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

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FLUIDMASTER, INC.,
Petitioner, C.A. No.
v. 2484CV00766-BLS1
DANCO, INC.,
Patent Owner.
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IPR2024-00633 U.S. Patent No. 9,139,993
IPR2024-00634 U.S. Patent No. 9,103,105
IPR2024-00635 U.S. Patent No. 10,934,698

DEPOSITION of KIMBERLY K. CAMERON, Ph.D.
Tuesday, November 19, 2024
Boston, Massachusetts

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

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1 Tuesday, November 19, 2024
2 1:23 p.m.
3
4 DEPOSITION of KIMBERLY K. CAMERON,
5 Ph.D., appearing at the Westin Boston
6 Seaport District, 425 Summer Street, Boston,
7 Massachusetts, pursuant to notice, before
8 Michael D. O'Connor, RMR, CRC, CRR, and
9 Notary Public
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1 I N D E X

2 Deposition of: Page

3 KIMBERLY K. CAMERON, Ph.D.

4 By Mr. Finch 6

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6

7 E X H I B I T S

8 No. Page

9 Exhibit 2005 Valve Figure 6B from U.S.

10 Application 2024/0026990 162

11 Exhibit 2006 Valve Figure 1 from U.S.

12 Patent 8,028,719 163

13 PREVIOUSLY MARKED EXHIBITS

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14 Paper 19 In re: IPR2024-00633 160

Exhibit 1001 U.S. Patent 9,139,993,

15 IPR2024-00633 132

16 Exhibit 1001 U.S. Patent 9,103,105,

17 IPR2024-00634 138

18 Exhibit 1001 U.S. Patent 10,934,698,

19 IPR2024-00635 158

20 Exhibit 1004 CV for IPR2024-00633 16

21 Exhibit 1015 Chinese patent,

22 IPR2024-00633 88

1 E X H I B I T S (Cont'd)

2 No. Page

3 Exhibit 1016 Linguist certification,

4 IPR2024-00633 89

5 Exhibit 1021 E.H. Brown Patent

6 09,103,105, IPR2024-00633 100

7 Exhibit 1022 U.S. Patent 5,862,538,

8 IPR2024-00633 123

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1 P R O C E E D I N G S
2
3 MR. FINCH: Before we get started
4 today, I want to note for the record
5 that this deposition, Dr. Cameron, is in
6 relation to three inter partes review
7 proceedings; IPR2024-00633, -00634,
8 -00635.
9 Counsel for Fluidmaster has agreed
10 to a single deposition of Dr. Cameron
11 with up to 14 hours on the record which
12 may be used as testimony in each of the
13 three IPR proceedings.
14 MS. TOTO: Agreed.
15
16 KIMBERLY K. CAMERON, Ph.D.
17 having been satisfactorily identified by the
18 production of her driver's license, and duly
19 sworn by the Notary Public, was examined and
20 testified as follows:
21 EXAMINATION
22 BY MR. FINCH:

Q. Good afternoon, Dr. Cameron. Would you please state your full name for the record.

A. Hi. Good afternoon. My name is Kimberly Cameron.

Q. How are you doing today, Dr. Cameron?

A. Good.

Q. Is it Cameron?

A. Apparently I say it both ways I have been told this week. Sometimes I have a New Jersey accent, sometimes I don't.

Q. I just didn't want to call you by the wrong name for two days. My name is Tom Finch. I represent Danco Incorporated, the patent owner in these proceedings.

For the record, as I mentioned earlier, those proceedings are the '633 proceeding, which relates to U.S. Patent number 9,139,993; the '634 proceeding relates to U.S. Patent 9,103,105; and the '635 proceeding which relates to U.S. Patent number 10,934,698.

Dr. Cameron, I'm going to be asking you some questions today on behalf of Danco. Do you understand that your testimony will apply to each of the three proceedings that we just referenced?

A. I do.

Q. Just so you're comfortable with the process today, I know you have been deposed before. I'm going to go over a couple of guidelines that will help things run a little smoothly today.

First, do you understand that you're under oath?

A. I do.

Q. Is there any reason that you can't give full, accurate and truthful testimony today?

A. No.

Q. Because the court reporter is present and here to record your testimony, please do your best to respond verbally to my question questions.

Do you understand?
A. Yes.
Q. And let's agree just from the beginning to not to talk over each other. So when you answer a question, I'll let you finish. If I'm asking a question, I just ask that you let me finish. Is that okay?
A. I will do my best.
Q. Okay. And if you don't understand a question, please let me know, and I will try and rephrase it. But if you answer one of my questions, I'm going to assume that you understood what I was asking. Is that fair?
A. That's fair.
Q. Okay. And if you need a break at any point in time, just let me know, and I'll just ask that if there's a pending question, we wrap that up, and then we can take a break.
A. That sounds good.
Q. Okay. So I expect, given that you testified at a trial this morning, that you have been deposed before, but to confirm, have

you been deposed before?

A. Yes, I have.

Q. Do you know, roughly, how many times?

A. At least a dozen.

Q. More or less than a dozen?

A. More, I'm sure, yeah.

Q. Of those cases, what was the subject matter of those cases generally?

A. Usually related to mechanical engineering.

Q. Okay. Mechanical engineering, is there a particular aspect of mechanical engineering?

A. Probably varied from case to case.

Q. Okay. And so I understand that the technical subject matter was mechanical engineering. Do you know what the legal issues in those cases were?

A. Some of them were related to patents, probably some of them are related to product liability or kind of related areas.

Q. So the products liability cases, were you testifying about how products malfunctioned or things of that nature?

A. Malfunctioned, like if there was an issue with the design or something like that.

Q. Okay. And how many patent cases do you think you've testified in?

A. Quite a few.

Q. Is that District Court patent cases or inter partes review proceedings like we have today?

A. I have done both.

Q. Do you know what the mix is between the two?

A. Probably more district -- well, I'm not sure. I'm not sure.

Q. And in the patent cases, in the District Court cases that you've testified in, do you normally testify on issues related to infringement or invalidity or a mix?

A. A mix.

Q. And when you're testifying about invalidity, do you typically represent the patentholder or the patent challenger?

A. That's -- well, it's not called that if you're in District Court. But in general, I have been on -- it has been a mix of those as well.

Q. Pretty even split down the middle?

A. Roughly, I would say, yes.

Q. Have you ever, prior to these inter partes review proceedings, have you ever been retained by Fluidmaster for any work?

A. Not that I recall.

Q. So it's fair to say you've never been deposed on behalf of Fluidmaster either?

A. I don't think so, no.

Q. And you were mentioned before the deposition started you were at trial this morning; is that correct?

A. Yes.

Q. What did that case relate to?

A. That was actually a trade secret

1 case.
2 Q. Okay. And on a high level, what
3 was the subject of your testimony?
4 MS. TOTO: I'll just object to
5 scope. You can answer.
6 A. It had to do with whether some
7 design features were misappropriated by some
8 employees that had left one company and went to
9 another one.
10 Q. And prior to this morning, had you
11 ever testified in a courtroom or before a legal
12 tribunal before?
13 A. Yes.
14 Q. How many times?
15 A. I don't know. At least ten.
16 Q. And did those ten to be a mix of
17 patent cases and product liability cases, the
18 same as your depositions?
19 A. That's correct.
20 Q. Have you ever had your testimony
21 or an expert report excluded by a judge before?
22 A. No.

Q. What did you do to prepare for your deposition today?

A. I read through some of my declarations.

Q. Did you meet with anyone prior to the deposition to discuss the testimony?

A. No.

Q. Did you meet with counsel?

A. No.

Q. You said you read your declarations, correct?

A. I did, yes.

Q. Did you review anything other than your declarations?

A. I think I also looked at the Institution decision, and I may have looked at some of the references within my declaration.

Q. And when you say "the references," what are you referring to?

A. Different patents.

Q. Do you recall specifically any patents that you looked at?

A. I don't remember which ones specifically, no.

Q. You said you looked at the Institution decisions as well; is that correct?

A. Yes.

Q. What are the Institution decisions?

MS. TOTO: Object to the form.

Q. So when you say "Institution decisions," what are you referring to?

A. I'm referring to the document order from the patent office granting or, I guess, saying that they're going to review the validity of the patents.

Q. And when you reviewed the institution decisions, were there any portions of them that you paid particular attention to?

A. Not really.

Q. I'm going to hand you a document that has the title page Exhibit A. It is pages 156 through 160 of Exhibit 1004 in IPR2024-00633.

1 (Document previously marked as
2 Exhibit 1004 for identification)
3 Q. Dr. Cameron, have you seen this
4 before?
5 A. This appears to be a copy of my
6 CV.
7 Q. Did you include the same CV as
8 Appendix A in each of the declarations that you
9 submitted in each of the three IPR proceedings?
10 A. I assume so, yes.
11 Q. Do you have any reason to suspect
12 that there was a difference between the CV and
13 any of the three proceedings?
14 A. No.
15 Q. The "Education" section of your CV
16 it lists you have an B.S.E. in mechanical and
17 aerospace engineering; is that correct?
18 A. That's correct.
19 Q. What is a B.S.E.?
20 A. Bachelor of Science in
21 Engineering.
22 Q. And your degree is in mechanical

and aerospace engineering. Is that two separate degrees or is that a concentration?

A. That's just one.

Q. That's the name of the degree from Princeton?

A. Yeah.

Q. And you graduated in 1999; is that correct?

A. That's correct.

Q. Did you complete a thesis or a senior project as part of that degree?

A. Yes, I did.

Q. What was that thesis or senior project about?

A. It was related to the design of a solar collector system.

Q. What is a solar collector system?

A. So instead of having like a PV panel, a photovoltaic panel, you also have basically collectors that concentrate light, and then you can transport that light through fiberoptic tubing. So you can basically put a

1 system on the roof that tracks the sun and can
2 provide daylight into the interior of a
3 building through that system.
4 Q. Did you have any particular
5 concentrations or minors or any other focus
6 areas as part of your Bachelor's degree?
7 A. Yes. I have basically a minor in
8 materials science and in applied and
9 computational mathematics, and in materials
10 science and public policy.
11 Q. What is applied and computational
12 mathematics?
13 A. So I guess related to my work, the
14 thing I find it most useful for, is really
15 related to like a lot of statistical things.
16 So if you're doing testing in the course of
17 design or when you get to a manufacturing
18 stage, it's kind of a lot of statistics
19 involved in making sure your tests are
20 reliable, repeatable, things like that.
21 Q. What sort of tests are you
22 referring to?

A. So like, let's say, you have a part that needs to pass a pressure test or something, so you need to make sure that that's going to do -- if you're mass manufacturing a part, for example, you want to make sure that's not just one part that you test, but you want to be able to say with some level of certainty that your product isn't going to leak, and there's basically statistics behind that of how many parts do I need to test, related to like what degree of confidence that gives you and whether the product is, you know, consistently passes that test or not.

Q. So in product development, in general, is reliability and repeatability kind of things that you are focusing on working towards?

A. Yes, especially for, you know, products that you're going to take to market at scale, what we call it for manufacturing. So if you're making quite a lot of them, then it does become very important.

Obviously, I would say from industry to industry, there's a different level of focus on it sometimes. If you're a manufacturer like Intel that's making a lot of chips, it's super, super, super critical that your yield is high.

So I would say there's like a huge focus on that in that type of industry. It's important in other industries, but maybe not like -- not quite as much.

Q. Your CV also lists a certificate in engineering physics. Can you explain to me what engineering physics is?

A. Sure. So engineering physics, you learn a little bit more of a fundamental science behind engineering. I would say there's also quite a bit of overlap in the program that I did between electrical issues. So it's, I would say, the fundamentals, plus it's useful for devices that have like electronics as well as mechanical parts in them.

Q. Do you, in your professional career, work with electronic components frequently?

A. I do that as well, yes.

Q. Then you also have a certificate listed in materials science in engineering. What is materials science?

A. So materials science is what your parts are made of, and kind of all of the science and engineering that kind of goes into that or how that interplays with the mechanical design, for example.

Q. So would that include differences between, you know, polymers, plastic, metal, wood construction, those types of things?

A. Yes, all of that.

Q. Are there different considerations that go into working with different materials?

A. Yes, of course.

Q. Can you give me some examples of some different considerations that might go into working with different materials?

A. Sure. So depending on if you're looking at failure modes of a part, for example, depending on the material, you might be more concerned about one failure mode than another. You may be more concerned about like a fatigue crack that grows over a long time if you have a mature wall.

If you're worried about being brittle, if you have plastic you might be more concerned about creep situation where you have a longer applied load.

So you can -- for failure modes, that would be an example of that.

Q. What is creep situation?

A. So like if you have a plastic part that's under extended load, so, let's say, you're hanging something for a long time. The normal calculation you would do for just the static strength is independent of time. So it just has to do with how large the load is, whether it will break or yield or not.

Creep is if you have a plastic

1 part that can actually start to stretch over
2 time, so the failure mode will be time
3 dependent. So that would be kind of a
4 different type of failure mode that you might
5 consider if you have a plastic versus a metal,
6 for example.
7 Q. So that sort of consideration
8 would then apply to a metal part necessarily,
9 but there might be other things you have to pay
10 attention to?
11 MS. TOTO: Objection to form.
12 A. Yeah, that's generally correct,
13 because a plastic, generally speaking, is more
14 susceptible to that type of creep behavior.
15 Q. And materials science is just kind
16 of how the different properties of different
17 materials impact engineering and manufacturing?
18 A. Yeah, it can have to do with how
19 you're able to manufacture a part or how that
20 part behaves after it's manufactured as well.
21 Q. Then I see on your CV that you
22 also have a Master's in mechanical engineering

from Stanford; is that correct?

A. That's correct.

Q. Did you do a Master's thesis as part of that?

A. I don't think so, no.

Q. And then you have a Ph.D. from Stanford as well in mechanical engineering, with a minor in materials science and engineering?

A. That's correct.

Q. Did that degree have a thesis?

A. Yes, it did.

Q. What was your thesis project?

A. So had to do with the fracture and fatigue properties, what's called bulk metallic glass or sometimes they call it liquid metal.

Q. And what is bulk metallic glass?

A. So it's actually pretty fun to work on a relatively new material system. A lot of work is done in materials science and tends to be kind of incremental advances of a material that's already known.

Bulk metallic glass is basically if you choose carefully what metal atoms you have and you melt them together and then cool them quickly, rather than forming a structure of a normal metal, which would be crystalline, so regular order, it will have metal atoms in it, but it would be an amorphous structure like a glass.

Q. That seems really cool, honestly. So does that behave kind of more like a metal, then, or more like a glass?

A. The benefit is that you can have some of the mix of properties. So you can have it not be conductive, for example, because you don't have that regular structure, but you can have the higher stiffness or strength properties like a glass.

Q. And did your thesis have to do with applications of bulk metal glass or just creating the material in the first place?

A. So a little bit of the applications, but the focus was more on

1 studying the fracture, fatigue and fracture
2 behaviors of that material.
3 Q. And what applications did you
4 consider?
5 A. So all the money comes from
6 bullets, because of the structure as a bullet
7 pierces like armor or something like that, if
8 it was metal, it basically starts to blunt and
9 then stops the advance.
10 With this material, because it
11 doesn't have the same structure as metal, it
12 will actually like sheer failure mode, which
13 actually makes it sharper as that goes in. So
14 that's the application where all the money
15 comes from. There's also applications in
16 cellphones and they actually also make golf
17 clubs, because it's like much stiffer so it
18 bounces and you can hit the ball further.
19 Q. If I ever have a trivia question
20 on what cellphones, golf clubs and bullets have
21 in common, I now have the answer.
22 You graduated with your Ph.D. in

2004?

A. That's right.

Q. Do you remember if it was spring, winter? No memory?

A. No memory.

Q. That's just fine. Did you work while you were pursuing your education at all?

A. During undergrad I had a part-time job, and then like during the summers as well. Then I obviously had full time. That's it, I guess.

Q. Were those engineering-related jobs or just pay the rent jobs?

A. Engineering related.

Q. What engineering related jobs did you have while you were in college?

A. While I was in undergrad, I worked part time for a solar start-up company. And then in the summer I worked -- one summer I worked at Ford Motor Company. Another summer I worked at Lucent Technologies, which is like the research arm of Bell Labs. What else did I

do?

I spent another summer designing lab testing equipment. I also worked one summer in an electric propulsion research lab, so how you move things around in space.

Q. And what was your role at Ford?

A. I -- it was a long time ago. I remember at least working on -- at least part of my summers, working on a mass airflow sensor. I probably was working on other projects as well, but I don't remember specifically.

