Transcript of Troy L. Thornton

Date: August 15, 2025
Case: Imperative Care, Inc. -v- Inari Medical, Inc. (PTAB)

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INARI-2011
Imperative Care, Inc. v Inari Medical, Inc.
IPR2024-01157

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

IMPERATIVE CARE, INC.,	)	
	)	
Petitioner,	)	
	)	
VS.	)	Case No. IPR2024-01157
	)	Patent No. 11,697,011 B2
INARI MEDICAL, INC.,	)	
	)	
Patent Owner.	)	
_____	)	

IN-PERSON VIDEOTAPED DEPOSITION OF
TROY L. THORNTON
FRIDAY, AUGUST 15, 2025

STENOGRAPHIC REPORTER: CHRISTA YAN, CSR NO. 14316, RPR

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ALSO PRESENT PERSONALLY:
GARY GARCIA, The Videographer

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INDEX OF EXAMINATIONS

	PAGE
MR. HAMILTON	6

--oOo--

Witness's Changes or Corrections	84
Reporter's Certificate	86

--oOo--

E X H I B I T S

EXHIBIT	FOR IDENTIFICATION	PAGE
No Exhibits Marked.		

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1 BE IT REMEMBERED that on FRIDAY, the 15TH DAY OF
2 AUGUST, 2025, at the hour of 9:01 A.M., of said day, at
3 333 Bush Street, San Francisco, California 94104, before
4 me personally, CHRISTA YAN, a Certified Shorthand
5 Reporter, State of California, personally appeared TROY L.
6 THORNTON, who was examined as a witness in said cause;
7 that said transcript format was prepared in accordance
8 with California Code of Regulations Section 2473.
9
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15 --oOo--
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25

1 THE VIDEOGRAPHER: Here begins Media Number 1 in the 09:01:22
2 videotaped deposition of Troy L. Thornton in the matter of 09:01:25
3 Imperative Care, Inc., versus Inari Medical, Inc., in the 09:01:31
4 United States Patent and Trademark Office before the 09:01:39
5 Patent Trial and Appeal Board. Case Number IPR 09:01:43
6 2024-01157. 09:01:54
7 Today's date is August 15th, 2025. The time on 09:01:55
8 the video monitor is 9:01 a.m. The videographer today is 09:01:58
9 Gary Garcia, representing Planet Depos. This video 09:02:02
10 deposition is taking place at 333 Bush Street, San 09:02:05
11 Francisco, California. 09:02:10
12 Would counsel please voice identify themselves 09:02:11
13 and state whom they represent starting with the taking 09:02:13
14 attorney. 09:02:16
15 MR. HAMILTON: This is Joseph Hamilton from Perkins 09:02:16
16 Coie representing Patent Owner. 09:02:25
17 MR. STOWELL: Joshua Stowell of Knobbe Martens, 09:02:25
18 representing Petitioner, Imperative Care, as well as the 09:02:28
19 witness. 09:02:32
20 THE VIDEOGRAPHER: The court reporter today is Christa 09:02:33
21 Yan representing Planet Depos. The witness will now be 09:02:35
22 sworn. 09:02:38
23 TROY L. THORNTON, 09:02:38
24 the Witness, called on behalf of the Patent Owner, being 09:02:38
25 duly sworn to state the truth, the whole truth, and 09:02:38

1 nothing but the truth, testified on oath as follows: 09:02:38
2 EXAMINATION 09:02:46
3 BY MR. HAMILTON: 09:02:46
4 Q Good morning, Mr. Thornton. Thank you for coming 09:02:49
5 back. 09:02:52
6 Do you understand you're under oath? 09:02:52
7 A Yes. 09:02:56
8 Q Is there any reason you can't give your full, 09:02:57
9 complete, and truthful testimony today? 09:03:02
10 A No. 09:03:04
11 Q Are you on any medications that might prevent you 09:03:05
12 from giving your full, complete, and truthful testimony 09:03:08
13 today? 09:03:11
14 A No. 09:03:11
15 Q I'm going to hand you a couple things. We'll 09:03:12
16 start first with Exhibit 1001. 09:03:29
17 Do you recognize Exhibit 1001? 09:03:47
18 A Yes. 09:03:50
19 Q And is this the '011 patent? 09:03:50
20 A Yes. U.S. 11,697,011 B2. 09:03:57
21 Q If I refer to that Exhibit 001 as the '011 09:04:04
22 patent, can we both agree that's the same patent 09:04:15
23 Exhibit 1001? 09:04:19
24 A Yes. 09:04:20
25 Q All right. I'm going to hand you another 09:04:22

1 exhibit. This exhibit's been previously marked as 09:04:26
2 Exhibit 1014. Do you recognize this exhibit? 09:04:40
3 A Yes. 09:04:42
4 Q And what is it? 09:04:43
5 A Supplemental Declaration of Troy L. Thornton in 09:04:45
6 Support of Petitioner's reply for Inter Partes Review of 09:04:50
7 U.S. Patent Number 11,697,011. 09:04:54
8 Q Do you recall submitting an earlier declaration 09:05:03
9 in this matter? 09:05:09
10 A Yes. 09:05:10
11 Q So to keep the two separate, when we refer to 09:05:13
12 them, I'm going to refer to Exhibit 1014 as your 09:05:20
13 supplemental declaration. And the other exhibit, which is 09:05:24
14 Exhibit 1003, I'm going to refer to as your declaration. 09:05:28
15 A Okay. 09:05:32
16 Q Is that okay? Great. 09:05:33
17 Is there anything you want to change in your 09:05:36
18 first declaration, Exhibit 1003? 09:05:47
19 A No. 09:05:50
20 Q Are there any mistakes in your first declaration, 09:05:51
21 Exhibit 1003, that you're aware of? 09:06:03
22 A Not that I'm aware of. 09:06:05
23 Q And then what about for your supplemental 09:06:06
24 declaration? 09:06:09
25 A I'm not aware of any mistakes. 09:06:10

1 THE VIDEOGRAPHER: One moment, Counsel. I just want 09:06:33
2 to adjust your mic because it keeps brushing against your 09:06:35
3 shirt. (Indicating.) There you go. 09:06:41
4 BY MR. HAMILTON: 09:06:43
5 Q If you could open your supplemental declaration 09:06:44
6 to page 21. 09:06:48
7 A Yes. 09:07:30
8 Q Do you see the figure on page 21? 09:07:30
9 A Yes. 09:07:33
10 Q I got a couple questions about that figure. Do 09:07:34
11 you understand what's depicted in the figure? 09:07:36
12 A Yes. 09:07:38
13 Q And what is depicted in the figure on page 21? 09:07:40
14 A It's an illustration provided by the patent owner 09:07:43
15 showing two instruments in red with a Hartley string or 09:08:11
16 Eller's wire member encircling them in yellow, and green 09:08:23
17 is identified as Schaffer's seal module component. 09:08:30
18 Q If you look at the sentence underneath the figure 09:08:36
19 beginning with, Patent owner's illustration. 09:08:41
20 A Yes. 09:08:48
21 Q What is the compliant sealing member you're 09:08:48
22 referencing there? 09:08:52
23 A The sealing member that's described in Schaffer's 09:08:53
24 paragraph 68. 09:09:27
25 Q Is this figure an accurate depiction of your 09:09:34

1 proposed combination of Schaffer with Hartley or Eller? 09:09:38
2 MR. STOWELL: Objection. Incomplete hypothetical. 09:09:45
3 THE WITNESS: It's not my depiction. It's from patent 09:09:47
4 owner's illustration that was provided, I think, by 09:09:57
5 Zalesky. 09:10:02
6 BY MR. HAMILTON: 09:10:02
7 Q And is it an accurate depiction of your proposed 09:10:04
8 combination of Schaffer with Hartley or Eller? 09:10:07
9 MR. STOWELL: Same objection. 09:10:19
10 THE WITNESS: Yeah, I'm not sure that it is an 09:10:20
11 accurate depiction. 09:10:28
12 BY MR. HAMILTON: 09:10:29
13 Q And why not, what's not accurate about it? 09:10:29
14 MR. STOWELL: Objection. Outside the scope. 09:10:38
15 THE WITNESS: As I state in paragraph 35, they're 09:10:39
16 depicting a noncompliant sealing member in the 09:10:57
17 illustration showing large gaps whereas if they would have 09:11:01
18 used the very compliant material as described in Schaffer 09:11:07
19 as... as a very compliant sealing member as described in 09:11:14
20 Schaffer which would fill in those gaps. 09:11:44
21 BY MR. HAMILTON: 09:11:46
22 Q So in your proposed combination of Schaffer with 09:11:53
23 Hartley or Eller, that proposed combination would include 09:11:55
24 the highly compliant sealing member; is that correct? 09:11:58
25 MR. STOWELL: Objection. Misstates testimony. 09:12:00

1 THE WITNESS: In the Schaffer embodiments where the 09:12:01
2 U-shape actuating members are replaced with a wire member 09:12:23
3 or string, the seal module wouldn't be extremely 09:12:27
4 compliant, gel-like sticky as is described this Schaffer 09:12:39
5 paragraph 68. 09:12:51
6 BY MR. HAMILTON: 09:12:51
7 Q But you would include a highly compliant sealing 09:12:59
8 member; is that correct? 09:13:04
9 MR. STOWELL: Objection. Misstates testimony. Asked 09:13:06
10 and answered. 09:13:09
11 THE WITNESS: It would include a seal member. It 09:13:09
12 would not be the extremely sticky self-sealing seal member 09:13:16
13 which is one of the options provided in Schaffer. 09:13:23
14 BY MR. HAMILTON: 09:13:26
15 Q But it would be compliant enough to fill in the 09:13:27
16 gaps in the figure on page 21, correct, that's your 09:13:29
17 testimony? 09:13:33
18 MR. STOWELL: Objection. Misstates testimony. Asked 09:13:34
19 and answered. 09:13:36
20 THE WITNESS: No. I think the seal member to be used 09:13:36
21 with Schaffer would need to reopen when force is 09:13:46
22 released -- when the circumferential force is released so 09:13:54
23 that an extremely compliant sticky seal member would not 09:14:01
24 be the appropriate material choice. 09:14:05
25

1 BY MR. HAMILTON: 09:14:07
2 Q What about just a compliant seal member, would it 09:14:08
3 include a compliant seal member? 09:14:11
4 MR. STOWELL: Objection; vague. 09:14:13
5 THE WITNESS: It's not clear what you mean by 09:14:14
6 compliant. How compliant is compliant? 09:14:19
7 BY MR. HAMILTON: 09:14:21
8 Q I'm looking at your statement on page 21 where 09:14:23
9 you say, Patent owner's illustration does not depict the 09:14:25
10 compliant sealing member, and you refer to a specific 09:14:29
11 paragraph in Schaffer. Do you see that? 09:14:34
12 A Yes. 09:14:35
13 Q How compliant is that sealing member? 09:14:35
14 MR. STOWELL: Objection. Vague. 09:14:40
15 THE WITNESS: I'd have to look at Schaffer's paragraph 09:14:41
16 to refresh my recollection. 09:14:44
17 BY MR. HAMILTON: 09:14:49
18 Q Would that sealing member be compliant enough to 09:14:49
19 fill in the gaps on the -- in the figure on page 21? 09:14:52
20 A I'd have to look at Schaffer to confirm that. 09:14:58
21 Q If the sealing member was not compliant enough to 09:15:00
22 fill in the gaps, your proposed combination of a string or 09:15:10
23 a wire as in Hartley or Eller in the device of Schaffer 09:15:19
24 would leak if two (indiscernible utterance) instruments 09:15:25
25 were inserted as shown on page 21, correct? 09:15:29

1 THE STENOGRAPHIC REPORTER: I'm sorry, Counsel. You 09:15:29
2 said would leak if two what? 09:15:32
3 MR. HAMILTON: I'll withdraw the question and restate 09:15:49
4 it. 09:15:51
5 THE VIDEOGRAPHER: Counsel, please be mindful of your 09:15:53
6 mic. Thank you. 09:15:55
7 BY MR. HAMILTON: 09:15:57
8 Q In your proposed combination of Schaffer with 09:16:00
9 Hartley and Eller, would gaps form when two instruments 09:16:03
10 are inserted as shown on page 21 of your declaration? 09:16:08
11 MR. STOWELL: Objection. Outside the scope. Vague. 09:16:14
12 THE WITNESS: That's not something I've considered in 09:16:16
13 this particular supplemental declaration. 09:16:29
14 BY MR. HAMILTON: 09:16:33
15 Q You don't know if gaps would form as shown in 09:16:37
16 this figure on 21. Is that your testimony? 09:16:40
17 MR. STOWELL: Objection. Asked and answered. 09:16:42
18 THE WITNESS: Repeat the prior question. 09:16:43
19 BY MR. HAMILTON: 09:16:55
20 Q In your proposed combination of Schaffer with 09:17:01
21 Hartley and Eller, would gaps form when two instruments 09:17:03
22 are inserted as shown on page 21 of your declaration? 09:17:06
23 MR. STOWELL: Objection. Outside the scope and vague. 09:17:11
24 THE WITNESS: It would depend on the size of the 09:17:13
25 instruments, the shape of the instruments, the seal module 09:17:36

1 material, the seal module thickness and many other 09:17:40
2 variables, material properties of the seal module. So it 09:17:43
3 would depend on lots of different variables. 09:17:50
4 BY MR. HAMILTON: 09:17:52
5 Q Okay. So let's apply the shape, thickness, and 09:17:53
6 other variables shown on page 21. Would a gap form? 09:17:58
7 MR. STOWELL: Objection. Incomplete hypothetical. 09:18:04
8 THE WITNESS: I don't know. I haven't considered 09:18:05
9 that. 09:18:10
10 BY MR. HAMILTON: 09:18:10
11 Q If you look at the sentence that begins on the 09:18:59
12 bottom of page 21 starting with, The sealing and goes over 09:19:03
13 to the next page. What does that mean, Compliant that it 09:19:07
14 forms a seal around the instruments 260 even if the 09:19:22
15 instruments 260 are irregularly shaped. What does that 09:19:25
16 mean? 09:19:29
17 A That's a statement from the Schaffer patent 09:19:29
18 application so I need to look at Schaffer to fully 09:19:37
19 understand that sentence. 09:19:41
20 Q I'm going to hand you what's been previously 09:19:42
21 marked as Exhibit 1005. Is that the Schaffer that you're 09:20:07
22 referring to? 09:20:14
23 A Yes. 09:20:14
24 Q What do you need to look at to determine what 09:20:15
25 that sentence means from Schaffer that you quoted in your 09:20:22

