you would definitely produce</p> <p>20 a negative lift. But as we discussed earlier, you would</p> <p>21 not be able to fly that drone.</p> <p>22 Q Now, you opine that the asserted claims in the</p> <p>23 '184 patent are obvious based on Sasaki, in combination</p> <p>24 with EP 067 or Philistine, correct?</p> <p>25 A That is correct.</p>	<p style="text-align: right;">Page 322</p> <p>1 identifies no need to improve or modify any aspect of the</p> <p>2 propeller attachment mechanism?</p> <p>3 A I don't recall it saying anything that leads</p> <p>4 somebody to believe that, but what I'm relying on in this</p> <p>5 particular argument is the fact that somebody who sees</p> <p>6 Zhou's patent, and wants to have the capability of</p> <p>7 releasably attaching the blades, will look to another</p> <p>8 reference in order to combine those two and achieve the</p> <p>9 result desired.</p> <p>10 Q I'd like a yes or no answer to this next</p> <p>11 question.</p> <p>12 A Okay.</p> <p>13 Q And you'd agree that Zhou identifies no need to</p> <p>14 improve or modify any aspect of the propeller attachment</p> <p>15 mechanism, correct?</p> <p>16 A I'd say that's a yes.</p> <p>17 Q And you opine that a person of ordinary skill in</p> <p>18 the art would combine Zhou with Philistine or EP 067,</p> <p>19 right?</p> <p>20 A I did.</p> <p>21 Q And those are the same two references that you</p> <p>22 say a person of ordinary skill in the art would combine</p> <p>23 with Sasaki, correct?</p> <p>24 A Those are the same two references, yes.</p> <p>25 Q And Sasaki and Zhou, they both disclose UAVs,</p>

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1 right?

2 A Sasaki -- well, we talked about UAV flying toy,
3 but with that distinction, yes, they do both talk about
4 quadcopter-like devices.

5 Q And EP 067 and Philistine, they do not disclose
6 UAVs, correct?

7 A You're correct. They are related in EP 067 to a
8 marine propeller type application and in Philistine --
9 sorry.

10 Q Go ahead.

11 A And in Philistine, they talk about attachment
12 mechanisms in the actual helicopter.

13 Q Would it be fair to say that EP 067 and
14 Philistine describe twist lock attachment mechanisms?

15 A Yes, I would say that's true.

16 Q Okay. Let's talk about EP 067 first.

17 A Uh-huh.

18 Q And this is RX-0039.

19 A I have it.

20 Q Got it? Thank you. And you would agree that
21 this is what you referred to in your testimony as EP 067?

22 A Yes, this is the -- what I refer to as the EP
23 067 patent.

24 Q Okay. And this is a publication of a European
25 patent application filed in 1998?

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1 A That's correct.

2 Q And that just -- that adjusts the pitch of the
3 blade along its X axis, right?

4 A Along which axis?

5 Q So it would be adjusting along the radial axis?

6 A That's correct. I mean, the variable pitch
7 propeller, because of the different speeds that the boat
8 may go out, may need to adjust its angle of attack ever so
9 slightly. So they are relatively small angles rotating
10 about that axis 2 for the top blade in that figure.

11 Q And the radial axes are designated with the
12 lines that are kind of running through the center of the
13 blades, right?

14 A The dashed dotted lines -- the three dashed
15 dotted lines running 120 degrees apart that meet at the
16 center of the picture.

17 Q Now, when the boat throttle is opened up, that
18 causes the hub to spin around, correct?

19 A Correct.

20 Q So I know this might sound like a silly
21 question.

22 A Go ahead, please.

23 Q For the record, opening up the boat throttle
24 doesn't cause those blades to rotate and spin around their
25 radial axes, correct?

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1 A Correct.

2 Q And you'd agree that EP 067 relates to a
3 mechanism for attaching motorboat propeller blades to a
4 hub, correct?

5 A That is correct.

6 Q Can we take a look at figure 5 that's on
7 RX-0039.0007. Do you see figure 5?

8 A I can see it. Yes, I have it in front of me.

9 Q And you would agree here, that on this figure,
10 it shows three boat propeller blades?

11 A Yes, this looks like an axial view from --
12 looking from behind the boat, towards the front. And three
13 propeller blades at 120-degree intervals.

