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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NJOY, LLC and NJOY HOLDINGS, INC.

Petitioners,

v.

JUUL LABS, INC.

Patent Owner.

IPR2024-00231

U.S. Patent No. 10,130,123

1 Videotaped deposition via Zoom of JOHN M.
2 COLLINS, a witness herein, called for examination by
3 counsel for Petitioners in the above-entitled matter,
4 pursuant to notice, the witness being duly sworn by
5 MARY GRACE CASTLEBERRY, a Notary Public in and for
6 the State of Maryland, taken at 10:02 a.m. EST,
7 Thursday, November 7, 2024, and the proceedings being
8 taken down by Stenotype by MARY GRACE CASTLEBERRY,
9 RPR, and transcribed under her direction.

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21 ALSO PRESENT:

22 APRIL CARTER, Videographer

1	C O N T E N T S		
2	WITNESS	EXAMINATION BY COUNSEL FOR	
3	JOHN M. COLLINS	PETITIONERS	PATENT OWNER
4	BY MR. PEPE	6	
5	BY MR. LU		109
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8			
9	E X H I B I T S		
10	EXHIBIT		PAGE
11	NO. 1001	United States Patent 10,130,123	31
12	NO. 1004	US 2015/0245658 A1	63
13	NO. 1010	WO 2012/142293 A2	87
14	NO. 1016	US 2014/0318559 A1	96
15	NO. 1038	Levitz Figures	90
16	NO. 1039	Declaration submitted by Dr.	105
17		Collins in a prior IPR on behalf of	
18		NJOY, Inc. as the petitioner	
19	NO. 2002	Resume of John M. Collins, Ph.D.	12
20	NO. 2053	Supplemental Declaration of John M.	12
21		Collins Ph.D. in Support of Patent	
22		Owner'S Response	

1 P R O C E E D I N G S

2 THE VIDEOGRAPHER: We are now on the
3 record in the matter of NJOY LLC, NJOY, LLC and NJOY
4 Holdings, Inc. versus JUUL Labs, Inc. and NJOY
5 Holdings, Inc. versus JUUL Labs, Inc. Today's date
6 is November 7, 2024. The time is 10:02 a.m.

7 This is the video recorded deposition of
8 John M. Collins being taken remotely. I am the
9 camera operator. My name is April Carter in
10 association with TP.One. The court reporter is Mary
11 Grace Castleberry, also in association with TP.One.

12 Would all attorneys please identify
13 themselves and the parties they represent beginning
14 with the party noticing this proceeding.

15 MR. PEPE: My name is Chris Pepe from Weil
16 Gotshal & Manges representing the petitioner, and
17 with me is Anne Cappella, also from Weil representing
18 the petitioner.

19 MR. LU: Quincy Lu from Quinn Emanuel
20 representing JUUL.

21 Sorry. Before we begin, the real time
22 doesn't seem to be showing anything.



1 THE REPORTER: Okay. Do you want to go
2 off the record, April?

3 THE VIDEOGRAPHER: Yes, of course. Off
4 the record at 10:03.

5 (Discussion off the record.)

6 THE VIDEOGRAPHER: On the record at 10:10.
7 Whereupon,

8 JOHN M. COLLINS, Ph.D.,
9 was called as a witness by counsel for Petitioners,
10 and having been duly sworn by the Notary Public, was
11 examined and testified as follows:

12 EXAMINATION BY COUNSEL FOR PETITIONERS

13 BY MR. PEPE:

14 Q. Good morning, Dr. Collins.

15 A. Good morning.

16 Q. You understand that you are here today for
17 a deposition for IPR2024-00231?

18 A. I understand I'm here for a deposition. I
19 don't recall the number, though.

20 Q. Okay. You understand you're here for a
21 deposition for an IPR concerning U.S. Patent Number
22 10,130,123?

1 A. That's correct.

2 Q. And I'll refer to that as the '123 patent

3 if that's all right with you.

4 A. Yep.

5 Q. All right. Now, you've been deposed a

6 number of times before, correct?

7 A. Correct.

8 Q. Approximately how many times?

9 A. Probably around 40, 45.

10 Q. Okay. And when was the last time you were

11 deposed?

12 A. A couple of weeks ago.

13 Q. So I'll just quickly go over how things

14 are going to work today but you've done this a number

15 of times so, you know, you understand that I'm here

16 to ask you questions and, to the best of your

17 ability, you're to answer them?

18 A. Correct.

19 Q. Okay. And it's important that we don't

20 speak over each other so I'll ask that you make sure

21 you wait until I'm done asking the question before

22 you answer. Does that sound good?

1 A. I'll do my best, yes.

2 Q. All right. If I ask you a question that
3 you don't understand, let me know and I will do my
4 best to rephrase it in a way that you can understand
5 it. Does that sound good?

6 A. Yes, it does.

7 Q. All right. We'll generally take breaks
8 about once every hour but if you need to take a break
9 before then, let me know and we'll find a convenient
10 time to do that.

11 A. Great. As I mentioned, I just have one
12 delivery expected today. Other than that, I should
13 be fine.

14 Q. Okay. Any reason you wouldn't be able to
15 testify truthfully today?

16 A. No.

17 Q. All right. Now, when were you first
18 retained to work on this matter?

19 A. I don't recall. I'd have to go back and
20 take a look at my notes.

21 Q. Okay. Now, you understand this, the '123
22 patent, is also being asserted in a co-pending ITC

1 investigation?

2 A. Yes, I do.

3 Q. Okay. And you were retained to provide
4 expert testimony on behalf of JUUL in that
5 investigation, right?

6 A. That's correct.

7 Q. Okay. Do you recall when you were
8 retained for that ITC investigation?

9 A. It would have been at the same time but I
10 don't recall when that was.

11 Q. Okay. So sometime during 2023, does that
12 sound right?

13 A. Yes. Yeah.

14 Q. Okay. And you're also currently
15 consulting on behalf of JUUL in some proceedings that
16 are pending in Europe right now, right?

17 A. I had been. I thought my participation
18 was over but I don't know.

19 Q. Okay. And you've also been a consultant
20 on behalf of JUUL in prior litigations, correct?

21 A. Correct.

22 Q. Okay. There are two ITC investigations

1 that you previously provided opinions on behalf of
2 JUUL in, is that right?

3 A. That's correct.

4 Q. Does the 1139 and 1141 investigation sound
5 familiar?

6 A. They don't ring a bell. I don't remember
7 the numbers.

8 Q. Okay. You don't memorize the numbers like
9 we do?

10 A. No. Sorry.

11 Q. All right. But there were two ITC
12 investigations you previously consulted on behalf of
13 JUUL, right?

14 A. That's correct.

15 Q. Okay. Now, aside from -- well, strike
16 that.

17 Aside from the litigation consulting on
18 behalf of JUUL that I've already referenced, is there
19 any other litigation consulting you've done on behalf
20 of JUUL?

21 A. No.

22 Q. Okay. And aside from your litigation

1 consulting work on behalf of JUUL, have you ever done
2 any other type of consulting for JUUL?

3 A. No.

4 Q. All right. So I would like to ask you
5 some questions about your work experience, and so I
6 guess before I get into that, do you have any paper
7 copies of any documents in front of you?

8 A. Nope.

9 Q. Okay. Do you have any electronic copies
10 of materials submitted in the IPR available right
11 now?

12 A. I've got -- I've got a file folder with
13 some clean copies of some of the documents. It's not
14 open, though.

15 Q. Okay. So I think the court reporter will
16 be posting these to the Zoom chat but certainly if
17 you have corresponding copies already on your PC, I
18 don't really care which ones you look at.

19 So first, I would like to ask you some
20 questions about your work experience which is
21 described in Exhibit 2002 and Exhibit 2053.

22 So if the court reporter can post those,

1 and Dr. Collins, you're welcome to take those out or
2 open them up on your own PC if you already have them.

3 (Exhibit Nos. 2002 and 2053 was
4 identified for the record.)

5 THE VIDEOGRAPHER: 2002 and 2023?

6 MR. PEPE: 2053. Apologies if I said
7 2023.

8 BY MR. PEPE:

9 Q. And, Dr. Collins, let me know if you
10 already have those available or if you want to wait
11 for the videographer.

12 A. I have my report. I don't -- I can -- I
13 didn't post my resume but I can go back and find it.

14 Q. Okay. Well, I think we can start with --

15 A. Oh, there it is.

16 Q. -- the general questions and then if you
17 need your CV at some point, we can --

18 THE VIDEOGRAPHER: When -- sorry. One
19 question about 2053 because I don't want to send the
20 wrong one. There are two versions.

21 MR. PEPE: You can send him the
22 confidential version.

1 THE VIDEOGRAPHER: Okay. Thank you.

2 BY MR. PEPE:

3 Q. All right. So, Dr. Collins, you are
4 currently employed at the Consortia for Improving
5 Medicine With Innovation and Technology, is that
6 right?

7 A. That's correct.

8 Q. Okay. And do you generally refer to that
9 as something for short other than --

10 A. Yes, CIMIT.

11 Q. Okay. So you do refer to it as CIMIT.
12 Now, what's your current role at CIMIT?

13 A. I'm a director there and responsible for
14 implementing -- developing and implementing our
15 innovation platforms as well as providing support to
16 the team -- helping select the teams that we provide
17 funding to and support, and provide support to those
18 teams that we fund.

19 Q. Okay. Does any of the work that you're
20 currently doing at CIMIT relate to the design or
21 development of e-cigarettes?

22 A. No.

1 Q. Okay. In the time you've been at CIMIT,
2 has any of the work you've done been related to the
3 design or development of e-cigarettes?

4 A. I can't think of any. There have been
5 some pulmonary projects but nothing that I would say
6 relate to e-cigarettes.

7 Q. Okay. And you've been at CIMIT since
8 2008, correct?

9 A. Correct.

10 Q. And since 2008, you've also been the chief
11 technology and innovation officer at Reed Collins
12 LLC, is that right?

13 A. Yes.

14 Q. Okay. And what are your job
15 responsibilities there?

16 A. It's basically it's a small consulting
17 firm, so I do consulting for a variety of groups,
18 including patent litigation.

19 Q. Okay. And how many people are employed at
20 Reed Collins?

21 A. Just my wife and I.

22 Q. Aside from litigation consulting, has any

1 of the consulting work you've done at Reed Collins
2 since 2008 related to the design or development of
3 e-cigarettes?

4 A. No.

5 Q. And prior to your positions at CIMIT and
6 Reed Collins, you were employed at TIAX LLC, is that
7 right?

8 A. Yeah. We call it TIAX, but yes.

9 Q. TIAX, LLC, okay. Thank you.

10 And what were your job responsibilities at
11 TIAX?

12 A. So I was the president there and my
13 responsibilities covered a wide range of things,
14 certainly hiring and firing but more importantly,
15 working with teams to address the needs of our
16 clients, so I would be involved in preparing
17 proposals and then, once jobs became active, be
18 managing those jobs, putting together teams and
19 monitoring the progress of those jobs and helping out
20 as needed.

21 Q. Okay. And what industry was TIAX involved
22 in at the time you were working there?

1 A. Yeah, quite a few different areas. So as
2 it says in the resume, kind of the focus, which
3 represented probably 80 to 90 percent of the work,
4 were in clean energy or green -- clean energy or
5 green materials, health and wellness, consumer
6 appliances and residential -- or actually residential
7 and commercial heating, ventilation, and
8 air-conditioning systems, as well as security
9 projects for the military and other government
10 agencies.

11 Q. Okay. Now, were you the president
12 there -- actually, hold on. When you joined in 2002,
13 what was your role?

14 A. Executive vice president.

15 Q. Okay. And then eventually you were
16 promoted to president in 2005, right?

17 A. That's correct.

18 Q. Okay. And were you directly doing design
19 and development work in either of those roles?

20 A. Yeah, I was actively involved in working
21 with teams to develop technologies and products.

22 Q. Okay. And during your time at TIAX, did

1 you do any work related to the design or development
2 of e-cigarettes?

3 A. No. Oh, at TIAX? When TIAX had started,
4 there was an e-cigarette project that was
5 transitioned from Arthur D. Little, and that kind of
6 morphed into some clean energy projects using the
7 same vaporization technology but applied in a
8 different way.

9 Q. And what was your role with respect to
10 that project?

11 A. That project, I had overall responsibility
12 for that project, so I would -- I was responsible for
13 building the team and monitoring the progress of the
14 team, working with them on, you know, how things were
15 going and addressing issues as things moved forward.

16 Q. Okay. What role if any did you have with
17 regard to the actual design of that product?

18 A. Yeah, so I did not sit at the CAD station
19 and actually do the drawings but I worked with the
20 teams and kind of reviewed the drawings and reviewed
21 issues and made suggestions.

22 Q. Did that project ever result in a

1 commercial product?

2 A. I don't believe it did, no.

3 Q. Okay. And when did that project conclude?

4 A. It concluded -- that -- the e-cigarette
5 project concluded not long after the transition to
6 TIAX, so sometime in 2002. At least our
7 participation stopped then. I don't know if it was
8 pursued further at Chrysalis.