1 declaration? 09:20:24
2 A So in paragraph 68 it's discussing another 09:20:24
3 embodiment, and the last sentence says, The material 166 09:21:47
4 of the third seal member third central seal member 165 is 09:21:59
5 so compliant that it forms a seal around the instruments 09:22:07
6 260 even if the instruments 260 are irregularly shaped. 09:22:10
7 Q And how does that third central seal member form 09:22:19
8 that seal around an irregularly shaped instrument? 09:22:23
9 A Well, it states it is so compliant, and earlier 09:22:27
10 sections discuss ranges of material properties, including 09:22:44
11 some very compliant soft gelatinous-type materials that 09:22:50
12 they show in paragraph 59. 09:22:58
13 At the end of paragraph 59 Schaffer states, The 09:23:20
14 material 166 exhibits a self-closing nature in that it 09:23:22
15 sticks occlusively to itself forming a nearly fluid 09:23:28
16 gas-tight seal under very light compression. 09:23:32
17 Q So the third central seal member forms a seal by 09:23:42
18 filling in the gaps; is that correct? 09:23:47
19 MR. STOWELL: Objection. Vague. 09:23:50
20 THE WITNESS: It states it can seal around the 09:23:57
21 instruments even if the instruments are irregularly 09:23:58
22 shaped. 09:24:00
23 BY MR. HAMILTON: 09:24:01
24 Q And does that mean it will fill in the gaps 09:24:01
25 around the irregularly shaped instrument? 09:24:03

1 MR. STOWELL: Objection. Vague. 09:24:08
2 THE WITNESS: I would say once again, it depends on 09:24:09
3 the size, the shape, the thickness of the seal member, the 09:24:12
4 compliance of the seal member, the tension applied. Many 09:24:17
5 different variables would make a difference. 09:24:20
6 BY MR. HAMILTON: 09:24:23
7 Q Is the goal of the compliant seal member to fill 09:24:24
8 in those gaps? 09:24:27
9 MR. STOWELL: Objection. Vague. 09:24:27
10 THE WITNESS: Schaffer certainly states that it is so 09:24:28
11 compliant that it forms a seal around instruments even if 09:24:44
12 the instruments are irregularly shaped. 09:24:49
13 BY MR. HAMILTON: 09:24:52
14 Q Does that mean it would fill in the gaps around 09:24:52
15 the irregularly shaped instrument? 09:24:55
16 MR. STOWELL: Objection. Asked and answered. Vague. 09:24:57
17 THE WITNESS: I think it depends on the instruments, 09:24:59
18 the size, the materials, the tension applied and possibly 09:25:00
19 other variables. 09:25:05
20 BY MR. HAMILTON: 09:25:06
21 Q Is the highly compliant material intended to fill 09:25:06
22 in gaps around an irregularly shaped instrument, is that 09:25:08
23 how it seals? 09:25:11
24 MR. STOWELL: Objection. Vague. Asked and answered. 09:25:12
25 THE WITNESS: It's certainly how it's described in 09:25:21

1 Schaffer, is that it would seal around irregularly shaped 09:25:29
2 instruments. 09:25:31
3 BY MR. HAMILTON: 09:25:31
4 Q And could it also fill in the gaps shown on 09:25:49
5 page 21 of your declaration in the figure? 09:25:54
6 MR. STOWELL: Objection. Incomplete hypothetical. 09:25:56
7 THE WITNESS: It would depend on the material, the 09:25:58
8 thickness, material properties, tension applied, the size 09:26:05
9 of the two instruments, and potentially other variables. 09:26:09
10 BY MR. HAMILTON: 09:26:14
11 Q And a person -- could a person of ordinary skill 09:26:16
12 in the art figure out all those variables so that the gaps 09:26:19
13 are filled in by the highly compliant material? 09:26:25
14 A I don't know. 09:26:27
15 Q If you look at the sentence beginning after the 09:26:36
16 quote on the top of page 22 in your declaration, In 09:27:44
17 addition, what did you mean by that sentence? 09:27:47
18 A Well, as I said the patent owner did not explain 09:27:54
19 how the illustration of the two instruments would be any 09:28:18
20 different if the string or wire member were replaced with 09:28:28
21 two U-shaped actuating members. Because of the 09:28:31
22 noncompliant seal that's depicted in illustration, some 09:28:36
23 gaps it would exist with U-shaped actuating members also. 09:28:42
24 Q Okay. So let's stop there. So whether you use a 09:28:48
25 string or U-shaped actuating members, these gaps would be 09:28:52

1 formed unless you use the compliant -- a compliant seal; 09:28:55
2 is that right? 09:29:03
3 MR. STOWELL: Objection. 09:29:03
4 THE WITNESS: I'm just saying that the illustration 09:29:03
5 apparently shows a relatively less compliant material. 09:29:05
6 BY MR. HAMILTON: 09:29:10
7 Q So one skilled in the art would actually use a 09:29:11
8 more compliant material to fill in those gaps; is that 09:29:14
9 right? 09:29:18
10 MR. STOWELL: Objection. Outside the scope. 09:29:18
11 THE WITNESS: I think the illustration is showing a 09:29:19
12 relatively noncompliant material as confirmed by the fact 09:29:25
13 that it is the same thickness all the way around. If a 09:29:29
14 more compliant material were used, it still would be 09:29:37
15 unclear whether some gaps would still form because of the 09:29:41
16 other variables I mentioned before. 09:29:45
17 BY MR. HAMILTON: 09:29:47
18 Q And that would be the same whether it's a string 09:29:47
19 or wire or two U-shaped members; is that right? 09:29:52
20 A Well, as I said, if the string were replaced by 09:29:55
21 two U-shaped actuating members, and one were to use a 09:30:08
22 relatively noncompliant seal member, some gaps would exist 09:30:15
23 between either design. 09:30:21
24 Q So could one use a more compliant seal member and 09:30:22
25 fill in those gaps? 09:30:28

1 A As I said before, I'm not sure. It would depend 09:30:29
2 on the size of the instruments, the thickness of the 09:30:38
3 material, the compliance of the material, the tension 09:30:41
4 applied, the flexibility of the U-shaped members, et 09:30:45
5 cetera. 09:30:50
6 Q So both the U-shaped members and the string would 09:30:51
7 form the gaps; is that right? 09:30:55
8 MR. STOWELL: Objection. Misstates testimony. 09:30:57
9 THE WITNESS: Gaps could form depending on the 09:30:58
10 multiple variables that I've mentioned several times. 09:31:04
11 BY MR. HAMILTON: 09:31:06
12 Q You say here on page 22, the same gaps would 09:31:07
13 exist. You're comparing the gaps with a string or a wire 09:31:09
14 and U-shaped members, correct? 09:31:14
15 A And with use of a relatively less compliant seal 09:31:16
16 member. 09:31:28
17 Q So using a string or a wire in place of the 09:31:28
18 U-shaped members doesn't improve sealing if all other 09:31:33
19 things are equal; is that right? 09:31:38
20 MR. STOWELL: Objection. Incomplete hypothetical. 09:31:42
21 Vague. 09:31:44
22 THE WITNESS: It's certainly possible that a string or 09:31:44
23 a wire could improve sealing. Once again, it depends on 09:31:53
24 the size and shape of the instruments inside, material 09:31:57
25 properties of the seal module, tension applied, the 09:32:01

1 flexibility of the string, wire, or U-shaped members and 09:32:06
2 potentially other variables. 09:32:13
3 BY MR. HAMILTON: 09:32:14
4 Q So here on page 22 you say, The same gaps would 09:32:15
5 exist. 09:32:17
6 A In this illustration that was provided by the 09:32:20
7 patent owner, given the way it's drawn, if the same 09:32:24
8 materials were used, it would appear that the similar gaps 09:32:31
9 would exist. 09:32:36
10 Q Now you just said similar. It would be the same 09:32:37
11 gaps, wouldn't it? 09:32:39
12 A It might depend on the material properties, the 09:32:40
13 tension applied, how tension can be applied to U-shaped 09:32:44
14 members, may be different than how tension is applied to a 09:32:48
15 suture. 09:32:53
16 Q So do you want to change this then, do you want 09:32:53
17 to change your testimony on page 22, you said the same 09:32:56
18 gaps. Is that not true? 09:32:58
19 A No, I don't want to change it. 09:33:00
20 Q So the same gaps would exist with U-shaped 09:33:04
21 members and a string or a wire, correct? 09:33:07
22 A If a relatively noncompliant seal member, as is 09:33:09
23 depicted in the illustration, it would be the same or very 09:33:14
24 similar gaps would exist if U-shaped members were used. 09:33:19
25 Q And how would a more compliant seal member 09:33:23

1 address that issue of the gaps? 09:33:26
2 A If a thicker, more compliant seal member were 09:33:28
3 used, it may be able to fill in some or all of the gaps. 09:33:34
4 Q And that would be the case whether or not a 09:33:41
5 string or a wire is used or U-shaped members as in 09:33:48
6 Schaffer's used, correct? 09:33:53
7 MR. STOWELL: Objection. Compound. 09:33:56
8 THE WITNESS: I think it's unclear without knowing the 09:33:56
9 exact materials, material properties, thicknesses, et 09:34:05
10 cetera, how different designs would perform. 09:34:08
11 BY MR. HAMILTON: 09:34:14
12 Q Would you need to know how compliant the member 09:34:26
13 is in order to assess that? 09:34:28
14 A I think one would need -- a person skilled in the 09:34:29
15 art would need to know many different aspects of the 09:34:36
16 different components of the design. 09:34:40
17 Q Is that one of the aspects? 09:34:41
18 A That would be one of the aspects. 09:34:43
19 Q Would you also need to know if the U-shaped 09:34:45
20 members were rigid or flexible to determine if the gaps 09:34:59
21 would be filled in? 09:35:04
22 A I think it would be important to know the 09:35:05
23 material properties of U-shaped members, the size and 09:35:20
24 shape of material properties, and obviously, flexibility 09:35:24
25 and rigidity exist along a wide range. 09:35:29

1 Q So you would need to know how much force is 09:35:34
2 necessary to cause the more compliant material to fill in 09:35:39
3 the gaps; is that right? 09:35:44
4 MR. STOWELL: Objection. Vague. Misstates testimony. 09:35:46
5 THE WITNESS: I think as I've said before, I think we 09:35:47
6 need to know -- a person of skill in the art would need to 09:35:53
7 know material properties for all the different components, 09:35:58
8 dimensions for the different components to be able to 09:36:05
9 judge that. 09:36:08
10 BY MR. HAMILTON: 09:36:09
11 Q And those properties and different components, 09:36:09
12 one of those properties is how compliant the seal member 09:36:12
13 is, right? 09:36:15
14 A That would be one aspect -- 09:36:17
15 Q Sorry. 09:36:22
16 A -- of one component. 09:36:23
17 Q And another one would be how rigid the member 09:36:24
18 applying (indiscernible utterance) the compression is, 09:36:38
19 right? 09:36:38
20 THE STENOGRAPHIC REPORTER: As a member of compliant 09:36:38
21 pressure? Is that what you said? 09:36:38
22 MR. HAMILTON: How rigid the member applying the 09:36:39
23 compression is. 09:36:42
24 THE STENOGRAPHIC REPORTER: Thank you. 09:36:42
25 THE WITNESS: I think it would be important to know 09:36:49

1 the dimensions, the material properties. Material 09:36:51
2 properties include, flexibility or rigidity, among other 09:36:58
3 properties and dimensions for the tools that are inside, 09:37:05
4 the tension applied and potentially other properties. 09:37:13
5 BY MR. HAMILTON: 09:37:15
6 Q For -- if you look at the first sentence on 09:37:15
7 page 22, starting with the quote, So compliant that it 09:37:37
8 forms a seal. Do you see that? 09:37:43
9 A Yes. 09:37:45
10 Q I want you to assume a seal member meets that 09:37:46
11 requirement. It's so compliant that it forms a seal. 09:37:50
12 Okay? Can you do that? 09:37:53
13 MR. STOWELL: Objection. Vague. Incomplete 09:37:56
14 hypothetical. 09:37:57
15 THE WITNESS: I don't know. It depends on the 09:37:57
16 dimensions, the material properties, the size of the 09:38:07
17 instrument. There's many variables to consider. 09:38:09
18 BY MR. HAMILTON: 09:38:13
19 Q So is it your testimony that you -- withdraw the 09:38:15
20 question. 09:38:21
21 And the way this functions would be a -- some 09:38:21
22 member, U-shaped member or string would cause the 09:38:33
23 compliant member however compliant it is, to deform to 09:38:36
24 form the seal; is that correct, that's how this operates? 09:38:42
25 MR. STOWELL: Objection -- objection. Vague. 09:38:44

1 THE WITNESS: The mechanism of action in the '011 09:38:46
2 patent and in Schaffer are the same in that they 09:38:55
3 circumferentially constrict the tube in order to create a 09:39:05
4 seal around the members that are inside. 09:39:10
5 BY MR. HAMILTON: 09:39:15
6 Q So right now, we're talking about some sealing 09:39:15
7 member that's so compliant that it forms a seal as you've 09:39:18
8 stated on page 22. And the way Schaffer forms the seal 09:39:22
9 with that sealing member that is so compliant that it 09:39:28
10 forms a seal is to apply some kind of compression to that 09:39:32
11 sealing member, correct? 09:39:35
12 MR. STOWELL: Objection. Misstates testimony. 09:39:37
13 Incomplete hypothetical. 09:39:40
14 THE WITNESS: In Schaffer, when they are showing 09:39:40
15 embodiments that are described as being this extremely 09:39:44
16 compliant, gelatinous, sticky material, they're referring 09:39:51
17 to earlier embodiments, not the embodiments in 30 through 09:39:55
18 34 -- Schaffer 30 through 34, which have the same 09:40:01
19 mechanism of action as the '011 patent. 09:40:09
20 BY MR. HAMILTON: 09:40:11
21 Q So but is it your testimony the embodiment in 09:40:12
22 Schaffer Figures 30 through 34, does not include a 09:40:16
23 compliant seal member; is that right? 09:40:21
24 MR. STOWELL: Objection. Vague. 09:40:23
25 THE WITNESS: In Schaffer, they use the term highly 09:40:23