Q. And what was your role while you were at Lucent, to the extent you remember?

A. I was working on -- I worked on a few things there. I worked on design of a high-speed electrical connector. Then I also worked on some MEMS devices.

Q. What is a high-speed electrical connector?

A. It's basically like an Ethernet cable.

Q. Like CATV?
A. Yeah.
Q. Then after your Ph.D., looks like from your CV, you took a job as a senior engineer at Exponent; is that right?
A. That's correct.
Q. What is Exponent?
A. It's an engineering consulting firm.
Q. And what does an engineering consulting firm do?
A. So they have, I guess, all kinds of clients across industry that they provide engineering support services for. It could be helping with the design, it could be doing some testing, things like that.
Q. Was there a particular industry you focused on?
A. Not really. My background is in mechanical engineering, and over the course of my career applied to a lot of different industries.

Q. And what were your kind of responsibilities as a senior engineer at Exponent?

A. Basically I just provide technical support.

Q. Were you developing products?

A. Yeah, I do some of that, yes.

Q. Did you do, like, failure testing or fault testing?

A. Sometimes that, too, yeah.

Q. Was there anything else, other types of services that you did?

A. Yeah. Typically related to design process, which can also include the failure analysis type of things as well.

Q. What are some examples of products you designed at Exponent or were involved in the design process of?

A. I worked on a lot of different consumer products. I worked on a fair number of medical devices, consumer electronics, cellphones, iPads.

In the medical device space I worked on different implantable devices, a lot of drug-delivery devices, things like that.

Q. And for the consumer electronics, were you involved in more mechanical development or electrical development?

A. I'd say primarily mechanical, but I do have quite a bit of experience that kind of overlapped to electrical. So I have done some consulting in that space as well.

Q. Did you do any software development?

A. No.

Q. And what were some examples of some of the medical devices that you worked on the design process for?

A. So I have worked on like spinal implants, different orthopedic joint implants. I have worked on implantable drug-delivery devices, catheters, stents; a lot of different products.

Q. Are there different considerations

that matter when you're working on medical devices versus other types of mechanical products?

A. I would say a lot of the underlying design principles are the same, but you are operating in a different regulatory environment. So some steps of the process can be a little bit different, because there are design controls and things like that that you're required to have when you're developing a medical device.

But often even in industries that that's not required, there's a reason that they require them for medical devices, because it kind of makes your process better. So that's followed sometimes in other industries as well, even though it's not specifically required.

Q. Are there different structural characteristics that are important for a product that's being used in conjunction with the human body?

A. I would say there's a lot in

1 common. There's also like a few -- especially
2 like for an implantable device, you're
3 obviously looking in addition at
4 biocompatibility concerns, which may have like
5 different environmental factors if you're not
6 putting it in the body. But that's only for,
7 you know, like one category of medical devices,
8 but it's an example.
9 Q. So the implantable medical devices
10 you've worked with, what types of materials are
11 those made out of usually?
12 A. I have worked with metal, metal
13 implants. I've worked with plastic ones as
14 well, I guess.
15 Q. And like the metal implants you've
16 worked with, what types of implants are those?
17 A. So I've worked with hardware that
18 you use for like spinal implants, for example.
19 Some of those screws and things are made out of
20 metal.
21 Q. Looking back at your CV, you
22 indicate that in 2011 you left to become a

principal at Engineering Systems Incorporated; is that correct?

A. That's correct.

Q. What is Engineering Systems Incorporated?

A. It's actually a firm that's fairly similar to Exponent engineering.

Q. Did your role change at all at Engineering Systems, Inc.?

A. Not really.

Q. What types of products did you work with at Engineering Systems, Inc.?

A. A similar variety.

Q. Medical devices and consumer electronics?

A. Consumer products, yes.

Q. What other types of consumer products besides electronics have you worked on?

A. I've worked on relatively simple things, like children's products, things like that. Probably more will come to mind.

Q. What types of children's products?
A. Like bouncers that you put a child in or carriers, things like that.
Q. And those are like mass-produced plastic product type things?
A. Yes.
Q. How are those products, types of products, usually made?
A. Typically injection molded.
Q. What is injection molding?
A. It's a process that you basically flow plastic material into a mold and cool it until it comes out into the shape you want.
Q. Are there other types of plastic molding besides injection molding?
A. There are different types of molding, but they're all, at the end of the day, roughly the same.
Q. What other types of molding?
A. So you can have -- you can basically do it with pressure -- there's different variations, but I would put it all in

a very similar category.

Q. What are the distinctions between the various types of molding?

A. So like you could have a process that you're doing like, for example, an over-mold. I guess another maybe something slightly outside that would be you could do extrusion of plastics, too. So if you have something like a straight tube, that would be a third extrusion process.

Q. What is over-molding?

A. So it's basically when you do something in stages. So if you are making a product that maybe has like a bit of a complicated feature that's difficult to make a single mold for, and you can do it kind of in stages. So you make the underlying shape and then you basically have a mold that's done over that. That's where the word over-mold comes from.

Q. You do one mold and then do a second mold on top of it?

A. Basically.

Q. What sort of -- strike that.

So you mentioned that over-molding is used when you have a product that has complicated features that make it difficult for a single mold. What types of features make it difficult for a product to be molded?

A. I guess it doesn't necessarily -- it's not that it's like necessarily impossible to make. It's just more reliable to make it as an over-mold if you have kind of a particular feature that's -- it's just easier to do it in two steps basically.

Q. What types of features make it easier to do in two steps?

A. Well, if you have like an initial tube or something and you have another protrusion or bump on top of that, then you can basically quickly do it in two stages rather than having one mold with different shapes and sizes.

Q. That makes the manufacturing

1 process more efficient?
2 A. Yes, in some cases, yes.
3 Q. And is cost reduction another
4 reason why one might choose over-molding versus
5 injection molding?
6 A. Yes, those are all factors you're
7 considering, yes.
8 Q. What other types of factors would
9 you consider?
10 A. I may go into cost at the end of
11 the day, but just like how quickly they make
12 it, things like that, reliability, things like
13 that.
14 Q. So the efficiency is something
15 that's considered in choosing the kind of
16 manufacturing technique?
17 A. Yeah, I mean, of course everybody
18 has different things that they're prioritizing
19 for their design, but that's certainly one
20 thing to consider, yes.
21 Q. And in some cases it might be more
22 efficient to use injection molding or

over-molding or some other technique?

MS. TOTO: Objection. Form.

A. Generally speaking. It depends on the part.

Q. You mentioned extrusion molding as another type of molding?

A. Extrusion, yes, where you can make plastic parts.

Q. What is extrusion?

A. There you're basically just drawing or forcing it through a mold so you can get the final shape out.

Q. Other than molding, are there different ways to make plastic products or parts?

A. Sure. You can print them, machine them.

Q. So when you say you can print them, what do you mean?

A. 3D print them, for example.

Q. How is a 3D printer different from molding?

A. So for molding, you're basically have your molding or flying material in for 3D printing, you're basically taking your part shape and you can think about doing it in layers.

So if you think about taking like a cross-section slice through a material and think about what that looks like just at that cross-section, it's basically doing that print at that level, and then it hops up a level, looks at what the cross-section should be there, prints that, and so on. So it's kind of like a stack of 2D deposits.

Q. And what would lead you to choose 3D printing versus one of the molding techniques?

A. Probably if you had fewer parts that you are making you're more likely -- or you're prototyping, something like that, you're more likely to 3D print it than have to go through the expense of creating the mold.

Q. Are molds expensive?

A. I mean, it's all relative. If you're making one part, a mold is very expensive. If you're making a million parts, the cost of the mold is no longer as much of a concern, yeah.

Q. So for the children's products that you worked with, how much would it cost to make a mold, on average?

MS. TOTO: Objection. Form. Foundation.

A. It would not be significant compared to how many parts you're making in the industry, because they make -- in that industry, you're making quite a lot of parts.

Q. Do you have an understanding of what a mold would cost?

A. I don't -- I'm not really as involved in precise cost of that. But, you know, it could cost a thousand dollars to make a mold for your prototype, which is, again, a lot if you're only making one part. It's not as much as if you're making a ton of them.

Q. Does the complexity of the part you're trying to make lend itself towards 3D printing or molding?

MS. TOTO: Objection to form.

A. We're pretty good now at making molds. So the technology has improved quite a bit over time, and you can make molds for fairly intricate parts.

Now it's partly, because of the increases in technology of the mold process, as well as the things that make the mold itself, as well as the materials that is going to be put into the mold. So it's a combination of those makes it much easier now to make more intricate or complicated parts for injection molding.

Again, if you're not making a ton of them, though, it's probably going to be faster and more cost effective for you to just print like one piece.

Q. And when you say it's much easier now, is that compared to when you like entered

1 the workforce?
2 A. Yes.
3 Q. Okay. What types of products can
4 you mold now that you couldn't mold back then?
5 A. So I would say even looking
6 further back in time, you're probably looking
7 at, I don't know, something like a polystyrene
8 that you would need to use in an injection
9 mold, but today we have a huge -- there's been
10 a ton of research and advancement in terms of
11 materials.
12 So you can do peak, you can do
13 polyethylene. Even within those categories,
14 there's a lot of research that has been done
15 on, you know, small things that you add that to
16 to make the flow properties better, the
17 strength better. It's really night and day in
18 terms of materials that you have available now
19 that can be injection molded.
20 I forget what was the question. I
21 got sidetracked.
22 Q. So I think the last answer related

to the different types of materials that can be molded; is that correct?

A. Yeah.

Q. So in terms of the structure of the product that's being molded itself, are you able to do more complex molds now than when you started or when you entered the workforce?

A. Yes, and even compared to prior to that, too, it has changed a lot over time.

Q. What are some of the changes that have occurred over your career?

A. So again, they have been making improvements both in being able to manufacture the mold, so that allows you to have more intricate shapes. And then also in terms of like the pressure, the machines that apply pressure, there's better -- basically better process control.

So there's better control of temperature, better control of pressure, and that allows you to overcome like some problems that they would have maybe in the past, like

not being able to control the wall thickness, which makes it challenging to have intricate parts, because if you don't have the wall thickness and some thin part around a corner or something, that might cause a problem there.

But now they have kind of improved process controls as another factor in addition to the materials. It's easier to get the right flow of properties so that you can have uniform thicknesses within the part. So that's kind of like another example.

Q. Then in addition to the 3D printing products, you also mentioned machining plastic products; is that correct?

A. Yes. We just talked about that.

Q. What is machining?

A. Oh, sorry, I thought in addition to 3D. Machining, to put it really simplistically, start with a block of material, and you can have like a machine like a drill or a lathe or something just cutting the parts, cutting into the block to arrive at the shape

you need.

Q. Is it possible to make the same product using molding and 3D printing and machining?

MS. TOTO: Object to form.

A. No. It depends on the part, but, yes, there are parts that you can choose from from any of those.

Q. Are you able to tell when you look at the finished part which of those methods was used to create it?

A. It depends.

Q. Sometimes, but not always?

A. I would say sometimes, but not always is fair.

Q. Looking back at your CV, you've got a section titled "Selected Project Experience" on there. I'm going to ask you a question about a few of these. Some of them may be things that we talked about when we were talking about your employment generally, and if that's the case, just let me know.

1 The first item listed here talks
2 about, "Failure an analysis, design analysis,
3 material selection, mechanical testing, finite
4 element analysis, fatigue and fracture
5 evaluation, and development of various
6 implantable medical devices."
7 I think we talked about that a
8 little previously, correct?
9 A. Yes, we did touch on that.
10 Q. On your CV you identify heart
11 valves as one of the products that you were
12 involved in the development of; is that
13 correct?
14 A. That's correct.
15 Q. What was your role in the
16 development of heart valves?
17 A. I was on the mechanical
18 engineering side.
19 Q. And were you creating a new heart
20 valve from the ground up or were you helping
21 with fault analysis or was there some other --
22 A. Making, I would say, design

1 improvements. It was certainly not the first
2 heart valve.
3 Q. What sort of design improvements
4 were you working on?
5 A. Some of them are kind of related
6 to stress that you might see to make sure that
7 that's like minimized as much as you can.
8 Q. When you say the stress, what are
9 you referring to?
10 A. So basically there's loading on
11 the product, and the material can deform in
12 response to that load. When I say "stress,"
13 it's basically like the force of that load over
14 the local -- that local area.
15 So it's basically a way of
16 thinking about what happens to the structure
17 under load, basically.
18 Q. What are heart valves made out of?
19 A. So they are made out of plastic.
20 Q. And are those molded, printed,
21 machined, a combination?
22 A. They're molded.

Q. What type of molding is used in heart valves?

A. Injection molded.

Q. How does a heart valve operate?

MS. TOTO: Objection. Foundation.

A. So to put it pretty simply, it's basically -- it can allow fluid or not based on the contraction load that's applied.

Q. Based on the contraction load that's applied?

A. Yes.

Q. Can you explain that a little bit more?

A. So essentially it's like periodically able to open and close based on kind of the stress on the device.

Q. And what input causes the heart valve to know when to open or close?

A. The level of the load there.

Q. Are there ever situations where a heart valve is partially open or partially closed?

MS. TOTO: Objection to form.
A. Yes.
Q. What are those situations?
A. Well, as it's going from open to close.
Q. Other than while it's in the process of opening or closing, are there situations where a heart valve is partially open or partially closed?
MS. TOTO: Objection. Foundation.
A. Not typically.
Q. Do you have a sense of why heart valves are structured that way?
MS. TOTO: Objection. Form.
A. Why they have to be partially opened or closed sometimes? I'm not understanding your question.
Q. That's okay. Let's move on. We might come back to that.
A little bit farther down in your CV you indicate that you "Evaluated the design, pipeline integrity management program, in-line

1 inspection tools, leak detection systems,
2 control room management and operation and
3 maintenance practices, of both liquid and gas
4 pipeline systems"; is that correct?
5 A. Yes.
6 Q. Can you describe that project for
7 me?
8 A. It's not just one project.
9 Q. Can you describe those projects
10 for me, please?
11 A. Sure. So I can just give you an
12 example I've done recently. There was a --
13 just give me a second so I can separate
14 confidential information.
15 So there was an oil spill, for
16 example, in Santa Barbara, maybe ten years ago,
17 still working its way through the courts, but I
18 was hired to basically look at what the cause
19 of that failure is.
20 So as part of that, I'm looking at
21 the design of the overall system to make sure
22 there wasn't an issue there. I'm looking at

all the documents and procedures that they have in order to assess risk on the system and operate the pipelines. That's like their integrity management program, so you're looking at what inspection tools did you run, did you go through the right process to do that. Were there any issues there.

Then I was looking at as well on the leak dissection side. Did they have adequate training for people doing leak detection? Did they have an adequate system in place for that on the day of the rupture? Was there anything that they could have done better in terms of responding to the leak and making sure that everything is shut down so that you're not continuing to pump oil into the ocean.

So that's a bit of the different pieces there.

Q. And the system you're referring to, was this at a refinery or a drill platform?

A. So actually there were offshore

1 platforms there that were delivering oil into
2 the transmission line. But the line that
3 failed was -- not the offshore line, but the
4 transmission line onshore.
5 Q. What is the onshore transmission
6 line or is an onshore transmission line?
7 A. So, I mean, for this particular
8 system, they're pumping oil from a platform
9 that's out in the ocean, and then there's an
10 underwater pipeline that comes to a station.
11 And then from that station it will go get
12 transmitted into a different pipeline which
13 they call onshore, because it's no longer
14 offshore under the water, and that's used as
15 the distribution pipeline.
16 Q. What was the onshore distribution
17 pipeline made out of?
18 A. Steel.
19 Q. And were there various valves and
20 other connectors involved in the pipeline?
21 A. There were, yes.
22 Q. What were those made out of?

A. Also steel.

Q. So important to use steel when work working with oil pipelines?

A. Yes. Typically other pipeline systems can be made of plastic, but for crude oil it would be made of steel.

Q. When you're developing a steel pipeline system for oil transmission, are there any features or characteristics that you have to pay particular attention to because you're working with steel?

A. Working with steel as opposed to plastic?

Q. Correct.

A. Sure. As one example, one of the failure modes that you're trying to mitigate risk against would be corrosion. So for oil lines, you typically will run what's called a PEG inspection tool through the pipeline, and it will -- essentially two kinds of tools, a UT tool and a MFL tool, which relies on magnetics, but it essentially shoots that into the wall

1 and gets a signal back, so that it can tell you
2 what the wall loss in that pipe is so that you
3 can understand what the corrosion looks like in
4 your pipe at that time for the inspection, and
5 you can kind of compare that to historical
6 information that you've collected and make
7 decisions about which parts of the line you
8 should take up and repair, for example, or
9 whether, you know, you might need to do another
10 inspection more quickly than you thought
11 because there's more corrosion than you were
12 expecting.
13 Q. And turning on to Page 4 of your
14 CV, you have an experience or project here that
15 you describe as "Performed design and failure
16 analysis of various gas distribution systems
17 made of polyethylene and steel pipe, including
18 the evaluation of compression couplings."
19 Do you see that?
20 A. Yes, I do.
21 Q. Was that one project or multiple
22 projects?