9 Q. Okay. So was that the last project you
10 worked on related to e-cigarettes outside of
11 litigation consulting that you've done?

12 A. Yeah. And I want to be clear, what we're
13 talking about is the application to e-cigarettes but
14 all the technologies that are involved, vaporization,
15 inhalation, electronics, those are things that I've
16 worked on in a number of different applications.
17 But -- so referring to the application to
18 e-cigarettes, that's correct.

19 Q. Okay. So since 2002, you've worked on
20 technologies that are related to e-cigarettes but
21 you've not, is that right?

22 A. You broke up for a second there. Could

1 you repeat the question?

2 Q. Sure. So since 2002, you've worked on
3 various technologies that are applicable to
4 e-cigarettes but you haven't directly been involved
5 in design or development of an e-cigarette since
6 2002, is that correct?

7 A. That's correct.

8 Q. All right. And that project you referred
9 to that concluded at TIAX around 2002, that was a
10 carryover from your time at Arthur Little, is that
11 right?

12 A. That's correct.

13 Q. Okay. And aside from that one particular
14 project at Arthur Little, did you work on any other
15 projects involving the design or development of
16 e-cigarettes while you were employed at Arthur
17 Little?

18 A. Not that I recall, no.

19 Q. Okay. Now, at your time at Arthur Little,
20 what was your role in that e-cigarette development
21 project?

22 A. Pretty much the same as it was at -- when

1 it had transitioned to TIAX, so I was responsible for
2 the group that was doing that work or that had the
3 lead. Of course, we pulled in resources from across
4 the organization. So I had overall responsibility
5 for that project.

6 Q. Okay. Now, with respect to that
7 e-cigarette project, could you generally describe
8 what the design of the flow path through the device
9 was?

10 A. So the particular technology that was at
11 the heart of that product was something called CAG, a
12 capillary action generator, so that was a way of
13 vaporizing very small amounts of liquid in an
14 efficient way with a heater so there would be a
15 liquid source that would be vaporized, and then that
16 would be mixed with an incoming air flow, and then
17 that would be -- go to a mouthpiece.

18 Q. Okay. And was the air flow path through
19 that device generally a straight tube?

20 A. I'm trying to remember. Well, it wouldn't
21 have been a straight tube because the -- I do recall
22 the discharge of the vaporizer had an annular flow of

1 air around it, so there would have -- and my
2 recollection is that there was a side entrance, but
3 then it went into an annular space around the
4 discharge tube. And then that tube would have
5 continued to the mouthpiece.

6 Q. Okay. And what was your involvement in
7 the design of that flow path?

8 A. Again, the same as the rest of the device
9 that I did not -- I was not sitting down doing the
10 CAD work but I would be reviewing the work, reviewing
11 test results, those sorts of things.

12 Q. Do you recall if that device included any
13 pressure sensors in it?

14 A. That particular device, as we were working
15 on it, did not.

16 Q. Okay. Did you work on any devices --
17 strike that.

18 Did you work on any e-cigarette devices as
19 part of that project that used a pressure sensor to
20 detect when somebody was inhaling on the device?

21 A. Well, that project did not have a pressure
22 sensor, so the answer is no.

1 Q. All right. And in your time at Arthur
2 Little, there weren't any other e-cigarette projects
3 that you worked on, correct?

4 A. Correct. Again, the application being
5 e-cigarettes.

6 Q. Okay. Now, if you have your declaration
7 handy, in paragraph 14, which is Exhibit 2053, and
8 that's where you describe that e-cigarette project
9 you had worked on, right?

10 A. That's correct.

11 Q. All right.

12 A. It was puff-actuated, so my mistake. I
13 thought that was -- my recollection was it was a
14 switch-actuated.

15 Q. Okay. But sitting here today, can you
16 recall the design of the sensors that were used as
17 part of that project for the puff actuation?

18 A. I don't remember the specifics of it
19 sitting here right now.

20 Q. Okay. And you weren't directly
21 responsible for doing the design of that puff
22 activation system in that device, right?

1 A. I was not charged with creating it but I
2 was responsible for reviewing the overall project and
3 performance issues.

4 Q. Now, in paragraph 3, you list I think
5 three patents that resulted from that project in
6 paragraph 14?

7 A. Not really. So my recollection is that
8 these patents are to the CAG, the capillary action
9 generator, and that was the technology that was used
10 in the device, so our responsibility was utilizing
11 that technology, and that technology was developed by
12 Chrysalis.

13 Q. Okay. So the three patents you've listed
14 there are not the result of a project you've directly
15 worked on, is that right?

16 A. Well, as it -- as it says in the text, it
17 says, "These projects built off of and utilized the
18 prior capillary action generator research that was
19 developed at Philip Morris USA and Chrysalis." So
20 that was technology that we were then responsible for
21 implementing in a product.

22 Q. Okay. And that's technology that somebody

1 else had already developed prior to the start of your
2 project, is that right?

3 A. That's correct.

4 Q. Okay. And so you're not an inventor on
5 those three patents that you've listed, right?

6 A. That's correct.

7 Q. Okay. All right. But you are an inventor
8 on a number of other patents, correct?

9 A. Correct.

10 Q. Okay. And none of those patents though
11 relate to e-cigarettes, correct?

12 A. Correct, again, to the application
13 e-cigarettes.

14 Q. Okay. And none of those patents are
15 directed to vaporizer devices, correct?

16 A. I don't believe so, no.

17 Q. Okay. Now, if you'd go to Exhibit 2002,
18 which, again, is your CV. Do you have that?

19 A. I do.

20 Q. And on page 4, you've listed all the
21 patents that you're a named inventor on, right?

22 A. Correct.

1 Q. All right. Which of these categories of
2 patents, if any, you know, describe technology that's
3 applicable to the design of e-cigarettes?

4 A. Let's see. Well, certainly all of the
5 blood fluid warmers relate to heat transfer. The rug
6 cleaner involved atomization of what's called the
7 Venturi spray nozzle. The -- I'm trying to think.
8 The catalytic coating process involved air flow
9 through a narrow passage to deposit precious metal on
10 the substrates, so I don't know how that would
11 directly relate.

12 So probably, you know, the heat transfer
13 and the blood fluid warmer and the aerosolization of
14 the rug cleaner would relate.

15 Q. Okay. And so you would consider those two
16 to be applicable to e-cigarette design?

17 A. No. What I was talking about is the
18 underlying technologies, that -- those underlying
19 technologies would be used in e-cigarette design.

20 Q. Okay. And so is it fair to say the
21 underlying technology for the rug cleaner and the
22 blood fluid warmer would be applicable to the design

1 of e-cigarettes?

2 A. The underlying technology, sure.

3 Q. Okay. So we talked a little bit about the
4 puff activation sensor in the -- e-cigarette project,
5 aside from that with respect to design and
6 development of pressure sensors?

7 A. I -- maybe you broke up. I didn't hear a
8 question there.

9 Q. Sorry. I think my internet kicked out for
10 a second.

11 So aside from the e-cigarette project we
12 already talked about, what work in the course of your
13 career have you done with respect to the design and
14 development of pressure sensors?

15 A. I've not done the design and development
16 of pressure sensors. I've certainly used, used
17 pressure sensors in configurations.

18 Q. And what other applications have you used
19 pressure sensors in in the course of your career?

20 A. When I did both my master's and Ph.D.
21 work, it was an experimental study of pulmonary flow,
22 air flow in the lungs. We had an experimental setup

1 and we had pressure taps that would map the pressure
2 at various -- various positions. One thing that
3 comes to mind.

4 Q. Okay. Anything else after your Ph.D.
5 work?

6 A. I would have to go back and look at the
7 list of projects that I've worked on but certainly,
8 you know, pressure sensors are a pretty standard
9 component, but I would have to go back and look at
10 the list of projects I've worked on.

11 Q. Okay. So sitting here right now, you
12 can't think of any?

13 A. None come to mind immediately.

14 Q. All right. Now, if we go to paragraph 19
15 of your declaration, which is Exhibit 2053, all
16 right, and in that paragraph you've set forth what
17 you believe would be a person of ordinary skill in
18 the art relevant to the '123 patent, is that right?

19 A. I thought you had asked me about paragraph
20 20, which was Mr. McAlexander's definition, and mine
21 is in paragraph 19.

22 Q. Yeah, I'm sorry. I thought I referred you

1 to 19. I'm sorry if I said 20.

2 A. You probably did. I misheard that.

3 Q. Okay. Yeah, I would like you to focus on
4 19. That's your definition of a person of ordinary
5 skill, right?

6 A. Yes.

7 Q. Okay. And that person of ordinary skill
8 would have a BS in mechanical engineering, electrical
9 engineering or an equivalent degree and either two
10 years of experience designing electromechanical
11 consumer products or an advanced degree in mechanical
12 engineering, electrical engineering, or an equivalent
13 field, right?

14 A. That's correct.

15 Q. Okay. And so a person of ordinary skill
16 doesn't need to have at least two years of experience
17 specifically designing e-cigarettes, correct?

18 A. I believe that's correct, yes.

19 Q. Okay. And they also wouldn't need
20 specifically two years of experience designing
21 vaporizers, right?

22 A. That's correct.

1 Q. Okay. And so just a couple of examples,
2 would a vacuum cleaner fall into the scope of an
3 electromechanical consumer product that you've
4 referenced in paragraph 19?

5 A. Yes, certainly.

6 Q. Okay. And would a printer as well?

7 A. A printer, certainly.

8 Q. Okay. Go ahead.

9 A. I was going to say a lot of the early
10 e-cigarettes have used a dot matrix printing
11 technology.

12 Q. And which e-cigarettes are those?

13 A. I don't know if any of them were
14 commercialized. They were -- but a number of the
15 early patents were.

16 Q. Now, your -- all of your post-high school
17 degrees are in mechanical engineering, is that right?

18 A. That's correct.

19 Q. Okay. Now, are you familiar with the
20 Mark's Standard Handbook for Mechanical Engineers?

21 A. I certainly am, yes. I have my own copy.

22 Q. All right. And what is that?

1 A. It's a, you know, three-inch thick
2 reference book for mechanical engineers that kind of
3 talk about standard practice in the field.

4 Q. Okay. And is that a book that a person of
5 ordinary skill would have been aware of?

6 A. I believe so, yeah.

7 Q. All right. So do you have a copy of the
8 '123 patent in front of you?

9 A. I can get it.

10 Q. Or available to you. I would like you
11 to -- I would like to ask you some questions about
12 that.

13 A. Okay, I've got it open.

14 Q. And before we get to that, is the Mark's
15 Standard Handbook something you've used in the course
16 of your career?

17 A. Sure. Yes.

18 Q. Do you recall in what context you've used
19 it?

20 A. I've certainly used it a lot in some of my
21 litigation work to be able to explain what a person
22 of ordinary skill would understand. But I've also

1 used it as I've wanted to check various concepts for
2 some of the engineering work I've done.

3 Q. And have you found it to generally be a
4 reliable source?

5 A. Generally, yeah.

6 Q. All right. Do you have the '123 patent in
7 front of you?

8 A. I do.

9 Q. All right. And that's Exhibit 1001,
10 right?

11 A. I don't know.

12 THE VIDEOGRAPHER: Thank you.

13 THE WITNESS: Oh.

14 (Exhibit No. 1001 was identified for
15 the record.)

16 BY MR. PEPE:

17 Q. All right. I will represent that that has
18 been premarked as Exhibit 1001, for the court
19 reporter and videographer's reference.

20 Give me one moment because I actually have
21 not pulled it up either.

22 All right. And I would like to direct you

1 just briefly to claims 14 and 27, which are on
2 pages 45 and 46 of the exhibit. And you can actually
3 take a look at claim 14. And this is one of the
4 claims that you analyzed in part of putting together
5 your declaration in this IPR, right?

6 A. That's correct.

7 Q. All right. And one of the limitations
8 is -- in claim 14 is that there is a sealed air flow
9 path comprising a channel formed between an interior
10 surface of the cartridge receptacle and an exterior
11 surface of the cartridge. Do you see that in
12 claim 14?

13 A. I do.

14 Q. All right. I would now like you to take a
15 look at figure 10.

16 A. Of the '123?

17 Q. Of the '123. And that's going to be on
18 page 12 of the exhibit. And specifically I would
19 like to start with 10A, which is the figure at the
20 top. Are you there?

21 A. Yes.

22 Q. And figure 10A is showing -- has a number

1 of arrows that show how air would flow into an
2 embodiment in the '123 patent, correct?

3 A. That's correct.

4 Q. All right. And figure 10A illustrates an
5 exemplary channel that meets the limitation that's in
6 claim 14, correct?

7 A. Correct.

8 Q. Okay. And in figure 10A, air enters into
9 the device via the inlets 50, right?

10 A. I'm -- it looks that way.

11 Q. All right. And do you want me to refer
12 you to the text of the spec to help you confirm that?

13 A. If you want. I mean, it -- the label is
14 50 there but, you know, sometimes the labels aren't
15 exactly the same so --

16 Q. All right. Well, why don't we -- you can
17 take a look at column 31, and starting at about line
18 50, there is a paragraph describing figures 10A
19 through 10C.