1 compliant third seal member, and they use that seal member 09:40:36
2 to describe embodiments shown as 10A, 10B. And the way 09:40:39
3 that those embodiments work is by passive blood pressure, 09:40:51
4 not by an outside constraining force that constricts a 09:40:57
5 lumen. 09:41:05
6 BY MR. HAMILTON: 09:41:05
7 Q And so is it your testimony that that sealing 09:41:06
8 member that you just referred to is not found and could 09:41:08
9 not be used in Figures 30 through 34 in that embodiment; 09:41:11
10 is that right? 09:41:15
11 A I certainly don't believe that a gelatinous 09:41:15
12 substance that sticks to itself as they describe in 09:41:25
13 paragraph 59 is the type of material which could be used 09:41:29
14 for the Figures 30 through 34. 09:41:37
15 Q What about a material that's so compliant that it 09:41:43
16 forms a seal around instruments as you quoted on page 22, 09:41:45
17 could that material be used in the embodiment of Figures 09:41:52
18 30 through 34? 09:41:55
19 MR. STOWELL: Objection. Vague. 09:41:55
20 THE WITNESS: Once again, that sentence comes from the 09:41:56
21 end of paragraph 68 in Schaffer. And as it says, it's so 09:42:16
22 compliant which implies that it is the sticky, super-soft 09:42:33
23 material, gelatinous material, and I do not believe that 09:42:36
24 that would be -- a person skilled in the art would choose 09:42:40
25 that material to be used with the figures in 30 09:42:45

1 through 34, Schaffer. 09:42:51
2 BY MR. HAMILTON: 09:42:53
3 Q And when you say that material, let's just make 09:42:53
4 sure we're clear on what material you're referring to. 09:42:59
5 What paragraph are you referencing for the material? 09:43:06
6 A Paragraph 59, Schaffer. 09:43:07
7 Q So is it your testimony that the description of 09:43:10
8 the materials, for example, C-flex or Kraton, wouldn't be 09:43:19
9 used in the embodiment of Figures 30 through 34, is that 09:43:25
10 your understanding? 09:43:28
11 MR. STOWELL: Objection. Misstates testimony. 09:43:29
12 THE WITNESS: In paragraph 59 they say the shore 09:43:30
13 hardness of the material 166 is in another option between 09:43:41
14 15 and 20 on the shore 00 scale. This provides a material 09:43:45
15 166 that is extremely soft and compliant and intrinsically 09:43:50
16 sticky. They go on to compare it to a gelatinous 09:43:54
17 substance. 09:44:06
18 So I believe that material, that type of 09:44:06
19 description of material is not the material that would be 09:44:08
20 able to be used for designs in Figures 30 through 34 09:44:15
21 wherein when the tension is released on the actuating 09:44:21
22 members, the tubing needs to recover, reopen on its own, 09:44:25
23 in order to open the valve. 09:44:32
24 BY MR. HAMILTON: 09:44:33
25 Q So it's this sentence in paragraph 59 that begins 09:44:33

1 with, The shore hardness and ends with, 00 scale. That's 09:44:37
2 the material you're referring to, something with those 09:44:40
3 properties couldn't be used in Figures 30 through 34; is 09:44:42
4 that correct? 09:44:45
5 A I think a person skilled in the art would not 09:44:45
6 choose materials that were that soft, gelatinous, or 09:44:51
7 sticky to be used in designs that need -- where the 09:44:53
8 sealing member needs to reopen on its own once tension is 09:45:01
9 released from its circumference. 09:45:06
10 Q And when you say that soft, gelatinous, or 09:45:10
11 sticky, you're referring to the shore hardness properties, 09:45:14
12 correct? 09:45:18
13 A Hardness is one measure. I think there are 09:45:18
14 others. But they describe it as intrinsically sticky, 09:45:21
15 extremely soft, extremely low shore hardness. It can be 09:45:30
16 easily compressed upon itself or upon inserted an 09:45:35
17 instrument, can be compared to a gelatinous substance. 09:45:41
18 Q And that material -- withdraw the question. 09:45:55
19 If you could turn to paragraph 75 of Schaffer. 09:46:12
20 Do you see the last sentence in paragraph 75? 09:46:42
21 A Yes. It reads, In another option, the seal 09:46:44
22 module 100 and/or any of its respective seal members can 09:46:52
23 be formed of one or more materials, including their 09:46:56
24 relative properties as discussed above. 09:47:00
25 Q And that would include the materials and 09:47:02

1 properties of paragraph 59, wouldn't it, that's discussed 09:47:05
2 above that paragraph, isn't it? 09:47:08
3 A That's at least one area above that discusses 09:47:09
4 material properties. 09:47:14
5 Q So Schaffer says you can use that material, 09:47:15
6 doesn't it? 09:47:18
7 MR. STOWELL: Objection. Misstates the document. 09:47:19
8 THE WITNESS: Schaffer says that the seal members 09:47:21
9 could be formed of one or more materials and they have a 09:47:29
10 wide range of materials shown in paragraph 59 including 09:47:33
11 ones that are not so soft and sticky and gelatinous in 09:47:40
12 their nature. 09:47:48
13 BY MR. HAMILTON: 09:47:48
14 Q So how compliant is the seal module in this 09:48:12
15 embodiment 30 through 34? 09:48:17
16 MR. STOWELL: Objection. Vague. Outside the scope. 09:48:19
17 THE WITNESS: The description in Schaffer toward the 09:48:22
18 end of paragraph 77 says, The seal module 100 is able to 09:49:04
19 retract to an unsealed configuration. So that it has to 09:49:17
20 be resilient enough to retract to its open configuration 09:49:23
21 or unsealed configuration. That's the guidance that they 09:49:26
22 provided. 09:49:30
23 BY MR. HAMILTON: 09:49:30
24 Q Does it also have to be compliant enough to seal 09:49:32
25 around irregularly shaped instruments? 09:49:35

1 A I'm sure the goal of the design is to be able to 09:49:37
2 seal well. It also has to unseal and reopen. 09:49:50
3 Q So the goal of the design is to be able to seal 09:49:54
4 around irregularly shaped instruments, correct? 09:50:02
5 MR. STOWELL: Objection. Misstates testimony. Asked 09:50:05
6 and answered. 09:50:07
7 THE WITNESS: I think the goal is to be able to seal 09:50:07
8 around various instruments. It is a hemostatic valve. So 09:50:16
9 it's designed to seal around a variety of instruments, I'm 09:50:24
10 sure. 09:50:27
11 BY MR. HAMILTON: 09:50:27
12 Q And the seal members must be compliant enough to 09:50:28
13 seal around irregularly shaped instruments, correct, for 09:50:32
14 this embodiment of Figures 30 through 34, correct? 09:50:37
15 MR. STOWELL: Objection. Vague. Misstates the 09:50:39
16 document. 09:50:40
17 THE WITNESS: In order to seal adequately, there are a 09:50:47
18 number of variables, including the spring tension, the 09:50:49
19 actuating members, material properties, the seal member 09:50:53
20 material properties and thickness, the tension applied, 09:51:02
21 and probably others that all impact the ability to seal 09:51:07
22 appropriately. 09:51:11
23 BY MR. HAMILTON: 09:51:11
24 Q So let's focus on the seal member material 09:51:20
25 properties and thickness. And one of those properties is 09:51:23

1 how compliant the seal member is, right? 09:51:27
2 A Yes. 09:51:28
3 Q And a more compliant seal member is more likely 09:51:31
4 to fill in gaps or seal around an irregularly shaped 09:51:35
5 instrument, correct? 09:51:39
6 MR. STOWELL: Objection. Vague. 09:51:41
7 THE WITNESS: Depends on the thickness and the 09:51:42
8 material properties, tension applied, et cetera. 09:51:46
9 BY MR. HAMILTON: 09:51:51
10 Q Does it also again on what's applying the 09:51:53
11 compression? 09:51:55
12 MR. STOWELL: Objection. Vague. 09:51:57
13 THE WITNESS: Yeah, I don't know. I haven't 09:51:57
14 considered that. 09:52:10
15 BY MR. HAMILTON: 09:52:10
16 Q So let's go back to page 21, paragraph 35 of your 09:56:08
17 supplemental declaration. You're right there on it. Do 09:56:15
18 you see the figure? 09:56:19
19 A Yeah. 09:56:19
20 Q You say, Patent owner's illustration does not 09:56:20
21 depict the compliant seal member described in Schaffer's 09:56:33
22 paragraph 68. Do you see that, right underneath the 09:56:35
23 picture? 09:56:38
24 A Yes. 09:56:38
25 Q If the compliant seal member described in 09:56:39

1 Schaffer's paragraph 68 was included in the figure on 09:56:45
2 page 21, how would that figure differ? 09:56:50
3 A If it were extremely compliant and soft material, 09:56:52
4 it would probably show some filling of the gaps, some 09:57:17
5 thinning out on the sides where it's in contact with the 09:57:24
6 instruments. 09:57:28
7 Q So when you say it would probably show some 09:57:28
8 filling in of the gaps and thinning out on the sides, you 09:58:18
9 mean it would deform? 09:58:24
10 A Once again, it depends on how gelatinous, how 09:58:25
11 soft, how much pressure's being applied. But if a seal 09:58:33
12 module were significantly more compliant than what's shown 09:58:42
13 here, it would have a different geometry shown. 09:58:48
14 Q And it would have a different geometry because 09:59:01
15 the material had deformed, its shape had deformed; is that 09:59:04
16 right? 09:59:12
17 A Extremely soft, compliant, gelatinous material 09:59:12
18 would thin out in certain areas and potentially fill in 09:59:15
19 other areas depending on all the material properties I've 09:59:23
20 mentioned before. 09:59:28
21 Q Thin out in certain areas and potentially fill in 09:59:29
22 other areas, that's the material deforming, correct? 09:59:36
23 A I don't know if I'd characterize it that way. 09:59:40
24 But... it's... changing its geometry if you look at it in 09:59:46
25 cross-section. 09:59:52

1 Q And that changing of geometry is caused by an 09:59:53
2 external compression force, right? 10:00:05
3 MR. STOWELL: Objection. Vague. Incomplete 10:00:09
4 hypothetical. 10:00:11
5 THE WITNESS: It's caused by exerting force around the 10:00:11
6 seal module. Circumferential force around the seal 10:00:18
7 module. 10:00:26
8 BY MR. HAMILTON: 10:00:26
9 Q Let's turn to page 17 of your declaration -- 10:01:02
10 supplemental declaration, excuse me. Does this image show 10:01:08
11 a compliant seal member? 10:01:56
12 MR. STOWELL: Objection. Vague. 10:01:59
13 THE WITNESS: What's showing is potential gaps that 10:01:59
14 could form between the tool and the valve lumen with tools 10:02:24
15 that do not match the size and shape of the U-shaped 10:02:31
16 actuating members or if the members don't conform 10:02:33
17 sufficiently to the size of the tool inserted. That's 10:02:36
18 what the graphic is showing. 10:02:39
19 BY MR. HAMILTON: 10:02:41
20 Q And you depict a seal module in that graphic, 10:02:41
21 correct? 10:02:46
22 A Yes. 10:02:46
23 Q Does that seal module include a compliant sealing 10:02:46
24 member? 10:02:53
25 MR. STOWELL: Objection. Vague. 10:02:54

1 THE WITNESS: It's showing a seal module that can 10:02:54
2 collapse upon circumferential force and seal module, which 10:03:06
3 can expand when that force is released. So it has the 10:03:12
4 appropriate properties to perform those functions. I 10:03:18
5 can't say the level of compliance that it would have. 10:03:22
6 BY MR. HAMILTON: 10:03:32
7 Q Could a person of ordinary skill in the art have 10:03:37
8 figured out a level of compliance for a sealing member 10:03:39
9 that would fill in the gaps shown in that figure? 10:03:43
10 MR. STOWELL: Objection. Vague. 10:03:47
11 THE WITNESS: I think a person of skill in the art 10:03:48
12 would have many variables to consider, including the 10:03:53
13 actuating members themselves, mechanical properties of the 10:03:57
14 actuating members, mechanical properties of the spring 10:04:01
15 force applied, the polymer seal module materials. And 10:04:05
16 depending on the tools inserted, they may be able to 10:04:17
17 design one that works well in many cases. 10:04:20
18 BY MR. HAMILTON: 10:04:23
19 Q So let's take the tool that you're depicting on 10:04:24
20 page 17. With that tool inserted, could one of skill in 10:04:27
21 the art select a seal module material that's compliant 10:04:35
22 enough to fill in these gaps? 10:04:37
23 MR. STOWELL: Objection. Asked and answered. 10:04:40
24 THE WITNESS: I don't know. What I'm depicting is 10:04:40
25 that there may be cases where it doesn't seal perfectly 10:04:49

1 depending on the material properties of the components I 10:04:56
2 just mentioned. 10:04:59
3 BY MR. HAMILTON: 10:04:59
4 Q And the material -- one of those material 10:05:04
5 properties is how compliant that seal module is, correct? 10:05:06
6 A Well, material property, among many others, would 10:05:08
7 be material properties of that tube, the seal module, the 10:05:16
8 thickness of the seal module, the resilience, how much it 10:05:21
9 can recover when force is released, and of course, the 10:05:24
10 actuator or U-shaped members' properties also. 10:05:29
11 Q So could a person of ordinary skill in the art 10:05:33
12 select material properties of the seal member such that 10:05:36
13 those gaps would be filled in? 10:05:39
14 A I think it would depend on the size of the tool 10:05:40
15 inserted, the shape of the tool inserted, the geometry of 10:05:46
16 the actuating members as to whether that would be possible 10:05:54
17 or not. 10:05:58
18 Q So let's take the size of the tool, the shape of 10:05:58
19 the tool, and the geometry of the actuating members shown 10:06:01
20 in this figure. Is it possible? 10:06:05
21 MR. STOWELL: Objection. Vague. 10:06:08
22 THE WITNESS: This is just a graphic illustration that 10:06:09
23 it may not be possible in some cases. 10:06:14
24 BY MR. HAMILTON: 10:06:17
25 Q But in some cases it is possible, correct? 10:06:19