A. That's also multiple projects.

Q. Can you at a high level describe what this entry on your CV is referring to?

A. Sure. So just like as an example, I worked on distribution systems with plastic pipe, and they have couplings that are also made of plastic that basically can stab together.

So I've looked at the design of various types of those couplings for that piping system.

Q. So when you say plastic couplings that you can stab together, what does that mean?

A. So instead of having -- like sometimes for, just going back to our example, oil pipelines, those are typically welded together or you can have systems where there are parts that screw together, for example.

The kind I'm talking about it's like very quick assembly, because you have the connector and you can literally just like stab

1 the pipe into it to make the connection.
2 Q. Is that a feature of plastic pipes
3 or can you have that sort of connector with a
4 metal pipe as well?
5 A. It's mostly for plastic pipes.
6 Q. Is there a reason that that works
7 better with plastic than with metal?
8 A. I would say it has something to do
9 with the pressure inside, too. But I would say
10 the main reason is that the plastic is kind of
11 more easily deformed. So what you're relying
12 on for kind of the strength of the connection
13 works better for plastic.
14 Q. And on the CV entry you reference
15 systems made of polyethylene and steel pipe.
16 Are those two different systems or are there
17 systems that use both polyethylene and steel
18 pipe?
19 A. Here I was referring to different
20 projects and different systems. In general,
21 typically you would have one or the other, but
22 I wouldn't like to make an absolute statement

on that.

Q. Why would you typically have one or the other?

MS. TOTO: Objection. Foundation.

A. Again, it would probably depend on if you do have changing conditions in your system. But typically if you're looking at one subsystem or something, the same design process you want to arrive at the choice of one or the other is kind of similar for your whole system, so there wouldn't be really a natural reason for there to be two different, sitting right here that I can think of, yeah.

Q. Have you ever worked on a piping system that uses both plastic and metal pipes?

A. Yeah, I guess sometimes you are -- I guess kind of depends on how narrow you want to draw your box for the subsystem. There are cases where you're coming with a kind of metal pipe that you transition into like a softer cannula or softer tube, yeah, so you would technically have both if you consider the whole

1 thing.
2 Q. Have you worked on any systems
3 where you've done that transition?
4 MS. TOTO: Objection. Form.
5 A. Again, if you keep the system
6 definition large, then, yes.
7 Q. Are there any particular
8 considerations when you're at the point of
9 connection between the metal and plastic
10 systems?
11 A. Just like there is for any other
12 connection, you're looking to make sure that
13 you can withstand whatever external loads you
14 have, as well as internal pressure, if you have
15 that, to make sure it doesn't leak or come
16 apart, basically.
17 Q. Do you have an understanding of
18 what metallurgy is?
19 A. Yes.
20 Q. What is metallurgy?
21 A. So that's more specifically
22 related to the kind of study of like metal and

1 its processing and things like that.
2 Q. Is that something that you have
3 experience with?
4 A. Yes. I actually have a
5 professional license in metallurgy as well.
6 Q. What was involved in getting that
7 professional license?
8 A. You have to have a certain number
9 of years of experience, and then you have to
10 sit for an exam.
11 Q. What topics did that exam cover?
12 A. Different areas of metallurgy,
13 different questions about analysis or
14 processing of metals.
15 Q. What does the term "process
16 piping" mean?
17 A. Like if you're in a plant as
18 opposed to like we talked about, distribution
19 of oil.
20 Q. And when you say "a plant," what
21 do you mean?
22 A. Like -- so process piping is like

a chemical plant or something where you have piping for whatever you're running basically as opposed to just like an oil transmission system.

Q. I'm sorry, this might be the lawyer in me showing through. Can you explain a little bit more what you mean what process piping is?

A. Like in a contained system for like a plant or something like that as opposed to like I'm taking oil out of the ground and moving it somewhere else.

Q. As opposed to a distribution system?

A. Yeah.

Q. Okay. When you mentioned working with steel pipes earlier, you mentioned connecting them by welding or possibly by screwing?

A. Yes.

Q. Are there other ways to connect steel pipes?

A. Sure, yes.
Q. What other ways are you aware of?
A. You could bolt them together.
Q. Are there any other ways you're aware of?
A. Those are the things that come to mind off the top of my head.
Q. What is welding?
A. So welding is basically you can weld outside the context of a pipe, of course. But just to take pipes as an example, you can take the two pipes and put them kind of end to end so their circumferences line up. There's different kinds of welding, but at the end of the day usually supplying like heat, sometimes a filler metal, to basically melt the two metals and possibly additional metal together, and then it solidifies to form a weld, which holds the pipe together.
Q. When you're working with steel pipes, how are those steel pipes usually created?

MS. TOTO: Objection to form.

A. So there's a few different ways. So sometimes they can make them basically by at the end of the day like a spiral weld on it. So they will take a sheet of steel and it will get wrapped around, and then there will be like an overlap. I think maybe a paper towel roll as an example. Then they will make a spiral weld all along or sometimes they just do it straight, so it would just extrude the pipe like this, and then they will have a straight weld across.

It's done with those big machines. It's actually very fun to watch.

Q. I think you testified earlier in some of the gas or oil distribution systems that work with steel pipes that the valves and connectors and other fittings are usually made of steel as well; is that correct?

A. Yes.

Q. So do you have an understanding of how a steel valve would be made?

A. It could be like cast or machined.

Q. When you say "cast," what does that mean?

A. So it would be like sort of the equivalent of injection molding, but for metals, I guess, is that you cast it into a particular shape you need.

Q. Are there differences between casting metal and injection molding?

A. Yes, of course.

Q. Other than the distinction between steel and plastic, what are the differences between casting metal and injection molding?

A. So for injection molding, there's kind of a lot of process controls in terms of like the flow into the mold, and then basically -- so for injection molding, depending on how complicated your part is, there can be different controls on the temperature on the mold itself, in addition to the controls on the pressure and temperature of the machine that does the injection.

1 So, for example, you could have
2 like cooling channels in the mold to kind of
3 make sure that like if you have some thin wall
4 feature or something that you're getting the
5 right rate of cooling so that you don't get any
6 warping or anything uneven.
7 So there's, I guess, a lot of
8 process in design parameters that are adjusted
9 to the way that that particular plastic will
10 flow in the mold.
11 Q. And how is that different from
12 cast metal?
13 A. It's not the same -- it doesn't
14 have the same flow properties, so you're not
15 using the same type of machine.
16 Q. Are there differences in the
17 structure you can make using injection molding
18 versus using cast metal?
19 A. Yes. It's easier to -- it's
20 easier to make an intricate part with injection
21 molding, I would say.
22 Q. Okay. We were talking about

1 polyethylene earlier. Is polyethylene just a
2 type of plastic?
3 A. It's a type of plastic, yes.
4 Q. How many different types of
5 plastics are there roughly?
6 A. Hundreds.
7 Q. Is there a subset of the different
8 types of plastics that are commonly used in
9 commercial application?
10 A. Yeah. Polyethylene is pretty
11 common, sure.
12 Q. What other common plastics are
13 there?
14 A. FEP, PEEK, polystyrene. There's a
15 lot of different ones.
16 Q. Does the type of plastic being
17 used impact whether or not you can use a
18 specific type of molding to create a part?
19 MS. TOTO: Objection to form.
20 A. So the material within the
21 plastic, it can be -- one factor that you're
22 using to decide which plastic you might want to

1 use does include like the ability to flow in
2 the mold and what temperatures and pressures
3 you need for that particular material.
4 Obviously also a consideration is
5 what is your final strength of that material
6 and other properties.
7 Q. Are you familiar with the concept
8 of a compression coupling?
9 A. Yes.
10 Q. What is a compression coupling?
11 A. So it's a way to join two pipes
12 that relies on compression. You know what
13 compression is? Relies on compression.
14 Q. What is being compressed in that
15 compression coupling?
16 A. It can be compression of basically
17 the coupler around the pipe.
18 Q. So when you're joining two pipes
19 with compression couplings, there is a separate
20 coupler around the pipe?
21 A. For that when you were talking
22 about in my CV, the coupling is a separate

1 piece in the two pipes.
2 Q. We talked a bit about kind of
3 different oil and gas systems. Have you worked
4 with plumbing or water distribution systems in
5 the past?
6 A. Yes.
7 Q. What examples of plumbing or water
8 distribution systems have you worked with?
9 A. I've worked the full gamut. I've
10 worked on like the giant water mains
11 essentially here in Boston. I have been all
12 the way on the other end, working on like
13 residential systems.
14 Q. What sort of project would fall in
15 the middle that you've worked on between water
16 mains and residential?
17 A. So I have worked on like a
18 university hot water system. So that's
19 somewhere in between.
20 Q. And what was your role working on
21 water mains?
22 A. They had a huge failure of the

main waterline in Boston, and I was part of the failure analysis effort for that.

Q. So your role was to figure out why it was that the water main failed?

A. That's correct.

Q. Is that project confidential?

A. Yes.

Q. What sorts of residential plumbing projects have you worked on?

A. I've worked on issues related to sinks, toilettes, refrigerators, washers.

Q. And what sort of projects related to sinks have you worked on?

A. I usually like failure analysis projects.

Q. What types of components have you evaluated in the failure analysis projects?

A. It can be a connector or pipe itself. Sometimes it's just an issue of how someone installed something. It kind of varies.

Q. And in a residential sink, would

the pipes and connectors typically be metal or plastic?

A. It could be either.

Q. It just depends on the brand and manufacturer in question?

A. Yes.

Q. When you're performing failure analysis, does your analysis change if it's metal versus plastic?

MS. TOTO: Objection to form.

A. Overall, no, but there obviously can be some failure modes that would apply to metal that wouldn't apply to plastic.

Q. What sort of failure modes apply to metal that don't apply to plastic?

A. Corrosion.

Q. Are there failure modes that apply to plastic that don't apply to metal?

A. Creep is the obvious one that comes to mind again.

Q. Are there any others?

A. That comes to mind right away.

Q. No others that come to mind right now?

A. Correct.

Q. What sort of residential toilet projects have you worked on?

A. Sometimes I've been helping evaluate designs, sometimes it has been the same thing, failure analysis for like a product complaint.

Q. When you say evaluate design, what type of component were you evaluating the design of?

A. It can be a -- I've done it for various components of the design, so it can be for -- one thing I've done is basically the noise. It's kind of funny, but the noise that's created by distribution of water. I've looked at how to minimize that.

Q. What other components have you looked into for residential toilet?

A. A fair amount of failure analysis in general. So I'm looking at the connectors,

1 things like that.
2 Q. Are connectors commonly a point of
3 failure?
4 A. Yes.
5 Q. When you were looking at how to
6 minimize the noise that's created by the
7 distribution of water, what was the outcome of
8 that project?
9 A. It was improved.
10 Q. How did you improve or reduce the
11 noise?
12 A. That's also confidential.
13 MR. FINCH: We have been going a
14 little bit over an hour. Let's go ahead
15 and take a short break.
16 (Recess taken at 2:37 p.m. and
17 reconvening at 2:51 p.m.)
18 BY MR. FINCH:
19 Q. Welcome back, Dr. Cameron.
20 A. Thanks.
21 Q. So before the break we were
22 talking about your experiences with various

1 residential plumbing fixtures, including
2 toilettes.
3 Do you recall that?
4 A. Yes.
5 Q. When did you first work with a
6 toilet in a professional capacity?
7 A. Probably like 2004, '05.
8 Q. Would this have been as part of
9 your employment at --
10 A. Do you want help?
11 Q. I got it. -- at Exponent?
12 A. Yes.
13 Q. Yes, this would have been part of
14 your employment at Exponent?
15 A. Yes.
16 Q. What sort of project did you work
17 on when you first worked with toilet products
18 at Exponent?
19 A. It would be like failure analysis
20 work.
21 Q. Have you ever been involved in a
22 professional experience related to a toilet

fill valve?

A. That would have been something that we looked at, too, but I don't have any like clear memory of what the actual problems were on the different things I looked at from that long ago.

Q. And when you say that would have been something that you looked at, is that because you were evaluating the toilet system generally for failure?

A. Yes.

Q. Have you ever specifically evaluated a toilet fill valve?

A. I may have. I don't remember specifically if that was the focus.

Q. Sitting here today, you don't recall specifically evaluating a toilet fill valve?

A. I'm sure that I have, but I don't specifically remember the details of that.

Q. Do you remember any details?

A. Not really. It was a long time

ago.

Q. And when you say "not really," you mean, no?

A. Correct.

Q. Have you ever evaluated a toilet flush valve before?

A. The same answer.

Q. Okay. Do you have an understanding of the difference between a toilet fill valve and a toilet flush valve?

A. Yes.

Q. What is your understanding of the difference between a toilet fill valve and a toilet flush valve?

A. The fill valve is the first one that's controlling the amount of water that flushes, like the overflow valve.

Q. When you say "the first one that's controlling the amount of water," what do you mean?

A. It's controlling from the inlet, the valve after the inlet.

Q. Okay. And what is your understanding of what a flush valve is?

A. Basically the overflow valve from the tank.

Q. When you say "overflow valve," what do you mean?

A. Water coming out of the tank, from the tank.

Q. When you say "out of the tank," out of the tank into what?

A. Into the bowl.

Q. Turning back to your CV, you have a number of publications and presentations listed. Is this a full listing of your publications and presentations or was this selected for your CV?

A. I think this is everything.

Q. Okay. And the first publication listed there is titled "'Crack Growth and Arrest in Steam Turbine Casings.'"

Is that correct?

A. Yes.

Q. What is a steam turbine casing?
A. It's basically, in power generation, it's like the big part that spins.
Q. And so a steam turbine is the big part that spins in power generation; is that correct?
A. Correct.
Q. What is a steam turbine casing?
A. That's like the housing.
Q. The housing for the turbine itself?
A. Yeah, correct.
Q. And was the point of this publication or presentation to determine what causes cracks and what helps prevent them in steam turbine casings?
A. Yes.
Q. Okay. The casing that you -- casing or casings that you evaluated as part of this publication or presentation, what were those casings composed of?
A. Those are steel.

Q. Are casings typically composed of steel?

A. Not always. It could be like cast iron. In fact, maybe those ones were cast iron. Actually, I take that back my previous answer. I'm not sure.

Q. Do you expect they were either steel or cast iron?

A. Yes.

Q. Some sort of metal?

A. Metal, yes.

Q. Okay. Casings typically are composed of metal?

A. Not generally, but for those steam turbines, yes.

Q. When we were talking about toilet fill valves a moment ago, I believe you testified that the fill valves where the water goes from the inlet; is that correct?

A. Yes.

Q. What is the inlet?

A. Where the water comes in.

Q. Where the water comes into what?
A. The toilet.
Q. Where does the water come into the toilet from?
A. From like the water supply.
Q. Do you know where the inlet is located in the toilet?
A. In the back.
Q. When you say "the back," the back of what?
A. I mean, it comes from your water supply. So it comes in from your pipe in your house.
Q. And after water comes through the inlet into the toilet, is it your understanding that it goes through the fill valve at that point in time?
A. Yes.
Q. Okay. You mentioned earlier that water goes from the tank to the bowl; is that correct?
A. Yes.

Q. How does water go from the tank to the bowl in a typical residential toilet?

A. Like when you flush basically.

Q. And can you explain what you mean when you say "when you flush"?

A. So when you flush, it opens the valve, so then the water can go.

Q. What valve is it that opens?

A. I think -- well, I understood you to be talking about the flush valve before.

Q. Okay. And when you say "so then the water can go," do you mean from the tank to the bowl?

A. Yes.

Q. How does the water go from the tank to the bowl?

MS. TOTO: Objection. Asked and answered.

A. Because the valve is open when you flush.

Q. Do you have an understanding of what connects the toilet flush valve to the

bowl?

MS. TOTO: Objection to form. Foundation.

A. I'm not understanding your question.

Q. You testified that water goes from the tank to the bowl when the toilet flush valve is open; is that correct?

A. Yes.

Q. Okay. Do you have an understanding of how that process occurs?

MS. TOTO: Objection. Foundation.

A. I'm not sure how this is different from what you were asking before.

Q. When you flush a toilet, what happens?

A. So the valve opens.

Q. That's the flush valve?

A. Right.

Q. Then what happens?

A. Then the water goes to the bowl.

Q. Okay. What connects the tank to

the bowl?