20 A. Column 31, you said?

21 THE VIDEOGRAPHER: Is this back on
22 page 46?

1 MR. PEPE: Column 31 is on page 37 of the
2 PDF. And so if you go -- you can go further down
3 toward the bottom of that page. All right.

4 BY MR. PEPE:

5 Q. And do you see it says, at line 50 in
6 column 31, "As illustrated in figures 10A-10C"?

7 A. I see that.

8 Q. Okay. And you see in that paragraph, it
9 refers to element 50 as channel air inlet opening?

10 A. I see that, yeah.

11 Q. Okay. So why don't we go back to figure
12 10A, which is on page 12 of the exhibit. All right.
13 And so air is going to -- and just to be clear, in
14 figure 10A, that is showing a portion of the device
15 body as well as a cartridge or a pod that's inserted
16 into the device body, right?

17 A. It's a cross-sectional view of those two
18 components, correct.

19 Q. Okay. And so in figure 10A, air is going
20 to enter via the inlets 50, right?

21 A. Yes.

22 Q. And then the air is going to make a

1 90-degree turn and proceed along the channel 51
2 that's formed between an exterior surface of the
3 cartridge and an interior surface of the receptacle,
4 is that right?

5 A. That's correct.

6 Q. Okay. And then so that 51 would
7 correspond to the claimed channel in 14, right?

8 A. Yes.

9 Q. Okay. And then at some point, the air
10 will then take another 90-degree turn towards the
11 center of the device, correct?

12 A. Yes.

13 Q. And that is taking a turn near element 52,
14 correct?

15 A. Yeah. Near there, yeah.

16 Q. Okay. And then when it gets to element
17 52, it's going to take another right hand or, I'm
18 sorry, strike that.

19 When it gets to element 52, it's going to
20 take another 90-degree turn and proceed towards
21 element 53, correct?

22 A. When you say 90 degrees, it's generally

1 90 degrees but, you know, fluid doesn't flow at 90
2 degrees. It would be an arch. But the overall
3 direction would change 90 degrees but the fluid
4 doesn't turn 90 degrees.

5 Q. Okay. So generally 90 degrees but there
6 may be some variation in that, is that fair?

7 A. No. I think the -- again, the difference
8 is the overall channels are at 90 degrees but the
9 flow doesn't actually -- there's no 90-degree turn of
10 the air. It's going to flow in an arc.

11 Q. Okay. All right. So let me -- let me
12 rephrase that. And we'll start back at 50.

13 So the air is going to enter through
14 inlets 50, correct?

15 A. Correct.

16 Q. And then the channel that the air flows
17 through has a 90-degree turn so that it can proceed
18 along channel 51, correct?

19 A. Well, I hate to be nudgey about it but when
20 you say 90 degrees, 90 degrees from what? So
21 there's --

22 Q. Well, if you look at 50, there is an arrow

1 pointing directly down on the screen, right?

2 A. That's correct. And again, that's just
3 indicative because air is not going to flow only
4 directly down. It's going to flow at an angle.

5 Q. Okay. That's fair. And then the
6 direction of the arrow going along channel 51 is at a
7 90-degree angle, forms a 90-degree angle with the
8 arrow that goes down where 50 is, right?

9 A. Yes, absolutely.

10 Q. Okay. And then the arrow showing how the
11 air flow turns after proceeding through channel 51 is
12 at a 90-degree angle to the arrow along channel 51,
13 correct?

14 A. That's correct.

15 Q. Okay. And then where the arrow is
16 pointing at 52, there is another arrow that is
17 90 degrees relative to that that is showing that the
18 air flow will generally move in the direction towards
19 element 53, correct?

20 A. That's correct.

21 Q. Okay. And so there's three of those 90
22 degrees arrows at the time you get to 53, correct?

1 A. Yes.

2 Q. All right. And element 53 is the inlet to
3 the heater of the cartridge, correct?

4 A. I believe so but I don't recall.

5 Q. All right. Well, if you want to go back
6 to column 31 at about line 56, you'll see that it
7 refers to 53 as heater inlet.

8 A. I'm happy to take your word for it.

9 Q. Okay. All right. And then if we then go
10 down to figure 10B, that's illustrating the air flow
11 within the heater, correct?

12 A. That's my recollection.

13 Q. Okay. And figure 10B is showing that the
14 flow will circulate within the heater, correct?

15 A. Correct.

16 Q. Okay. And then when we look at figure
17 10C, that's illustrating the air flow or the --
18 strike that.

19 In figure 10C, it's now illustrating the
20 fluid flow after the fluid exits the heater, correct?

21 A. I'm not sure. I'd have to go back and
22 look.

1 Q. All right. So why don't we go back to
2 column 31 to help you with that.

3 THE VIDEOGRAPHER: Apologies. What was
4 that page number?

5 MR. PEPE: So column 31 will put us at
6 page 37 of the exhibit, PDF page 37.

7 THE VIDEOGRAPHER: Thank you.

8 BY MR. PEPE:

9 Q. All right. And if you look towards the
10 bottom of column 31, Dr. Collins, you'll see it says
11 that ultimately the vapor may be drawn out of the
12 heater along an air path 55. Do you see that?

13 A. I do.

14 Q. All right. So why don't we go back to
15 figure 10C. All right. And you see that air path 55
16 is identified as being on either side of the
17 cartridge?

18 A. I see that.

19 Q. Okay. And so 55 is showing you where the
20 fluid will exit the heater and proceed along another
21 path 55, correct?

22 A. No.

1 Q. That's not what it's showing?

2 A. No, it's not.

3 Q. What is it showing, then?

4 A. It's the vapor. It's not the liquid.

5 Q. Okay. Strike that. So I just want to
6 make sure we're on the same page.

7 So what I asked you is 55 is showing you
8 where the fluid will exit the heater and proceed
9 along path 55, right?

10 A. Correct.

11 Q. Okay. And fluid would encompass the air
12 that is mixed with vapor, correct?

13 A. Fair enough. Fair enough. I was thinking
14 you were referring to the liquid as opposed to the
15 aerosol but you're right, fluids can be air, liquid,
16 et cetera, so I had misinterpreted your question.

17 Q. Okay. No problem. I just want to make
18 sure we're on the same page there.

19 All right. And so the fluid is going to
20 exit the heater out of 55 and proceed along the sides
21 of the cartridge, correct?

22 A. Correct.

1 Q. Okay. And so although the air flow
2 entered the heater via a central inlet, it is then --
3 and exiting -- well, strike that.

4 Although the air flow entered the heater
5 via a central inlet, the mixed air flow and vapor is
6 exiting the heater on the sides of it, correct?

7 A. I believe that's correct, yes.

8 Q. Okay. And so the mixture of vapor and air
9 flow is going to have to do some turning within the
10 heater to exit out to air path 55, correct?

11 A. And again, I wouldn't -- you know, it's
12 following a path and there are curves in that path.

13 Q. Right. So it is going to have to follow
14 some curves in the path to exit the heater, correct?

15 A. Correct, yeah.

16 Q. All right. Okay. So and then once the
17 fluid exits the heater in figure 10C, it's going to
18 proceed from left to right and eventually that fluid
19 will exit out of the cartridge via a mouthpiece,
20 correct?

21 A. Correct.

22 Q. All right. Now, with respect to the flow

1 path that we just talked about through the device,
2 are you able to determine what the draw resistance is
3 based on the disclosure of the '123 patent?

4 A. You can't -- you don't take these -- these
5 are not engineering drawings. They're illustrations,
6 so a person of ordinary skill would know to modify
7 the size of those passages to create a resistance
8 that is -- results in a pleasant use cigarette,
9 e-cigarette.

10 Q. Okay. Was there a known optimal draw
11 resistance for an e-cigarette at the time the '123
12 patent was filed?

13 A. I believe at the time, the common
14 knowledge was that you wanted to mimic a conventional
15 cigarette as much as possible, but the JUUL product
16 actually had a lower draw resistance and that kind of
17 changed the game.

18 Q. Okay. And with respect to the device
19 that's described in the '123 patent, a person of
20 ordinary skill would have to figure out how to size
21 the passages we just talked about to achieve whatever
22 draw resistance they wanted, right?

1 A. Yeah, they would, but it's a pretty
2 straightforward analysis when you've got fixed
3 geometries. Certainly if the geometries weren't
4 fixed or variable, then that would be -- that would
5 be a challenge because it would change from time to
6 time. But here, all the channels are mechanically
7 set.

8 Q. Okay. Now, with respect to a given
9 e-cigarette design, would there be a known acceptable
10 variation from device to device in terms of draw
11 resistance?

12 A. That's typically something that's done as
13 a specification when you're setting out -- setting
14 out your design.

15 Q. Okay. But there was no particular -- as
16 far as you're aware, there was no particular
17 variability that was deemed acceptable in the
18 e-cigarette industry at that time?

19 A. My under -- my recollection is that what
20 they were looking for was consistency, and I don't
21 recall if there was a specific spec as to how
22 consistent that should be. But certainly the goal

1 was making it consistent.

2 Q. All right. So why don't we go to -- back
3 to claim 14 of the '123 patent.

4 THE VIDEOGRAPHER: Can you give me a page
5 number, please?

6 MR. PEPE: Sorry. Page 45 of the PDF.

7 BY MR. PEPE:

8 Q. All right. Are you there, Dr. Collins?

9 A. I am.

10 Q. Okay. And now, looking at claim 14, there
11 is no limitation explicitly set forth in the claim
12 regarding the shape of the device body or cartridge,
13 correct?

14 A. I don't see it, no.

15 Q. Okay. And so the claims would encompass a
16 device body and a cartridge that are cylindrical,
17 right?

18 A. They could, if they met all the other
19 claim limitations.

20 Q. All right. And you would agree that the
21 vaporizer device in claim 14 could have a
22 flame-simulating LED and still fall within the scope

1 of the claims, right?

2 A. I don't see any LED limitations in the
3 claim so it wouldn't matter.

4 Q. Okay. And so a device could have an LED
5 and fall within the scope of the claim, right?

6 A. Yeah. My understanding is it's silent as
7 to whether or not there is an LED so you can add it
8 and still fall within the claim, or not.

9 Q. Now, are you familiar with nicotine salts?

10 A. Generally.

11 Q. Okay. And do you understand that the
12 liquid that is used in JUUL pods has nicotine salts
13 in it?

14 A. I believe so.

15 Q. Okay. And now claim 14 refers to a
16 cartridge containing a vaporizable material, right?

17 A. Yes.

18 Q. Okay. And so claim 14 would cover a
19 vaporizer that has a vaporizable material that has
20 nicotine salts in it, right?

21 A. It would as long as the material is
22 vaporizable.

1 Q. Okay. But claim 14 would also cover a
2 vaporizer that has a vaporizable material that
3 doesn't have nicotine salts in it, correct?

4 A. That's correct.

5 Q. Claim 14 -- strike that.

6 So one of the limitations in claim 14 is
7 that the sealed air flow path passes from an air
8 inlet through the channel into a heater and an outlet
9 of the mouthpiece, right?

10 A. Correct.

11 Q. Okay. And so claim 14 requires an air
12 inlet, right?

13 A. Yes, it does.

14 Q. Okay. Claim 14 would also encompass a
15 vaporizer device that has multiple air inlets, right?

16 A. It needs to have at least one, correct.

17 Q. Okay. Meaning it could have two or more
18 and still meet claim 14, right?

19 A. That's my understanding, yes.

20 Q. Okay. Now, in the JUUL system, do you
21 know how, when you insert a JUUL pod into the device,
22 those two are secured together?

1 A. There are magnets that hold them together.

2 Q. Okay. So your understanding is that the
3 JUUL system uses magnets to hold the cartridge and
4 the device together?

5 A. The physical product, that's my
6 recollection, yeah.

7 Q. Okay. In any of the prior ITC cases you
8 worked on on behalf of JUUL Labs, did you do any
9 analysis of patents that claimed locking gaps?

10 A. Sitting here, I don't recall.

11 Q. Okay, you don't recall that?

12 Now, on the bottom of the JUUL pod, there
13 are electrical contact tabs, right?

14 A. That's correct.

15 Q. Okay. And in claim 14, those electrical
16 contact tabs are not explicitly claimed, correct?

17 A. I don't believe so, no. I don't see it
18 there.

19 Q. Okay. And when you look at the bottom of
20 the JUUL pod, you can see the electrical contact
21 tabs, right?

22 A. That's my recollection.

1 Q. Okay. And those are positioned over air
2 inlets in the bottom of the JUUL pod, right?

3 A. I'm not sure what you mean by over. And
4 it would probably be helpful -- I haven't looked at
5 one in a while so it would be helpful if you had a
6 picture.

7 Q. Okay. When was the last time you looked
8 at a JUUL pod?

9 A. A couple of weeks ago.

10 Q. Okay. Well, maybe we'll come back to
11 that. I'll try to find a picture for you at the
12 break. I don't have one offhand right now.