1 A That would certainly be the goal of the engineer, 10:06:22
2 the person of skill in the art, to be able to make it seal 10:06:25
3 well and not have gaps. 10:06:30
4 Q And a person of ordinary skill in the art could 10:06:32
5 take that goal and make this seal well by adjusting the 10:06:34
6 seal module's compliance, correct? 10:06:37
7 MR. STOWELL: Objection. Vague. Asked and answered. 10:06:39
8 THE WITNESS: I think it's not just a seal module. 10:06:42
9 There are many other components, and their properties are 10:06:44
10 important. And this is just illustrating a case in which 10:06:47
11 it isn't -- everything is not perfectly optimized to 10:06:52
12 create a seal around the size of tool. 10:06:56
13 BY MR. HAMILTON: 10:06:58
14 Q And one of those things is the -- how compliant 10:06:59
15 the seal module is, correct? 10:07:01
16 A One aspect of many would be the seal module 10:07:02
17 properties. 10:07:07
18 Q And Schaffer discloses a seal module having a 10:07:08
19 level of -- that is compliant enough to fill in these 10:07:14
20 gaps, correct? 10:07:18
21 A I don't know. Schaffer provides a wide range of 10:07:18
22 material properties, some of which probably would not work 10:07:31
23 for this type of design because they would be too soft and 10:07:36
24 sticky and gelatinous. 10:07:39
25 Q And would a person of ordinary skill in the art 10:07:40

1 be able to figure out which ones would work and which ones 10:07:43
2 wouldn't? 10:07:46
3 A That would be the goal of the engineer to 10:07:47
4 optimize a design to pick the right materials and 10:07:54
5 properties. 10:07:57
6 Q And would that engineer be able to do that, pick 10:07:58
7 the right materials and properties? 10:08:01
8 MR. STOWELL: Objection. Asked and answered. 10:08:03
9 THE WITNESS: Depends on the range of tools that are 10:08:03
10 going to be inserted and the other properties for the 10:08:08
11 other components that we've been discussing. 10:08:10
12 BY MR. HAMILTON: 10:08:14
13 Q To deform a compliant material, is it easier to 10:09:51
14 deform with a hard or rigid material or a soft flexible 10:10:11
15 material? 10:10:20
16 MR. STOWELL: Objection. Incomplete hypothetical. 10:10:21
17 THE WITNESS: Can you clarify what components we're 10:10:22
18 talking about here? 10:10:26
19 BY MR. HAMILTON: 10:10:26
20 Q If you have a -- let's say you've got a ball of 10:10:27
21 the highly compliant material disclosed in Schaffer, and 10:10:32
22 you want to deform it. Is it easier to deform with a hard 10:10:39
23 material or a softer material, which one would be easier? 10:10:44
24 MR. STOWELL: Objection. Incomplete hypothetical. 10:10:47
25 THE WITNESS: Depends on how hard the hard material 10:10:48

1 is, but extremely soft, gel-like material can be 10:10:58
2 deflected -- what's the term you used? -- compressed with 10:11:10
3 the material that's at least as hard as the gel material 10:11:19
4 itself. 10:11:22
5 BY MR. HAMILTON: 10:11:22
6 Q And when you say at least as hard, so it would be 10:11:22
7 at least as hard as the gel material, first of all, right, 10:11:26
8 and the harder it is, the more predictable that 10:11:31
9 deformation would be, wouldn't it? 10:11:34
10 MR. STOWELL: Objection. Incomplete hypothetical. 10:11:37
11 THE WITNESS: Theoretically, a harder material would 10:11:38
12 be able to deform a softer material more readily. 10:11:45
13 BY MR. HAMILTON: 10:11:50
14 Q And if that harder material was, say, for 10:11:51
15 example, steel that doesn't deform, so let's just say a 10:11:53
16 block of steel that wouldn't deform in any meaningful 10:11:59
17 sense relative to the softer material, you could predict 10:12:03
18 with pretty good accuracy exactly how much the soft 10:12:11
19 material would deform based on how much pressure you 10:12:14
20 applied to the other material, correct? 10:12:18
21 MR. STOWELL: Objection. Vague. Incomplete 10:12:20
22 hypothetical. 10:12:22
23 THE WITNESS: If an engineer knew the material 10:12:22
24 properties of the two materials in question, I think it 10:12:32
25 could be modeled, how much force would cause -- how much, 10:12:35

1 certain amount of deformation. 10:12:44
2 BY MR. HAMILTON: 10:12:46
3 Q And that modeling is pretty simple when one 10:12:46
4 material, the material applying compression, is much 10:12:49
5 harder than the other material, correct? 10:12:53
6 MR. STOWELL: Objection. Vague. 10:12:54
7 THE WITNESS: I don't know, haven't considered that. 10:12:55
8 BY MR. HAMILTON: 10:13:00
9 Q So as you sit here now, you can't tell me what's 10:13:01
10 easier to predict in terms of the amount of deformation 10:13:05
11 between applying a compression force with a hard material 10:13:08
12 or a softer material; is that right? 10:13:10
13 MR. STOWELL: Objection. Vague. Misstates testimony. 10:13:14
14 THE WITNESS: Can you repeat the question? 10:13:16
15 BY MR. HAMILTON: 10:13:20
16 Q As you sit here now, can you tell me what -- 10:13:34
17 whether it's easier to predict the amount of deformation 10:13:37
18 between applying compression force with a harder material 10:13:40
19 or a softer material? 10:13:43
20 A I haven't considered how hard it might be to 10:13:44
21 predict material compression in this supplemental 10:13:55
22 declaration, so I can't really answer that. 10:14:00
23 MR. STOWELL: We've been going for about an hour and 10:15:19
24 15 minutes. So when you reach a good spot to take a 10:15:22
25 break, let's take one. 10:15:25

1 BY MR. HAMILTON: 10:15:30
2 Q Are you okay to go for a couple more questions? 10:15:30
3 A Sure. 10:15:33
4 Q All right. Let's take a look at page 19 of your 10:15:33
5 declaration. Do you see the figure on page 19? 10:15:36
6 A Yes. 10:15:53
7 Q Do you see the U-shaped actuating members 10:16:04
8 depicted in that figure? 10:16:16
9 A Yes. 10:16:17
10 Q Do those U-shaped actuating members have a 10:16:18
11 cross-section that's rectangular? 10:16:34
12 A Yeah, Schaffer's Figure 32, it shows a 10:16:39
13 cross-section, and they would show the U-shaped portion as 10:16:58
14 having a rectangular cross-section. 10:17:02
15 Q So Figure 32's a better depiction of that 10:17:04
16 cross-section; is that right? 10:17:08
17 A Yes. 10:17:09
18 Q Does that U-shaped member provide a compression 10:17:09
19 force against the seal module along the length, the 10:17:59
20 longest distance of that rectangular cross-section? 10:18:05
21 MR. STOWELL: Objection. Vague. 10:18:09
22 THE WITNESS: I'm not sure what you mean by length. 10:18:09
23 BY MR. HAMILTON: 10:18:16
24 Q So if you look at the cross-section, you see it's 10:18:17
25 a rectangle, right? 10:18:19

A In Figure 32? 10:18:21
Q Yes. 10:18:23
A Yes. 10:18:23
Q And it's got four sides, right? 10:18:23
A Yes. 10:18:26
Q Two sides are shorter than the -- you have two 10:18:27
short sides and two long sides, right? 10:18:32
A Yeah. 10:18:33
Q And the compression force is applied along the 10:18:34
length of the longest side, correct? 10:18:39
A Yes. That's the portion that's in contact with 10:18:41
the seal member. 10:18:46
Q And so that compression force is spread across a 10:18:47
distance that's the same length as the longest side of the 10:18:52
rectangle, correct? 10:18:58
MR. STOWELL: Objection. Vague. 10:19:00
THE WITNESS: That's the portion that's in contact 10:19:01
with the seal member as it wraps around the seal member. 10:19:10
BY MR. HAMILTON: 10:19:14
Q And the portion that's in contact with the seal 10:19:22
member, that's the portion that applies compression to the 10:19:25
seal member, correct? 10:19:27
A It applies compression to the seal member by the 10:19:29
springs that are attached on either end of it. 10:19:40
Q And it applies that compression along that entire 10:19:42

1 length of the cross-section, the longest side of the 10:19:46
2 cross-section, correct? 10:19:49
3 MR. STOWELL: Objection. Vague. 10:19:51
4 THE WITNESS: That's the part that's in contact. So 10:19:52
5 that's how it would apply the force. 10:19:57
6 BY MR. HAMILTON: 10:19:59
7 Q And as depicted in figure -- let's look at 10:20:14
8 Figure 34. Do you see the two U-shaped members are 10:20:26
9 side-by-side, parallel to each other, do you see that? 10:20:50
10 A Yes. 10:20:52
11 Q So for the two members, the force applied is 10:20:56
12 along the length of one member, the longest side of the 10:21:04
13 rectangle, and the other one along the length of the other 10:21:06
14 member, longest side of that rectangle. 10:21:10
15 A That's how the force is applied to the seal 10:21:13
16 module, yes. 10:21:17
17 Q And when that force is applied, the seal module 10:21:18
18 will deform from the farthest end of one U-shaped member 10:21:34
19 to the farthest end of the length of the other U-shaped 10:21:42
20 member, correct? 10:21:46
21 MR. STOWELL: Objection. Vague. 10:21:47
22 THE WITNESS: I'm not sure exactly what you mean by 10:21:48
23 farthest end. 10:21:51
24 BY MR. HAMILTON: 10:21:52
25 Q So if you look at Figure 34, and you have one 10:21:52

1 U-shaped member with the cross-section in the length and 10:21:56
2 another U-shaped member with the cross-section in the 10:21:59
3 length, do you see that? 10:22:01
4 A Length meaning the total length of the U-shaped 10:22:06
5 member to where it attaches to the button? 10:22:09
6 Q No. 10:22:11
7 The length of the cross-section, the rectangular 10:22:11
8 cross-section, the longest dimension we were just 10:22:15
9 discussing. 10:22:18
10 A Okay. 10:22:18
11 Q So twice that length, when the two U-shaped 10:22:18
12 members apply compression -- withdraw the question. 10:22:24
13 The two U-shaped members apply -- withdraw that 10:22:27
14 question. 10:22:33
15 The two U-shaped members deform the seal module 10:22:34
16 along that entire length, correct? 10:22:38
17 MR. STOWELL: Objection. Vague. 10:22:45
18 THE WITNESS: U-shaped members deform the seal module 10:22:46
19 in areas that it's in contact with the seal module. 10:22:52
20 BY MR. HAMILTON: 10:22:55
21 Q And it's in contact along the longest side of 10:22:55
22 each of those cross-sectional rectangles, correct? 10:22:57
23 A Yes. That's the part that's in contact with the 10:23:01
24 seal module. 10:23:05
25 Q And that -- would that be the same if Schaffer's 10:23:05

1 U-shaped members were replaced with a string, the 10:23:46
2 deformation of the seal module would occur at the place 10:23:49
3 where the string contacts the seal module? 10:23:52
4 MR. STOWELL: Objection. Outside the scope. 10:23:56
5 THE WITNESS: I haven't really considered how it 10:23:57
6 deforms in cross-section. I haven't shown that in my 10:24:05
7 declaration. 10:24:08
8 BY MR. HAMILTON: 10:24:09
9 Q Can you answer the question? 10:24:11
10 A I'm not sure I can. It's not something I've 10:24:11
11 considered how the module deforms, with the string. 10:24:16
12 Q You don't know what would happen if a string was 10:24:20
13 put into, in place of Schaffer's U-shaped members. Is 10:24:23
14 that your testimony? 10:24:28
15 MR. STOWELL: Objection. Misstates testimony. 10:24:28
16 THE WITNESS: I said I haven't considered in my 10:24:29
17 declaration how a cross-section might look if a string 10:24:34
18 were wrapped around the U-shaped member. 10:24:37
19 BY MR. HAMILTON: 10:24:40
20 Q Do you understand what would deform in the module 10:24:41
21 if a string was used in place of the U-shaped members? 10:24:46
22 MR. STOWELL: Objection. Vague. 10:24:50
23 THE WITNESS: Well, the seal module would compress, 10:24:51
24 circumferentially. 10:24:58
25

1 BY MR. HAMILTON: 10:25:00
2 Q And it would compress where the string contacts a 10:25:00
3 seal module, just like you testified for the U-shaped 10:25:02
4 members, correct? 10:25:05
5 A That's the area in contact. That's where you're 10:25:06
6 trying to compress the seal module. So it would compress 10:25:11
7 the seal module in areas that are in contact with the 10:25:18
8 string or wire or filament. 10:25:21
9 MR. HAMILTON: Okay. Why don't we take a break. 10:25:29
10 THE VIDEOGRAPHER: We are going off the record. The 10:25:31
11 time is 10:25 a.m. 10:25:33
12 (Recess taken.) 10:35:05
13 THE VIDEOGRAPHER: We are back on the record. The 10:35:05
14 time is 10:35 a.m. 10:35:13
15 BY MR. HAMILTON: 10:35:15
16 Q Do you understand you're still under oath, 10:35:17
17 Mr. Thornton? 10:35:18
18 A Yes. 10:35:19
19 Q Did you communicate with anybody regarding the 10:35:19
20 substance of your testimony during the break? 10:35:31
21 A No. 10:35:33
22 Q Did you review any documents during the break? 10:35:34
23 A No. 10:35:36
24 Q If you could turn to page 20 of Exhibit 1014, 10:35:36
25 your supplemental declaration. Do you see two figures on 10:35:45

1 page 20? 10:35:55
2 A Yes. 10:35:56
3 Q Did you create those figures? 10:35:56
4 A Working with counsel, I had input into the 10:35:58
5 figures. 10:36:07
6 Q Did you suggest those two figures to counsel? 10:36:07
7 A I don't recall. 10:36:11
8 Q Do you understand what's depicted in the two 10:36:14
9 figures? 10:36:19
10 A Yes. 10:36:19
11 Q Is this a depiction of Schaffer from these two 10:36:21
12 figures? 10:36:46
13 MR. STOWELL: Objection. Vague. 10:36:53
14 THE WITNESS: It's a depiction of the U-shaped 10:36:54
15 actuating members in Schaffer showing the deformation that 10:37:12
16 might happen with the somewhat flexible U-shaped members 10:37:21
17 or bights, with tool diameters that are smaller. One is 10:37:25
18 smaller than the other. 10:37:33
19 BY MR. HAMILTON: 10:37:34
20 Q Both figures show gaps, correct? 10:37:38
21 A I've illustrated an example where gaps are formed 10:37:41
22 because of a mismatch between sizes or shapes or 10:37:50
23 compliance or flexibility. 10:37:59
24 Q And this is your understanding of Schaffer's 10:38:03
25 disclosure, this is what Schaffer discloses? 10:38:10