14 Q And those blades are connected to a hub that's
15 designated with the number 20 on this figure, right?

16 A Yes, correct.

17 Q Now, after the blades are attached to the hub,
18 EP 067 explains that an operator can adjust the pitch of
19 the blades, correct?

20 A Yes, both propellers sometimes have what's
21 called a variable pitch mechanism, and I think that's what
22 they are talking about.

23 Q Right. And that's designated by the number 22.
24 There is a mechanism in the hub that rotates the blades,
25 right?

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1 A To rotate around the radial axis?

2 Q Correct.

3 A It would be -- they'll rotate about the axis
4 that's perpendicular to the screen at the center, 21 there.

5 Q Right. So the hub spins when you turn the boat
6 motor on, right?

7 A Yes, that's how a boat works.

8 Q All right. You would agree with me that there
9 is no discussion in EP 067 regarding blades being clockwise
10 or counterclockwise rotating blades, right?

11 A That's correct, there are no specifics about
12 that.

13 Q So let's briefly talk about the connection
14 mechanism in EP 067. Let's take a look at figures 1 and 3,
15 and you'll find that bottom page is designated with a 0006.
16 Do you see that?

17 A I have it.

18 Q So figure 1 shows the upper side of a mounting
19 plate that is attached to the hub we were talking about,
20 correct?

21 A Correct.

22 Q And then figure 3 is a bottom view of the base
23 of the propeller blade, correct?

24 A That's correct.

25 Q And just generally speaking, when a user wants

30 (Pages 323 to 326)

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1 to attach one of those boat propeller blades, the
 2 components in figures 1 and 3 interlock to connect the
 3 blade to the hub, right?
 4 A That's correct. In figure 1, you can see --
 5 sometimes it's hard to interpret these drawings, but the
 6 dash lines mean lines that are not visible from this point
 7 of view. So you have these two claws that are coming out.
 8 And then in figure 3, you see the two protrusions. You
 9 align them properly, rotate them, and lock them into place,
 10 yes.
 11 Q So those two pieces fit together, right?
 12 A Those two pieces fit together. They are meant
 13 to.
 14 Q But you would agree with me that EP 067 does not
 15 describe different configurations for its locking
 16 mechanism, based on the direction of the blade's rotation,
 17 correct?
 18 A I do agree that specifically, the patent doesn't
 19 say anything. I do go on in my argument to talk about the
 20 fact that if the same mechanism were applied to the
 21 propellers of a UAV, somebody skilled in the art would
 22 think it obvious to reverse or mirror image that mechanism,
 23 in order to make it work for something that only allows
 24 certain blades to be placed in certain motors.
 25 Q So I'm asking for a yes or no in response to

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1 A I do.
 2 Q And would you say that RDX-0001.60 is depicting
 3 that mirror image configuration?
 4 A It was intended to, yes.
 5 Q But you would agree with me that that mirror
 6 image configuration is not in EP 067, correct?
 7 A That's correct. And my statement is that a
 8 person skilled in the art will be inclined to mirror image
 9 it, in order to attach it to something that rotates in the
 10 opposite direction.
 11 Q Just for clarity, though, and I want a yes or no
 12 on this one, you would agree with me that that mirror image
 13 on RDX-0001.60 is not in EP 067, correct?
 14 A I would have to agree with that.
 15 Q Could we go to Q-A 158?
 16 A 158?
 17 Q 158, yes. Do you see the sentence that says, "a
 18 person having ordinary skill in the art could use a mirror
 19 image configuration." Do you see that?
 20 A I see that.
 21 Q You would agree with me, and I want a yes or no
 22 on this one, that that mirror image configuration that
 23 you're referring to is not actually disclosed in EP 067,
 24 correct?
 25 A It's not specifically stated. I'm sorry. Yes.