13 All right. Now, in your declaration, you
14 performed some analysis of the JUUL system, correct?

15 A. Yes.

16 Q. Okay. And with respect to this IPR, you
17 know, what did you do to analyze the JUUL system?

18 A. I -- the part you're talking about, I
19 compared the JUUL product, the JUUL system to the
20 claims of -- to the elements of claim 14.

21 Q. Okay. Did you inspect physical examples
22 of the JUUL system as part of doing that?

1 A. I did.

2 Q. All right. Are you aware of who Adam
3 Bowen and James Monsees are?

4 A. Yes.

5 Q. Okay. And they're the founders of JUUL
6 Labs, right?

7 A. Yes, that's my understanding.

8 Q. Okay. And you understand that they were
9 involved in designing the JUUL system that you
10 analyzed as part of this IPR?

11 A. That's my understanding, yes.

12 Q. Okay. Now, we just looked at figures 10A
13 through 10C of the '123 patent that shows an
14 exemplary air flow path through the device. Do you
15 recall that?

16 A. I do.

17 Q. Okay. And you understand that that's not
18 the same air flow path that is found in the
19 commercial JUUL system, correct?

20 A. That's my -- that's my recollection, yes.

21 Q. Okay. What are your under -- what's your
22 understanding of the differences between the designs?

1 A. That -- well, there are a number of --
2 number of differences. Again, without looking at the
3 JUUL product, it's kind of hard to describe what the
4 differences are.

5 Q. Can you think of any differences right
6 now?

7 A. Certainly. The -- you know, kind of
8 the -- again, I'd want to go back and take a look at
9 it to be clear rather than just relying on my memory.

10 Q. Okay. Is there anything in your
11 declaration that would help you understand that?

12 A. That's a good point. Maybe, because there
13 are pictures there.

14 Q. Maybe, maybe pages 56 and 57 of your
15 declaration can help you out with that.

16 A. Yeah. I think one of the biggest ones is
17 the central air -- central vaporization channel in
18 the implemented product.

19 Q. Okay. And just to clarify, so when you're
20 talking about central vaporization channel, you're
21 referring to the fact that the fluid flow through the
22 JUUL, the commercial JUUL pod goes through the middle

1 of the pod, whereas in figure 10C, it's illustrated
2 as being positioned on the sides of the pod?

3 A. Again, the fluid being the vaporized
4 material, the vaporized liquid.

5 Q. Yes. So when I was saying fluid, I was
6 referring to the combination of air and vapor that
7 flows out of the heater.

8 A. Yep, yep.

9 Q. And is it your opinion that either of
10 these flow path configurations could result in a
11 device that has optimal draw resistance?

12 MR. LU: Objection, vague.

13 THE WITNESS: Again, all of these designs
14 that I've seen, the flow path is engineered to be a
15 controlled flow path so that the designer has control
16 over what the flow resistance is going to be.

17 BY MR. PEPE:

18 Q. Okay. And they do that by sizing the
19 various passageways, is that right?

20 A. By sizing them, looking at tolerances and
21 stack-ups and all of those standard things.

22 Q. Okay. Now, your declaration includes a

1 number of pictures of the JUUL system, correct?

2 A. Various components, yes.

3 Q. Okay. And you did not take those
4 pictures, correct?

5 A. That's correct.

6 Q. Okay. And those pictures were given to
7 you by counsel, correct?

8 A. That's correct.

9 Q. Okay. And you didn't perform the
10 tear-down that's shown of the JUUL system in these
11 figures, in these pictures, correct?

12 A. Not in these figures but I have done a
13 tear-down of a JUUL system and everything here is
14 consistent with when I did the tear-down, so these
15 pictures I think represent what I saw.

16 Q. Okay. And when did you do your tear-down?

17 A. As part of the ITC investigation.

18 Q. Okay. Do you recall when that was?

19 A. No. Pre-COVID, for sure.

20 Q. Okay. And the annotations of the pictures
21 of the JUUL system here, those were added by someone
22 other than you, correct?

1 A. That's correct, but I certainly reviewed
2 them and agreed with them.

3 Q. Okay. And the pictures you got already
4 had the annotations on them, correct?

5 A. That's correct.

6 Q. All right. I think we've been going a
7 little over an hour. Maybe we'll take our first
8 break, take 10 minutes, if that's all right.

9 A. Yep, that's fine.

10 MR. LU: Sure.

11 THE VIDEOGRAPHER: Off the record at
12 11:12.

13 (Recess.)

14 BY MR. PEPE:

15 Q. Welcome back, Dr. Collins.

16 THE VIDEOGRAPHER: I'm sorry. Sorry.
17 Back on the record at 11:22. I'm sorry.

18 MR. PEPE: I'm sorry. I jumped the gun.

19 BY MR. PEPE:

20 Q. All right. Welcome back, Dr. Collins.

21 A. Thank you.

22 Q. Can you go to page 53 of your declaration,

1 which is Exhibit 2053?

2 A. I'm there.

3 Q. All right. And you'll see this is part of
4 your analysis of the JUUL system and whether it
5 practices claim 14 of the '123 patent, right?

6 A. Yes.

7 Q. All right. And I just want to be clear
8 because the page numbering is a little off here.

9 This is part of paragraph 115, which is numbered
10 page 52 but PDF page 53 that I'm referring to, okay?

11 A. Okay.

12 Q. Do you see there is a picture of a JUUL
13 system device that has been annotated to show
14 pressure sensors, sealed air flow path and gasket?
15 Do you see that?

16 A. I do.

17 Q. Okay. And is it correct that the pressure
18 sensor you're pointing to there corresponds to the
19 claimed pressure sensor?

20 A. Yes.

21 Q. Okay. And what pressure is that sensor
22 measuring in the JUUL system?

1 A. It's measuring the pressure just upstream
2 of the cartridge.

3 Q. Okay. What do you mean by upstream of the
4 cartridge?

5 A. Well, upstream before it enters the
6 cartridge, the inside of the cartridge, so it flows
7 around the cartridge to the base, and that's where
8 the pressure sensor is -- has access to the sealed
9 air flow path.

10 Q. Okay. So that pressure sensor is
11 measuring the pressure in the sealed air flow path?

12 A. Yeah. And I think I mislabeled that
13 sealed air flow path. That's -- that's a -- that's
14 not a -- that's not part of the flow path. That's
15 just a tap to be able to provide the pressure sensor
16 access to what the pressure is in the air sealed flow
17 path.

18 Q. Okay. And what is the output of that
19 pressure sensor?

20 A. It's -- it's an electrical signal.

21 Q. Okay. What is the electrical signal?

22 A. It's a voltage, is my recollection.

1 Q. Okay. And how did you figure out that
2 it's a voltage?

3 A. I remember seeing some documentation a
4 while ago.

5 Q. Okay. When you say a while ago, do you
6 mean in the context of this litigation or some prior
7 litigation that you worked on?

8 A. Part of the ITC.

9 Q. Okay. But you don't recall what document
10 that was described in?

11 A. I don't remember the specifics. But
12 that's certainly fairly standard for pressure
13 sensors.

14 Q. Okay. Now, the JUUL system also has a
15 second pressure sensor, correct?

16 A. I don't recall one.

17 Q. So sitting here today, you don't know if
18 the JUUL system has a second pressure sensor in the
19 device?

20 A. I don't recall one.

21 Q. Okay. Why don't we move on to
22 paragraphs 126 to 135 of your declaration.

1 A. Paragraph 125?

2 Q. 126 to 135, so it's starting on I guess
3 numbered page 61 of the exhibit.

4 A. I'm there.

5 Q. All right. And this is a section in which
6 you opine that there was a long-felt need for the
7 JUUL system, right?

8 A. That's correct.

9 Q. All right. And one of the long-felt
10 needs -- well, that you identified is that the JUUL
11 system abandoned cigarette iconography, right?

12 A. Yes.

13 Q. Okay. Because the prior devices, prior
14 art e-cigarettes were made to look like actual
15 cigarettes, correct?

16 A. Correct.

17 Q. Okay. And the JUUL system avoided that
18 design by having a rectilinear shape, correct?

19 A. In part, yes.

20 Q. Now, in your analysis of long-felt need,
21 you didn't identified any documents that described
22 that there was a long-felt need for the pressure

1 sensor configuration that's claimed in the '123
2 patent, correct?

3 A. I don't remember calling that out
4 specifically.

5 Q. All right. Now, another aspect of the
6 long-felt need that you identified is that the JUUL
7 system provided a different user experience with
8 respect to nicotine delivery that satisfied smokers'
9 cravings, right?

10 A. Yes.

11 Q. Okay. And you understand that some of the
12 publications that you cited to in your declaration
13 attributed the improved nicotine delivery of the JUUL
14 system to the use of nicotine salts in the liquid
15 formulation, right?

16 A. In part, yes.

17 Q. All right. Why don't we take a look at
18 paragraphs 136 and 137. And this is your analysis of
19 unexpected results, right?

20 A. Correct.

21 Q. All right. And one of the unexpected
22 results you identify in your analysis is that the

1 JUUL system allowed users to view the current liquid
2 level while the pod was inserted in the vaporizer,
3 right?

4 A. Yes.

5 Q. Okay. But there's no limitation in claim
6 14 of the '123 patent that explicitly allows the user
7 to view the liquid level in the cartridge, correct?

8 A. I don't believe that claim limitation is
9 in there, no.

10 Q. Okay. Now, another unexpected result
11 you've identified here is accurate pressure sensing,
12 right?

13 A. Yes.

14 Q. Okay. And is it your opinion that the
15 prior art pressure sensors used in e-cigarettes were
16 prone to accidental triggering?

17 A. Yeah, there were, you know, a number of
18 issues with pressure sensing. Pressure sensing is
19 always an issue you've got to worry about. And a lot
20 of it depends too on how that pressure signal is
21 analyzed, so there is a known problem, for example,
22 of allowing the -- kind of using what's called the

1 running average of the output of the pressure sensor
2 to establish a baseline. And if you do that, then
3 there can be -- when a user exhales on the device,
4 after the exhale that could be viewed as a trigger.

5 So there's a lot of engineering that needs
6 to go into the pressure channel to make sure that the
7 air flow doesn't screw up the pressure signal and the
8 pressure sensor gets to see an accurate pressure or
9 is exposed to an accurate pressure.

10 Q. Okay. But you didn't identify any
11 documents that described that that was a known
12 problem, right?

13 A. I didn't identify documents, no.

14 Q. Okay. And claim 14 doesn't explicitly
15 claim any specifics of a -- of the engineering of the
16 pressure channel that you referred to, correct?

17 A. Could you repeat the question?

18 Q. I'm sorry, do you need me to repeat the
19 question?

20 A. Please, yes.

21 Q. Okay. Claim 14 doesn't explicitly claim
22 any specifics of the engineering of the pressure

1 channel that you referred to, correct?

2 A. That's correct.

3 Q. All right. Now, in paragraphs -- strike
4 that.

5 Before we move on, which prior art
6 e-cigarettes -- strike that actually. Why don't
7 we -- we'll move on to -- all right. Paragraphs 139
8 and 140, you describe industry praise, right?

9 A. Yes.

10 Q. Okay. And you didn't identify any
11 industry praise of the pressure sensor configuration
12 of the JUUL system, correct?

13 A. Well, it was all part of the -- of the
14 design, that it worked well and the pressure sensor
15 was part of that.

16 Q. Okay. But none of the documents you cited
17 specifically referred to the design of the pressure
18 sensor configuration as what made the device work
19 well, right?

20 A. Well, I don't think that these articles
21 are necessarily meant for the engineer. It's
22 meant -- it's general industry and what they're

1 worried about is performance and having a device
2 which the sensor accurately represents what the
3 suction pressure is, is an important part of
4 performance. So an engineer would certainly know
5 that as part of the praise of the device.

6 Q. Okay. So my question is a little simpler.
7 The documents you've cited in this section don't
8 explicitly refer to the pressure sensor configuration
9 of the JUUL system, correct?

10 A. I don't think so but I'd have to go back
11 and look at them to answer the question.

12 Q. Similarly, in paragraph 141 to 144, you
13 refer to some articles describing the sales of the
14 JUUL system, right?

15 A. Yes.

16 Q. Okay. And sitting here today, none of
17 those -- well, strike that.

18 Sitting here right now, as far as you
19 know, none of those documents you cited in that
20 section describe that the commercial success of the
21 JUUL system was attributable to the pressure sensor
22 configuration, correct?

1 A. It was the -- again, the same answer. It
2 was at attributable to the overall product and the
3 number of components that needed to work together
4 effectively. And certainly getting an effective
5 pressure reading is part of that.

6 Q. But none of those documents explicitly
7 refer to the pressure sensor configuration of the
8 JUUL system, correct?

9 A. I don't think so but I'd have to go back
10 and look to see for sure.

11 Q. All right. Why don't we take a look at
12 the Worm reference which is Exhibit 1004.

13 (Exhibit No. 1004 was identified for
14 the record.)