1 MR. STOWELL: Objection. Vague. 10:38:12
2 THE WITNESS: It's depicting a case where small gaps 10:38:13
3 are formed and even larger gaps might form if an even 10:38:23
4 smaller tool is inserted, if the distance between the 10:38:29
5 attachment points is a fixed dimension as is depicted in 10:38:34
6 Schaffer's Figures 30 through 34. 10:38:40
7 BY MR. HAMILTON: 10:38:43
8 Q And those gaps would cause a poor seal in 10:38:44
9 Schaffer, correct? 10:38:49
10 MR. STOWELL: Objection. Vague. 10:38:51
11 THE WITNESS: Gaps are not desired in order to create 10:38:51
12 a seal in a hemostatic valve. 10:38:58
13 BY MR. HAMILTON: 10:39:01
14 Q So these gaps would be created in Schaffer 10:39:02
15 whether or not the U-shaped member was flexible or rigid, 10:39:05
16 correct? 10:39:09
17 A Well, this is depicting U-shaped members that 10:39:09
18 are -- that have some flexibility as shown, especially in 10:39:22
19 the lower image where they're deforming more so around a 10:39:27
20 smaller tool. 10:39:32
21 Q So if Schaffer's U-shaped members are flexible, 10:39:33
22 gaps would still be formed in Schaffer; is that correct, 10:39:40
23 is that your testimony? 10:39:43
24 MR. STOWELL: Objection. Vague. Misstates the 10:39:44
25 document. 10:39:46

1 THE WITNESS: Depending on the material properties of 10:39:46
2 the actuators, the U-shaped actuating members, the seal 10:39:52
3 module, the size of the tool, the force exerted, I think 10:39:59
4 it's possible that gaps could form. That is even more so 10:40:03
5 true as the tools get smaller as depicted in the lower 10:40:13
6 figure on page 20. 10:40:16
7 BY MR. HAMILTON: 10:40:17
8 Q And that would occur whether or not Schaffer's 10:40:17
9 U-shaped members are rigid or flexible, correct? 10:40:20
10 MR. STOWELL: Objection. Asked and answered. 10:40:25
11 THE WITNESS: I think a person of ordinary skill in 10:40:27
12 the art would have understood that Schaffer's actuating 10:40:35
13 members have some flexibility, that they're not entirely 10:40:39
14 rigid. They're not entirely inflexible. And that's what 10:40:43
15 we're depicting here, especially on the lower image on 10:40:49
16 page 20. 10:40:53
17 BY MR. HAMILTON: 10:40:54
18 Q Are the flexible U-shaped actuating members in 10:41:18
19 the bottom of the two pictures, would that be a string, 10:41:22
20 for example? Are you depicting what would happen if a 10:41:28
21 string was used in Schaffer? 10:41:31
22 A I'm depicting the U-shaped actuating members that 10:41:33
23 are described in Schaffer as being a metal or polymer. 10:41:43
24 Q And what if this U-shaped member was a metal 10:41:57
25 wire, is this -- would -- a flexible metal wire, is this 10:42:01

1 what would happen in the embodiment Figures 30 through 34 10:42:07
2 of Schaffer? 10:42:10
3 MR. STOWELL: Objection. Vague. Outside the scope. 10:42:11
4 THE WITNESS: Well, it's depicting a metal U-shaped 10:42:12
5 actuator, which in -- which is depicted in the Figures 30 10:42:19
6 through 34 as a metal or plastic, flat wire is how it's 10:42:25
7 depicted in those figures. 10:42:31
8 BY MR. HAMILTON: 10:42:32
9 Q And if the flexible U-shaped member in the bottom 10:42:37
10 figure was a string, would it look just like this, would 10:42:43
11 you have the same issue with these gaps? 10:42:47
12 A I don't know. I haven't considered that here in 10:42:50
13 this declaration. 10:42:57
14 Q So you don't know what would happen if this 10:42:58
15 flexible U-shaped actuating member was a string as opposed 10:43:01
16 to a, you said, flat wire as depicted in Schaffer; is that 10:43:04
17 right? 10:43:09
18 MR. STOWELL: Objection. Asked and answered. 10:43:09
19 THE WITNESS: I don't know that the geometry would be 10:43:10
20 identical. It depends on the properties of the flexible 10:43:13
21 U-shaped member, flat wire, or polymer versus the 10:43:17
22 properties of the string or wire that you're proposing. I 10:43:23
23 haven't considered that in here. The geometry could be 10:43:27
24 similar. It might be slightly different. 10:43:31
25

1 BY MR. HAMILTON: 10:43:32
2 Q And whatever the geometry is similar or slightly 10:43:32
3 different, these gaps would still be formed, correct? 10:43:36
4 MR. STOWELL: Objection. Vague. Outside the scope. 10:43:41
5 THE WITNESS: Yeah, I haven't really considered a pair 10:43:42
6 of strings or wires or -- for these -- for these images. 10:43:49
7 So I don't know that gaps would form or not. 10:44:03
8 BY MR. HAMILTON: 10:44:04
9 Q So I thought a moment ago, you said this was a 10:44:05
10 flat wire, Schaffer was a flat wire. Is that not correct? 10:44:08
11 A I think Schaffer gives an example, shows in the 10:44:11
12 embodiments 30 through 34 to be a rectangular-shaped 10:44:19
13 member wire or plastic -- metal or plastic or -- 10:44:24
14 descriptions that they use in the specification. 10:44:32
15 Q Are the actuating members in Schaffer a flat 10:44:34
16 wire? 10:44:37
17 A I think they could be a flat wire. 10:44:37
18 Q When you say could be, you mean Schaffer doesn't 10:44:43
19 disclose a flat wire, but one skilled in the art could 10:44:53
20 include a flat wire. Is that what you mean by it could 10:44:56
21 be? 10:44:58
22 MR. STOWELL: Objection. Misstates testimony. Asked 10:44:58
23 and answered. 10:45:00
24 THE WITNESS: I think Schaffer shows pretty clearly in 10:45:00
25 30 through 34, that the actuating members are a flattened 10:45:04

1 material whether it's polymer or metal. Yeah. 10:45:09
2 BY MR. HAMILTON: 10:45:19
3 Q And is that material a flat wire as you 10:45:19
4 understood that -- understand what that term means? 10:45:22
5 MR. STOWELL: Objection. Asked and answered. 10:45:28
6 THE WITNESS: It could be a flattened wire. It could 10:45:29
7 be a flattened polymer. They give those examples as 10:45:33
8 potential materials. I don't think it's mandatory to be 10:45:36
9 this shape, but they don't -- this is what's shown in the 10:45:45
10 30 through 34, is a rectangular cross-section implying a 10:45:49
11 flattened wire, flattened polymer as the actuating member. 10:45:55
12 BY MR. HAMILTON: 10:46:00
13 Q So if a flattened wire is used, that's what 10:46:00
14 you're depicting on page 20, correct, a flat wire? 10:46:02
15 A Yes. 10:46:05
16 Q And if a flat wire is used in Schaffer, you 10:46:08
17 understand it is, gaps are going to be formed as shown on 10:46:12
18 page 20 of your declaration, correct? 10:46:17
19 A Gaps may be formed in some instances depending on 10:46:19
20 all the properties that we've talked about already. 10:46:24
21 That's what's being shown on page 20. 10:46:27
22 Q If you could turn to the next page, 21, 10:46:29
23 paragraph 35. You see the sentence about the middle of 10:47:15
24 that paragraph, This particular disclosure. Do you see 10:47:29
25 that? 10:47:32

1 A I need to read to get there, sorry. 10:47:32
2 Q Sure, go ahead. 10:47:40
3 A Okay. 10:47:41
4 Q Is it your understanding that the third seal 10:48:06
5 member shown in Figures 12 through 15 is not used in the 10:48:20
6 embodiment of Figures 30 through 34, is that what you're 10:48:25
7 saying here in this paragraph? 10:48:29
8 A I'm saying this particular disclosure refers to 10:48:30
9 Figures 12 through 15 in Schaffer, not to Figures 30 10:49:09
10 through 34. Figures 12 through 15 are different 10:49:14
11 embodiments that does not use an external circumferential 10:49:18
12 member to compress the seal module. 10:49:25
13 Q Does that embodiment use a third seal member? 10:49:28
14 MR. STOWELL: Objection. 10:49:40
15 THE WITNESS: Which embodiment? 10:49:41
16 BY MR. HAMILTON: 10:49:42
17 Q The one Figures 12 through 15. 10:49:43
18 A Let's see... third seal member. Figures 12 10:49:45
19 through 15 on Schaffer show a third seal member 165 in 10:50:14
20 those embodiments, and those embodiments work with a 10:50:21
21 method of action where the antegrade crusher 270 is 10:50:24
22 sufficient to push the valve closed. 10:50:32
23 Q And how does the seal module close in those 10:50:41
24 figures, does seal member 165 form a seal? 10:50:45
25 MR. STOWELL: Objection. Compound. 10:50:50

1 THE WITNESS: The design shown in 12 through 15, I 10:50:51
2 believe, work by blood pressure 270 shown in Figure 13 as 10:50:57
3 pushing a seal member 170, which doesn't really compress, 10:51:08
4 and it compresses the third seal member 165 because that 10:51:15
5 is extremely soft and compliant and can self-seal is how 10:51:20
6 it's described in the patent. 10:51:25
7 BY MR. HAMILTON: 10:51:26
8 Q So seal member 165 in Figures 12 through 13 forms 10:51:30
9 the seal based on deforming, correct? 10:51:38
10 MR. STOWELL: Objection. Vague. 10:51:44
11 THE WITNESS: My understanding is it's compressed 10:51:46
12 actually, which causes it to collapse cylindrically and 10:51:51
13 seal. 10:52:00
14 BY MR. HAMILTON: 10:52:00
15 Q And then in Figures 30 through 34, that seal 10:52:00
16 member's compressed from the outside using the U-shaped 10:52:03
17 members, correct, that's the difference? 10:52:06
18 MR. STOWELL: Objection. Vague. Compound. 10:52:09
19 THE WITNESS: Well, the mechanism of sealing is 10:52:10
20 different in that it is an outside, cylindrical 10:52:17
21 circumferential force that collapses the tubular member. 10:52:22
22 BY MR. HAMILTON: 10:52:26
23 Q So as you just read, Figures 12 through 15 10:53:27
24 include third seal member 165, right? 10:53:30
25 A Yes. The figures show that. 10:53:34

1 Q And then if you look at page 70 of Schaffer, 10:53:37
2 that's Exhibit 1005 -- excuse me. Paragraph 70. I'm 10:53:41
3 sorry. Not paragraph 70. Paragraph 77. Paragraph 77 10:53:47
4 also refers to third seal member 165, correct? 10:54:11
5 A Yeah, at the end of that paragraph, it states 10:54:14
6 that, The lumen 193 of the third seal member 165 is able 10:54:43
7 to retract to an unsealed configuration. 10:54:47
8 Q And then actually, up in the previous column, it 10:54:49
9 refers to it again, The lumen 193 of third seal member 165 10:54:53
10 is at least partially collapsed by the compressive force 10:55:00
11 67. Do you see that? 10:55:05
12 A Yes. 10:55:06
13 Q So the third seal member 165 forms the seal as 10:55:07
14 described in paragraph 77, correct? 10:55:17
15 A That's what paragraph 77 is saying. 10:55:19
16 Q And paragraph 77 relates to the embodiment of 10:55:25
17 Figures 30 through 34; is that correct? 10:55:28
18 A It appears that they relate to Figures 30 10:55:30
19 through 34 where paragraph 75 at the end says that, The 10:55:40
20 seal module 100 can be formed of one or more materials, 10:55:46
21 including the relative properties above. 10:55:50
22 Q So now let's look back at page 21 of your 10:55:53
23 declaration. The embodiment that you're discussing here 10:56:04
24 on page 21 of Figures 12 through 15 includes the seal 10:56:40
25 member 165 as we just discussed, right? 10:56:48

1 A It lists that seal member 165 as part of seal 10:56:50
2 module 100. 10:56:56
3 Q And for your citation that the disclosure relates 10:56:57
4 to, Figures 12 through 15, you cite paragraph 68 and 69. 10:57:03
5 Do you see that? 10:57:09
6 A Yes. 10:57:09
7 Q What I'm trying to understand is just below that, 10:57:10
8 just below the figure, you criticize patent owner as not 10:57:17
9 depicting a compliant sealing member as described in 10:57:22
10 Schaffer, and you cite the exact same paragraph 68. So 10:57:25
11 what I'm trying to understand is, is the compliant seal 10:57:31
12 member of paragraph 68 included in the embodiment of 10:57:37
13 Figures 30 through 34 or not? 10:57:43
14 MR. STOWELL: Objection. Compound. Vague. 10:57:49
15 THE WITNESS: I think it's clear that 68 and 69 in 10:57:50
16 Schaffer are referring to the earlier embodiments that are 10:58:05
17 passive. They describe it as hands-free operation at the 10:58:12
18 end of paragraph 69. For those to function, they would 10:58:17
19 need a very compliant, gel-like, soft material is how they 10:58:22
20 describe it in the patent. 10:58:27
21 Whereas in 30 through 34, I believe that material 10:58:30
22 is not -- would not be appropriate, would not function 10:58:33
23 with a -- with the design shown on Figures 30 through 34. 10:58:39
24 BY MR. HAMILTON: 10:58:47
25 Q So patent owner argues properties that seal -- 10:58:49

1 withdraw the question. 10:58:56
2 So then is it your testimony that the third seal 10:58:57
3 member 165, as disclosed with respect to Figures 12 10:59:49
4 through 15, is not included in the embodiment of Figures 10:59:54
5 30 through 34? 11:00:01
6 A I think in paragraph 77, when they're talking 11:00:01
7 about third seal member 165, that just means the middle 11:00:09
8 most seal member if there's more than one, and that could 11:00:15
9 have, as paragraph 75 says, any of its respective seal 11:00:19
10 members can be formed from one or more materials. In 11:00:33
11 Figure 30 through 34, that material would be something 11:00:41
12 that is not particularly highly compliant, gelatinous, et 11:00:45
13 cetera. 11:00:51
14 Q Could a person of ordinary skill in the art make 11:00:51
15 a material that's highly compliant, yet not sticky or 11:01:23
16 gelatinous? 11:01:33
17 MR. STOWELL: Objection. Vague. 11:01:35
18 THE WITNESS: I don't know. I haven't talked about 11:01:36
19 that in my disclosure. 11:01:42
20 BY MR. HAMILTON: 11:01:43
21 Q Are you aware of any material that's highly 11:01:51
22 compliant but that's not sticky? 11:01:54
23 MR. STOWELL: Objection. Vague. 11:01:59
24 THE WITNESS: I don't know. I haven't considered 11:02:00
25 that. 11:02:05