MS. TOTO: Objection to form.

A. The tube.

Q. What tube?

A. I'm not sure of your question.

Q. Can you explain to me how water makes it from a toilet tank to a toilet bowl when you flush a toilet?

A. So when you flush, there's like a -- basically there's a lever that opens the valve, and then the water can go.

Q. Okay. When you say "the water can go," what do you mean?

A. The water can fill the bowl.

Q. Is that the only way the water enters a bowl in a traditional residential toilet?

MS. TOTO: Objection. Foundation. Outside the scope.

A. So -- well, it comes from the inlet water supply.

Q. When you say "it comes from the

1 inlet water supply," what are you referring to?
2 A. The water.
3 Q. And your understanding is that the
4 water enters the toilet bowl through the flush
5 valve; is that correct?
6 MS. TOTO: Objection. Form.
7 Outside the scope.
8 A. So when you operate the flush
9 valve, then you're going to have water that
10 goes into the bowl.
11 Q. Are you aware of any other ways
12 that water enters the toilet bowl of a
13 traditional residential toilet?
14 MS. TOTO: Same objection.
15 A. I think I mentioned already it
16 comes from the water supply.
17 Q. Okay. So your understanding of
18 the operation of a traditional residential
19 toilet is that water goes from the water supply
20 through the inlet in the fill valve, and then
21 through the flush valve into the bowl?
22 A. Water can go through the fill

1 valve into the bowl, yes.
2 Q. How does water go through the fill
3 valve into the bowl?
4 A. There's an outlet into the bowl.
5 Q. There's an outlet from the fill
6 valve into the bowl?
7 A. From the -- I'm getting confused.
8 Basically when you operate the flush valve,
9 that's when you can then fill the bowl.
10 Q. Other than through the flush
11 valve, are you aware of any other ways that
12 water enters the toilet bowl in a traditional
13 residential system?
14 MS. TOTO: Objection. Form.
15 Foundation. Outside the scope.
16 A. I'm not sure why we're going in
17 circles. I think the water comes in from the
18 water supply through the valve, and then it can
19 go into the bowl.
20 Q. So you're not aware of any other
21 ways that water enters the toilet bowl other
22 than through the flush valve?

1 MS. TOTO: Same objections.
2 A. I don't -- I'm not sure what's
3 going on, but I feel like I've said at least
4 three times, it can come from the water supply
5 into the fill valve.
6 Q. Water comes from the water supply
7 into the fill valve?
8 A. Correct.
9 Q. Then after water enters the fill
10 valve, where does it go next?
11 A. So it can go into the bowl.
12 Q. How does it go into the bowl?
13 A. Through a tube.
14 Q. Through what tube?
15 A. I don't know what you mean by
16 that.
17 Q. When you say it goes through a
18 tube, what are you referring to?
19 A. I don't know how to describe that.
20 I don't know how to answer your question.
21 Q. Is it your testimony that there's
22 a tube that goes from the fill valve to the

bowl?

A. Right. You can go from -- yes.

Q. So my understanding of your testimony is that water can enter the toilet bowl through the flush valve or through a tube that goes from the fill valve to the bowl; is that correct?

MS. TOTO: Objection to form.

A. I think my testimony is when you operate the flush valve, that's when you can bring water into the bowl in the tank.

Q. And that water enters through the flush valve?

A. Well, it comes in -- in general, it comes in from the water supply to refill.

Q. So the water that enters the toilet bowl, what is your understanding of where that water was immediately prior to entering the toilet bowl?

MS. TOTO: Objection to form.

Asked and answered.

A. It comes from the water supply.

Q. How does a flush valve work in a toilet?

MS. TOTO: Objection. Outside the scope.

A. So there's typically like a lever that opens the valve.

Q. And what happens when the lever is actuated and the valve opens?

MS. TOTO: Same objection.

A. What's in the bowl will drain and then the bowl and the tank will refill.

Q. How does the bowl refill?

A. From the water supply.

Q. Other than a tube from a toilet fill valve that goes directly to the bowl, and water from the tank passing through the flush valve into the bowl, are you aware of any other ways that water enters the toilet bowl?

MS. TOTO: Objection to form.

A. No. That's how water goes to the bowl.

Q. I hand you a document that's

1 previously marked Exhibit 1015 in
2 IPR2024-00633.
3 (Document previously marked as
4 Exhibit 1015 for identification)
5 Q. Dr. Cameron, have you seen this
6 document before?
7 A. I've seen this figure. I'm not
8 sure I've seen it in Korean or Chinese or
9 whatever this is.
10 Q. Do you know what this document is?
11 A. Yes. This is one of the
12 references I relied on in my declaration.
13 Q. Do you speak Chinese?
14 A. No, I do not.
15 Q. Did you rely on the Chinese
16 original version of this document for anything
17 in your declaration?
18 A. Only to the extent that these
19 figures are the same.
20 Q. Okay. You can go ahead and put
21 this one aside.
22 I'm going to hand you a document

1 marked 1016 previously marked in IPR2024-00633.
2 (Document previously marked as
3 Exhibit 1016 for identification)
4 Q. Do you recognize this document?
5 A. This looks like an illustration of
6 the previous document.
7 Q. And did you rely on this document
8 in your declarations?
9 A. Yes.
10 Q. And this document lists the
11 patentee named Wang Guoxin is my understanding
12 of the pronunciation?
13 A. I don't know what the
14 pronunciation is, but I will take your word for
15 it.
16 Q. If I refer to this as Guoxin, will
17 you know what I'm talking about?
18 A. Sure.
19 Q. On Page 1 of this document,
20 there's a linguist's certification. Do you see
21 that?
22 A. Yes, I see that.

Q. Were you involved in any way in the translation of this document?

A. No.

Q. Do you have any understanding of whether this is or is not an accurate translation of the document?

MS. TOTO: Objection. Foundation.

A. I don't speak Chinese at all.

Q. Did you do anything to verify the accuracy of the translation of this document?

A. I don't have any reason to think it's inaccurate. I don't speak Chinese at all.

Q. Could you turn to Page 002 of the document. It says "Utility Model Patent Specification" at the top.

Are you with me?

A. Yes.

Q. Under Section 54, it says, "Name of Utility Model," it says, "Toilet Water Tank Water Supply Switching Device."

Do you see that?

A. No. Where are you?

Q. About halfway down the page on the left.

A. Yes, I see that now.

Q. It says, "Toilet Water Tank Water Supply Switching Device"; is that correct?

A. Yes.

Q. What is a water supply switching device?

A. I think they're just talking about the valve. My understanding is that's just the valve.

Q. You don't have an understanding of what the term "water supply switching device" means in the context of the Guoxin reference?

A. I think here I just said it's the valve.

Q. Okay. When you say "the valve," what are you referring to?

A. The device that's described in this patent. If you look at Figure 4, it's just like the number 4.

Q. And Figure 4, what number 4 are

you referring to?

A. There's only one, right?

Q. I don't see a component identified as number 4 in Figure 4.

A. On the top you can only see the number 4.

Q. Could you point to where you're referring?

A. Right there. Oh, sorry, I see the confusion. That's actually Figure 3.

Q. So you believe the switching device or the water supply switching device referred to in the title of Guoxin is referring to what's identified as No. 4 in Figure 3?

A. Yes.

Q. Do you have an understanding of what the purpose of the water supply switching device described in Guoxin is?

MS. TOTO: Objection to form.

A. So that you can control how much water is going through.

Q. How much water is going through

1 what?
2 A. Going through that valve.
3 Q. And do you have any understanding
4 of why Guoxin is designed to regulate the
5 amount of water that goes through the valve?
6 MS. TOTO: Objection to form.
7 A. I could look through this, but my
8 recollection is it has to do with the ability
9 to add additional water because the tank is
10 small.
11 Q. So is it fair to say that the
12 purpose of Guoxin is to increase the amount of
13 water that goes through the switching valve?
14 MS. TOTO: Objection to form.
15 A. Yeah, that can be one thing it's
16 used for. So the purpose of the valve is to be
17 able to regulate the amount of water that goes
18 through.
19 Q. And is that the purpose of all
20 valves generally?
21 MS. TOTO: Objection to form.
22 A. I would say that's typical, yes.

Q. To regulate the amount of water?
A. I mean, you don't -- obviously a valve doesn't need to be for water, in general, but, yes, it's typically for regulating flow.
Q. What types of valves are you familiar with?
MS. TOTO: Objection. Form.
A. I guess for me it's usually in either like a water system or ones you find in like an oil system -- I work on all kinds of different valves, so I have worked on ones that you would see in plumbing, I've worked on ones that you would see kind of in an oil and gas system, medical devices as well, I guess. That's what comes to mind offhand.
Q. Turn to Page 004 of Guoxin.
A. Where is the numbers?
Q. The page number that was added by counsel for Fluidmaster.
A. Yes.
Q. And at the top of the page it states that the "design of toilet water tank

1 water supply switching, it is specifically
2 targeted at the tanks of commercially available
3 one-piece toilets --
4 A. I don't know where you're reading
5 from.
6 Q. The second paragraph.
7 A. Okay. Go ahead.
8 Q. It states that the "design of the
9 toilet water tank water supply switching, it is
10 specifically targeted at the tanks of
11 commercially available one-piece toilets that
12 have insufficient water storage capacity in the
13 tank, which results in insufficient water
14 volume to thoroughly flush the toilet of
15 waste."
16 Do you see that?
17 A. Yes, I do.
18 Q. It's talking about the structure
19 described in Guoxin and states that "a portion
20 of the water from the inlet device is directly
21 supplied to the toilet bowl to compensate for
22 the lack of water in the tank, thereby ensuring

that the toilet is flushed clean in a single flush."

Do you see that?

A. Yes.

Q. So is it accurate to state that the purpose of Guoxin is to increase the amount of water that is added to the toilet bowl?

MS. TOTO: Objection to form.

A. Yeah, it can regulate the amount of water that goes through so that you have the appropriate amount.

Q. And one of the goals is to increase the amount, correct?

A. That's correct, yes.

Q. And it does that by supplying water directly from the inlet device to the toilet bowl?

A. Correct.

Q. To your knowledge, does Guoxin reference water savings or water reduction at all?

A. Yes. I mean, that's the point;

1 right? So you want to have not more than you
2 need. So that's why there's the regulator to
3 make sure that you're not overusing the water
4 that you don't need.
5 Q. Can you point to me where in
6 Guoxin it discusses making sure that you don't
7 use more water than you need?
8 A. That's how I read what you just
9 pointed me to. So it's talking about, as one
10 example, when you put less water in the tank,
11 then you can make sure that you hit the target
12 amount by just adding what you need from the
13 inlet water supply, and then that regulator is
14 what ensures that you hit that target.
15 Q. And it does that by adding
16 additional water during a toilet flush on top
17 of what was already contained in the tank?
18 A. Right. So in this example, you
19 have less water than you need in the tank, and
20 then you use the water regulator to bring it to
21 the amount you need, and not more.
22 Q. You say you have less water using

1 Guoxin's switching device; is that correct?
2 A. Yes, and not overusing the water;
3 that's correct.
4 Q. Less water compared to what?
5 A. That's why I corrected your
6 question to say not overusing the water.
7 Q. Can you turn to Figure 2 of Guoxin
8 on Page 0007. Are you with me?
9 A. Yes.
10 Q. At the very bottom of Figure 2,
11 there's an arrow pointing upwards.
12 Do you see that?
13 A. Sorry, I'm on the wrong Page 2.
14 I'm there now. Yeah.
15 Q. At the very bottom of Figure 2,
16 there's an arrow pointing upwards.
17 Do you see that?
18 A. Yes.
19 Q. What is that arrow referring to?
20 A. Water.
21 Q. The arrow means water?
22 A. Yes.

Q. Okay. What is the significance of using an arrow there to refer to water?

A. What do you mean? The arrow is showing where the water is going.

Q. So the arrow is showing where the water is going?

A. Yes.

Q. And where is the water going?

A. So there it's showing it coming from the supply to the inlet.

Q. Coming from the supply to the inlet?

A. Yes. That's the inlet you see with the arrows.

Q. And as the device depicted in Guoxin is in use, after the water comes from the water supply to the inlet, what happens next?

A. So some of it travels up to the valve and some of it goes out into the tank.

Q. Okay. And when you say "up to the valve," what are you referring to on Figure 2?

A. Four.
Q. Number 4?
A. Number 4, yes.
Q. And referring still to Figure 2, does water pass through the valve depicted in Figure 4?
A. Yes.
Q. You can put that one to the side for now.
I'm going to go ahead and hand you another document previously marked as Exhibit 1021 in IPR2024-00633.
(Document previously marked as Exhibit 1021 for identification)
Q. Have you seen this document before?
A. Yes, I have.
Q. What is your understanding of what this document is?
A. This is one of the references I relied on in my declaration.
Q. And this is a patent with the

number 3,086,546, correct?

A. That's correct.

Q. And the inventor on this is E.H. Brown; is that correct?

A. That's correct.

Q. If I refer to this as Brown, will you understand what I'm referring to?

A. Yes.

Q. Brown is titled "Water Silencing and Saving Means for Ball Cock Valve Assembly in Toilet Flush Tank"; is that correct?

A. That's correct.

Q. What's a ball cock valve assembly?

A. That's basically like that arm that moves that has the ball on the end.

Q. And when you say "has the ball on the end," what are you referring to?

A. Maybe there's a picture. I think there's a picture in one of the references. It's basically the round ball at the end of the lever.

Q. In general, separate and apart

from the Brown reference, how does a ball cock valve assembly work?

A. Through that lever arm.

Q. Okay. Can you explain in more detail how a ball cock valve assembly works?

MS. TOTO: Objection. Foundation. Outside the scope.

A. I'm not sure what more you need. There's basically an arm that lifts that has the ball at the end of it.

Q. What is the purpose of the ball?

A. To open and close. So basically that can float and open and close.

Q. So a ball cock valve assembly, the purpose of the ball is both to float and to open and close?

A. Yeah. It's like on the end of the lever. I don't think there's a picture of it here. There's a picture in some of the other references I had if you want to look at it.

Q. So there's not -- the ball of the ball cock valve assembly is not depicted in

Brown?

A. Yeah, the ball itself is not shown, I guess. Let me make sure that's true. Maybe they didn't put it there so it wouldn't interfere with the rest of the drawing. But I think -- it might be described in here, but I've definitely seen an image if you want to look at one of the other ones?

Q. I'm sure we'll get to that over the course of the deposition.

Do you have an understanding of where in Brown a ball should be depicted as part of the ball cock valve assembly?

A. Yeah, like at the end here in Figure 1.

Q. When you say "the end," the end of what?

A. The arm. The end of the arm.

Q. Is there a reference numeral?

A. There is not a reference number there.

Q. You're referring to the horizontal

arm that is underneath the curved component number 28?

A. Yes.

Q. Your understanding is there should be a ball depicted there which both acts as a float and serves to open and close a valve?

A. Yes.

Q. How does the ball in a ball cock valve assembly open and close the valve?

A. Through the lever, the lever arm.

Q. What in Figure 1 opens and closes when the ball cock valve assembly is activated?

A. I think the number on -- if you look on Page 001, Figure 1, I think it's indicated by number 17.

Q. So what is your understanding of which components move as the ball cock valve assembly is activated?

MS. TOTO: Objection. Form.

A. So basically if you look -- well, if you look where 17 is and go up from there, you'll see like the assembly that has the

various linkages on it.

So you can imagine like as -- so like as I mentioned, the ball is not shown on there, but it's at the end of the arm. So when it drops, then that ball will obviously drop, too, and then that causes the linkages to basically rotate and open up the valve at 17.

Q. Just so the record is clear, what linkages are you referring to?

A. So if you like go upwards from 17 on Figure 1, you'll see the -- I don't know what the better word is -- the bars that are connected by pins, those are linkages.

Q. And Brown is designed to work in a toilet, correct?

A. Yes.

Q. If you were to flush a toilet that this valve had been installed in, as depicted in Brown's Figure 1, can you walk me through what would happen after that toilet was flushed in terms of where water would go?

MS. TOTO: Objection. Form.

A. So if you -- when the valve opens, then the water from -- that basically goes through 17 goes into -- like a portion of it goes towards 19 into the tank, and then a portion of it goes up the tube -- is it 21 -- I guess the opening is 21 and then the pipe itself is 23, goes up that way to the bowl.

Q. You said 23 is a pipe?

A. I don't know. What is it called? Tube. He just calls it a tube.

Q. And what is 17?

A. 17, that's -- I can double-check, but that's, I think, pointing to the valve I was talking about when you operate the lever for the linkage.