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1 this question.
 2 A Sure.
 3 Q You would agree with me that EP 067 does not
 4 describe different configurations for its locking
 5 mechanism, based on the direction of the blade's rotation,
 6 correct?
 7 A I would have to say yes, uh-huh.
 8 Q Can we go to your witness statement, Q-A 157.
 9 A I have it in front of me.
 10 Q Do you see the sentence in your response to
 11 question 157 that starts with the words, "alternatively, to
 12 the extent the locking mechanism illustrated in figures 1
 13 and 3, and described at paragraph 21 of EP 067, rotates in
 14 one direction, a person having ordinary skill in the art
 15 would be motivated to use a mirror image configuration for
 16 rotation in the other direction." Do you see that?
 17 A I do see that.
 18 Q Okay. And then you say you show this below at
 19 RDX-0001.60, right?
 20 A That's correct, which is on the next page of my
 21 statement.
 22 MR. ABRAMIC: Could we go to that, please?
 23 BY MR. ABRAMIC:
 24 Q So you referred in the testimony that we just
 25 read to a mirror image configuration. Do you recall that?

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1 Q Can we go to Q and A 164, please? If you look
 2 at the sentence that says, "figure 1 of EP 067, as shown
 3 left, RDX-0001.63, depicts the position of the stops for
 4 the clockwise rotating driveshaft, modified figure 1 of EP
 5 067, as shown right in RDX-0001.63." Do you see that
 6 reference to modified figure 1?
 7 A Yes.
 8 Q I'd like a yes or no answer to this question.
 9 You would agree with me that modified figure 1 of EP 067 is
 10 not actually disclosed in EP 067, correct?
 11 A That's correct.
 12 Q Let's turn to the Philistine reference.
 13 JUDGE BULLOCK: Since you're starting on a new
 14 reference, let's take our lunch break here. We'll come
 15 back at 1:30. Thank you.
 16 (Whereupon, at 12:25 p.m., the investigational
 17 hearing in the above-entitled matter was recessed, to
 18 reconvene at 1:30 p.m.)
 19
 20
 21
 22
 23
 24
 25

31 (Pages 327 to 330)

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1 AFTERNOON SESSION
 2 (1:32 p.m.)
 3 Whereupon,
 4 JUAN J. ALONSO, Ph.D.,
 5 the witness on the stand at the time of recess, having been
 6 previously duly sworn, was further examined and testified
 7 as follows:
 8 JUDGE BULLOCK: Back on the record. Please
 9 proceed.
 10 CROSS-EXAMINATION (RESUMED)
 11 BY MR. ABRAMIC:
 12 Q Welcome back, Dr. Alonso.
 13 A Thank you.
 14 Q We were going to talk about the Philistine
 15 reference before we broke for lunch. Do you recall that?
 16 A I think so, yes.
 17 Q And there should be a copy of Philistine in your
 18 cross-examination binder. It's RX-0040.
 19 A Yes, I have it in front of me.
 20 Q Thank you. And Philistine generally relates to
 21 a twist lock mount for positioning two things together, is
 22 that right?
 23 A That's correct.
 24 Q And if we could look at figures 1 and 2 in
 25 Philistine. You would agree that those figures depict an

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1 BY MR. ABRAMIC:
 2 Q Dr. Alonso, are you familiar with the Phantom 3
 3 DJI product?
 4 A I have not examined the Phantom 3, so, no, I'm
 5 not very familiar with it at all.
 6 Q Do you have any familiarity with it?
 7 A It is possible I've seen ads for it, or possibly
 8 somebody in my department may be flying one, but I don't
 9 recall anything beyond that.
 10 Q Okay.
 11 MR. ABRAMIC: May I approach the witness, Your
 12 Honor?
 13 JUDGE BULLOCK: Sure.
 14 BY MR. ABRAMIC:
 15 Q Dr. Alonso, you've been handed a physical
 16 exhibit, CPX-0018. Do you see that?
 17 A Yes.
 18 Q And does that appear to you to be a drone?
 19 A It does appear to be a drone, yes.
 20 Q And that appears to be a quadcopter?
 21 A It does.
 22 Q And there are four rotors on there?
 23 A Yes.
 24 Q And those four rotors are at the end of the four
 25 arms there. Would you agree, if you look at the end of the