1 BY MR. HAMILTON: 11:02:05
2 Q If you could turn to paragraph 59 of Schaffer, 11:02:14
3 Exhibit 1005. Do you see the first sentence? 11:02:17
4 A Yes. 11:02:41
5 Q The first sentence discusses a third central seal 11:02:42
6 member 165 that includes a material that is highly 11:02:46
7 elastic, deformable, compliant and yet virtually 11:02:51
8 noncompressible. Do you see that? 11:02:54
9 A Yes. 11:02:56
10 Q Would that material always be sticky? 11:02:56
11 MR. STOWELL: Objection. Vague. Incomplete 11:03:09
12 hypothetical. 11:03:10
13 THE WITNESS: I don't think it would necessarily be 11:03:10
14 sticky. I think the description here is also trying to 11:03:23
15 describe a seal member that can be compressed and can 11:03:31
16 recover without having permanent deformation. They talk 11:03:39
17 about noncompressible. In other words, it's not 11:03:45
18 permanently deformed. 11:03:47
19 So in order to have a seal member that can be 11:03:49
20 compressed to basically zero, when nothing's inside and 11:03:53
21 yet reopen is how I think that first sentence is really 11:03:58
22 describing the function of the -- any seal member. 11:04:04
23 BY MR. HAMILTON: 11:04:08
24 Q When you say any seal member, you mean any seal 11:04:11
25 member used throughout Schaffer, correct? 11:04:13

1 A They're describing seal members within Schaffer, 11:04:14
2 I believe. 11:04:21
3 Q And that could include the seal member in the 11:04:21
4 embodiment of Figures 30 through 34, correct? 11:04:23
5 A Yes. I think they refer back. When describing 11:04:26
6 30 through 34, they refer back to prior descriptions of 11:04:43
7 materials that are potential materials to use for the seal 11:04:47
8 member. 11:04:52
9 Q And that would include a material that is highly 11:04:55
10 elastic, deformable, compliant, and yet virtually 11:04:58
11 noncompressible, correct? 11:05:02
12 A That's what the first sentence says, yes. 11:05:03
13 Q And that material could be sticky, and it might 11:05:05
14 not be sticky; is that right? 11:05:08
15 MR. STOWELL: Objection. Vague. 11:05:11
16 THE WITNESS: I think later on in paragraph 59, they 11:05:11
17 talk about more specific materials with different shore 11:05:15
18 hardness scales. Materials that are in the shore hardness 11:05:19
19 00 scale, they describe as being extremely soft, 11:05:27
20 compliant, intrinsically sticky. 11:05:30
21 So that's a category -- a subcategory of the 11:05:36
22 materials they're listing there that could perform the 11:05:38
23 functions of the tubular member. 11:05:41
24 BY MR. HAMILTON: 11:05:44
25 Q So if one skilled in the art made a material as 11:05:44

1 set forth in paragraph 59 that had a shore hardness in 11:05:48
2 this range on the 00 scale, that material, would that 11:05:55
3 material be sticky? 11:05:59
4 A I'm not sure when the term stickiness would apply 11:06:04
5 as you get to very soft materials. 11:06:12
6 Q Could that material -- could a material 11:06:14
7 manufactured as described in that paragraph and having 11:06:28
8 that shore hardness be used in the embodiment of Figures 11:06:31
9 30 through 34? 11:06:36
10 A Which shore hardness? 11:06:36
11 Q The shore hardness in paragraph 59. 11:06:37
12 MR. STOWELL: Objection. Vague and compound. 11:06:41
13 THE WITNESS: They give a wide range of shore 11:06:44
14 hardnesses from 5 to 15 in the shore A categorization and 11:06:55
15 15 to 20 in the 00 measurement scale. So there's a wide 11:07:03
16 range shown there that a person skilled in the art might 11:07:09
17 start with materials in that range and then experiment to 11:07:18
18 optimize from there. 11:07:23
19 BY MR. HAMILTON: 11:07:25
20 Q What do you mean experiment to optimize, optimize 11:07:45
21 what? 11:07:50
22 A All the required design features, such as 11:07:50
23 recovery being nondeformable, not plastically deformable, 11:07:58
24 the ability to seal well around the tools. All the design 11:08:05
25 requirements that might be necessary for that seal member. 11:08:15

1 Q And I think you've testified two of those 11:08:17
2 requirements are the ability to seal well. So fill in the 11:08:24
3 gaps, right, that's one of them? 11:08:27
4 A I think the goal of the project would be to seal 11:08:29
5 the hemostasis valve overall. 11:08:32
6 Q And that would be by filling in the gaps, 11:08:36
7 correct? 11:08:38
8 MR. STOWELL: Objection. Vague. 11:08:38
9 THE WITNESS: It would be by preventing gaps and 11:08:39
10 creating a full seal around a variety of instruments would 11:08:43
11 be the design goal. 11:08:48
12 BY MR. HAMILTON: 11:08:51
13 Q And a person of ordinary skill in the art would 11:08:51
14 be able to optimize that design goal, correct? 11:08:53
15 A I think they would be able to make adjustments 11:09:03
16 and do experimentation to the springs, the actuating 11:09:07
17 members, the seal member, the material dimensions in order 11:09:11
18 to try to optimize a hemostatic valve design. 11:09:22
19 Q If you look at the last sentence of paragraph 59 11:09:30
20 in Schaffer, you see the phrase, Under very light 11:09:55
21 compression? 11:10:07
22 A Yes. 11:10:08
23 Q Is it important in a hemostasis valve to form a 11:10:16
24 good seal under very light compression? 11:10:31
25 A I'm not sure. I haven't really considered that. 11:10:32

1 The physician usability is where I think about -- when I 11:10:44
2 think about compression and actuating the valve. 11:10:50
3 Q So why is Schaffer referencing that the seal can 11:10:57
4 be formed under very light compression, what does Schaffer 11:11:00
5 mean by that? 11:11:03
6 MR. STOWELL: Objection. Vague. Calls for 11:11:04
7 speculation. 11:11:05
8 THE WITNESS: Well, that sentence about using a very 11:11:05
9 light compression at the end of paragraph 59 is clearly 11:11:12
10 referring to the materials in the very soft shore 00 scale 11:11:19
11 where they refer to them as extremely soft, compliant, and 11:11:27
12 sticky. And they compare it to a gelatinous substance and 11:11:30
13 have a self-closing nature under a very light compression. 11:11:39
14 So I believe that is really referring to the 11:11:48
15 designs shown in Figures 12 through 15 which are the 11:11:51
16 designs that operate under low pressure, like blood 11:12:00
17 pressure, to be self-closing and don't require -- the term 11:12:05
18 they use is -- and allow a hands-free operation. The term 11:12:14
19 they use in paragraph 69. 11:12:20
20 BY MR. HAMILTON: 11:12:21
21 Q So other than in that embodiment, is there any 11:12:21
22 other reason one skilled in the art might want to create a 11:12:25
23 seal under light compression? 11:12:28
24 MR. STOWELL: Objection. Vague. Outside the scope. 11:12:29
25 THE WITNESS: I think for a design like this, it's 11:12:31

1 always a balance between the spring force, the material 11:12:40
2 properties of the seal member, size of devices going 11:12:45
3 through it. So I think a person of skill in the art would 11:12:53
4 try to optimize those, those different aspects of a 11:12:57
5 design. 11:13:03
6 BY MR. HAMILTON: 11:13:03
7 Q And when you say optimize, why do you need a 11:13:03
8 balance -- why do you need to optimize the balance between 11:13:08
9 the spring force, the material properties of the seal 11:13:10
10 member and the size of the devices going through it? 11:13:16
11 A Well, excessive spring force would mean the 11:13:20
12 physician would have to push harder. So there's an 11:13:27
13 ergonomic aspect to the spring force for the doctor to 11:13:30
14 actuate, to open the valve. The higher spring force -- if 11:13:34
15 the spring force was too high, it could exert excessive 11:13:41
16 force on the seal member depending on the properties of 11:13:44
17 the seal member itself. So there are several aspects that 11:13:51
18 would need to be balanced if one were trying to optimize 11:14:00
19 the design. 11:14:01
20 Q What is the problem with exerting excessive force 11:14:02
21 on the seal member? 11:14:07
22 A Yeah, I don't know that there would be a problem. 11:14:08
23 It depends on the thickness of the material, the amount of 11:14:24
24 pressure. But, you know, conceivably, it could be -- 11:14:30
25 could damage a seal member. 11:14:37

1 Q Could it also damage the catheter going through 11:14:43
2 the seal member? 11:14:46
3 MR. STOWELL: Objection. Vague. 11:14:52
4 THE WITNESS: I don't -- I don't know. Haven't 11:14:53
5 thought about that. 11:14:57
6 BY MR. HAMILTON: 11:14:57
7 Q Could it also damage the tools going through the 11:14:58
8 seal member? 11:15:00
9 MR. STOWELL: Objection. Vague. 11:15:01
10 THE WITNESS: Well, the other aspect I didn't mention 11:15:02
11 was you'd also want to have the ability to move the 11:15:12
12 devices forward and back. So I think friction within that 11:15:16
13 system might be important. Certainly design 11:15:21
14 considerations might also include damage to the devices 11:15:27
15 going through the tubular member. 11:15:31
16 BY MR. HAMILTON: 11:15:33
17 Q If you could turn to page 10 of your 11:17:09
18 declaration -- supplemental declaration. Excuse me. See 11:17:12
19 the figure -- annotated Figure 34 on page 10? 11:17:25
20 A Yes. 11:17:30
21 Q Is it your understanding that the figures of 11:17:36
22 Schaffer are drawn to scale? 11:18:18
23 A No. I think most patents, things are not drawn 11:18:19
24 to scale. 11:18:26
25 Q So here, you're comparing the thickness of the 11:18:26

1 U-shaped member with the thickness of the compression 11:18:29
2 spring. Do you see that? 11:18:31
3 A Yes. 11:18:32
4 Q Do you think that's drawn to scale? 11:18:34
5 MR. STOWELL: Objection. Vague. 11:18:37
6 THE WITNESS: I don't believe most drawings in patents 11:18:38
7 are necessarily drawn to scale. 11:18:42
8 BY MR. HAMILTON: 11:18:44
9 Q So I'm trying to figure out why do you say they 11:18:44
10 have the same thickness if you don't believe this is drawn 11:18:47
11 to scale? 11:18:51
12 A Whatever scale is drawn to, I took my calipers, 11:18:51
13 and it looked like they were approximately the same 11:18:55
14 thickness, that the U-shaped actuating member thickness 11:18:57
15 was about the same as the compression spring diameter, 11:19:02
16 giving some indication or giving a person of ordinary 11:19:10
17 skill in the art some indication that those are probably 11:19:13
18 relatively flexible actuating members. 11:19:14
19 Q How does the length of the compression spring 11:19:16
20 compare to the length of the U-shaped actuating members? 11:19:24
21 MR. STOWELL: Objection. Vague. 11:19:27
22 THE WITNESS: The length of the compression spring in 11:19:28
23 its compressed state or uncompressed state or unwound 11:19:37
24 state? 11:19:41
25 BY MR. HAMILTON: 11:19:42

1 Q Let's say the unwound state. 11:19:42
2 A I have no idea. 11:19:47
3 Q The compression spring is much longer than the 11:19:48
4 U-shaped members in an unwound state, isn't it? 11:19:51
5 MR. STOWELL: Objection. Asked and answered. 11:19:55
6 THE WITNESS: I would assume if an unwound state, it 11:19:57
7 would be a longer piece of spring steel, yes. 11:20:00
8 BY MR. HAMILTON: 11:20:03
9 Q If you had two identical materials of identical 11:20:08
10 thickness and one was many times longer than the other, 11:20:13
11 would you expect the one that was many times longer to be 11:20:19
12 more flexible? 11:20:22
13 MR. STOWELL: Objection. Incomplete hypothetical. 11:20:30
14 THE WITNESS: Yeah, I haven't considered that. This 11:20:32
15 is just considering the diameter shown of the compression 11:20:35
16 spring as being very similar to the thickness shown of the 11:20:42
17 actuating member, which I believe would convey a certain 11:20:47
18 amount of information that it was relatively thin and 11:20:52
19 flexible -- not thin, relatively flexible in its 11:21:00
20 mechanical properties. 11:21:08
21 BY MR. HAMILTON: 11:21:09
22 Q And your comparison here is simply taking into 11:21:17
23 account the thickness shown in this figure; is that right? 11:21:20
24 A That and the fact that my understanding of a 11:21:23
25 compression spring and having a physician able to compress 11:21:30

1 the two buttons is that it would have to be a fairly soft 11:21:37
2 compression spring in order to be ergonomically 11:21:44
3 appropriate for a physician to use. 11:21:48
4 Q Do you know the material that this compression 11:21:49
5 spring is manufactured from? 11:21:52
6 A I don't believe Schaffer talks about the material 11:21:53
7 of a compression spring in this patent. 11:21:57
8 Q Would you need to know the material that it's 11:22:00
9 manufactured from to determine how flexible the 11:22:15
10 compression spring is? 11:22:18
11 A The material, the diameter of the wire, the 11:22:18
12 stacking of the spring, all those would be important in 11:22:27
13 order to quantify a compression force of a spring. 11:22:31
14 Q So here, your comparison is based on the 11:22:35
15 thickness of the U-shaped member and the thickness of the 11:22:39
16 spring, but you've ignored all the other properties of 11:22:41
17 those components, correct? 11:22:44
18 MR. STOWELL: Objection. Misstates testimony. Asked 11:22:46
19 and answered. 11:22:50
20 THE WITNESS: All I'm showing is that I believe the 11:22:50
21 figures in Schaffer, this cross-section, would give a 11:22:53
22 person of ordinary skill the sense that the actuating 11:23:00
23 members are probably relatively flexible. Because they 11:23:03
24 would be relatively thin. 11:23:09
25