15 THE WITNESS: Okay, I'm there.

16 BY MR. PEPE:

17 Q. And you analyzed Worm as part of your
18 analysis in this IPR, right?

19 A. That's correct.

20 Q. And Worm discloses a vaporizer device,
21 right?

22 A. That's correct.

1 Q. All right. And it has a device body and a
2 cartridge, correct?

3 A. I wouldn't call it that. I think they
4 called it something else. I think they called it a
5 control body or something, in a cartridge, but device
6 body is fine.

7 Q. Okay. So just to be more specific, Worm
8 discloses a control body that would include the
9 battery and electronic components, correct?

10 A. Correct.

11 Q. Okay. And the control body is intended to
12 couple to a cartridge in Worm, correct?

13 A. That's correct.

14 Q. And Worm describes that the control body
15 has a coupler with a cavity, correct?

16 A. Correct.

17 Q. All right. And the cartridge has a
18 projection on it, correct?

19 A. Correct.

20 Q. And the projection is inserted into the
21 cavity of the control body, right?

22 A. I'm just checking one thing. Yeah,

1 projection 741.

2 Q. Okay. So projection 741 is inserted into
3 the cavity of the control body, correct?

4 A. That's correct.

5 Q. Okay. And once the control body and the
6 cartridge are coupled to each other during use, the
7 control body and the cartridge are not intended to be
8 rotated relative to each other, correct?

9 A. I don't believe that's true.

10 Q. What do you mean by "I don't believe
11 that's true"?

12 A. My recollection of the design allows the
13 two pieces to rotate about the axis relative to each
14 other.

15 Q. While the user is inhaling?

16 A. At any time.

17 Q. And where is that described?

18 A. So I'm looking for example in the
19 embodiment in figure 2, and that shows a feature
20 number 229 that goes into a slot in the cartridge, so
21 that would prevent the two from rotating. But as I
22 look at the other illustrations, I don't see that

1 projection anywhere. And because these are
2 cylindrical components, there's nothing that would
3 stop them from rotating relative to each other.

4 Q. Okay. And so if -- element 229 was
5 included in all the embodiments so it wouldn't
6 rotate, is that right?

7 A. That would be my understanding, yes.

8 Q. Okay.

9 A. That and an accompanying feature on the
10 cartridge.

11 Q. Okay. Now, aside from the fact that you
12 don't see that feature in the other figures, is there
13 anything in the text that tells you that they're
14 designed to rotate relative to each other during use?

15 A. I would have to go back and look through
16 the text but one of the advantages of a configuration
17 like this is the orientation is irrelevant. So it's
18 easier for a user to put the two pieces together
19 because they don't have to orient them angularly when
20 they go together, just -- just axially. It doesn't
21 matter where they are.

22 Q. Now, Worm describes that the cavity can

1 include electrical contacts, right?

2 A. That's correct.

3 Q. Okay. And in figure 4, for example, it
4 shows three electrical contacts, 361, 362 and 363,
5 correct? And --

6 A. Yep. Yes.

7 Q. That is on page 5 of the PDF, for the
8 court reporter's reference.

9 And Worm describes that those electrical
10 contacts 361, 362 and 363 can be three bands that are
11 placed at different depths on the cavity, right?

12 A. That's correct.

13 Q. Okay. And so you would understand that
14 those bands are circular, is that right?

15 A. Yes, circular, although there's most
16 likely a gap so they're not fully circular.

17 Q. What do you mean, there's likely a gap?

18 A. From a fabrication perspective, it's
19 likely that these would be stamped out of flat sheet
20 metal and then rolled so that the two ends wouldn't
21 form a -- so it wouldn't form a continuous circle.

22 Q. Okay. So there would be a gap in between

1 I guess the two ends of each band?

2 A. Yes.

3 Q. Okay. All right. And then you would
4 understand -- a person of ordinary skill would
5 understand that there would be three corresponding
6 bands on the projection of the cartridge to engage
7 each of the three bands on the cavity, right?

8 A. They would be a matched set. They
9 wouldn't be identical but they would be a matched
10 set.

11 Q. Okay. And they could, for example, be a
12 matched set of bands, right?

13 A. They would -- yeah, they would be designed
14 to match together.

15 Q. Okay. All right. And so 361, 362 and 363
16 are all shown in figure 4. You would understand that
17 in figure 7, there are three corresponding bands on
18 the cavity similar to what's shown in figure 4,
19 right?

20 A. Yeah, they'd be -- they'd be a little
21 different but it would -- they'd be a matched set.

22 Q. Okay. And so figure 7 would likewise have

1 a matching set of bands on the cavity and the
2 projection that would contact each other when you
3 couple the control body to the cartridge, correct?

4 A. That -- yeah. Again, they would be
5 mounted a little bit different. They'd be -- they'd
6 be springier so to ensure contact, where the ones in
7 the control body are shown to be fixed.

8 Q. Okay. So just to be clear, the three
9 bands on the control body would be fixed and you
10 would expect three corresponding bands on the
11 projection, but those would have some spring to them
12 to ensure better contact, is that correct?

13 A. That's correct.

14 Q. Okay. And you'd understand that those
15 bands for the electrical contacts would be metallic,
16 is that fair?

17 A. That's correct. They're conductors.

18 Q. Okay. And your opinion is that the
19 contact between those bands would create a seal that
20 would prevent air flow through it, correct?

21 A. It would basically create a -- the
22 combination of the contact between the electrical

1 contacts in the cavity and -- I can't remember what
2 the piece is called but basically I call it the
3 shoulder, on the outside would prevent any air flow
4 from going in those gaps.

5 Now, with that said, the patent very
6 clearly says that there needs to be a non-airtight
7 connection between the inlet 789 and the inlet to the
8 pressure tap. I think that's 785A. You need to be
9 able to communicate the pressure that's in the -- at
10 the point of 789 to the pressure sensor.

11 Q. Okay. I just want to -- I'm not quite
12 sure you answered my question so I want to step
13 through it a little more slowly.

14 So when the cartridge is coupled to the
15 control body, the three bands on the control body
16 will contact three corresponding bands on the
17 projection, correct?

18 A. That's correct.

19 Q. Okay. And is it your opinion that the
20 contact between the control body bands and the
21 projection bands will create a seal that prevents air
22 flow through them?

1 A. Well, it's really kind of the combination
2 of all of them. At some point there is likely to be
3 a blockage, but there's definitely, you know, some
4 gap there and the patent explicitly teaches you need
5 to have some gap, however small, to enable that
6 pressure to be sensed in the pressure sensor.

7 Q. Okay. So between -- with respect to the
8 electric contacts that are closest to the air inlet
9 789, you'd agree that when the band on the control
10 body engages the band on the projection, it does not
11 create a seal that prevents air flow, correct?

12 A. That's correct. It need not be an
13 airtight seal. It shouldn't be an airtight seal.

14 Q. Now, in paragraph 43 of your declaration,
15 which is Exhibit 2053, and let me know when you're
16 there.

17 A. I'm sorry, what paragraph again?

18 Q. Paragraph 43 of your declaration, and
19 specifically on number -- numbered page 15 of the
20 reference.

21 A. You're talking about the illustration?

22 Q. Yes. So not PDF page 15, numbered page

1 15, which is PDF page 16, just --

2 A. Yeah, I was looking at the paragraph --
3 paragraph 43, you said?

4 Q. Yeah, paragraph 43 and then it spills over
5 onto the next page. So you see you have figure 6B
6 there?

7 A. Yes.

8 Q. Okay. And you've annotated figure 6B here
9 to show how air would enter via the inlets in figure
10 7, correct?

11 A. That's correct.

12 Q. Okay. But figure 6B, that corresponds to
13 the configuration shown in figure 5 of Worm, right?

14 A. I don't recall but it may.

15 Q. Okay. So why don't we see if we can
16 find -- all right. Why don't you go back to Worm
17 quickly, Exhibit 1004.

18 A. Okay.

19 Q. And it's on PDF page 13 of Exhibit 1004.
20 All right. And so specifically, if you look at
21 paragraph 19, you see it says figure 6B is a
22 cross-section through line B-B of figure 5.

1 A. Yeah.

2 Q. All right. And so figure 6B is related to
3 figure 5 of Worm, right?

4 A. That's correct.

5 Q. Okay. So figure 6B does not show you --
6 well, strike that.

7 Why is figure 6B relevant to how you would
8 understand figure 7 of Worm if it corresponds to
9 figure 5?

10 A. Because in this area, the geometries are
11 pretty similar. And the difference would be that,
12 you know, there could be one or two or three of those
13 air channels, so in 6B where it references, in
14 figure 5, it only has two. But that's the same
15 configuration that would be consistent with figure 7.

16 Q. Okay. So the configuration of figure 5 is
17 generally consistent with the configuration of
18 figure 7, is that right?

19 A. Well, specifically they're talking about
20 the air inlet.

21 Q. Okay. Are there any aspects of the
22 configuration of figure 5 that are inconsistent with

1 the configuration of figure 7 in Worm?

2 A. I haven't tried to compare those two.

3 Q. All right. Now, if we go back to figure 7

4 of Worm, which is Exhibit 1004 at page 9. All right.

5 Now, you understand that it's Mr. McAlexander's

6 opinion that air would flow through the interface

7 between the control body and the cartridge, correct?

8 A. Yes.

9 Q. All right. And you have analogized that

10 interface between those two components as a labyrinth

11 seal, correct?

12 A. That's correct.

13 Q. Okay. And during the course of your

14 career, have you used labyrinth seals?

15 A. Yes, I have.

16 Q. Okay. In what context?

17 A. Hydraulics for an automotive braking

18 system.

19 Q. Okay. And in particular, what -- what

20 were you trying to seal that involved using a

21 labyrinth seal in that context?

22 A. They were cylinders, moving cylinder in a

1 chamber.

2 Q. Okay. And so you were attempting to
3 create a seal where there was relative motion between
4 two components, is that right?

5 A. That's correct.

6 Q. Okay. Now, in your career, have you ever
7 used labyrinth seals in any application where the two
8 components were stationary relative to each other?

9 A. I'm trying to remember. I can't think of
10 any off the top of my head.

11 Q. Okay. And labyrinth seals are generally
12 used when it's desirable to eliminate contact between
13 two components that -- where there is relative
14 movement, correct?

15 A. That is a good application for it, yes.

16 Q. Okay. And one of the benefits of using a
17 labyrinth seal in that situation is it eliminates
18 rubbing contact between the components, right?

19 A. That's correct.

20 Q. Okay. And because the labyrinth seal
21 involves -- strike that.

22 Labyrinth seals are generally considered

1 to be noncontacting seals, correct?

2 A. You try to make them noncontacting to make
3 the gap as small as possible to prevent air -- or to
4 prevent flow, but they're not always noncontact.

5 Q. All right. Now, can you go to paragraph
6 50 of your declaration? Okay. Now, in 50,
7 paragraph 50, you say that Worm does disclose channel
8 725 that is connected to pressure channel 785. Do
9 you see that?

10 A. I do.

11 Q. And you refer to paragraph 76 of Worm to
12 support that, right? And that's on page 20 of Worm,
13 1004.020.

14 A. Yep.

15 Q. All right. But, and if you look at
16 paragraph 76 of Worm, it refers to 725 as cavity,
17 right?

18 A. It does.

19 Q. All right. So there is no channel 725
20 that's described in Worm, correct?

21 A. Your question again?

22 Q. My question is, there is no channel 725

1 described in Worm, correct?

2 A. It's -- so it's the -- what I should have
3 said was the -- that's the portion of the cavity 725
4 that forms that channel.

5 Q. So the matched configuration of cavity 725
6 and projection 741 forms a channel, right?

7 A. Well, it specifically says that --
8 paragraph 76 says when draw on the device causes air
9 to enter the air inlet channel 788 through the air
10 inlet aperture 789, causes a pressure drop. Such
11 pressure drop is communicated to the cavity 725. The
12 matched configuration of the cavity 725 and
13 projection 741 preferably does not substantially form
14 an airtight connection between them.

15 So as I look at Worm and I look at that
16 figure, figure 7, if we go back there, or my report,
17 I guess. So what that's telling me is that there is
18 a pressure sensor and that pressure sensor wants
19 to -- if you, one, expose that pressure sensor to the
20 pressure at the air inlet 789. So there needs to be
21 a gap that I've described and highlighted in yellow
22 to be able to represent or to be able to communicate

1 that pressure to the pressure sensor.

2 Q. All right. Now, why don't we take a look
3 at paragraph 62.

4 MR. LU: Of which exhibit, Mr. -- Counsel?

5 BY MR. PEPE:

6 Q. Paragraph 62 of your declaration, sorry.
7 So go back to Exhibit 2053. Are you there,
8 Dr. Collins?

9 A. Yes, I am.

10 Q. All right. And there you talk about how
11 the draw resistance must be tightly controlled,
12 right?

13 A. That's correct.

14 Q. Okay. And do you know what the draw
15 resistance specification is in the JUUL system?

16 A. I don't recall.

17 Q. All right. Whatever it is, it's not
18 described in the '123 patent specification, right?

19 A. I don't recall it specifically being --
20 being given a number, but it's certainly discussed.

21 Q. Okay. Now, we talked about this earlier
22 but in the JUUL system, there's an air inlet that has

1 a channel formed by the interface between the
2 cartridge and the device, correct?