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1 embodiment of the twist lock mount, is that right?
 2 A That's correct, the top and the bottom view.
 3 Q Now, Philistine does not describe different
 4 configurations of the twist lock mount, based on the
 5 direction of rotation, correct?
 6 A That's correct. They only show one, as I
 7 mentioned before with a previous reference. The idea is
 8 that somebody skilled in the art would use that knowledge
 9 to look at both directions, but indeed, it only shows one
 10 direction.
 11 Q Let's turn to your witness statement at question
 12 and answer 173.
 13 A Okay.
 14 Q In about the middle of your answer there, there
 15 is a reference to a mirror image of Philistine's
 16 configuration. Do you see that reference?
 17 A I do see it, yes.
 18 Q Okay. And I'd like a yes or no answer to this
 19 question. You would agree with me that that mirror image
 20 of Philistine's configuration is not actually in the
 21 Philistine reference, correct?
 22 A I agree with that, yes.
 23 Q I'd like to turn to a physical exhibit for a
 24 couple of questions. It's CPX-0018.
 25 MR. ABRAMIC: Do we have the Phantom 3?

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1 four arms there, there is some little plastic indicators
 2 that show the direction that the blade is supposed to
 3 rotate. Do you see those?
 4 A I do see those.
 5 Q And two of them point in the clockwise
 6 direction, two of them point in the counterclockwise
 7 direction, is that right?
 8 A You're correct.
 9 Q And would you agree with me that the driveshafts
 10 appear to be threaded?
 11 A Sorry. Yes, they are all threaded.
 12 Q Okay.
 13 MR. ABRAMIC: May I approach, Your Honor?
 14 JUDGE BULLOCK: Yes.
 15 MR. ABRAMIC: May I approach again, Your Honor?
 16 JUDGE BULLOCK: Yes.
 17 BY MR. ABRAMIC:
 18 Q Dr. Alonso I've just handed you some rotor
 19 blades, four of them. Do you see those?
 20 A I see them, yes.
 21 Q And they appear to be plastic propeller blades?
 22 A They appear to be plastic rotor blades, yes.
 23 Q And would you examine kind of the interior of
 24 the rotor blades? There is some plastic covering on the
 25 center of the rotor blade, right?

32 (Pages 331 to 334)

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1 A There is.

2 Q So that you can't actually get your finger into

3 the threaded area, right?

4 A That's correct.

5 Q But if you look in there, you can see they're

6 threaded, right?

7 A Yes, I can see they are threaded. It's hard for

8 me to tell which direction they are threaded, but yes.

9 Q Sure. Now, if you look at the blade on the top,

10 there is another indicator, much like the indicator that we

11 talked about on the arm of the device itself that show the

12 direction that the blades are supposed to rotate?

13 A There are two indicators. I think what they are

14 indicating is the direction in which the blades are

15 supposed to lock, because it has a little lock symbol,

16 rather than in the other one, you had a propeller symbol.

17 Q Okay. Thank you. And for two of the blades,

18 they share the same rotation. And for the other two, they

19 show the opposite rotation, is that right?

20 A That looks right, yes.

21 Q And then two of the blades have a silver cap on

22 the center, and two of the blades have a black cap,

23 correct?

24 A That's correct.

25 Q Okay.

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1 MR. ABRAMIC: Your Honor, may I approach the

2 witness, and ask some questions where we share the

3 microphone?

4 JUDGE BULLOCK: Sure. If anyone else would like

5 to come up closer, if they need to look at the physical

6 exhibit, please feel free to do so.

7 BY MR. ABRAMIC:

8 Q So if you look at this drone, on the top of two

9 of the drive shafts, there is silver on the top, right?

10 A That's correct.

11 Q And on two of them, they are black on the top,

12 correct?

13 A Black indentation, black paint, yes. All right.

14 Q So I'm going to select one of the blades that

15 has the black top on it. Let me see if I can open it with

16 my fingers here. And I will clean that up, Your Honor. So

17 now I'm going to place the rotor with the black cap on it

18 on the black tipped rotor there?

19 A Yes.

20 Q And I'm going to spin it around, right? And you

21 would agree, it's attached?

22 A Yes.

23 Q Okay. Now -- sorry. This is the silver one,

24 right?