1 BY MR. HAMILTON: 11:23:10
2 Q And that's based solely on the thickness of those 11:23:15
3 members, correct, the comparison of the thickness; is that 11:23:17
4 right? 11:23:20
5 MR. STOWELL: Objection. Misstates testimony. Asked 11:23:20
6 and answered. 11:23:22
7 THE WITNESS: That's all we're showing here. 11:23:22
8 BY MR. HAMILTON: 11:23:30
9 Q And there are many other properties of both those 11:23:34
10 components that would determine how flexible they are; 11:23:37
11 isn't that right? 11:23:39
12 MR. STOWELL: Objection. Vague. 11:23:42
13 THE WITNESS: Certainly to measure flexibility, one 11:23:42
14 would need to know the material, the dimensions and how 11:23:51
15 the material was processed even. 11:23:53
16 BY MR. HAMILTON: 11:23:57
17 Q If you could turn to page 12 of your declaration. 11:23:59
18 Do you see the figures shown on page 12? 11:24:12
19 A Yes. 11:24:14
20 Q So I believe a few moments ago, you testified 11:24:14
21 that these figures aren't to scale; is that right? 11:24:22
22 A I'm assuming that they're not exactly to scale. 11:24:25
23 As most patent drawings are not. 11:24:29
24 Q But do you believe the size of the components are 11:24:31
25 to scale relative to each other in the figure? 11:24:39

1 A Not necessarily. But they overall have an 11:24:41
2 appearance of, you know, being a reasonably -- reasonably 11:24:50
3 sized for use in a handheld, hemostatic device. 11:24:57
4 Q So to create the measurements of these components 11:25:01
5 in this figure, you've assumed they are to scale relative 11:25:05
6 to each other, correct? 11:25:10
7 A That was the assumption, to create these 11:25:10
8 dimensions that we added, yes. 11:25:17
9 Q Does the circumference define an encircled area? 11:25:21
10 MR. STOWELL: Objection. Vague. 11:26:02
11 THE STENOGRAPHIC REPORTER: I'm sorry, Counsel. You 11:26:09
12 said encircled area? 11:26:10
13 MR. HAMILTON: Encircled. 11:26:11
14 THE STENOGRAPHIC REPORTER: Thank you. 11:26:13
15 MR. STOWELL: Outside the scope. 11:26:13
16 THE WITNESS: Can you be more clear in the question? 11:26:14
17 BY MR. HAMILTON: 11:26:17
18 Q What don't you understand about the question? 11:26:18
19 A I'm not sure what you're referring to in my 11:26:19
20 declaration. 11:26:21
21 Q Do you understand what the word circumference 11:26:21
22 means? 11:26:26
23 A Yes. 11:26:26
24 Q Do you understand that the claims in the patent 11:26:28
25 use the term circumferentially constrict? 11:26:33

1 A I'd have to relook at the claims, I guess. In 11:26:36
2 the '011 patent you're talking about? 11:26:43
3 Q Mm-hmm. 11:26:45
4 A Yeah, Claim 1 uses the term circumferentially 11:27:02
5 constrict after talking about a first member coupled to 11:27:08
6 the first in the filament, and a second member coupled 11:27:14
7 (indiscernible utterance) to the second -- 11:27:21
8 THE STENOGRAPHIC REPORTER: I'm sorry. You're 11:27:21
9 speaking really fast. 11:27:21
10 THE WITNESS: Sorry. 11:27:21
11 THE STENOGRAPHIC REPORTER: Are you saying second end? 11:27:22
12 I didn't understand that. 11:27:22
13 THE WITNESS: Second end of the filament wherein the 11:27:23
14 first member and the second member of the actuator are 11:27:28
15 moveable between a first position wherein the filament 11:27:32
16 circumferentially -- circumferentially constricts the 11:27:37
17 lumen to create a seal. 11:27:45
18 BY MR. HAMILTON: 11:27:55
19 Q Does the circumference define an encircled area? 11:27:55
20 MR. STOWELL: Objection. Vague. 11:28:01
21 THE WITNESS: Well, I think with respect to the 11:28:02
22 Figures 30 through 34 in Schaffer and in '011, those are 11:28:32
23 both encircling -- encircling the tubular member and 11:28:40
24 circumferentially constricting. 11:28:49
25

1 BY MR. HAMILTON: 11:28:52
2 Q Does a circumference define an encircled area? 11:28:52
3 MR. STOWELL: Objection. Vague. 11:28:56
4 THE WITNESS: I'm not sure what encircled area you're 11:28:57
5 referencing here. 11:29:01
6 BY MR. HAMILTON: 11:29:02
7 Q Do you understand what the word circumference 11:29:03
8 means? 11:29:05
9 A Yes. 11:29:05
10 Q What does the word circumference mean? 11:29:08
11 A Is there a dictionary definition listed 11:29:10
12 somewhere? 11:29:22
13 Q Do you need a dictionary to understand what the 11:29:23
14 word circumference means? 11:29:24
15 A Well, if you have it, I would use that. 11:29:25
16 Q I do not. 11:29:29
17 A Okay. So my understanding is circumference means 11:29:31
18 to surround, wrap around, encircle. 11:29:37
19 Q You said surround, wrap around, encircle. Is 11:29:49
20 there a difference between those three terms, or do they 11:29:57
21 all mean the same thing? 11:29:59
22 MR. STOWELL: Objection. Outside the scope. 11:30:00
23 THE WITNESS: Well, I think they all relate to 11:30:01
24 circumferentially constricting a tubular member as it 11:30:07
25 relates to these patents. 11:30:11

1 BY MR. HAMILTON: 11:30:12
2 Q Are you using those three words as synonyms? 11:30:38
3 MR. STOWELL: Objection. Outside the scope. 11:30:44
4 THE WITNESS: I'm giving those as examples of 11:30:46
5 circumferentially constricting the seal member as it 11:30:49
6 relates to these patents. 11:30:54
7 BY MR. HAMILTON: 11:30:55
8 Q So the question was about the word circumference 11:30:56
9 and what does circumference mean. And you said, Surround, 11:30:58
10 wrap around, encircle. Is that right? 11:31:02
11 A I think from a geometric standpoint, 11:31:07
12 circumference means the outside length of a circle or 11:31:16
13 something approximating a circle, doesn't have to be a 11:31:23
14 true circle. 11:31:27
15 Q What do you mean by true circle? 11:31:28
16 A From a geometric standpoint, a true circle. 11:31:57
17 Q So it could be an oval or some other shape; is 11:32:04
18 that right? 11:32:10
19 MR. STOWELL: Objection, vague. 11:32:10
20 THE WITNESS: I believe the term circumference can be 11:32:10
21 used to describe the perimeter dimension of things that 11:32:16
22 are not true circles, including ellipses or ovals or tree 11:32:24
23 trunks. 11:32:34
24 BY MR. HAMILTON: 11:32:36
25 Q So then would that be it's the outer boundary of 11:32:37

1 an area? 11:32:41
2 MR. STOWELL: Objection. Vague. 11:32:42
3 THE WITNESS: Circumference is, from a geometric 11:32:42
4 standpoint, the measurement of the outside perimeter of a 11:32:50
5 circle or roundish or oval type of member of geometry. 11:32:55
6 BY MR. HAMILTON: 11:33:06
7 Q Does the '011 patent disclose any embodiments 11:33:16
8 that do not circumferentially constrict? 11:33:19
9 MR. STOWELL: Objection. Outside the scope. 11:33:36
10 THE WITNESS: I will say the figures -- in the 11:33:37
11 figures, at least for the '011 patent as I interpret them, 11:34:00
12 it does appear that they -- that their embodiments 11:34:07
13 including Figures 8 and 9 do circumferentially constrict 11:34:14
14 the seal member. 11:34:18
15 BY MR. HAMILTON: 11:34:20
16 Q So it's your understanding every figure discloses 11:34:24
17 embodiments that circumferentially constrict; is that 11:34:26
18 right? 11:34:29
19 A That's my interpretation of these figures. 11:34:29
20 Q Are you aware of any embodiment in the 11:34:35
21 specification that does not circumferentially constrict? 11:34:38
22 A I'd have to look at more detail at the 11:34:43
23 specification. I haven't considered that for this -- this 11:34:47
24 supplementary declaration. 11:34:55
25 Q Did you consider it for your first declaration, 11:34:55

1 Exhibit 1003? 11:35:14
2 A I believe we did discuss circumferential 11:35:16
3 collapse, including more details about Figures 8 and 9 and 11:35:30
4 how those systems would work. 11:35:35
5 Q So are you aware of any embodiment in the '011 11:35:36
6 patent that does not circumferentially constrict? 11:35:42
7 A I'd have to look at more detail at the 11:35:46
8 specification. I haven't considered that for this 11:35:53
9 supplemental declaration. 11:36:00
10 Q Have you considered that question with respect to 11:36:02
11 your first declaration? 11:36:06
12 A I believe there was some description and 11:36:08
13 explanation for all the -- all the embodiments shown in 11:36:18
14 '011. 11:36:24
15 Q I see you have in front of you Figures 8 and 9 of 11:36:25
16 Exhibit 1001, the '011 patent. 11:37:08
17 A Yes. 11:37:10
18 Q Do those figures show interlocking bights? 11:37:10
19 A Yes. The two separate bights are overlapping, or 11:37:16
20 interlocking, I think, is the term that the patent uses as 11:37:24
21 one option. 11:37:27
22 Q What does overlap mean? 11:37:28
23 A The one wire is inside the other wire when 11:37:31
24 they're assembled as shown in Figures 8 and 9. I believe 11:37:38
25 that was given as an option that they would be 11:37:46

1 interlocking and that they don't have to be interlocking. 11:37:50
2 Q So if they're not interlocking, do they form an 11:37:53
3 encircled area? 11:37:58
4 A Yes. In Column 14, line 2, it states, In some 11:37:59
5 embodiments the first orientation is different from the 11:39:28
6 second orientation. These are referring to the bight 11:39:33
7 embodiments, such that the first and second receiving 11:39:37
8 areas 808A and 808B overlap and define an encircled area, 11:39:38
9 also referred to as a constricting area. Elongate member 11:39:45
10 132 is received -- can be received within the encircled 11:39:53
11 area 814. 11:39:56
12 Q What you just read is the interlocking bights, 11:39:59
13 correct? 11:40:08
14 MR. STOWELL: Objection. Misstates document. 11:40:08
15 THE WITNESS: In the section above, Column 13, 11:40:09
16 line 50, Whereas in other embodiments, the first and 11:40:29
17 second bights 800A, 800B can be noninterlocking. So I 11:40:32
18 believe it's referring to either interlocking or 11:40:42
19 noninterlocking. 11:40:45
20 BY MR. HAMILTON: 11:40:46
21 Q So whether they interlock or not, it's your 11:40:46
22 testimony that they overlap; is that right? 11:40:50
23 A Well, the U-shaped components have to overlap in 11:40:51
24 order to allow the tubing to go in between. So they're 11:41:04
25 overlapping in order to receive the sealing member. 11:41:08

1 Q And is that what's meant by overlap in -- that's 11:41:11
2 your understanding of the passage you just read in 11:41:17
3 Column 13, overlap means they overlap along the axis? 11:41:21
4 MR. STOWELL: Objection. Vague. 11:41:27
5 THE WITNESS: Well, it says they overlap to define an 11:41:27
6 encircled area 814, so... Figure 8 is showing the 11:41:32
7 overlapped area as being the 814 encircled area. 11:41:44
8 BY MR. HAMILTON: 11:41:49
9 Q Figure 8 shows the interlocking bights, correct? 11:41:49
10 A It does. 11:41:53
11 Q It does not show bights that are not interlocked, 11:41:54
12 does it? 11:41:56
13 A It doesn't, but I think the interlocking area -- 11:41:57
14 I'm sorry, the overlapping area, the encircled area would 11:42:01
15 be identical whether the bights are interlocked or not 11:42:04
16 interlocked. 11:42:11
17 Q Would the bights that are not interlocked have to 11:42:11
18 be contacting each other to form an encircled area? 11:42:26
19 MR. STOWELL: Objection. Vague. 11:42:31
20 THE WITNESS: I haven't thought about it. 11:42:31
21 BY MR. HAMILTON: 11:42:37
22 Q Can you think about it now? 11:42:38
23 A It's not something I've considered in my 11:42:39
24 declaration for today. 11:42:45
25 Q If the bights are not contacting each other side 11:42:46

1 by side, would that form an encircled area? 11:42:52
2 A I guess I would say if they're close enough to 11:42:56
3 compress the tubing, then they're forming an encircled 11:43:20
4 area around the tubing. 11:43:24
5 Q So whether or not the compression is along a 11:43:26
6 circumference, the bights would compress the tubing; is 11:43:36
7 that right? 11:43:40
8 MR. STOWELL: Objection. Vague. 11:43:40
9 THE WITNESS: Can you explain the compression along 11:43:40
10 the circumference? 11:43:50
11 BY MR. HAMILTON: 11:43:51
12 Q If they're interlocking, there is compression 11:43:51
13 along a single circumference, correct? 11:43:55
14 MR. STOWELL: Objection. Vague. 11:43:57
15 THE WITNESS: I'm not sure. I haven't addressed that 11:43:57
16 in my declaration. 11:44:11
17 BY MR. HAMILTON: 11:44:13
18 Q If the bights are side by side, would each bight 11:44:19
19 form an arc around the tubular member? 11:45:13
20 MR. STOWELL: Objection. Vague. 11:45:17
21 THE WITNESS: Yeah, I really haven't considered that. 11:45:19
22 I'm not sure what -- I'm not sure what -- what the 11:45:30
23 question is, I guess. 11:45:36
24 BY MR. HAMILTON: 11:45:37
25 Q What don't you understand about the question? 11:45:37

1 A How are you using the term arc? 11:45:38
2 Q Do you understand what the term arc means? 11:45:48
3 A Yes. 11:45:50
4 Q What does arc mean? 11:45:51
5 A A curve. A bend or a curve. 11:45:54
6 Q What's the difference between an arc and a 11:46:04
7 circumference? 11:46:10
8 MR. STOWELL: Objection. Outside the scope. 11:46:11
9 THE WITNESS: I think before I said circumference is 11:46:12
10 surrounding, encircling or the measurement of a perimeter 11:46:18
11 of a circle is a circumference. 11:46:29
12 BY MR. HAMILTON: 11:46:31
13 Q And how is that different from an arc? 11:46:36
14 MR. STOWELL: Objection. Outside the scope. 11:46:39
15 THE WITNESS: An arc has a length -- 11:46:40
16 MR. STOWELL: Vague. 11:46:43
17 THE WITNESS: -- that's something less than a complete 11:46:44
18 circle. Something less than a complete circumference. 11:46:47
19 BY MR. HAMILTON: 11:46:50
20 Q So it would be fair to say an arc is a partial, 11:46:50
21 could be a partial circumference? 11:46:53
22 MR. STOWELL: Objection. Vague. 11:46:57
23 THE WITNESS: From a geometric standpoint, an arc is a 11:46:57
24 part of a curve or a circle. 11:47:10
25