Q. That valve is located in kind of a casing or container of some sort?

A. Yes.

Q. What would you refer to that container that houses the valve as?

MS. TOTO: Objection. Form.

A. I think they just call that part

1 around it the chamber, chamber 15, I guess.
2 Q. And chamber 15 is a cavity of some
3 sort or another?
4 MS. TOTO: Objection to form.
5 Foundation.
6 A. Yeah. You can see it in Figure 1.
7 Q. And what is that cavity contained
8 within?
9 A. I'm not sure what you mean by
10 that.
11 Q. Numeral 15, we agreed, is a cavity
12 or an opening of some sort that allows water to
13 pass through; is that correct?
14 A. Oh, no, I didn't know that's what
15 you meant by "cavity." It's, as I mentioned,
16 it was the chamber. I just -- when you asked
17 that, I assumed you meant there was a cavity in
18 the structure.
19 Q. I might have confused both myself
20 and you here. Let's take a step back.
21 What is numeral 15?
22 A. A chamber.

Q. And what is a chamber?
A. Container, structure, cavity.
Q. What is the purpose of the chamber in Brown?
A. Well, you asked me where the -- I thought where we started was you were asking me what the valve 17 was.
Q. So does the chamber 15 that you identified have any purpose other than to hold the valve?
MS. TOTO: Objection. Foundation.
A. Well, I mean, that chamber can fill with water.
Q. Okay. And what is numeral 14?
A. I don't see 14.
Q. If you're looking at Figure 1, it is directly next to numeral 19.
A. I think that's just the casing. I think 14, it's like a weird four, but if that's the 14, I think it's just pointing to like the wall there, which is the housing or the casing.
Q. And that casing has an opening 15

and another opening 19 that water can pass through; is that correct?

A. I'm not sure. You said that before that 15 was an opening. I thought 15 was the chamber. Let me just double-check that.

Yeah, I'm not sure where you got the opening from. 15 is the chamber.

Q. And we may be using different terminology. What's your understanding of the difference between a chamber and an opening?

A. They're not all the same. A chamber is like a container -- maybe not the best word, but the first thing that comes to mind. An opening is like empty space that you go in or out of.

Q. Is numeral 15 empty space?

MS. TOTO: Objection to form.

A. Well, I mean, you know you have a container and you're going to label it, and you might just put the arrow to the middle of the container.

Q. So looking at -- based on your understanding of Figure 1, and the teachings of Brown, is 15 empty space or is that solid space?

MS. TOTO: Objection to form.

A. Well, the end of the line from 15 goes to empty space. But 15 is described as the chamber, which is the structure of the container. I guess I'm just explaining that like sometimes, you know, you label a bottle and you might draw the line to the middle, which is technically space, but you're still talking about the bottle itself.

So here, like on page -- if you look in Column 2 on Page 002, it talks about the chamber, chamber 15. I mean, you're nitpicking whether you want to talk about that as the wall plus the space or just the wall. I don't know. But the chamber is different than an opening.

Q. Can water pass from the chamber 15 to numeral 19, which I believe is another

chamber?

A. Yes.

Q. Okay. And your description of the chamber 15 included both the space and the wall surrounding it. Do you have an understanding of what that wall is made of?

MS. TOTO: Objection. Foundation.

A. It says it's made of plastic, but I don't actually see that specified yet. I would assume it's made of plastic from a quick review. I don't see it called out specifically, though.

Q. Why do you assume it's made of plastic?

A. These parts are made from similar -- both made from plastic. It does call out some of these parts here as plastic, and I would expect this to be plastic as well.

Q. Which parts does it call out as plastic?

A. 28. I thought I saw more than that, but maybe it's only that. I could have

1 sworn there was more than that, but that's all
2 I see right now.
3 Q. Other than the fact that the part
4 identified as numeral 28 is described as being
5 made of plastic, is there anything else about
6 this figure that makes you think that the
7 casing surrounding numeral 15 is made of
8 plastic?
9 MS. TOTO: Objection. Foundation.
10 Outside the scope.
11 A. I would have to think about that.
12 I guess when I read this, I guess I thought it
13 was plastic. I'd have to think about why it is
14 beyond the -- it already tells you that tube 28
15 is plastic.
16 Q. Looking at Figure 1, is there
17 anything that indicates whether numeral 14 is
18 made of plastic?
19 MS. TOTO: Objection. Foundation.
20 Outside the scope.
21 A. What is that that we're already
22 talking about?

Q. In your mind, is there a distinction between the part identified by numeral 14 and the casing surrounding numeral 15?

MS. TOTO: Objection. Form.

A. Well, I mean, 14 is like the wall, I think.

Q. Okay. So other than language in the specification that indicates other parts are made of plastic, sitting here today you're not aware of any features of Figure 1 which indicate that it is made of plastic?

MS. TOTO: Objection. Form. Foundation. Outside the scope.

A. From my reading of this, I would think that that part would be plastic. For a more detailed answer, I would want to think about it.

Q. And your reading of this is based off of the language in the specification that indicates the number 28 is made of plastic?

A. From reading the entire

specification, yeah.

Q. Looking at just the figure, sitting here today, you're not aware of anything from the figure that indicates that it's made of plastic?

MS. TOTO: Objection. Form. Foundation. Outside the scope.

A. I think even from just looking at the figure, I would have said that was made from plastic. For a more detailed answer, I would want to think about that.

Q. So your testimony is based off of looking at the figure, you believe it's made from plastic, but you can't explain why?

MS. TOTO: Objection to form.

A. That would be my initial thought, yes, and I would want some time to think about that for a more detailed explanation, yes.

Q. If you were going to think about it more, what would you consider?

A. I'm not sure right now. I just -- my initial immediate thought is it would be

1 plastic, and I would want to think about -- for
2 a more detailed explanation, I would want to
3 think about that.
4 Q. Is it fair to say you haven't
5 considered what material numeral 14 was made of
6 prior to today?
7 MS. TOTO: Objection to form.
8 A. No. As I mentioned, I thought it
9 was plastic. But to the extent that you're
10 probing for a more detailed explanation of why,
11 I would want to think about that.
12 Q. Separate and apart from the Brown
13 reference, what types of things in figures
14 would indicate what material a product is made
15 from?
16 MS. TOTO: Objection. Foundation.
17 A. I suppose in general, you could
18 have labels or whatever for the materials or
19 you could just specify it on the drawing.
20 That's not done in this figure. So I was more
21 just basing that on my read for this case in
22 particular, basing that on my read of Brown and

1 probably my experience in general just makes me
2 think that's plastic.
3 But again, for more, I would want
4 to think about that a little more for a more
5 detailed explanation.
6 Q. A moment ago you testified that
7 you thought that Figure 14 was plastic. Prior
8 to today, did you consider anything other than
9 the fact that the specification identifies
10 other components as plastic in coming to that
11 opinion?
12 A. I think -- well, I think you said,
13 maybe mistakenly, said Figure 14. If we're
14 talking about the same thing, then, again, I
15 think it was just based on probably my
16 experience and my reading of Brown that I
17 thought that part was plastic. But for a more
18 detailed explanation, again, I would want to
19 think about it.
20 Q. I'm not asking you to come to new
21 conclusions. I'm interested in any conclusions
22 you had prior to today regarding what the

1 structure of the -- what the material that the
2 structure with numeral 14 is composed of.
3 So with that understanding, prior
4 to today, did you consider anything other than
5 the fact that the specification identifies
6 other components as being made of plastic in
7 coming to that conclusion?
8 A. So I think that's what I was just
9 explaining, that's probably just based on my
10 experience in conjunction with reading the spec
11 of Brown is why I thought that was plastic.
12 But for a more detailed explanation, I would
13 want to think about it.
14 Q. So in the conclusions that you
15 came to previously, you relied on your
16 experience. What about your experience led you
17 previously to conclude that this structure was
18 made of plastic?
19 A. That's why I told you I wanted to
20 think about it. You know, you look at it,
21 you're obviously always considering your
22 experience; that's why. That, plus the spec of

Brown is why I thought that. But if you want a more detailed explanation, I need to think about that.

Q. Were fill valves made of plastic in 1963?

MS. TOTO: Objection. Foundation. Outside the scope.

A. Injection molding was not as good then as it is today, which I expect is why the tube 23 is screwed in. But I still think that both of those pieces would be plastic.

Q. Outside of the Brown reference, are you aware of any fill valves made of plastic in 1963?

MS. TOTO: Objection. Foundation. Outside the scope.

A. I don't have any particular valves in mind from 1963.

Q. You testified that injection molding was not as good then as it is today. What were some of the issues with injection molding in 1963?

MS. TOTO: Objection. Foundation. Outside the scope. You can answer if you know.

A. So in that timeframe, we did not have access to the same types of materials that we do today, which matters because basically if you can have materials that flow better, then that makes it easier to achieve different shapes from your molding, and it makes it less likely that you have localized spots where it's thinner or that it's warped.

And then I think as I mentioned earlier, it's not just the materials that have gotten better. It's the processes in the mold designs, and the cooling designs for those molds.

So we're much better at making the actual mold. We're much better at making the machines that are used to control the pressure and the temperature. We're much better at controlling localization of the cooling of the mold, and things like that.

So there's quite a bit of difference in the molding abilities from that timeframe.

Q. If you look at Column 1, line 50 of Brown, it mentions that an object of the invention was to provide improved water silencing means, in order to reduce turbulence and noise of the water flowing through the valve assembly into the flush tank.

A. You read some of it, and skipped some and then read some more. But what you read was there.

Q. Is reducing turbulence essentially reducing noise in a fluid system?

MS. TOTO: Objection to form.

A. Yes. The side effect of reducing the turbulence, one side effect can be the noise is reduced, yes.

Q. You testified earlier that you've worked on projects in the past that related to reducing noise in plumbing systems; is that correct?

A. Yes.
Q. Did reducing turbulence play a role in those projects?
A. Indirectly, yes.
Q. What do you mean by "indirectly"?
A. I'm trying to talk about that without getting into too many details, because that's confidential, but it's not -- what's the best way to put it? It's not similar to this, but there is -- the solution does involve some reduced turbulence.
Q. What causes turbulence in a fluid system?
A. It can be the conduit that you're going through, the pace of the water, friction. That's what comes to mind.
Q. When you say the conduit, what do you mean?
A. What it's flowing through.
Q. How does the conduit cause or impact turbulence in a fluid system?
A. The shape or the change in shape

can introduce turbulence.

Q. When you say "the change in shape can introduce turbulence," what do you mean?

A. Like the cross-section of the conduit is changing.

Q. Would that be a conduit changes directions or has an intersection or something of that nature?

A. Sure, yes.

Q. And that would cause turbulence?

A. Yeah, that can cause turbulence, yes.

Q. And in turn, that would increase the noise in the system?

A. It depends on other things in the system, but generally, yes.

MR. FINCH: Let's go ahead and take another short break.

(Recess taken at 4:14 p.m. and reconvening at 4:37 p.m.)

BY MR. FINCH:

Q. Dr. Cameron, I'm going to hand you

1 another document marked previously as Exhibit
2 1022 in IPR2024-00633.
3 Dr. Cameron, have you seen this
4 document before?
5 (Document previously marked as
6 Exhibit 1022 for identification)
7 A. Yes.
8 Q. What is this document?
9 A. This is the '538 patent.
10 Q. Is that U.S. Patent number
11 5,862,538?
12 A. Yes.
13 Q. And it lists the inventor's name
14 as Ho; is that correct?
15 A. Yes.
16 Q. If I refer to this reference as
17 Ho, will you know what I'm referring to?
18 A. Yes.
19 Q. Dr. Cameron, the title of this
20 patent is "Toilet Flushing Device"; is that
21 correct?
22 A. Yes.

Q. And if you look at the abstract on the first page, it says, "A toilet flushing device is to be installed in a water supply tank and has a diverter valve." Is that correct?

A. Yes.

Q. What is a diverter valve?

A. A valve that can control how much water goes between one outlet and another.

Q. That determines what pathway the water takes?

A. Yes.

Q. Turn, if you would, to Figure 3 on Page 004 on Ho. Figure 3 appears to depict a toilet fill valve with a cross-section of the diverter valve; is that correct?

A. Yes.

Q. If you were to install the valve structure depicted in Figure 3 into a toilet, and flushed the toilet, can you walk me through what would happen?

MS. TOTO: Objection. Outside the

scope.

A. Basically if you look at Figure 3 or 4, it's going to be easy to see how the first part is operated. So the 252 moves up and down to operate this valve, and then the regulator that we talked about, the water goes into that and can be regulated there.

Q. So you indicated that 252 operates a valve. What valve are you referring to?

A. So that's like kind of similar to the one I was describing before. So this operates that linkage or the lever, so the water can flow through here.

Q. And when you say "the water can flow through here," how does operating the linkage or the lever allow the water to flow?

A. So these parts aren't labeled in here, but basically when you change the position of the 252, that lever moves and opens up so you can flow water through here.

It doesn't really have any labeling of the parts inside here, but

1 basically it's similar to the valve we saw in
2 the other reference. It's just operated by
3 this lever, and it's basically in the area
4 right under 22.
5 Q. 252 is a float, correct?
6 A. Yes.
7 Q. And does 252 drop when the water
8 level in the toilet tank drops?
9 A. Yes.
10 Q. Okay. And that causes 251 to go
11 farther up into the air?
12 A. Yeah. It's on like a lever arm
13 there.
14 Q. And that causes a valve to open?
15 A. Correct.
16 Q. What happens to water flow through
17 the structure when that valve opens?
18 A. So then you can have water flowing
19 into here.
20 Q. And when you say "into here," what
21 are you referring to?
22 A. Into the diverter.

Q. And where is water flowing from in order to go into the diverter?

A. From the inlet. So I guess that would be like 21.

Q. And can you explain to me how the diverter valve depicted in Ho operates?

A. Sure. So if you look at 35, there's also a float. And so basically how much water is moving through depends on the position of that not there on the right.

Q. Dr. Cameron, what figure are you referring to, just so we're on the same page?

A. Figure 3.

Q. You testified that 35 is a float?

A. Yes.

Q. And that the amount of water that flows through Ho's diverter valve depends on the position of a nut; is that correct?

A. Yes. So there might be a better figure here. If you look at Figure 8 it's probably easier to tell. So if you compare Figure 3 and Figure 8, you can see how the

1 float moves, and then how that moves nut on the
2 right.
3 Q. And in Figure 8, does the nut have
4 a numeral associated with it so we can make
5 sure we're on the same page?
6 A. 313.
7 Q. So what happens when the nut 313
8 moves as depicted in Figure 8?
9 A. It changes where the seal is
10 seated.
11 Q. What seal are you referring to?
12 A. I think they call it valve 33, and
13 then they label the seat that I'm talking about
14 as 3111.
15 Q. So when the nut 313 moves down as
16 depicted in Figures 7, 8 and 9, what happens to
17 the flow of water through the diverter valve?
18 A. So then the water can refill the
19 tank.
20 Q. And when you say "the water can
21 refill the tank," how does that occur?
22 A. So the water flows like through --

I think he labels it 3210.

Q. And which figure are you referring to?

A. I'm on Figure 8 right now. But I think it's labeled in a couple of them. So you can see it in nine and ten as well.

Q. Just to confirm we're on the same page, your testimony is that in Figure 8 water is flowing through 3210?

A. Yes.

Q. Take a look at Figure 3 again.

A. Okay.

Q. And I don't recall the exact words you used, but you testified something along the lines of 21 referring to an inlet where the water comes from; is that correct?

A. I probably did. I think the words this author uses are water supply pipe.

Q. And the bottom edge of the water spry pipe in Figure 3 that's threaded, do you know what that would be connected to?

A. That's the inlet. So that's your

water supply.

Q. That's connected to, if this is a residential toilet, the plumbing in your house in some capacity?

A. Correct.

Q. And as water comes up through water supply pipe 21, you testified that it goes into the diverted valve. Does the watering anywhere other than the diverter valve?

A. I think all the water goes to that valve.

Q. Take a look at Figure 4 for me.

A. Okay.

Q. There's a structure 40 coming off of the diverter valve 30.

Do you see that?

A. Yes.

Q. And 40 appears truncated in this figure. Do you know where 40 ultimately leads to or connects to?

A. It's called the supply line, and

it should go to the bowl. You can see it a little better in Figure 1.

Q. So in Figure 1, it appears that the supply line 40 enters a cavity of some sort or another above the bowl; is that correct?