25 A Correct.

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1 Q And I'm going to set the black one on there.

2 I'm spinning it to the right, and you would agree with me

3 that it's attached on there, correct?

4 A Well, you're spinning. I mean, you must have

5 destroyed the threads on that -- the inside of that

6 propeller.

7 Q Okay. But now it's on there, right? I'm

8 holding this upside down and the blade is not falling off,

9 correct?

10 A That is correct. I wonder if you continue to

11 turn it, so you attached it all the way, like you did with

12 the other one, whether you further strip the propellers.

13 Q But you would agree with me it's attached,

14 correct?

15 A Yes, it's probably not as rigidly attached as

16 when you put it in the right place, but it's not falling

17 off, if that's what you're asking.

18 Q And when I spin the rotor, it spins the blade,

19 correct?

20 A It is spinning the blade.

21 MR. ABRAMIC: I have no further -- nothing on

22 the '013. Do you need me to leave this up here?

23 JUDGE BULLOCK: If I could just clarify. Okay,

24 we were talking about the '184, right?

25 MR. ABRAMIC: Yes, so I just crossed him on the

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1 '184 patent.

2 JUDGE BULLOCK: Right.

3 MR. ABRAMIC: For validity purposes.

4 JUDGE BULLOCK: I understand, but you said

5 something about '013.

6 MR. ABRAMIC: '013, I don't have a cross-exam,

7 but he's now on -- I went out of order there. I'll

8 announce that after he goes.

9 JUDGE BULLOCK: Thank you.

10 REDIRECT EXAMINATION

11 BY MR. BRITTINGHAM:

12 Q Dr. Alonso, you were asked a lot about

13 attachment?

14 A Yes.

15 Q And whether certain things are attached, like

16 for example, in this Phantom 3, whether that blade is

17 attached to the drive, right?

18 A Correct.

19 Q Let's look at your answer to question 63, what

20 you were asked about in your witness statement, RX-1C.

21 A 63?

22 Q 63. And you were specifically directed to the

23 language that appears in the second sentence after "sure,"

24 that the patent specification teaches a lock mechanism for

25 attaching blades to rotors in a UAV that prevents the

33 (Pages 335 to 338)

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1 clockwise rotor blade from being attached to the
2 counterclockwise driveshaft and vice versa. Do you recall
3 that?

4 A I recall that, yes.

5 Q In the context of the '184 patent, what does
6 "attachment" really mean?

7 A I think it's the solid connection between two
8 pieces that restricts all six degrees of freedom, three
9 translational, three rotational.

10 Q So if -- and how is that attachment achieved
11 between those components?

12 A I mean, we could go to the patent if you want.
13 And look at the claims, but there is a shaft lock portion
14 and a blade lock portion which rotate relative to each
15 other. And the knobs and the lugs of those respective
16 components engage to perform that locking function.

17 Q So --

18 A And that attachment, I guess.

19 Q So in the '184 patent, the concept that it's
20 getting at with "attachment" has to do with engagement of
21 the two pieces together?

22 A I'd say more strongly than "engagement." It's
23 the restriction of relative motion between one piece and
24 the other of the UAV mechanisms.

25 Q But that's -- and that's achieved by having

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1 way of attaching a propeller blade to the shaft of a motor,
2 because it would very easily come off.

3 Q There are many ways you can attach things,
4 right?

5 A Sure.

6 Q I mean, Scotch tape?

7 A That's one of them. Probably not a very good
8 one.

9 Q That's not what the '184 patent is talking
10 about, is it?

11 A Correct. It's discussing a very particular way
12 of attaching both pieces with the lug and the notches.

13 Q Let take a look at -- I think it's question 111,
14 you were asked about. This has to do with Microdrones.

15 A Okay.

16 Q Now, this has to do with -- you were discussing
17 those figures that are shown in the Microdrones manual.
18 And we can put those up, if you need to, but what I want to
19 ask you is, you were specifically asked about the sentence
20 in the middle that says, "these figures do not show the
21 wrong blade being attached to the wrong rotor, as
22 Dr. Reinholtz claims, and that is clear from the angle of
23 the blade in both figures."