3 A. Correct.

4 Q. Okay. And the size of that channel is
5 going to impact the draw resistance, correct?

6 A. The size of the gap, yes.

7 Q. Okay. And the size of that channel can
8 vary based on tolerance stack-ups, right?

9 A. Certainly.

10 Q. So not every cartridge is going to be the
11 same exact size, right?

12 A. That's correct.

13 Q. And not every device receptacle is going
14 to be the same exact size, right?

15 A. That's correct. That's why there is a
16 great -- my understanding, you know, great deal of
17 pain went into manufacturing to cut down those
18 tolerances to make it a highly reliable service.

19 Q. Okay. And that manufacturing process
20 isn't described in the '123 patent, correct?

21 A. It doesn't have to be. You know,
22 people -- a person of ordinary skill understands

1 these high-volume manufacturing techniques.

2 Q. Okay. And they would understand how to
3 design the manufacturing process to minimize the
4 tolerance stack-up?

5 A. I wouldn't say necessarily minimize. To
6 make it such that you get the desired performance, so
7 you've got control things and you basically ensure
8 that those things that you're controlling will meet
9 your specification on either end of their tolerance
10 band.

11 Q. All right. And part of the air flow
12 passage channel in the JUUL system through which air
13 enters the JUUL pod is formed by the bottom of the
14 JUUL pod and the bottom of the device receptacle,
15 right?

16 A. Yes.

17 Q. And the spacing between the bottom of the
18 JUUL pod and the spacing of the bottom of the
19 receptacle is also going to vary depending on
20 tolerance stack-ups, right?

21 A. That's correct.

22 Q. And it also can vary by how hard the user

1 pushes the JUUL pod into the device receptacle,
2 correct?

3 A. I wouldn't say so in operation because you
4 will find the user doesn't hold them together while
5 it's being used.

6 Q. Okay. So once it is inserted, it's going
7 to reach -- it's going to go back to an equilibrium
8 of the design intent with respect to that --

9 A. I --

10 Q. -- air release?

11 A. I believe so, yes.

12 Q. Okay. Would that be true of other
13 e-cigarettes?

14 A. It depends on the design.

15 Q. Okay. What is it about the JUUL system
16 that would make it different than other designs with
17 respect to that?

18 A. Well, again, it's how well things fit
19 together. If you have gaps that are too large, then
20 the device flops around and it will be variable.

21 Q. Okay. So that all relates back to
22 precision manufacturing, ensuring that you have --

1 you minimize tolerance stack-ups?

2 A. Well, I wouldn't say, you know, every
3 single case you have to minimize tolerance stack-ups.
4 What you need to do is you need to ensure that the
5 tolerance stack-ups that you have produce an
6 acceptable product.

7 Q. Okay. So let's take this a step at a
8 time. So in the JUUL system, you insert the pod into
9 the device body receptacle, right?

10 A. Yes.

11 Q. Okay. And when you do that, there's going
12 to be a channel formed by the bottom of the JUUL pod
13 and the bottom of the receptacle, correct?

14 A. I would not necessarily call it the bottom
15 of the receptacle, right? Probably the -- I guess as
16 you're looking at it, basically where they go
17 together, yeah.

18 Q. And there's going to be variability in the
19 size of the channel that is formed by the bottom of
20 the pod and the bottom of the receptacle if you're
21 looking from the top-down, correct?

22 A. That's correct.

1 Q. And part of that variability will be due
2 to manufacturing tolerances, correct?

3 A. Certainly.

4 Q. Okay. And part of the variability could
5 be based on how the user inserts the pod into the
6 device, correct?

7 A. I wouldn't think so for JUUL, no.

8 Q. Okay. And so what is it that
9 differentiates JUUL from other e-cigarettes that
10 inserting it wouldn't make a difference to how big
11 the channel would be?

12 A. Because of the way JUUL is captured, the
13 JUUL pod is captured. And again, I think what's
14 important here is that, as you look at the flow
15 resistance, it's a function of the entire geometry.
16 So when you know that there are very tight areas --
17 or excuse me, if you know there are areas that have
18 variable tolerances that could impact the flow, what
19 you do is you open up those areas and you make up for
20 it with a resistance somewhere else.

21 So for example, in JUUL, they have a
22 fairly long engagement between the pod and the

1 control unit, and that length is -- the tolerances in
2 that length on a percentage basis are very, very
3 small. So that provides really high accuracy. So
4 those are the sorts of things that you can do as a
5 designer to be able to engineer in the draw
6 resistance that you want dealing with realistic
7 tolerances.

8 Q. Okay. And in your previous answer, you
9 said "because of the way JUUL is captured." Are you
10 referring to the magnets that secure the pod to the
11 JUUL device?

12 A. That's right, in the pogo sticks, I think
13 they're called.

14 Q. Okay. And in the JUUL system, within that
15 channel through which air flows, there are pogo pins
16 on the device receptacle that engage with electrical
17 contact pads on the bottom of the JUUL pod, right?

18 A. That's correct.

19 Q. Okay. And those, that electrical -- those
20 electrical contacts are in the path through which air
21 flows into the pod, right?

22 A. That's correct.

1 Q. Now, if we go back to the Worm reference,
2 Exhibit 1004, and Worm describes that, you know, one
3 of the advantages of its design is that it can reduce
4 passage of liquid from the cartridge back into the
5 control body that can otherwise cause contamination
6 of sensors and other electronics, right?

7 A. Yes.

8 Q. Okay. And the way in which Worm's design
9 achieves that is by really offsetting the pressure
10 channel from the flow passage through the cartridge
11 such that there's not a direct path for liquid to
12 flow back into the control body where the pressure
13 sensor and other electronics are, correct?

14 A. Well, there's not only not a direct path,
15 but air isn't carrying it there. So, yeah, the
16 separation, physical separation and the flow of --
17 the separate flow of air makes a difference.

18 Q. Okay. But also -- oh, sorry. What was
19 that?

20 THE VIDEOGRAPHER: I'm sorry. Is there a
21 page number or paragraph number?

22 MR. PEPE: No, not right now. We're just

1 generally talking about it.

2 THE VIDEOGRAPHER: Sorry.

3 BY MR. PEPE:

4 Q. But in Worm, air fluid can flow from that
5 inlet back to the pressure channel, correct?

6 A. Well, there's some communication so it's
7 not airtight. I wouldn't call it a flow because
8 that's basically, you know, it's a dead end channel.

9 Q. Okay. But it's not sealed between that
10 inlet and where the pressure channel is, correct?

11 A. That's correct.

12 Q. Okay. So fluid can flow back to that
13 channel, right?

14 A. Well, again, there'd need to be a driving
15 force to drive the fluid into that channel, and
16 there's no driving -- no driving force because
17 there's no net air flow. I mean, it's a dead end
18 chamber. It's supposed to be an isolated chamber, as
19 the spec calls.

20 Q. All right. Why don't we take a look at
21 the Levitz reference.

22 MR. LU: Counsel, if you're moving on to

1 another topic, could we take like a quick, 10-minute
2 break?

3 MR. PEPE: Yeah, that's fine with me. Why
4 don't we go off the record.

5 THE VIDEOGRAPHER: Off the record at
6 12:17.

7 (Recess.)

8 THE VIDEOGRAPHER: On the record at 12:31.

9 (Exhibit No. 1010 was identified for
10 the record.)

11 BY MR. PEPE:

12 Q. Dr. Collins, welcome back. I want to ask
13 you some questions about the Levitz reference which
14 is Exhibit 1010. Let me know when you have that
15 available.

16 A. I've got it.

17 Q. Now, Levitz discloses an e-cigarette
18 device, right?

19 A. That's true.

20 Q. All right. In the device it discloses,
21 there is a device body and a cartridge that couples
22 to the device body, right?

1 A. That's correct.

2 Q. And the device body in Levitz can include
3 a sensor that can detect a pressure differential
4 associated with the user inhaling on the device,
5 right?

6 A. Yes.

7 Q. Now, Levitz also discloses a couple of
8 different connector designs for coupling the
9 cartridge to the device body, correct?

10 A. It does.

11 Q. All right. And figures 13 and 14 of
12 Levitz illustrate one embodiment of a connector for
13 coupling the cartridge to the device body, right?

14 A. Well, those are components of a connector.

15 Q. Okay. So it illustrates at least part of
16 a connector, right?

17 A. Yes.

18 Q. Okay. And if we look at figure 14 in
19 particular, you see element 35?

20 A. I see that.

21 Q. Okay. And 35 is an orifice that forms a
22 pressure differential channel in the embodiment of

1 Levitz that's illustrated in figures 13 through 16,
2 right?

3 A. Yeah. I was just hesitant because I think
4 of an orifice as a hole with a short length, and here
5 they describe it as a longitudinal orifice or tube.

6 Q. Okay. And, but you agree that is
7 described as it's a longitudinal orifice 35 that
8 forms the pressure differential channel, right?

9 A. Yes.

10 Q. And so that's the opening in the Levitz
11 device that allows the pressure sensor access to
12 the -- to be able to sense the pressure differential,
13 correct?

14 A. That's correct.

15 Q. All right. And that orifice 35 is
16 directly in line with the fluid flow path through the
17 cartomizer in Levitz, correct?

18 A. In connection with figure 16?

19 Q. Yes.

20 A. That's correct.

21 Q. Okay. And so Levitz describes that one of
22 the potential drawbacks of this design is that there

1 can be a backflow issue because there can be a back
2 flow of liquid from the cartomizer fluid path back
3 into that orifice 35 which could damage the sensor
4 and other electronics, correct?

5 A. That's correct.

6 Q. All right. And so what I would like to do
7 now is mark a new exhibit which will be Exhibit, I
8 believe, 1038.

9 (Exhibit No. 1038 was marked for
10 identification.)

11 BY MR. PEPE:

12 Q. And I don't think this is one you will
13 have so this will be something you'll have to get via
14 the court reporter here.

15 So can you see that in front of you?

16 A. I can but I'm opening it up.

17 Q. Okay.

18 A. I see it. Okay.

19 Q. Okay. And so in figure 16, I've taken
20 that figure 16 of Levitz and I've added a red
21 annotation, which is a line with an arrow at the end.
22 Do you see that?

1 A. I do.

2 Q. Okay. And because of the orientation of
3 the cartomizer flow path relative to orifice 35,
4 liquid could backflow back into the sensor and
5 battery compartment along that -- generally along
6 that red line, right?

7 A. That's true.

8 Q. I'm sorry, at least for me it cut out.
9 Can you -- I'm not sure if the court reporter got
10 that answer.

11 A. I said that's true.

12 Q. Okay. All right. And now, to the extent
13 that that creates a problem, Levitz describes an
14 alternative embodiment of the connector to try to
15 minimize the backflow, right?

16 A. Correct.

17 Q. All right. And so if we go back to
18 Levitz, which is, I believe, Exhibit 1010, and if we
19 go to figure 17, and let me know when you're there.

20 A. I'm there.

21 Q. Okay. And figure 17 has eliminated that
22 orifice 35 that was directly in line with the flow

1 path, correct?

2 A. Correct.

3 Q. Okay. And in order for the pressure
4 sensor to have access to the air flow and sense the
5 pressure -- strike that. Let me start that one over.

6 Instead of orifice 35 in figure 17, the
7 pressure sensor is able to access the flow to sense
8 pressure via the orifice 38 that's shown in
9 figure 17, right?

10 A. In combination with another drill hole.

11 Q. Okay. Right. So there's drill hole 38
12 and then there's going to be another drill hole
13 that's perpendicular to it that it intersects with
14 that would go down into the pressure differential
15 channel, correct?

16 A. That's correct.

17 Q. Okay. And so when you look at figure 18
18 of Levitz, by modifying that design in figure 18,
19 there's now no direct line between the cartridge flow
20 path and the pressure differential channel, right?

21 A. Correct.

22 Q. And that helps to minimize the backflow

1 problem, correct?

2 A. Correct.

3 Q. Okay. And so I would like to go back to
4 Exhibit 1038 which we had introduced earlier, and if
5 we go to the second page.

6 A. Yep.

7 Q. You see we have figure 18 of Levitz and
8 I've added some red annotations to it. Do you see
9 that?

10 A. I do.

11 Q. Okay. And so in contrast to figure 16
12 where there is a straight path between the cartomizer
13 fluid path and the pressure differential channel, in
14 figure 18, in order for there to be backflow to go
15 into the pressure differential channel, the fluid
16 would need to effectively make multiple turns to get
17 into the pressure differential channel, correct?

18 A. It would. And I don't see it doing that
19 at all.

20 Q. Okay. And so that's -- that's likely to
21 minimize the problem, correct?

22 A. Pretty -- pretty much.

1 Q. Okay.

2 A. Because there's no -- unlike figure --

3 your annotated figure -- let's see, figure 16.