A. Yeah. It goes to like -- probably like a conduit around the rim that's connected to the bowl.

Q. Turn back to the cover of Ho and take a look at the abstract. Starting with the second line of the abstract, it states that, "A diverter valve which permits the supply of high pressure water to the rim flushing conduit of a toilet bowl when the toilet bowl is flushed."

Is that what we were just referring to?

A. Yes. I guess it calls it a rim flushing conduit here. That's what I was talking about.

Q. Is it fair to say that one of the goals of the structure is to provide that high pressure water into the rim conduit?

A. Yes, to regulate the amount of water that goes to the tank versus the rim conduit or the bowl.

Q. You can go ahead and set that one to the side for now.

I hand you another document marked previously as 1001 in IPR2024-00634.

(Document previously marked as Exhibit 1001 for identification)

Q. Dr. Cameron, have you seen this document before?

A. Yes.

Q. What is this document?

A. This is the patent at issue, the '105 patent.

Q. And you referred to this as the '105 patent. This is U.S. Patent 9,103,105, correct?

A. Yes.

Q. And if we refer to this as the '105 patent, you'll know what we're talking about?

A. Yes.

Q. The title of the '105 patent is "Toilet Fill Valve," correct?

A. That's correct.

Q. If you look at the abstract, which is on the first page, it states that, "The toilet fill valve provides a second portion of the water to a bowl fill restriction that's in direct contact with an extended portion of the toilet fill valve."

Do you see that?

A. Yes.

Q. Do you have an understanding of what a bowl fill restriction is?

A. So I think I discuss this quite a bit in my declaration. In general, I would understand like a valve to be adjustable and the restriction to be fixed. But based on the representations by patent owner and the prosecution history, it seems that restriction is meant to be used as a broader term that encompasses the valve and/or restricter.

Q. So taking a step back from the difference between a restricter and a valve, what is a bowl fill restriction?

MS. TOTO: Objection to form.

A. That was what I thought you were asking.

Q. You testified that it is fixed, and that it is broader than a valve, but I didn't understand you to testify to what it actually is.

So can you tell me what a bowl fill restriction is?

A. Well, what I was just explaining, I would normally expect the restriction to refer to like a fixed one as opposed to a valve. But in the -- from my reading of the prosecution history, and other representations from the patent owner, my understanding is that it's intended to be a broad term that would include things like valves as well as fixed restricters, a fixed one that has a restriction.

Q. And I think where we're missing each other, when you testify that it is a fixed one, a fixed what?

A. A fixed device that restricts flow.

Q. My next question is, what does the device do?

A. Restricts flow.

Q. To confirm, your understanding is that what a restriction is a fixed device that restricts flow; is that correct?

A. I don't know that I thought about that specific definition, but generally speaking, yes.

Q. But when analyzing the prior art, you applied a broader term than that based off of your understanding of the prosecution history and infringement contentions; is that correct?

MS. TOTO: Objection to form.

A. Yes.

Q. Okay. And that broader

1 understanding encompassed both fixed and
2 adjustable devices?
3 A. Yes.
4 Q. Again, separate from a comparison
5 with a restriction, do you have an
6 understanding of what a valve is?
7 A. I do. I haven't thought about
8 what the best definition would be, but again, I
9 think of valve as like is adjustable and
10 regulates the flow as opposed to a restricter,
11 which would just be a fixed -- which would just
12 be fixed. But again, based on what I read in
13 the prosecution history and things, I
14 interpreted the restricter to encompass both of
15 those things.
16 Q. Is there a difference between a
17 restriction and a restricter?
18 MS. TOTO: Objection to form.
19 A. I can't think of a situation that
20 they wouldn't be the same thing.
21 Q. Have you heard of an adjustable
22 restriction or an adjustable restricter before?

A. I don't recall seeing that term before, but I can probably provide you context if you have an example.

Q. What does the term "adjustable restriction" mean to you?

MS. TOTO: Objection to form.

A. So I think even though generically if I use the term "restriction" or "restricter," to me that implies it's fixed. If someone was to specifically say adjustable restriction, I would maybe want to see the rest of the context how it was used. But I would assume they were probably trying to describe a device where you could adjust it rather than having it just be fixed.

Q. What's your understanding of the term "water flow regulator"?

A. I would probably want to see the context that was used in as well.

Q. I'm going to hand you another document previously marked as Exhibit 1001 in IPR2024-00633, U.S. Patent number 9,139,993.

(Document previously marked as Exhibit 1001 for identification)

Q. And do you have an understanding of the term "water flow regulator" as used in Claim 1 of the '993 patent?

A. To me that's basically like a valve.

Q. And when you say it's like a valve, what do you mean?

A. It's adjustable so it can regulate fluid flow.

Q. Could a structure regulate fluid flow without being adjustable?

MS. TOTO: Objection to form.

A. To me that implies it's adjustable when you say "regulator."

Q. That wasn't quite my question. My question was, could a structure regulate fluid flow without being adjustable?

MS. TOTO: Same objection.

A. Yeah, so for me if you refer to "regulate," you're not talking about a fixed

1 device.
2 Q. What does "regulate" mean in the
3 context of fluid systems?
4 A. I'm not sure. A better word
5 maybe. I haven't thought about a specific
6 definition. Basically I think of like
7 adjustable so that you can control the flow.
8 Q. Is it your opinion that a water
9 flow regulator only includes adjustable
10 structures?
11 MS. TOTO: Objection. Form.
12 A. Yeah, for me a regulator is
13 adjustable.
14 Q. If you can go back to the Brown
15 reference that we talked about earlier. It's
16 Exhibit 1021. Do you have a copy of that
17 still?
18 A. No. It was this last one.
19 Q. And Brown has a structure called a
20 set screw 26?
21 A. Yes.
22 Q. In your opinion, is Brown's set

1 screw 26 a valve?
2 A. Yes.
3 Q. Is Brown's set screw 26 a
4 restricter?
5 A. Yes.
6 Q. Is Brown's set screw 26
7 adjustable?
8 A. Yes.
9 Q. And you testified earlier that a
10 restricter is a fixed structure, not an
11 adjustable structure; is that correct?
12 A. Well, I said that would be -- I
13 put that aside based on the review of the
14 patent file history and things like that. So
15 with that, no, it wouldn't be.
16 Q. Based on your understanding of
17 what the term "restricter" means, separate and
18 apart from the file history and the
19 infringement contentions, is Brown's set screw
20 26 a restricter?
21 A. I mean, outside of that, I would
22 say no. But for the purposes of my analysis, I

1 took it based on my review of the file history.
2 Q. Based on your understanding of
3 what the term "water flow regulator" means,
4 separate and apart from the file history and
5 the infringement contentions, is Brown's set
6 screw 26 a water flow regulator?
7 A. I'm thinking about that a little
8 bit, because I do think about this as being
9 adjustable, because you can turn the screw to
10 adjust the flow. Normally, though, I think
11 about that for devices where you can adjust it
12 without having to disassemble the device.
13 So I guess I said this kind of
14 falls under the adjustable valve category, I
15 maybe want to give that some more thought a
16 little bit, just because normally when I think
17 of that, I think of one that can be adjusted
18 without disassembling it.
19 Maybe disassembling is kind of a
20 stretch too far and maybe makes this more of a
21 stretched device. So I think maybe I want to
22 change that answer now that I've thought about

it a little bit more.

Q. So does the application of where a valve or regulator or restricter is used impact whether it is in fact a valve or regulator or restricter?

MS. TOTO: Objection to form.

A. Yeah, I think the setup does matter. You can have -- yeah, I think that's right. I think the setup does matter. So you could have a screw -- yeah, you could have a screw within a valve, but you don't have to disassemble it to adjust it, I think. That seems fair.

This one is a little trickier, because I think I normally wouldn't think about it as being adjustable when you have to disassemble it.

So upon further reflection, I think maybe I would actually put that into the fixed category, just because it's not really the same when you have to take apart the tubes in order to change it.

Q. And to confirm, you said the setup does matter, not doesn't matter, correct?

A. That's correct.

Q. So based on your testimony, it sounds like one of the factors that goes into whether something is a valve or a restricter or a regulator or some combination of the three is possibly the mechanism by which it can be adjusted; is that fair?

MS. TOTO: Objection to form.

A. I don't know if you want to call that a mechanism to adjust it. It's just that taking something apart, installing it in a different way, to me is not really what I would think of as adjustable, I guess.

Q. So is it your opinion that if you have to take it apart, you're not really adjusting any more, you're changing the part at that point?

MS. TOTO: Objection to form.

A. Yes.

Q. Do you agree that the purpose of

Brown's set screw 26 is to impact in some way the flow of water through 23 and 28?

MS. TOTO: Objection to form.

A. Yes.

Q. And you can change the degree that it impacts the flow of water by tightening or loosening the screw, correct?

MS. TOTO: Objection to form.

A. Yeah. So you could disassemble it and change the position of that screw, and it will have a different flow after you reassemble it.

Q. Could you achieve the same purpose of impacting the flow of water through those tubes using a restriction rather than the set screw?

MS. TOTO: Objection to form. Foundation.

A. You could alter the flow by a restricter as well, yes.

Q. And if you wanted to change the degree by which you were altering the flow, you

could take out the restriction and put in a differently sized restriction; is that fair?

MS. TOTO: Objection to form. Foundation.

A. Yes, if you swapped out one restricter for another, you could potentially have a different flow, yes.

Q. And so, setting aside how easy or difficult it would be to do, you could achieve the same functionality that's provided by Brown's set screw 26 using a plurality of differently sized restricters?

MS. TOTO: Objection to form. Foundation.

A. Putting aside the difficulty, you could have -- potentially have different size restricters that could correspond to different positions of the set screw.

Q. And the observable effect of the device in operation would be the same, regardless whether you were using a set screw or a restricter?

MS. TOTO: Objection to form.

A. Again, putting aside the difficulty, but you've gone through the exercise of -- I'm not saying this will be easy to do by any stretch. But if you were able to design a restricter that gave you close to the same change in flow of a particular position of the set screw, you probably wouldn't be able to get exact, but you could maybe get in the ballpark.

Q. Dealing with Brown specifically, regardless of whether you're swapping out a restricter or adjusting the set screw, you still have to take the device apart and then put it back together, correct?

A. That's correct, yes.

Q. Does a valve have to be continuously adjustable or can it have one or more biased positions that it slots into?

MS. TOTO: Objection to form. Foundation.

A. It can have discrete biased

positions.

Q. If something just turns on or off, is that a valve?

MS. TOTO: Objection to form.

A. Yes, it could.

Q. Have you ever come across a restricter that has the purpose of stopping 100 percent of the flow through a given pathway?

MS. TOTO: Objection to form.

A. I personally would call that a cap rather than a restricter.

Q. Let's take a look back at the '105 patent that you have in front of you. And if you turn to Column 1 of the '105 patent on Page 012, there's a section titled "Background."

Do you see that?

A. Yes.

Q. The "Background" section states that in a conventional toilet "much of the water that flows into a toilet bowl during the average flush cycle is lost down the drain."

Do you see that?

A. Yes, I see that.
Q. Do you have an understanding of what the goals of the '105 patent are?
MS. TOTO: Objection. Foundation.
A. I think maybe one of them is to supply an adjustable flow of water so that you can fill the bowl without waste.
Q. Reducing waste or the waste of water during the flush cycle is one of the goals?
A. Yes.
Q. Take a look at Figure 1 of the '105 patent. Included in Figure 1 is a numeral 100.
Do you see that?
A. Yes.
Q. The specification says that, "The toilet fill valve 100 may be, for example, a pilot style fill valve."
That's Column 2, lines 7 and 8.
A. I see that, yes.
Q. What is a pilot style fill valve?

MS. TOTO: Objection. Foundation.

A. I don't remember exactly what that looks like.

Q. Sitting here today, do you have any understanding of what a pilot style fill valve is?

MS. TOTO: Same objection.

A. I've heard that term before, but I don't remember the exact structure right now.

Q. What do you remember about the structure of a pilot style fill valve?

A. Didn't I just say I don't remember?

Q. You testified you don't remember the exact structure. I want to know if you remember anything about the structure?

A. I don't remember the structure.

Q. We discussed a ball cock valve earlier. Other than a pilot style fill valve and a ball cock valve, are you aware of any other types of toilet fill valves?

MS. TOTO: Objection. Foundation.

A. They're usually ball cock valves, but you could have, I guess, other types of valves there besides that.

Q. Are you aware of any other types of valves that would work in a toilet fill valve?

A. I think the ball valve would be typical, but I mean in theory, you could put any kind of valve there you want, I guess.

Q. What other types of valves would work in a toilet fill valve?

A. I guess I'm not understanding why a specific kind wouldn't work, but you could have -- I think probably this patent has some examples, if I remember. You could have a gate valve, diaphragm valve, but I think there's a list here if I remember. I had a memory there was a list of different ones you could use in here, but maybe I'm wrong.

It does say in Column 2 that you could have different kinds of valves. I'm not sure. I thought you could have different kinds

of valves.

Q. You mentioned a gate valve earlier. How does a gate valve work?

A. I think that one -- actually, I would want to refresh my memory on the different names for the different valves, but I think that one just basically rotates to open.

Q. And how does a diaphragm valve work?

A. That's like basically a membrane that moves.

Q. When you say "a membrane that moves," what do you mean?

A. Like a flexible -- I don't know the word -- it's like a flexible part, I guess.

Q. And how does the membrane impact the flow of water through the valve?

MS. TOTO: Objection. Form.

A. Depending on the position, it controls like how much.

Q. Are you aware of any valves that are automatically activated based off of

1 certain water flow conditions?
2 MS. TOTO: Objection. Form.
3 Foundation.
4 A. Yes, there are.
5 Q. Can you give me an example?
6 A. I don't know the specific names of
7 them, but I know that there are valves that are
8 activated based on the flow to basically keep
9 the -- try to keep the flow rate constant.
10 Q. Are you familiar with a backflow
11 valve?
12 A. Yes.
13 Q. What does a backflow valve do?
14 A. Basically like a one-way valve so
15 you can't have flow going the opposite
16 direction.
17 Q. Could you turn back to the '105
18 patent. Column 2, line 34 it states, "By
19 virtue of the manual setting" --
20 A. Let me get it. Okay.
21 Q. Column 2, line 34 states, "By
22 virtue of the manual setting of the handle 119

of the bowl fill valve 109, the flow of water through the bowl fill valve 109 is regulated. In this manner, the flow of water is regulated so that enough water flows out of the bowl fill valve 109 to fill a toilet bowl without wasting any water down a drain."

A. I see that.

Q. When it says "the flow of water through the valve is regulated," do you understand that to mean it's regulating the rate at which water flows through the valve?

MS. TOTO: Objection. Form.

A. Yes.

Q. For the next paragraph it states "the bowl fill valve 109 is configured to supply an adjustable flow of water out of the bowl fill outlet 116 that is directed to a toilet bowl during a flush cycle of a toilet to fill the toilet bowl. The flow of water is adjusted so that just enough flows out of the bowl fill valve 109 so as to fill the toilet bowl without wasting any water."

Do you see that?

A. Yes.

Q. So does this suggest setting the bowl fill valve in such a position that the flow rate is sufficient to fill the bowl but not too large of a flow rate?

MS. TOTO: Objection to form. Foundation.

MR. FINCH: Strike that.

Q. Let me ask a better question. Is this saying the bowl fill valve can be adjusted to determine the total amount of water that flows into the toilet bowl?

MS. TOTO: Objection. Form.

A. In conjunction with other things, yes.

Q. And when you say "in conjunction with other things," what other things are you referring to?

A. When the water stops getting supplied.

Q. And the way that the bowl fill

1 valve impacts the total amount of water is by
2 changing the flow rate of the water; is that
3 correct?
4 MS. TOTO: Objection. Form.
5 A. Well, at the end of the day, that
6 is getting changed, yes.
7 Q. So it's fair to say that the bowl
8 fill valve impacts the total amount of water
9 that enters the bowl by adjusting the flow rate
10 of the water?
11 MS. TOTO: Objection. Form.
12 A. It's adjusting the proportion of
13 the water which will, in turn, affect the flow
14 rate, yes.
15 Q. When you say "proportion of the
16 water," what do you mean?
17 A. Adjusting the flow rate because
18 there's less that can get through. So it's
19 adjusting the area that's going through to
20 that. So that does affect the flow rate.
21 Q. When you say there's "less that
22 can get through," because there's a smaller

1 area for the water to pass through?
2 A. Yes. So for continuity.
3 Q. When you say "continuity," what do
4 you mean?
5 A. Basically a conservation of mass.
6 Q. Dr. Cameron, do you have the '105
7 and the '993 patents in front of you; is that
8 correct?
9 A. Yes.
10 Q. Do you understand that the '105
11 patent is a continuation of the '993 patent?
12 A. Yes.
13 Q. Do you have an understanding of
14 what it means for the '105 patent to be a
15 continuation of the '993 patent?
16 A. Yes.
17 Q. What does it mean?
18 A. So a continuation is basically
19 like if you file an application at the patent
20 office, and then you have the option of filing
21 another application that is called
22 continuation, but it basically can claim

1 priority back to that application.
2 So you can take material you've
3 already disclosed in the first application and
4 put it into your second application, and then
5 instead of getting a new filing date that you
6 did for the second one, you can claim priority
7 back to the first one, since it would be the
8 same material that you've disclosed, assuming
9 that's true.
10 Q. Based off of that, is it fair to
11 say that the '105 patent and the '993 patent
12 share the same specification in the figures?
13 MS. TOTO: Objection to form.
14 A. The figures are the same. I can't
15 remember if the specification is word for word
16 the same or not right now.
17 Q. Backing up a level of abstraction,
18 is it fair to say that if we were talking about
19 the '105 patent and talking about the
20 specification in the figures, that our
21 discussion would also apply to the '993 patent
22 as well?