24 MR. ABRAMIC: So let's put those two figures up
25 from page 27 of RX-36. It's actually going to be 10 pages

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1 pieces that are designed to engage?

2 A Correct. The lugs and the notches that I just
3 mentioned.

4 Q In a threaded screw like this, what are the
5 parts that are designed to engage?

6 A In the threaded screw, I mean, in the shaft, for
7 example, of that drone that I just was shown before, you
8 have a thread. And then on the propeller itself, you have
9 another thread that's supposed to match. And then the
10 action of the attachment is achieved by rotating one piece
11 relative to the other.

12 Q And the one thread -- the thread on the screw
13 and the thread on the nut engage?

14 A They interlock, right, such that those surfaces
15 are in contact with each other across the entire set of
16 threads, so there is no possibility of relative motion.

17 Q So if I had a bolt with threads, and then just a
18 round hole that was ever so slightly different sized, and I
19 shoved it in, is there engagement between those threads and
20 anything?

21 A I wouldn't say so. You're probably destroying
22 the plastic, and there is a little bit of force between
23 those two components, but there is certainly not a lug or a
24 notch that is engaging with each other, in order to perform
25 that locking function. And it seems to me like a careless

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1 further, because it's the -- page 37. The two lowers.

2 BY MR. ABRAMIC:

3 Q So can you just explain what were you talking
4 about when you said that these figures do not show the
5 wrong blade being attached to the wrong motor, and that is
6 clear from the angle of the blade in both figures? What
7 were you saying?

8 A I mean, the bottom figure shows a blade that is
9 properly positioned into the mounting plate with the knobs
10 and holes fully engaged. And you have the big fat green
11 check mark saying this is the way you're supposed to attach
12 that blade to that particular motor, right?

13 On the very top, what you have is an image of a
14 propeller blade that is being placed on the wrong mounting
15 plate, where the nuts and bolts are not aligning properly.
16 And effectively, you see this big red cross or X saying,
17 this is not what you're supposed to be doing. So it's
18 essentially showing you how you do not attach the wrong
19 blade into a particular motor, right.

20 Q Does that upper figure show the wrong blade
21 being attached to the wrong --

22 A It shows no attachment. There is a fairly big
23 gap in there. It's just showing a blade resting on the
24 wrong motor mount.

25 Q And how is the blade supposed to be attached,

34 (Pages 339 to 342)

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1 according to the manual?

2 A Where attached, those knobs will go into the
3 holes and match perfectly. And of course, you'll have to
4 put the two O-rings to perform the full attachment of the
5 blade to the rotor assembly.

6 Q So in your opinion, is the blade, the counter --
7 these are counterclockwise blades in both of those
8 pictures, I think you said?

9 A It looks like they are from the angle of the
10 propeller. Seen from the top, they would rotate
11 counterclockwise.

12 Q So in your opinion, is the blade in the upper
13 picture, yes -- you know, is it or is it not attached?

14 A No, it's not attached.

15 Q Are the knobs on the upper picture engaged in
16 the holes?

17 A No, absolutely not. You see a certain gap
18 indicated by the green arrow in the top image that is kind
19 of the evidence that those knobs are not going all the way
20 into the holes as they are intended.

21 Q You were asked a little bit about overlap, and
22 let's take a look at -- why don't we take a look at
23 RDX-0001.26. And I'm going to use this picture. I don't
24 think you were directed at this exact version of this
25 picture, but on the upper -- the upper figure.

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1 And counsel was asking you about the distance
2 between the middle shaft and the edge of the mounting
3 plate, and then where you would put that hole, right? Do
4 you recall that?

5 A Yes, I do recall that.

6 Q Now, and he specifically was asking whether
7 there would be an overlap, by which I think he means in one
8 of the products, the hole would be not fully distant from
9 the same location in the other rotor. Did you understand
10 that?

11 A That's what I understood, yes.

12 Q So when you put the blade on there, what's the
13 upright figure in the middle of the rotor assembly?

14 A Sorry, can you be more specific as to what
15 you're asking?

16 Q The thing that's sticking straight up?

17 A The shaft.

18 Q That's a shaft, right?

19 A Yes.

20 Q And where does that go with respect to the
21 blade?

22 A Well, it's hard to see in that image blown up,
23 but you see a circle between the two knobs. And the shaft
24 is directed -- supposed to go right through that hole in
25 the blade.