4 Because the fluid that, during exhale, has momentum

5 behind it, so it will basically -- you know, it has

6 energy. And then when it hits the point where -- the

7 pressure chamber, at that point, there's no --

8 there's no flow through that pressure chamber. So as

9 the flow goes into it, basically the pressure builds

10 up and provides a block, so there's no reason for

11 fluid to go in except when it has momentum, and that

12 momentum causes it to overcome some of the pressure

13 and enter into the chamber.

14 In figure -- in your annotated -- or in

15 figure 18, you can see that what they've done is

16 they've basically redirected the direction of flow

17 away from the channel, so there is no net force that

18 would cause the fluid to take that turn to go back up

19 and then into the -- into the pressure channel.

20 That's just not realistic. You know, the figure

21 accurately showed where the excess liquid, exhaled

22 vapor flow path is.

1 And again, we talked about this before.

2 Fluid doesn't take hard turns. You can see the
3 arrows there are smoother turns that would represent
4 the direction of air flow.

5 Q. Now, although I didn't annotate it, there
6 would be a corresponding potential passageway on the
7 topside of figure 18, right, because that drill hole
8 38 goes through -- no, just let me start over.

9 I understand your opinion is that nothing
10 would flow into there, but for the sake of
11 completeness, if it were able to flow in there, it
12 could either go in from the bottom according to the
13 red line or to the corresponding opening on the other
14 side on the top of the figure, right?

15 A. Again, there is an opening. But there's
16 no reason why that fluid would flow up against
17 pressure when the exhaust, the ambient is right
18 there. So again, there is an opening at the top and
19 the bottom, but there's no reason for fluid to flow
20 the way you've indicated it on the bottom or the top.

21 Q. Okay. So in that situation, it's -- your
22 understanding is that that fluid will -- to the

1 extent there is liquid that backflows, it will flow
2 out via the opening to ambient air?

3 A. Absolutely. Again, any kinetic energy,
4 momentum, is directed toward the outlet. The
5 pressure there is going to be lower and the fluid
6 will follow the lower pressure.

7 Q. All right. Why don't we now take a look
8 at the Thorens reference which is Exhibit 1016.

9 (Exhibit No. 1016 was identified for
10 the record.)

11 BY MR. PEPE:

12 Q. All right. Do you have that up?

13 A. I do.

14 Q. All right. Why don't we take a look at
15 figure 1 of Thorens. And that's going to be on
16 page 2 of Exhibit 1016.

17 And figure 1 illustrates what Thorens
18 refers to as the shell 101, right?

19 A. Yes.

20 Q. Okay. And that would correspond to a
21 device body, correct?

22 A. Correct.

1 Q. Okay. And the shell includes a puff
2 indicator 109, correct?

3 A. I thought it was 107.

4 Q. Why don't we take a look at paragraph 42
5 of Thorens quickly. All right. So you'll see there
6 that there is a puff detection system 107 and then
7 separately there is a puff indicator 109, right?

8 A. Yep.

9 Q. Okay. And so the puff indicator 109,
10 you'd understand that to be some type of light that
11 would turn on when the user puffs on the device,
12 right?

13 A. Yeah. And maybe I misheard you before in
14 terms of 107 or 105 or 109. So were you asking
15 earlier about 109?

16 Q. I was asking you about 109.

17 A. Yeah. My apologies. I thought you were
18 asking about 105 for some reason. That's the light.

19 Q. Okay. That's okay. And in figure 1, 103
20 is a battery, correct?

21 A. Correct.

22 Q. And 115 are the air inlets, correct?

1 A. Yep.

2 Q. And then 107 is a puff detection system,
3 correct?

4 A. Correct.

5 Q. All right. And then at the top of
6 figure 1 is electrical connection 113?

7 A. Yep.

8 Q. Sorry, electrical contact 113, correct?

9 A. Yes.

10 Q. And then there is a locking mechanism 117,
11 right?

12 A. Yes.

13 Q. Okay. Okay. And so Thorens describes
14 that the puff detection system 107 switches on the
15 puff indicator 109, correct?

16 A. That's my recollection.

17 Q. Okay. And so there in the Thorens device,
18 there would be electrical wiring that connects puff
19 detection system 107 to puff indicator 109, correct?

20 A. Yeah. I think they're labeled 111.

21 Q. So electrical connections 111, that would
22 have to run between puff detection system 109 and

1 puff -- strike that.

2 The electrical connection between puff
3 detection system 107 and puff indicator 109 would
4 have to run the length of -- run the length between
5 those two elements, right?

6 A. Yes.

7 Q. And that connection would likely be wires
8 running from 107 to 109, correct?

9 A. It would be -- they're silent on exactly
10 what it is. They would be electrical connectors.
11 Don't need to be wires. They can be, you know, part
12 of the film or other things that don't need to be
13 wires.

14 Q. Okay. But some sort of structure that
15 electrically connects 107 to 109 would run between
16 those two components, right?

17 A. That's correct.

18 Q. Okay. And going back to where figure 1
19 and figure 2 are, if we can go back to page 2 of the
20 document, figure 2 is illustrating a cartridge 201,
21 right?

22 A. Correct.

1 Q. Okay. And cartridge 201 is inserted into
2 shell 101 at the end where 113 and 117 are, correct?

3 A. Correct.

4 Q. Okay. And the purpose of the electrical
5 contacts 113 on shell 101 is to provide an electrical
6 connection between the shell of Thorens and the
7 cartridge, correct?

8 A. Well, specifically to the heater in the
9 cartridge.

10 Q. And so it provides an electrical
11 connection between the shell and the heater of the
12 cartridge, correct?

13 A. Yes.

14 Q. Okay. And so you would therefore
15 understand that there's going to be wires or film or
16 some other structure that provides an electrical
17 connection between battery 103 and the electrical
18 contacts 113, correct?

19 A. There will be some type of a connector and
20 particularly for metal housings, the housing itself
21 would serve as a connector.

22 Q. Okay. And so whatever that connector is

1 would have to run between battery 103 and electrical
2 contacts 113, correct?

3 A. Correct.

4 Q. And let's talk a little bit about the puff
5 detection system 107 in Thorens. Does the reference
6 describe exactly how the puff detection system works?

7 A. I don't believe it describes specifically
8 what technology it uses.

9 Q. Does it describe what the detection system
10 is measuring?

11 A. It detects air flow.

12 Q. So is it your understanding that it's
13 measuring air flow directly?

14 A. It says it detects air flow.

15 Q. Okay. Does it detect -- does it directly
16 measure air flow or is it measuring another parameter
17 that's indicative of air flow?

18 A. It says it detects air flow.

19 Q. Okay. So do you interpret that to mean
20 that it's actually directly measuring the air flow?

21 A. It's -- it detects -- when there's air
22 flow, it detects it. It doesn't say exactly how.

1 Q. Okay. So the reference is silent as to
2 exactly what parameter it is measuring?

3 A. No. It's measuring air flow.

4 Q. Okay. So it's directly -- your
5 understanding is it's directly measuring the air
6 flow, is that fair?

7 A. It's measuring the fact that there is air
8 flow there. And again, a contrast would be if I've
9 got that differential pressure sensor and the holes
10 for the air inlets are blocked, I would be reading a
11 reduction in pressure but there would be no air flow.
12 So that is where -- and I can use -- other
13 techniques, I can use hot wire anemometers and a
14 number of other things that basically detect that
15 there is a -- that there is an air flow. So it
16 depends on the technology that I wish to use to be
17 able to make sure that I'm actually detecting air
18 flow. So when there's air flowing, I'm able to
19 detect it.

20 Q. Okay. So your understanding is it's not
21 measuring pressure differential, correct?

22 A. There are configurations where you can use

1 a differential pressure to detect air flow, but
2 that's a very different configuration.

3 Q. Okay. So your understanding is that
4 Thorens is not measuring a pressure differential,
5 correct?

6 A. It is not measuring a pressure
7 differential between the vacuum pressure and the
8 ambient, no.

9 Q. Okay. Okay. And now, in your
10 declaration -- and I think you just alluded to this
11 in your prior response -- you indicated that one of
12 the reasons you wouldn't want to modify the Thorens
13 sensor is that you could activate the heater in
14 situations when the air inlets become clogged or
15 blocked, correct?

16 A. That's correct.

17 Q. Okay. And what -- what would cause air
18 inlets to become clogged or blocked?

19 A. All sorts of things. Dirt, fingers,
20 labels people put on things. There are all sorts of
21 things that could -- that could block it.

22 Q. Okay. Now, if a user inhaled on the

1 device and there was no air flowing through it, they
2 would recognize that pretty quickly, right?

3 A. Well, it all depends on the nature of the
4 draw, because what would happen is that there would
5 be significant -- you know, the heater would turn on
6 and that would generate vapor, and that vapor would
7 expand and go to the user.

8 Q. So even if there is no air flowing through
9 the device, your testimony is that it would still
10 deliver vapor to the user if the heater turned on?

11 A. Oh, absolutely. That's a configuration
12 called a fuming device where, again, the vapor, when
13 it -- when the liquid is vaporized, it expands and
14 goes to the user. So you look at most of the, kind
15 of the mods and pod version, that's what they do and
16 then they have an air inlet above to mix the air with
17 the vapor that's generated. So it's -- that's a
18 known technique.

19 Q. But in Thorens, there is no air inlet
20 above to mix the air and vapor, correct?

21 A. It's not specifically disclosed. And
22 again, it's not needed because that creates -- it

1 creates vapor.

2 Q. Okay. Now, you reference that the air
3 inlet could get clogged or blocked. Would a person
4 of ordinary skill have understood that at the time?

5 A. Certainly, which is why they had an air
6 flow sensor.

7 Q. Okay. And would a person of ordinary
8 skill have recognized that it would be desirable to
9 have multiple air inlets to help minimize the risk
10 that there was clogging or blocking of one of them?

11 A. That's one way of handling it. But again,
12 if you've got multiple air inlets and you're trying
13 to control the drop and you start making those holes
14 smaller, that's when the tolerancing issue becomes
15 more and more problematic. So there are trade-offs
16 that are associated with that.

17 Q. Dr. Collins, I think we're going to mark
18 one more exhibit, which is going to be Exhibit 1039.
19 And this will get displayed. This is one that will
20 be new and I don't think you have.

21 (Exhibit No. 1039 was marked for
22 identification.)

1 BY MR. PEPE:

2 Q. And so I just -- you know, looking at
3 Exhibit 1039, can you confirm this is a declaration
4 you had submitted in a prior IPR on behalf of NJOY,
5 Inc. as the petitioner?

6 A. I don't recall. It could be.

7 Q. All right. Why don't we go to the next
8 page of it. You see it says, "I am the chief
9 operating officer at the Consortia for Improving
10 Medicine With Innovation and Technology."

11 Do you see that?

12 A. Let me pull it up here.

13 Can you repeat the question?

14 Q. Sure. I just want you to confirm that
15 this is a declaration that you submitted in a prior
16 IPR.

17 A. I don't know. I would have to review it
18 and I don't recall the numbers.

19 Q. Okay. So if you --

20 A. I'm not saying it isn't. I just -- I
21 can't attest to the fact that this is -- that this
22 document is.

1 Q. Okay. So if you go to paragraph 1, it
2 says, "I am the chief operating officer at the
3 Consortia For Improving Medicine With Innovation and
4 Technology."

5 Do you see that?

6 A. I do.

7 Q. Okay. And that was a title you held,
8 correct?

9 A. At the time, correct.

10 Q. Okay. And if we go to page 66 of the PDF.

11 A. I'm there.

12 Q. Does that look like your signature?

13 A. It does.

14 Q. But you're still unsure if this is a
15 declaration you submitted?

16 A. I -- you know, it's 10 years ago. You're
17 giving me a document I haven't reviewed, so I just --
18 sitting here right now, I can't say that it is. I've
19 got no reason to believe it's not but I can't say
20 that it is.

21 Q. Okay. If you go to page 67, does that
22 look like a copy of your CV?

1 A. Yes, it does.

2 MR. PEPE: All right. Thank you. I don't
3 have any further questions for you.

4 MR. LU: Okay. Why don't -- I may have a
5 couple of questions but I need some time to review
6 this exhibit as well. So why don't we take like a
7 half hour lunch break. Is that okay?

8 MR. PEPE: Sure. That's fine if you want
9 to take lunch.

10 MR. LU: Okay. And come back at, I don't
11 know, 1:35?

12 MR. PEPE: Yeah, that's fine.

13 MR. LU: Okay. Sounds good.

14 THE VIDEOGRAPHER: I'm going to take us
15 off the record. Off the record at 1:04.

16 (Whereupon, at 1:04 p.m., the deposition
17 in the above-entitled matter was recessed, to
18 reconvene at 1:36 p.m., this same day.)

19

20

21

22

1 AFTERNOON SESSION

2 (1:36 p.m.)