MS. TOTO: Objection to form.
A. Can you repeat that?
Q. Sure. If we were talking about a particular figure or portion of the specification in the '105 patent, and that same figure or language was also present in the '993 patent, is it fair to say that our conversation would apply to both patents?
MS. TOTO: Objection to form.
A. I think that sounds fair, yes.
Q. We haven't talked about the '698 patent, but assuming the specification figures are the same, is it fair to apply those types of discussions to the '698 patent as well?
MS. TOTO: Objection to form.
A. I mean, I would probably want to see whatever you want to talk about specifically. But as a general matter, that sounds okay.
Q. While we're on the topic, Exhibit 1001, IPR2024-00635, U.S. Patent 10,934,698.
(Document previously marked as

Exhibit 1001 for identification)

Q. Dr. Cameron, have you seen this document before?

A. Yes, I have.

Q. If we refer to this as the '698 patent, will you understand what we're talking about?

A. Yes.

Q. If you look at the related U.S. application data on the '698 patent, it states that it's a continuation of application 14/856,901, which is, in turn, a continuation of application 14/164,424, which is the '993 patent.

Do you see that?

A. Yes, I do.

Q. And so, ultimately the '698 patent is a continuation of a continuation of the '993 patent, correct?

MS. TOTO: Objection to the extent it calls for a legal conclusion.

A. That's what that claims on the

1 front sheet, yes.
2 MR. FINCH: Let's go ahead and do
3 another short break.
4 (Recess taken at 5:54 p.m. and
5 reconvening at 6:11 p.m.)
6 BY MR. FINCH:
7 Q. Dr. Cameron, welcome back. You
8 testified earlier today that as part of your
9 preparation for the deposition today, you read
10 the board's Institution decisions; is that
11 correct?
12 A. Yes, I did.
13 Q. I hand you a document marked as
14 Paper 19 in IPR2024-00633, which is the board's
15 decision granting institution of inter partes
16 review.
17 (Document previously marked as
18 Paper 19 for identification)
19 Q. Is this one of the institution
20 decisions that you reviewed as part of your
21 deposition prep?
22 A. Just from looking at it, it looks

like it.

Q. Turn to Pages 14 and 15. The board provides a ruling on the construction of the term "integrally molded with."

Do you see that, Dr. Cameron?

A. Yes, I do.

Q. Did you review the board's opinion regarding this construction?

A. Yes, I did.

Q. On Page 15 of the board states that it construes "'integrally molded with' to mean molded together as a single structure."

Do you see that?

A. Yes, I do.

Q. Do you agree with the board's conclusion?

MS. TOTO: Objection. Legal conclusion.

A. Yes, I will accept that definition for the purposes of the IPR.

Q. Do you intend on offering any opinions that are not consistent with that

opinion or construction?

A. No.

Q. We were looking at the Institution decision for the '993 patent. Do you understand and agree that that construction also applies to the remaining two proceedings?

A. Yes.

Q. Dr. Cameron, I'm going to show you a picture of a valve, and I would like you to tell me whether you have an opinion regarding whether or not the portion that I'm highlighting in yellow is integrally molded with the portion I'm going to highlight in blue?

MS. TOTO: Are you going to be marking this as an exhibit?

MR. FINCH: Yes. We can go ahead and mark this as Exhibit 2005.

(Document marked as Exhibit 2005 for identification)

MS. TOTO: Do you have the front cover of the publication?

MR. FINCH: We'll get to that. I'll mark that separately.

MS. TOTO: Okay.

A. Sorry, did you ask me something on this?

Q. Looking at Figure 6B in front of you, do you have an understanding of whether the portion of the valve highlighted in yellow is integrally molded with the portion of the valve highlighted in blue?

A. From this, it looks like it, yes.

Q. And what about the image makes you think that it is integrally molded, that those two portions are integrally molded?

A. There's no -- there's nothing on here that would indicate to me that there are separate parts in here.

Q. You can set that to the side for now.

I'm going to hand you another figure, and we'll mark this as 2006.

(Document marked as Exhibit 2006

for identification)

MS. TOTO: I object to this whole line of questioning to the extent that it's outside the scope of the report.

Q. Dr. Cameron, the same question. Is the portion of the fixture highlighted in yellow integrally molded to the portion of the fixture that is highlighted in blue?

A. I'm having a harder time -- oh, I see. Hold on a second. Actually, no. I'm having a hard time understanding some of the lines on the top right over here. So I would probably want to see the description of the companies listed.

Q. What other information would be helpful in determining whether or not those two components or portions of the component are integrally molded?

A. Orienting me to what some of the lines in the upper right portion of this figure are.

Q. So you can't tell from this figure

alone whether or not these components are integrally molded?

MS. TOTO: Objection to form.

A. I'm having trouble visualizing what the structure is supposed to look like, and I would want to see some explanations of the lines on the upper right in particular.

Q. Other than identification of what the numerals refer to, is there any other information that would be helpful in determining whether or not the structures are integrally molded?

A. I think, again, just some explanation of the lines that are on the upper right would be helpful.

Q. You can set that to the side for now. Sorry, one more question on that, Dr. Cameron.

Just for clarity of record, what lines are you referring to when you say you would like to see?

A. On the upper right portion.

Q. Okay. Referring to the numerals and the arrows or the lines on the drawing itself?

A. The lines on the drawing itself.

Q. And what type of description of the lines would you need in order to make that determination?

MS. TOTO: Objection. Form.

A. I mean, it's hard to say until I see what the description is.

Q. What type of information do you need to know to know whether or not two structures are integrally molded together?

MS. TOTO: Objection to form.

A. I need some explanation of the lines in here.

Q. Separate and apart from this figure, what information, in general, do you need to know to know whether two structures are integrally molded together?

MS. TOTO: Same objection.

A. Whether they were made as one

1 part. I'm not sure I'm understanding your
2 question.
3 Q. When you're looking at a figure,
4 what information do you need in order to
5 determine whether or not two structures were
6 integrally molded together?
7 MS. TOTO: Objection. Foundation.
8 A. I'm not sure how to answer that.
9 If you want to give me some more pictures, I
10 can -- I can comment on them. I think I'm just
11 basing it all on what I look at. This one I
12 would want more explanation of some of those
13 lines. The first one you gave me seems to me
14 it was integrally molded.
15 Q. Dr. Cameron, you filed
16 declarations in each of IPR2024-00633, '634 and
17 '635, correct?
18 A. Yes.
19 Q. On a high level, can you summarize
20 what the differences are between those three
21 different declarations?
22 MS. TOTO: Objection to form.

A. Each are directed to different claims of the three different patents.

Q. Do you know why you were retained for these IPRs?

MS. TOTO: Objection. Foundation.

A. Because I'm an engineer.

Q. Who hired you?

A. So I -- I mean, just to be clear, I'm just a salaried employee of my firm. I think the firm that I work at was retained -- actually, I don't know. I guess it would either be Petitioner or the counsel for the Petitioner. I'm not sure which.

Q. You don't know whether it was counsel or whether it was Fluidmaster itself?

A. I'm not actually the one that handles that. I'm not sure.

Q. And when you say your firm, is that Engineering Systems, Inc. or is that a different company?

A. Engineers Systems, yes.

Q. So one of the services Engineering

Systems provides is expert testimony?

A. Yes.

Q. When you were retained in these proceedings, what was it that you were asked to do?

A. I was asked to review the three patents and to opine whether they were valid or not.

Q. Do you know when Engineering Systems was first contacted about this matter?

A. I don't remember exactly.

Q. Do you know when you were first contacted about this matter?

A. I don't know. I don't remember exactly.

Q. Roughly when were you first contacted?

A. I don't know. Maybe like a year ago. I don't even like to guess. I'm not sure.

Q. Was it 2024, 2023?

A. I'm kind of guessing, but I think

1 2023.
2 Q. How long after you were first
3 contacted were you hired or retained as an
4 expert or was Engineering Systems hired or
5 retained?
6 A. I'm not sure.
7 Q. You testified earlier that you
8 were asked to review the three patents and to
9 opine whether they were valid or not.
10 As part of that assignment, did
11 counsel provide you with any documents?
12 MS. TOTO: I'll just caution the
13 witness to only reveal documents that
14 you ultimately relied in your report.
15 A. I don't remember if the patents
16 were sent, like the whole patent was sent to
17 me, or if they just sent me some of the patent
18 numbers and I just pulled them.
19 Q. And when you say "the patents,"
20 are you referring to Danco's patents that are
21 challenged here or to the prior art?
22 A. I was referring to Danco's

1 patents.
2 Q. And did counsel also provide you
3 with the prior art that's discussed in your
4 declarations?
5 MS. TOTO: Same caution as before.
6 A. I don't remember that process
7 specifically. It's possible that they were --
8 some of them were sent to me, but I don't have
9 a specific memory.
10 Q. Did you do any prior are searching
11 as part of your work on this matter?
12 A. I think I did some searching, and
13 then I think also there had been some searching
14 done by like an outside firm that those
15 results, I think, were provided to me, but I
16 don't remember if the actual references were
17 sent or just like a list of numbers.
18 Q. When you were doing prior art
19 searching, what was it that you were searching
20 for?
21 A. I don't remember any more.
22 Q. Did you draft your declarations in

each of these proceedings?

A. Yes.

Q. Did anyone assist you in drafting them?

MS. TOTO: I'm going to instruct the witness not to answer. It's privileged.

Q. Outside of counsel, did anyone assist you in drafting your declarations?

A. Yes. I had some people helping me, especially with like doing some highlighting on the figures and things like that.

Q. And when you say "some people," were those employees at Engineering Systems?

A. Yes.

Q. Who helped you?

A. Lance Rewerts.

Q. Can you spell that for the record?

A. I think it's R-e-w-e-r-t-s.

Q. What was the first name?

A. Lance.

Q. L-a-n-c-e?
A. Yes.
Q. Did anyone else assist you with preparing your declarations?
A. Not that I recall.
Q. Okay. Did Mr. Rewerts assist in drafting the declaration separate and apart from preparing the figures?
A. I don't remember specifically, but it's probable he was kind of helping with some of the formatting and organizing as well.
Q. Did Mr. Rewerts provide you with any opinions regarding Danco's patents or the prior art?
A. No.
Q. What is Mr. Rewerts' job?
A. He's an engineer, but he's like a -- we have a group at Engineering Systems that's -- I think it's called visualization. So they will make like figures to go in reports or sometimes like animations of things, stuff like that. So he's in the visualization group.

Q. Did he create all the figures in your reports?

A. Do I have my report?

Q. If you have to go through your reports, we can come back to that later.

A. Okay.

Q. Did counsel provide you with any guidance in preparing your reports?

MS. TOTO: I instruct the witness not to answer as privileged.

Q. Did counsel provide you with any facts or assumptions to rely upon in preparing your reports?

A. No.

Q. All of the facts and assumptions in your reports are your own work?

A. What are you referring to exactly?

MR. FINCH: Strike that.

Q. Dr. Cameron, are you being compensated for your work in this case?

A. So I get -- I'm a salaried employee at ESI.

Q. Is ESI being compensated for your work in this case?

A. Yes, they are.

Q. Do you know how much ESI is being compensated for your work in this case?

A. I think my hourly rate is 570 an hour and ESI bills that.

Q. Is that for all work or based off of what type of work you were doing?

A. That's for anything.

Q. When you say "anything," does that include just expert witness consulting or your other consulting as well?

A. That includes all of my consulting.

Q. Is ESI's compensation from Fluidmaster impacted by the outcome of these proceedings?

A. No.

Q. Is your compensation from ESI impacted by the outcome of these proceedings?

A. No.

Q. Is your compensation from ESI impacted by the number of hours you work on these proceedings?

A. No.

Q. Do you have a sense of how many hours you spent preparing and drafting your declarations in these proceedings?

A. It was a lot, but I don't remember the number.

Q. More or less than a hundred?

A. Probably more.

Q. More or less than 200?

A. I'm not sure.

Q. If you had to guess, more or less than 200?

A. I did spend a lot of time working on this, and I'm still going to guess less.

Q. Is that for each of the three proceedings or total among the three proceedings?

A. Total.

Q. Okay. Other than preparing your

1 declarations, what other work have you done in
2 these proceedings?
3 A. Well, what do you include in
4 prepare?
5 MR. FINCH: Strike that.
6 Q. Other than drafting your
7 declarations, what other work have you done in
8 these IPR proceedings?
9 A. So I did, as I mentioned, I did
10 some searching, I did review of some search
11 results that were provided, and then I did
12 review of the patents at issue, their file
13 histories, and obviously review of all the
14 references I relied on. There might be other
15 things. That's what comes to mind.
16 Q. Did you select which prior art was
17 used in these proceedings?
18 A. I think that was a little bit of a
19 collaborative process with the attorneys.
20 Q. Did you select what combinations
21 of prior art were used to create the different
22 grounds in these proceedings?

A. I think that was also a collaborative process.

Q. What was your impact or input into determining which prior art references were used in these proceedings?

A. I'm not sure what you mean by that.

Q. You testified that it was a collaborative process. What was your role in that collaborative process?

A. To, I don't know, talk through what the different references are and what combinations I thought there would be motivations to combine for, things like that.

MR. FINCH: Dr. Cameron, I think this is a good time to take a break for dinner and the evening, and be back here at ten o'clock tomorrow morning.

(Whereupon the deposition suspended at 6:43 p.m.)

COURT REPORTER: A rough draft?

MS. TOTO: Yes. Thank you.

1 C E R T I F I C A T E
2
3 I, Michael O'Connor, Registered
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9 and ability.
10 IN WITNESS WHEREOF, I have hereunto
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12 of November 2024.
13
14
15 Michael O'Connor
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19
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21 My Commission expires:
22 November 9, 2029

Kimberly K. Cameron, Ph.D., c/o
PILLSBURY WINTHROP SHAW PITTMAN LLP
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Case: Fluidmaster, Inc. v. Danco, Inc.
Date of deposition: November 19, 2024
Deponent: Kimberly K. Cameron, Ph.D.

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

----------x
FLUIDMASTER, INC.,
Petitioner, C.A. No.
v. 2484CV00766-BLS1
DANCO, INC.,
Patent Owner.
----------x
IPR2024-00633 U.S. Patent No. 9,139,993
IPR2024-00634 U.S. Patent No. 9,103,105
IPR2024-00635 U.S. Patent No. 10,934,698

CONTINUED DEPOSITION of
KIMBERLY K. CAMERON, Ph.D.
Wednesday, November 20, 2024
Boston, Massachusetts

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

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1 Wednesday, November 20, 2024
2 10:00 a.m.
3
4 CONTINUED DEPOSITION of KIMBERLY K.
5 CAMERON, Ph.D., appearing at the Westin
6 Boston Seaport District, 425 Summer Street,
7 Boston, Massachusetts, pursuant to notice,
8 before Michael D. O'Connor, RMR, CRC, CRR,
9 and Notary Public
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1 I N D E X

2 Deposition of: Page

3 KIMBERLY K. CAMERON, Ph.D.

4 By Mr. Finch 187, 208

By Ms. Toto 205

5

6 E X H I B I T S

7 No. Page

8 Exhibit 1004 Declaration of Dr. Kimberly

9 Cameron, IPR2024-00633,

10 U.S. Patent 9,139,993 191

11 Exhibit 1004 Declaration of Dr. Kimberly

12 Cameron, IPR2024-00634,

13 U.S. Patent 9,103,105 202

14

15 PREVIOUSLY MARKED EXHIBITS

16 No. Page

17 Exhibit 1016 Linguist certification,

18 IPR2024-00633 193

19 Exhibit 2005 Valve Figure 6B from U.S.

20 Application 2024/0026990 206

21 Exhibit 2006 Valve Figure 1 from U.S.

22 Patent 8,028,719 206

P R O C E E D I N G S

KIMBERLY K. CAMERON, Ph.D.