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1 Q So the blade has a hole, and it goes right on
2 the shaft?

3 A Correct, yes.

4 Q So at that point, is the blade able to move
5 laterally?

6 A By laterally, in the plane of the blade?

7 Q Yes.

8 A No, that shaft will constrain the motion in the
9 X and Y direction, I would call it, in the plane of the
10 blade.

11 Q So if there was some overlap, so to speak, that
12 the wrong blade was on the wrong motor, and the protrusion
13 hit part of the hole, but not all of it because it was the
14 wrong one, could the blade kind of scootch over to get in
15 there?

16 A It could still rotate.

17 Q Could it move laterally?

18 A No, if there is not the perfect alignment of
19 the -- the notch and the -- or sorry, the knobs and the
20 holes, then you would not have the proper locking
21 happening.

22 Q If the -- if the blade did move in one
23 direction, so that the lug was closer to the notch, what
24 would happen on the other side?

25 A It would move away, but also it's constrained by

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1 the shaft, so it just cannot move in that lateral
2 direction. But if it were to move ever so slightly, the
3 overlap would decrease in the opposite direction, right.

4 Q So does it matter whether there is any overlap
5 in terms of whether you can engage the lugs and the notches
6 on the wrong way?

7 A Unless they are perfectly aligned with each
8 other, so they permit engagement, it does not matter
9 whether there is a little bit of overlap, I would say. I
10 would also say that as I look at this picture, you know,
11 the manual talks about radial distances, but you could also
12 rotate those notches around and find spots on the mounting
13 plate where those could be located without any overlap of
14 the kind that was being discussed.

15 Q Let's just quickly cover -- talk about Sasaki.

16 A Yes.

17 Q And I have a really short question.

18 A Okay.

19 Q You said Sasaki covers a flying toy?

20 A Uh-huh.

21 Q Does Sasaki describe a rotary wing aircraft?

22 A Yes.

23 Q Let's move on to EP 067 and Philistine.

24 A Okay.

25 Q Counsel asked you several times whether there

35 (Pages 343 to 346)