3 THE VIDEOGRAPHER: On the record at 1:36.

4 EXAMINATION BY COUNSEL FOR PATENT OWNER

5 BY MR. LU:

6 Q. Welcome back, Dr. Collins. Can you turn
7 to the '123 patent, which is Exhibit 1001?

8 A. I'm there.

9 Q. And then specifically, I want to look at
10 column 31 starting at line 50.

11 A. I'm there.

12 Q. Column 31.

13 THE VIDEOGRAPHER: Oh.

14 BY MR. LU:

15 Q. So do you recall being asked questions
16 about this passage and the corresponding figure 10A?

17 A. Yes, I do.

18 Q. And I want to direct your attention --
19 this first sentence is kind of long but I want to
20 direct your attention to the part starting at line 54
21 where it says air enters "through the second air
22 passage (tank air inlet hole) 41."

1 Do you see that?

2 A. I do.

3 Q. Okay. I want you to keep in mind this
4 tank air inlet hole 41 and then go to figure 10A,
5 which is page 12 of the patent.

6 A. Okay.

7 Q. And then do you see in figure 10A the
8 element labeled 41?

9 A. I do.

10 Q. And so that's the tank air inlet hole,
11 right?

12 A. That's what it says, yeah.

13 Q. Okay. And then I want to direct you to a
14 couple of other figures where this element 41 shows
15 up. Let's take a look at figure 7C first. That's
16 page 9.

17 A. Yes.

18 Q. And do you see -- do you see that element
19 41 there?

20 A. Yes.

21 Q. And then let's turn to the next page,
22 figure 8B. And then, again, you see that element 41

1 here as well?

2 A. Yes.

3 Q. And then also in this figure you see an
4 element 50. Do you see that?

5 A. I do.

6 Q. And element 50 is the air inlet where --
7 at the side of the device where air enters, correct?

8 A. That's correct.

9 Q. And then so looking at figure 7C and 8B,
10 or keep those in mind and let's turn back to figure
11 10A. So in looking at figure 10A -- first I should
12 ask you, based on figure 7C and 8B and where the air
13 inlet 50 and tank hole 41 are located in those
14 figures -- let me see how -- so in figure 10A, 10A is
15 a cross-section of the device, right?

16 A. Correct.

17 Q. And the cross-section, we're looking at it
18 at the narrow side of the device, is that right?

19 MR. PEPE: Objection, leading.

20 THE WITNESS: It's --

21 BY MR. LU:

22 Q. Or you tell me, you tell me, what are we

1 looking at in terms of the cross-section?

2 A. Yeah, we're looking actually at the wide
3 side of the device so it's cut down through the
4 middle of the narrow side of the device.

5 Q. Okay. And then -- okay. So the '123
6 patent refers to this element 41 as the tank air
7 inlet hole, right? Or am I correct?

8 A. Yes.

9 Q. So when the air enters hole 41, it enters
10 this tank such as shown in figure 7C, correct?

11 MR. PEPE: Objection, leading.

12 THE WITNESS: Yeah, it enters into a void
13 area.

14 BY MR. LU:

15 Q. Okay. So these arrows labeled 52, 53,
16 even though -- so is there a channel that is -- is
17 there a 90-degree channel for the air to flow through
18 after it enters hole 41?

19 A. No. It's an open chamber.

20 Q. Okay. Even though these arrows 52 and 53
21 are oriented perpendicularly, that's not -- is that
22 showing a 90-degree channel?

1 A. No, not at all.

2 MR. PEPE: Objection.

3 THE WITNESS: And I tried to explain that
4 before. You know, directionally, you can see this is
5 where the air enters and it enters generally in that
6 direction, then it flows to the left. So that's just
7 kind of indicating the general direction of the air
8 flow. As I tried to indicate, air doesn't turn those
9 90 degrees. It will basically follow a path
10 determined by physics.

11 BY MR. LU:

12 Q. Okay. All right. So let's -- I'm done
13 with that, that exhibit. Let's turn to Exhibit 1010,
14 the Levitz reference, and specifically figure 18,
15 which is the last page.

16 A. Yep, I'm there.

17 Q. And do you recall being asked questions
18 about this figure?

19 A. Yes, I do.

20 Q. I want to direct your attention to the
21 arrow labeled excess liquid and exhaled vapor flow
22 path. Do you see that?

1 A. I do.

2 Q. And you -- I believe you testified earlier
3 that the excess -- the backflow essentially will
4 follow this arrow, correct?

5 A. As an example.

6 MR. PEPE: Objection.

7 THE WITNESS: Again, generally that's
8 indicative of the direction it's going to take.

9 BY MR. LU:

10 Q. Right. And in this embodiment of Levitz,
11 I believe you said there isn't any force to bring the
12 backflow into the pressure differential channel,
13 right?

14 MR. PEPE: Objection, leading.

15 THE WITNESS: Correct. As I described,
16 that's a closed channel on the left.

17 BY MR. LU:

18 Q. Right.

19 A. So any initial flow toward it is going to
20 increase the pressure, and then that's opposed to the
21 outlet, which is atmospheric.

22 Q. And then -- oh, sorry. Go ahead.

1 A. So the combination of the pressure
2 differential is going to cause it to leave the exit
3 and the momentum is going to cause it to leave the
4 exit and not turn a corner.

5 Q. Is it -- let me -- would gravity play any
6 part in terms of the excess liquid leaving the device
7 through this path?

8 A. The liquid would but the vapor, gravity
9 wouldn't have much of an impact.

10 Q. So like for backflow, for example, if it's
11 in liquid form, would gravity have any impact?

12 A. Yes. The liquid will flow out through
13 the -- it will stay in the bottom and flow out
14 through the bottom.

15 Q. Okay. And then can you turn to
16 Exhibit 2053, your declaration? And I want to look
17 at paragraph 77, which is page 33.

18 A. I'm there.

19 Q. Okay. And then you say here -- it's in
20 the middle of this paragraph. I'll just read it.
21 "Yet petitioners' proposed modifications to Worm has
22 the same issue, specifically that the

1 inhalation/backflow channel and pressure differential
2 channel are the same path. This is especially the
3 case if petitioner propose creating a gap between
4 Worm's cartridge 704 and control body 702 - as that
5 would result in more backflow entering the pressure
6 differential channel -- or passage instead of Worm's
7 intended path via inlet aperture 789, which
8 Mr. McAlexander acknowledges is a separate port."

9 And then you say, "Below in purple, I have
10 indicated how backflow could enter the pressure
11 differential channel if the gaps were large enough?"

12 Do you see that?

13 A. I do.

14 Q. And on the next page, there is a figure.
15 I think it's mostly annotated by petitioner but you
16 added a couple of additional annotations, right?

17 A. That's correct.

18 Q. Now, if the gap between Worm's cartridge
19 704 and control body 702 is widened to allow air
20 flow, could gravity cause backflow to enter the
21 pressure differential channel?

22 A. Well, more than -- more than gravity. So

1 what would happen is that if there is backflow and a
2 focus on vapor for -- I guess it really depends on
3 the orientation. Let me focus on vapor first.

4 Q. Okay.

5 A. The vapor would flow backward, and then if
6 the gap were large enough, it would flow up through
7 the gap and out the air inlet. Then when the user
8 would apply a vacuum to the device, the reverse would
9 happen and the -- it's a little hard to see but the
10 vapor that's in that channel in front of the pressure
11 channel, that's going to start to move and that's
12 going to have momentum, and that momentum is going to
13 carry it into the channel.

14 Can I just take a one-minute break to deal
15 with a person at the door?

16 Q. Oh, yeah. Sure. Go ahead.

17 A. Thank you.

18 THE VIDEOGRAPHER: Off the record at 1:47.

19 (Pause.)

20 THE VIDEOGRAPHER: On the record at 1:48.

21 THE WITNESS: So as I was trying to
22 describe, the fluid that's in the chamber to the

1 right of where that green or that purple arrow is
2 will start to move to the left and go into the
3 pressure chamber.

4 BY MR. LU:

5 Q. I see. And, you know, if this device is
6 oriented, you know, upside down --

7 A. Correct. With a liquid perspective, if
8 it's oriented that way, liquid would flow.

9 And again, this is all part of that -- you
10 know, a POSA looking at this would recognize that you
11 should not have air flow through that -- through that
12 channel for this very reason. It has backflow
13 challenges as I've described.

14 In addition, it creates a pressure
15 difference, an error between the pressure sensor and
16 the vapor channel, the vapor vacuum, because there is
17 a pressure drop, yet there is an air flow through
18 that -- through that portion of the channel. And
19 that pressure drop is going to be dependent on the
20 specifics of the geometry, which can change, and the
21 flow rate. So it would be an unreliable way of
22 actually monitoring the pressure in the chamber at

1 789.

2 Q. Do you mean 783?

3 A. No, I was talking about -- trying -- what
4 we're trying to do is monitor the pressure at 783 so
5 we want the pressure at 783 to mirror the pressure at
6 789. If there is a flow between where that --
7 basically where that purple line is, that creates a
8 pressure drop and that pressure drop is dependent on
9 the geometry, which can vary and is dependent on the
10 flow rate.

11 So the difference between the pressure at
12 783 and the pressure that you want to monitor, which
13 is the pressure at 789, is going to be significant if
14 there is air flow through that channel. So a POSA
15 would know you don't want air flow through that
16 channel.

17 Q. If there is no air flow through that
18 channel, you could still monitor the pressure,
19 correct, or is that true?

20 A. Well, again, the amount of -- so the
21 air -- there's basically a change in pressure that
22 you're monitoring, and the amount of flow is

1 absolutely negligible. And again, you can imagine a
2 situation where the user is drawing on the device.
3 Once the user draws on that device, there will be a
4 little bit of air that will leave that chamber and
5 stop as the user continues to draw on that device
6 because the vacuum isn't changing. If there was an
7 air flow through that -- through that gap, what would
8 happen is that the pressure difference would continue
9 the entire time.

10 MR. LU: Okay. No further questions.

11 EXAMINATION BY COUNSEL FOR PETITIONERS

12 BY MR. PEPE:

13 Q. All right. Dr. Collins, just a couple of
14 questions related to the discussion you just had
15 regarding Worm and backflow into a pressure channel.

16 Can you go to paragraph 2053 of -- I'm
17 sorry, Exhibit 2053, paragraph 123 of your
18 declaration?

19 A. So my declaration, paragraph --

20 Q. Yeah.

21 A. Which paragraph?

22 Q. It would be 123. And you see there you

1 have the JUUL system, the pressure sensor, the gasket
2 and the sealed air flow path, right?

3 A. Yes.

4 Q. And there is pressure channel that extends
5 between the sensor and the sealed air flow path,
6 correct?

7 A. Correct.

8 Q. Okay. So where in the JUUL system does
9 this backflow exit to?

10 A. If there is backflow, it's going the
11 reverse direction of the inflow.

12 Q. So your opinion is it's going to go back
13 up through the interface between the cartridge and
14 the cartridge receptacle?

15 A. That's where it would have to go, yeah.

16 MR. PEPE: Okay. No further questions.

17 MR. LU: I also have no further questions.

18 THE VIDEOGRAPHER: Thank you. Off the
19 record at 1:53.

20 (Whereupon, at 1:53 p.m., the taking of
21 the instant deposition ceased.)
22

1 CERTIFICATE OF REPORTER

2

3 UNITED STATES OF AMERICA) ss.:

4 STATE OF MARYLAND)

5 I, MARY GRACE CASTLEBERRY, RPR, the officer
6 before whom the foregoing deposition was taken, do
7 hereby certify that the witness whose testimony
8 appears in the foregoing deposition was duly sworn by
9 me; that the testimony of said witness was taken by
10 me to the best of my ability and thereafter reduced
11 to typewriting under my direction; that I am neither
12 counsel for, related to, nor employed by any of the
13 parties for the action in which this deposition was
14 taken, and further that I am not a relative or
15 employee of any attorney or counsel employed by the
16 parties thereto, nor financially or otherwise
17 interested in the outcome of the action.

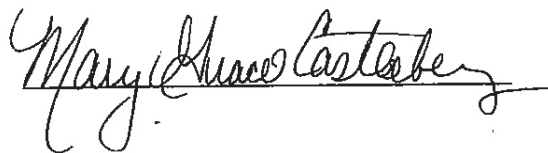
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21

22 My commission expires: 06/18/2027



Notary Public in and for
the State of Maryland

Notice Date: Monday, 11. November 2024

Attention: John M. Collins, Ph.D.

Re:NJOY, LLC and NJOY Holdings, Inc. v. Juul Labs, Inc.
Deposition of John M. Collins, Ph.D. (11/7/2024)

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Deponent Errata Page

Notice Date: 11/11/2024

Deposition Date: 11/7/2024

Deponent: John M. Collins, Ph.D.

Case Name: NJOY, LLC and NJOY Holdings, Inc.
v. Juul Labs, Inc.

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CERTIFICATE OF DEPONENT

I hereby certify that I have read and examined the foregoing transcript, and the same is a true and accurate record of the testimony given by me. Any additions or corrections that I feel are necessary, I will attach on a separate sheet of paper to the original transcript.

Signature of Deponent

I hereby certify that the individual representing himself/herself to be the above-named individual, appeared before me this ____ day of _____, 20__, and executed the above certificate in my presence.

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