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

EXAMINATION

BY MR. FINCH:

Q. Dr. Cameron, welcome back.

A. Thank you.

Q. Have you heard the term "flow control valve" before?

A. I'm sure I have. I can't think of a specific instance.

Q. Do you have an understanding of what a flow control valve is?

A. I think it's just a generic term for basically regulating the flow.

Q. Does it bring to mind any specific kind of valve?

A. No.

Q. Dr. Cameron, do you know what a pressure head is?

A. Yes.

Q. What is a pressure head?

A. It's buildup of pressure, sometimes due to height differences, but it's basically the -- it just measures the pressure in terms of like a length basically.

Q. And you say "sometimes due to height differences." Are there other things that can cause a pressure head to form?

A. I think in the context here they're just talking about basically that increase in pressure from elevation.

Q. Are you aware of anything else other than height or elevation that can cause a pressure head to form?

A. I typically just think of pressure head like the difference in pressure.

Q. So is it fair to say that if there is a pressure head, that there is a high pressure volume on one side of the head, a lower pressure volume on the other side of the head?

MS. TOTO: Objection to form.

A. Right. That would be the difference in pressure, yes.

Q. Are pressure heads a problem in fluid systems?

MS. TOTO: Objection to form.

A. They can be.

Q. How can pressure heads cause a problem in fluid systems?

A. It could cause -- well, if you have a fitting, it could cause it to start to work loose. If you have -- I guess depending on the flow, could cause vibration in the pipe.

I think in context here, the problem is typically discussed in terms of the problems with basically a fitting coming apart.

Q. Can a pressure head form when the

flow rate of water in a fluid system increases?

MS. TOTO: Objection to form.

A. Yes.

Q. And what causes the flow rate of water in a fluid system to increase?

MS. TOTO: Objection to form. Foundation.

A. Depends on the system. It could be increase in pumping power. It could be a change in flow area.

Q. And when you say a change in flow area, what do you mean?

A. Cross-sectional area of the conduit your flow is in.

Q. And would a larger or smaller cross-sectional area cause the flow rate to increase?

A. Smaller.

Q. We talked about water flow regulators yesterday. Do you have an opinion on if a water flow regulator can increase the pressure or flow rate -- strike that.

Do you have an opinion on if a water flow regulator can increase the flow rate of fluid?

MS. TOTO: Objection to form.

A. Yes, it could.

Q. And it could also decrease the flow rate of fluid?

A. Correct.

Q. Dr. Cameron, I'm going to hand you a copy of a document marked as 1004, IPR2024-00633.

(Document marked as Exhibit 1004 for identification)

Q. Dr. Cameron, does this appear to be a copy of your declaration from IPR2024-00633?

A. From looking at it, it does appear to be, yes.

Q. Can you please turn to Paragraph 188 of the declaration.

A. 188?

Q. Paragraph 188.
A. Okay.
Q. And in footnote 1 you state, "Claim 5 recites a 'bowl fill valve' that lacks an antecedent basis. For purposes of this petition, I assume the 'bowl fill valve' is the 'water flow regulator.'"
Do you see that?
A. Yes.
Q. Why did you assume that the term "bowl fill valve" is referring to the water flow regulator.
A. Can I see Claim 5?
Q. Do you have the copies of the exhibits from yesterday still?
A. There isn't a -- it doesn't mention bowl fill valve before that. And it says like "the bowl fill valve" rather than like "a bowl fill valve," which is what you do if you're introducing like a part for the first time.
So I think just to be fair, rather

than saying I can't do anything with that claim, it seemed reasonable that what it meant to refer to was the water flow regulator.

Q. Okay. Please turn to Paragraph 203 of your declaration. Starting on the third line of Paragraph 203, it states, "Guoxin discloses an adjustable water flow regulator that adjusts the flow rate of water based on a setting of the water flow regulator."

Do you see that?

A. Yes.

Q. In support of that statement, you state Guoxin, Page 2, lines 25 to 27; is that correct?

A. That's correct.

(Document previously marked as Exhibit 1016 for identification)

Q. I hand you a copy of Guoxin, which was previously marked as Exhibit 1016, and the cite on Page 2. Could you tell me which page you're referring to?

A. I assume that meant what was now

stamped 005.

Q. You assume that or you know that for a fact?

A. Give me a second. I think it is referring to Page 005. I must have a typo on the line numbers, I guess. This is the only format this comes in; is that right?

Q. That is the only format that we received it in.

A. I guess there's a typo on the line number.

Q. If you look at the next sentence, it states, "That level is set by adjusting the T-shaped nut to change the position of how the switching valve's stem is driven, which in turn alters amount of water that can leave the bowl fill restriction before the float valve stops water from entering the water inlet."

Do you see that?

A. Yes.

Q. And in support of that statement, you rely on Guoxin at Page 2, lines 27 to 33;

is that correct?

A. Yes. So that's the same thing. I think the page number is correct but there must be a typo on the line number.

Q. In looking at your declaration, is there any way to tell from the declaration what portions of Guoxin you were intending to refer to?

A. I don't know how it lines up in the beginning of the paragraph, so it might be line 9 through 21 or through the end, whatever number that is.

Q. Okay. When you say line 9, are you referring to the line numbers that are present on the left side of Guoxin?

A. Yeah.

Q. Do those numbers actually correlate to the number of lines in Guoxin?

A. Oh, that's the problem. Now I see. Maybe those numbers are right. Sorry. I was a little confused.

Yeah, they might be off by one.

1 Actually, I just got confused because of the
2 numbers on the side. So I think the citation
3 is accurate.
4 Q. Can you --
5 A. It may be off by one, depending on
6 the ability to count.
7 Q. Can you read lines 27 to 33 from
8 Guoxin?
9 A. Just to myself, I'm assuming,
10 right?
11 Q. That's fine.
12 A. Sorry about that. Actually, I
13 didn't count the numbers, but I think for the
14 second citation here, I think all the way to
15 the bottom is describing how it works, whatever
16 that number is.
17 Q. Okay. That information isn't in
18 your declaration at all?
19 A. What information?
20 Q. Any information that would
21 indicate to the reader that you should read to
22 the bottom of Guoxin.

A. Well, I think the numbers here is also describing that, but I agree that the remainder of that paragraph also relates to that.

Q. Okay. But to be clear, what information -- can you read lines 27 to 33 into the record, please.

A. "This facilitates a state as shown in Figures 3 and 4, where the water inlet and outlet can be aligned in a straight line, allowing water to flow into the toilet. However, when the water in the toilet water tank gradually reaches a set level of height (as shown in Figure 2), the lower annular surround 412 will block between the water inlet and outlet 401 and 402, thus discontinuing the water supply to the toilet through the switching mechanism. Furthermore, the valve stem 42 is equipped with external threads 420, which are combined with a T-shaped nut 421. This T-shaped nut has an appropriate weight, such that when the water level in the tank

1 decreases, the weight of the nut will
2 automatically lower the switching valve. By
3 simply turning the T-shaped nut, the length of
4 the valve stem can be altered, thus changing
5 the position at which the switching valve's
6 stem is driven by the secondary ball float."
7 Q. To be clear, you read to line 36,
8 correct?
9 A. Do you want me to count to make
10 sure?
11 Q. Yes, please.
12 A. Not the whole line of 36, but the
13 first part of 36.
14 Q. Okay. Line 33 starts with the
15 word "That" and ends with the word
16 "automatically," correct?
17 A. Based on counting right now, I
18 think so. It's difficult, because normally
19 there's line numbers on the left line, but they
20 seem to be random.
21 Q. So nothing in the portion of
22 Guoxin that you cited actually relates to

whether or not Guoxin's valve is adjustable, correct?

MS. TOTO: Objection to form.

A. That's not correct.

Q. Can you please tell me what in the portion of Guoxin that you cited in your declaration relates to whether or not the valve is adjustable?

A. It points to Figure 2 where you can see that it is. And obviously, I mean, probably have a typo in here and it's easy to read to the rest of the sentence there. But even the part that's actually cited, it points to Figure 2 where that can be seen.

Q. So in order to understand what you're talking about in the declaration, you would have to read portions that aren't cited as well?

MS. TOTO: Objection to form.

A. I don't agree with that. I agree that the remainder of that paragraph is obviously related to the same thing, but I

1 don't agree that what I cited to doesn't
2 support that.
3 Q. And that's because in your opinion
4 Figure 2 has an adjustable nut in it?
5 A. That's correct.
6 Q. Can you show me where the nut is
7 identified in Figure 2?
8 A. It's number 421.
9 Q. And can you show me where it
10 indicates that that nut is adjustable in Figure
11 2?
12 A. I guess that's how I would
13 understand Figure 2. But I mean, I don't think
14 it's that complicated. If you don't understand
15 that, there is more at the end of that
16 paragraph as well, and I likely intended to
17 cite to that whole paragraph. But because the
18 line numbers here are weird I probably made a
19 typo.
20 Q. Turn to Paragraph 239 in your
21 declaration. Paragraph 239 or directly after
22 it there's an annotated Figure 3 of Brown,

correct?

A. Yes.

Q. And there's a portion of the figure that's highlighted in peach; is that correct?

A. That's correct.

Q. And you refer to that as the extended portion of the toilet fill valve?

A. Yes.

Q. And there's a portion highlighted in green here, correct?

A. Yes.

Q. And is what's highlighted in green the water flow regulator?

A. Yes.

Q. Okay. And I understand it's your opinion that the water flow regulator, which is in green, is inserted into and comes in contact with the extended portion of the toilet fill valve, which is highlighted in peach; is that correct?

A. Yes.

Q. Dr. Cameron, I'm going to hand you a copy of what was previously marked as Exhibit 1004 in IPR2024-00634.

(Document previously marked as Exhibit 1004 for identification)

MR. FINCH: Counsel, I apologize. I don't have another copy of this one. I only have one question on this one.

MS. TOTO: All right.

Q. Can you please turn to Paragraph 52 of the declaration. Sorry, go back to the cover page. I apologize.

Is this a copy of your declaration related to U.S. Patent number 9,103,105?

A. That's what the title page says, yes.

Q. Do you have any reason to suspect this is not your declaration?

A. No.

Q. Please turn to Paragraph 52. Paragraph 52 states that, "I note that Claim 6 of the '105 patent recites 'the bowl fill

1 valve,' which lacks antecedent basis in Claim 6
2 or Claim 1 from which it depends. However, for
3 purposes of the petition, I assume the 'bowl
4 fill valve' in Claim 6 refers to the 'bowl fill
5 restriction' of Claim 1."
6 Did I read that correctly?
7 A. Yes.
8 Q. I hand you a copy of the '105
9 patent as well. Could you please explain to me
10 why the language of "the bowl fill valve" in
11 Claim 6 refers to the "bowl fill restriction"
12 of Claim 1?
13 A. This is similar. So it says like
14 "the bowl fill valve" rather than "a bowl fill
15 valve." So it should be like referring back to
16 something, but there's no bowl fill valve
17 recited earlier in the claim.
18 Rather than just say I can't
19 analyze this claim, because there's no bowl
20 fill valve recited earlier, I just -- instead
21 of doing that, I analyze it assuming that that
22 was bowl fill restriction.

Q. So you understood that when it said "bowl fill valve," it was referring to the "bowl fill restriction"?

MS. TOTO: Objection to form.

A. I mean, I guess I don't know that for sure. I thought it was reasonable to do the analysis for the purposes of the petition with it as bowl fill restriction rather than just saying I can't analyze that claim.

Q. Dr. Cameron, between when we met yesterday and when we started talking this morning, did you do anything else to prepare for your deposition?

A. I did a little bit of the similar things, I looked through my declarations.

Q. Other than your declarations, did you review anything else last night or this morning?

A. I may have looked at some of the patents, too. I don't remember.

Q. Did you meet with counsel last night or this morning?

A. No.

MR. FINCH: Dr. Cameron, I don't have any further questions for you. Thank you for your time.

MS. TOTO: Can we have a break just so I can look over my notes to see if I have anything?

MR. FINCH: That's fine.

(Recess taken at 10:39 a.m. and reconvening at 10:42 a.m.)

EXAMINATION BY

MS. TOTO:

Q. Hi, Dr. Cameron. I just have a few questions to make sure I understand your prior testimony.

Earlier you had testified that a water flow regulator can be adjustable; is that correct?

A. That's correct.

Q. And do you consider a water flow regulator to be only adjustable?

A. I think for the patents here it

can be either, but it can definitely be adjustable.

Q. Would you consider a water flow regulator to include fixed devices?

A. Yes.

Q. Quickly, can we revisit two exhibits that you had looked at earlier in your testimony; 2005 and 2006.

Looking at 2005, do you recall seeing this yesterday?

(Document previously marked as Exhibit 2005 for identification)

(Document previously marked as Exhibit 2006 for identification)

A. Yes.

Q. Can you tell at all where this figure comes from?

A. It appears it's part of U.S. patent application 2024/0026990.

Q. Were you given any of the specification claims or cover page?

A. No. Just this page.

Q. Do you recognize this patent reference as any of the references considered in this case?

A. No.

Q. Have you seen this figure before?

A. No.

Q. Do you know what this invention relates to?

A. No.

Q. Do you know the title of the invention?

A. No.

Q. Do you have any idea what industry this invention relates to?

A. No.

Q. Putting that aside, let's turn to Exhibit 2006. Do you recall seeing this yesterday?

A. Yes, I do.

Q. Similar questions. Can you tell where this figure comes from?

A. Yeah. It looks like it's from

U.S. Patent 8,028,719.

Q. And were you given any part of the specification or claims or cover page to this patent?

A. No.

Q. Do you recognize this patent as coming from any of the references in this case?

A. No.

Q. Have you seen this figure before?

A. No.

Q. Do you know what this invention relates to?

A. No.

Q. Do you know the title of the invention?

A. No.

Q. And do you know what industry this invention relates to?

A. No.

MS. TOTO: Thank you, Dr. Cameron. I have no further questions.

RE-EXAMINATION BY

MR. FINCH:

Q. A little bit of recross. You testified that you hadn't seen the claims with the cover page of either 2005 or 2006, correct?

A. That's correct.

Q. Is that important information to have when interpreting a figure in a patent?

A. It could be, yeah -- well, in terms of, you know, as in the patent, sure. Yes.

Q. You said you didn't know what either of the inventions relate to; is that correct?

A. That's correct.

Q. Is it important to have that type of knowledge when interpreting a figure?

A. I think it's important to understand the invention to be able to see the figure and the explanation, sure.

Q. And with respect to Exhibit 2005, yesterday you testified that you believe that figure was integrally molded; is that correct?

A. Yes.
Q. How did you make that determination without the information we discussed?
A. So for the information -- well, what I was talking about before is if you want to understand this invention, I probably wouldn't be able to tell you what the invention is based on this figure alone. So, yeah, I would probably want to see this specification and the other figures as well.
Q. That wasn't quite my question. I wanted to know how you made the determination yesterday that that figure depicted an integrally molded structure without looking at the claims, the specification or the title?
A. From looking at the figure.
Q. So you were able to determine based off the figure alone that that was an integrally molded structure?
MS. TOTO: Objection to form.
A. That's what it looks like to me.

MR. FINCH: No further questions. Thank you.

COURT REPORTER: Ms. Toto, an expedited transcript for Friday and Monday for yesterday and today?

MS. TOTO: Yes.

(Whereupon the deposition concluded at 10:48 a.m.)

1 C E R T I F I C A T E

2

3 I, Michael O'Connor, Registered Merit Reporter/Certified Realtime Reporter,

4 do hereby certify:

That KIMBERLY K. CAMERON, Ph.D.,

5 the witness whose testimony is hereinbefore

6 set forth, was duly sworn by me and that such testimony is a true and accurate record

7 of my stenotype notes taken in the foregoing

8 matter to the best of my knowledge, skill

9 and ability.

10 IN WITNESS WHEREOF, I have hereunto

11 set my hand and Notarial Seal this 20th day

12 of November 2024.

13

14

15 Michael O'Connor

16

17 MICHAEL O'CONNOR, RMR, CRR, CRC

18 Notary Public

19

20

21 My Commission expires:

22 November 9, 2029

Kimberly K. Cameron, Ph.D., Vol II, c/o
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Case: Fluidmaster, Inc. v. Danco, Inc.
Date of deposition: November 20, 2024
Deponent: Kimberly K. Cameron, Ph.D., Vol II

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