<p style="text-align: right;">Page 347</p> <p>1 was a mirror image of the connector that those two</p> <p>2 references describe, actually, in the reference itself. Do</p> <p>3 you recall that?</p> <p>4 A Yes, I recall that.</p> <p>5 Q And you said there was not a mirror image shown,</p> <p>6 right?</p> <p>7 A In the actual patent, there was not, yeah.</p> <p>8 Q But can you tell us what do you think would make</p> <p>9 a person of ordinary skill in the art likely to use a</p> <p>10 mirror image in the combination that you were proposing?</p> <p>11 A In the combination with Sasaki?</p> <p>12 Q Either in Sasaki or Xue?</p> <p>13 A Let's start with Sasaki. Sasaki is already</p> <p>14 teaching these directional mechanisms, right, by having a</p> <p>15 shaft that's threaded, and a screw that's actually</p> <p>16 threaded. So there is already some information for a</p> <p>17 person of skill in the art to know that you may be able to</p> <p>18 attach those blades in a directional way.</p> <p>19 So given that EP 67, for example, or Philistine,</p> <p>20 for that matter -- you can lump the arguments in the same</p> <p>21 one -- describes one particular direction. It just would</p> <p>22 seem obvious to somebody who has been designing these types</p> <p>23 of mechanisms to do the opposite direction in view of the</p> <p>24 existing mechanism that was already in Sasaki.</p> <p>25 Q When you say -- describe one particular</p>	<p style="text-align: right;">Page 349</p> <p>1 ILLAH R. NOURBAKSH, Ph.D.,</p> <p>2 was called as a witness, and having been duly sworn, was</p> <p>3 examined and testified as follows:</p> <p>4 DIRECT EXAMINATION</p> <p>5 BY MS. LU:</p> <p>6 Q Good afternoon Dr. Nourbakhsh.</p> <p>7 A Good afternoon.</p> <p>8 Q You have in front of you two binders, but let's</p> <p>9 look at the binder that's labelled Rebuttal Witness</p> <p>10 Statement of Illah Nourbakhsh.</p> <p>11 A I have it.</p> <p>12 Q It's RX-0175C. Could you open that binder, and</p> <p>13 you'll find inside your rebuttal witness statement. If you</p> <p>14 could flip through that, and just let me know when you've</p> <p>15 done that.</p> <p>16 A I recognize it.</p> <p>17 Q Okay. Do you agree that it contains your</p> <p>18 rebuttal testimony in this case?</p> <p>19 A Yes, it does.</p> <p>20 Q Is the testimony true and correct, to the best</p> <p>21 of your knowledge?</p> <p>22 A Yes, it is.</p> <p>23 Q If you could turn to the last page. Is that</p> <p>24 your signature at the very end?</p> <p>25 A Yes, it is.</p>
<p style="text-align: right;">Page 348</p> <p>1 direction, in either Philistine or EP 67, what did you</p> <p>2 mean?</p> <p>3 A Meaning that the engagement between the blade</p> <p>4 and the portion it's attached to happens by rotating in one</p> <p>5 particular direction, right.</p> <p>6 MR. ABRAMIC: Your Honor, I have no more</p> <p>7 questions on the '184 patent.</p> <p>8 MR. BRITTINGHAM: No questions, Your Honor.</p> <p>9 JUDGE BULLOCK: As I understand it, complainants</p> <p>10 have no cross on the '013 patent, is that correct?</p> <p>11 MR. ABRAMIC: That's correct.</p> <p>12 JUDGE BULLOCK: Okay. Thank you, sir. You're</p> <p>13 excused.</p> <p>14 THE WITNESS: Thank you.</p> <p>15 JUDGE BULLOCK: Let's go off the record while we</p> <p>16 set up for our next witness. When we return, we will</p> <p>17 remain on the public record.</p> <p>18 (Recess.)</p> <p>19 JUDGE BULLOCK: Back on the record. Please call</p> <p>20 the next witness.</p> <p>21 MR. BRITTINGHAM: Your Honor, the DJI</p> <p>22 Respondents are calling Dr. Illah Nourbakhsh, and Ms. Lu</p> <p>23 will be handling his examination.</p> <p>24 JUDGE BULLOCK: Please raise your right hand.</p> <p>25 Whereupon,</p>	<p style="text-align: right;">Page 350</p> <p>1 MS. LU: Your Honor, at this time, we would like</p> <p>2 to move into evidence -- RX-0175C into evidence.</p> <p>3 JUDGE BULLOCK: Is there objection?</p> <p>4 MR. FLYNN-OBRIEN: No objections, Your Honor.</p> <p>5 JUDGE BULLOCK: Exhibit RX-0175C is received in</p> <p>6 evidence.</p> <p>7 (Exhibit No. RX-0175C was</p> <p>8 received in evidence.)</p> <p>9 MS. LU: And in addition, Your Honor, we would</p> <p>10 like to tender Dr. Nourbakhsh as an expert in the area of</p> <p>11 the field of robotics and artificial intelligence composed</p> <p>12 of computer science, electrical engineering, mechanical</p> <p>13 engineering and human-robot interaction systems.</p> <p>14 MR. FLYNN-OBRIEN: No objections.</p> <p>15 JUDGE BULLOCK: Okay.</p> <p>16 MS. LU: We have no further questions at this</p> <p>17 time. We pass the witness.</p> <p>18 JUDGE BULLOCK: Now we have another binder. I</p> <p>19 guess you're planning to do them separately, is that</p> <p>20 correct?</p> <p>21 MS. LU: Correct. We are moving in his rebuttal</p> <p>22 witness statement just at the moment.</p> <p>23 JUDGE BULLOCK: Okay.</p> <p>24 MS. LU: Thank you.</p> <p>25 MR. BICKHAM: Just to orient the Court, here we</p>

1	C O N T E N T S				
2					
3	WITNESS	DIRECT	CROSS	REDIRECT	RECROSS
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6	BRIAN SONNLEITNER				
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