1 BY MR. HAMILTON: 11:47:11
2 Q And if two arcs -- could two arcs form a 11:47:12
3 circumference? 11:47:19
4 MR. STOWELL: Objection. Vague. Outside the scope. 11:47:20
5 THE WITNESS: With respect to the patent, I think the 11:47:21
6 arcs shown in, for instance, Figure 8, together form a 11:47:30
7 circumference around the seal member. 11:47:38
8 BY MR. HAMILTON: 11:47:41
9 Q And Figure 8 again shows interlocking bights, 11:47:45
10 correct? 11:47:50
11 A It shows interlocking bights and I think it could 11:47:50
12 show noninterlocking bights and I would have the same 11:47:53
13 answer. 11:47:56
14 Q What do you mean it could show interlocking 11:47:56
15 bights, does it show interlocking bights or not? 11:48:08
16 MR. STOWELL: Objection. Asked and answered. 11:48:11
17 THE WITNESS: The specification says they could be 11:48:12
18 interlocking or noninterlocking. So they could have shown 11:48:14
19 noninterlocking. They chose to show interlocking bights 11:48:23
20 in Figure 8. 11:48:26
21 BY MR. HAMILTON: 11:48:27
22 Q Is there any figure showing noninterlocking 11:48:27
23 bights in the '011 patent? 11:48:31
24 A I don't believe so. 11:48:33
25 Q So if the bights of Figures 8 and 9 were 11:48:34

1 noninterlocking, they're side by side, would each bight 11:49:16
2 form an arc around the tubular member? 11:49:20
3 MR. STOWELL: Objection. Outside the scope. Vague. 11:49:25
4 THE WITNESS: I think the curved portion could be 11:49:28
5 considered an arc. And together, they would act to form 11:49:32
6 an encircled area. 11:49:37
7 BY MR. HAMILTON: 11:49:39
8 Q But those two arcs would not actually connect, 11:49:39
9 would they? 11:49:43
10 MR. STOWELL: Objection. Vague. 11:49:44
11 THE WITNESS: They would not be interlocking if they 11:49:45
12 were side by side. 11:49:48
13 BY MR. HAMILTON: 11:49:53
14 Q And because they're not interlocking, they 11:49:55
15 wouldn't connect, would they? 11:49:58
16 MR. STOWELL: Objection. Vague. 11:49:59
17 THE WITNESS: They wouldn't be interlocked if that's 11:49:59
18 what you mean by connected. 11:50:07
19 BY MR. HAMILTON: 11:50:08
20 Q If the bights were interlocked, would that form a 11:50:41
21 singular substantially circular line that encircles the 11:50:48
22 tubular member? 11:50:55
23 MR. STOWELL: Objection. Vague. Outside the scope. 11:50:55
24 THE WITNESS: I think what it would form is how they 11:50:57
25 describe it in the patent. Column 14. They describe an 11:51:11

1 encircled area 814. 11:51:27
2 BY MR. HAMILTON: 11:51:29
3 Q And is that encircled area -- does that encircled 11:51:29
4 area have a singular substantially circular line? 11:51:33
5 MR. STOWELL: Objection. Vague. 11:51:39
6 THE WITNESS: I'm not sure what that means. 11:51:40
7 BY MR. HAMILTON: 11:51:42
8 Q The two side-by-side arcs form a singular 11:51:46
9 substantially circular line? 11:51:54
10 MR. STOWELL: Objection. Vague. 11:51:58
11 THE WITNESS: I'm not sure where substantially 11:51:58
12 circular line is coming from or -- 11:52:06
13 BY MR. HAMILTON: 11:52:07
14 Q You don't understand what those words mean? 11:52:07
15 A I don't understand the reference to those words 11:52:08
16 that you're referring to. 11:52:10
17 Q Do you understand what substantially means? 11:52:12
18 A Sure. 11:52:15
19 Q Do you understand what singular means? 11:52:16
20 A With respect to these designs and patents, I'm 11:52:19
21 not sure what substantially singular line means. 11:52:22
22 Q Do you understand what circular means? 11:52:26
23 A Yes. 11:52:29
24 Q What's a circular line? 11:52:29
25 MR. STOWELL: Objection. Vague. Outside the scope. 11:52:31

1 THE WITNESS: A circle. 11:52:33
2 BY MR. HAMILTON: 11:52:36
3 Q What's a singular circular line? 11:52:42
4 MR. STOWELL: Objection. Asked and answered. 11:52:46
5 THE WITNESS: I'm not sure how it relates to this 11:52:47
6 patent or what section you're reading from to find that 11:52:50
7 reference. 11:52:57
8 BY MR. HAMILTON: 11:52:57
9 Q Do you understand what a singular circular line 11:53:03
10 is? 11:53:05
11 MR. STOWELL: Objection. Asked and answered. 11:53:06
12 THE WITNESS: I think I said it's a circle. 11:53:08
13 BY MR. HAMILTON: 11:53:11
14 Q And for that circle, is one able to trace the 11:53:13
15 circle completely around its circumference? 11:53:18
16 MR. STOWELL: Objection. Outside the scope. 11:53:22
17 THE WITNESS: I think that's the definition of a 11:53:23
18 circle. 11:53:29
19 BY MR. HAMILTON: 11:53:30
20 Q So that's a yes? 11:53:30
21 A I think what you're describing is the definition 11:53:31
22 of a circle. 11:53:37
23 Q If you could turn to Column 4 of the '011 patent. 11:53:38
24 I want to ask you about the sentence beginning on line 51. 11:54:18
25 A You said Column 4? 11:54:36

1 Q Column 4, the sentence beginning on line 51. 11:54:38
2 A Okay. 11:54:41
3 Q So the sentence beginning at line 51, In some 11:56:14
4 embodiments. Do you see that? 11:56:19
5 A Yes. 11:56:19
6 Q Earlier, I had asked if there were embodiments 11:56:22
7 disclosed that do not circumferentially constrict. Does 11:56:29
8 this help you answer this question? 11:56:37
9 MR. STOWELL: Objection. Outside the scope. Vague. 11:56:38
10 THE WITNESS: (Indiscernible utterance)I don't think 11:56:40
11 it changes my answer. 11:57:56
12 THE STENOGRAPHIC REPORTER: I'm sorry. Repeat that? 11:57:56
13 THE WITNESS: I don't think it changes my answer that 11:57:58
14 the embodiments shown are all circumferentially 11:58:00
15 constricting a tubular member. 11:58:08
16 BY MR. HAMILTON: 11:58:10
17 Q When you say the embodiments shown, you mean in 11:58:13
18 the figures? 11:58:15
19 A In the figures. And in this paragraph you asked 11:58:15
20 me to read. 11:58:20
21 Q And this paragraph says, In some embodiments, the 11:58:20
22 at least one filament circumferentially constricts the 11:58:30
23 tubular member. Do you see that? 11:58:34
24 A Yeah. 11:58:34
25 Q So does that imply that there are embodiments 11:58:37

1 that do not circumferentially constrict? 11:58:40
2 MR. STOWELL: Objection. Vague. Outside the scope. 11:58:43
3 THE WITNESS: I don't recall embodiments that don't 11:58:45
4 circumferentially constrict. 11:58:52
5 BY MR. HAMILTON: 11:58:52
6 Q So as you sit here today, you're not aware of any 11:59:01
7 embodiment in the '011 that patent that does not 11:59:04
8 circumferentially constrict, where a filament does not 11:59:07
9 circumferentially constrict the tubular member; is that 11:59:11
10 right? 11:59:19
11 MR. STOWELL: Objection. Asked and answered. 11:59:19
12 THE WITNESS: That's my recollection, is that the 11:59:21
13 embodiment in '011 all discuss circumferentially 11:59:25
14 constricting using a filament of some type. 11:59:33
15 BY MR. HAMILTON: 11:59:34
16 Q And that was your understanding in rendering your 11:59:35
17 opinion in this case; is that correct? 11:59:37
18 A That's my understanding. 11:59:38
19 Q And the fact that this paragraph says, In some 11:59:44
20 embodiments, the at least one filament circumferentially 11:59:48
21 constricts, doesn't change your answer. You still believe 11:59:53
22 all the embodiments in the '011 patent circumferentially 11:59:59
23 constrict; is that right? 12:00:03
24 MR. STOWELL: Objection. Asked and answered. 12:00:03
25 THE WITNESS: That's my recollection, not having 12:00:04

1 looked at it in great detail today. 12:00:07
2 MR. STOWELL: We've been going another hour and a 12:00:31
3 half. So when you reach a good time for a break, let's do 12:00:33
4 that. 12:00:35
5 MR. HAMILTON: Sure, yeah. Let's take a break. 12:00:36
6 MR. STOWELL: Okay. 12:00:37
7 THE VIDEOGRAPHER: Okay. We are going off the record. 12:00:38
8 The time is 12:00 o'clock p.m. 12:00:40
9 (Recess taken.) 12:35:39
10 THE VIDEOGRAPHER: We are back on the record. The 12:35:39
11 time is 12:35 p.m. 12:35:46
12 BY MR. HAMILTON: 12:35:48
13 Q Mr. Thornton, do you understand you're still 12:35:50
14 under oath? 12:35:51
15 A Yes. 12:35:51
16 Q Did you review any documents during the break? 12:35:52
17 A No. 12:35:57
18 Q Did you communicate with anybody in any way 12:35:58
19 regarding your testimony here today? 12:36:01
20 A No. 12:36:05
21 Q Did you communicate with anybody regarding this 12:36:05
22 matter in any way? 12:36:07
23 A No. 12:36:08
24 Q What is steel rebar? 12:36:08
25 MR. STOWELL: Objection. Vague. Outside the scope. 12:36:17

1 THE WITNESS: In my declaration that I gave as an 12:36:18
2 example of -- well, steel rebar is using construction for 12:36:24
3 reenforcing concrete. 12:36:36
4 BY MR. HAMILTON: 12:36:37
5 Q Are you aware of steel rebar being used in a 12:36:39
6 hemostasis valve? 12:36:43
7 A No. 12:36:45
8 Q Would a person of ordinary skill in the art ever 12:36:46
9 use steel rebar in a hemostasis valve? 12:36:50
10 A No. 12:36:53
11 MR. HAMILTON: All right. I have no further 12:37:22
12 questions. 12:37:24
13 Thank you for your time today. 12:37:24
14 MR. STOWELL: I don't have any questions either. 12:37:26
15 THE VIDEOGRAPHER: Okay. One moment, I'll read us 12:37:32
16 off. 12:37:36
17 This marks the end of the deposition of Troy L. 12:37:40
18 Thornton. We're going off the record at 12:37 p.m. 12:37:44
19 (WHEREUPON THE DEPOSITION WAS
20 CONCLUDED AT 12:37 P.M.)
21
22
23
24
25

1 Please be advised I have read the
2 foregoing deposition, pages 1 through
86, inclusive.

3 I hereby state there are:

4

5

6
(Check one)_____ no corrections
7
_____ corrections per attached
8

9

10 _____
TROY L. THORNTON
11

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1 WITNESS'S CHANGES OR CORRECTIONS

2

3 NOTE: If you are adding to your testimony, print
the exact words you want to add. If you are
4 deleting from your testimony, print the exact
words you want to delete. Specify with "Add"
5 or "Delete" and sign this form.

6

Deposition of: TROY L. THORNTON
7 Case Title: IMPERATIVE V. INARI
Date of Deposition: AUGUST 15, 2025
8

9 I,_____have

10 the following corrections to make to my deposition:

11 Page Line Change/Add/Delete

12

13 ___ ___ _____

14 ___ ___ _____

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17 ___ ___ _____

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20 ___ ___ _____

21 ___ ___ _____

22 ___ ___ _____

23 ___ ___ _____

24 ___ ___ _____

25 ___ ___ _____

1 CERTIFICATE OF SHORTHAND REPORTER/STENOGRAPHER
2
3 I, Christa Yan, Certified Shorthand/Stenographic Reporter
within and for the State of California do hereby certify:
4
5 That Troy Thornton, the Witness whose deposition is
hereinbefore set forth, was duly sworn by me before the
6 commencement of such deposition and that such deposition
was taken before me and is a true record of the testimony
7 given by such witness.
8 I further certify that both parties were represented by
counsel at the deposition.
9
I further certify that the deposition of Troy Thornton,
10 occurred at the offices of Knobbe Martens San Francisco on
August 15, 2025, commencing at 9:01 a.m. to 12:37 p.m.
11
12 I further certify that I am not related to any of the
parties to this action by blood or marriage, I am not
13 employed by or an attorney to any of the parties to this
action, and that I am in no way interested, financially or
14 otherwise, in the outcome of this matter.
15
16 IN WITNESS WHEREOF, I have hereunto set my hand this 20th
day of August 2025.
17
18
19 _____
20 CERTIFIED SHORTHAND/STENOGRAPHIC REPORTER
IN AND FOR THE STATE OF CALIFORNIA
21
22
23
24
25

A
ability 28:21, 57:24, 58:2, 61:11
able 20:3, 21:8, 25:20, 27:18, 28:1, 28:3, 28:7, 32:16, 34:2, 35:1, 35:6, 36:12, 52:6, 58:14, 58:15, 63:25, 79:14
about 7:23, 8:10, 9:13, 11:2, 23:6, 24:15, 35:18, 37:23, 49:20, 49:23, 54:7, 54:18, 55:17, 56:17, 59:1, 59:2, 59:8, 61:5, 62:15, 64:6, 66:18, 67:2, 67:5, 69:8, 71:3, 73:20, 73:22, 74:25, 79:24
above 26:24, 27:2, 27:3, 52:21, 72:15
accordance 4:7
account 63:23
accuracy 36:18
accurate 8:25, 9:7, 9:11, 9:13
across 39:13
act 77:5
action 23:1, 23:19, 50:21, 86:19, 86:21
actually 17:7, 51:12, 52:8, 77:8
actuate 60:14
actuating 10:2, 16:21, 16:23, 16:25, 17:21, 25:21, 28:19, 31:16, 32:13, 32:14, 33:16, 33:19, 38:7, 38:10, 44:15, 46:2, 46:12, 46:18, 46:22, 47:15, 48:15, 48:25, 49:11, 58:16, 59:2, 62:14, 62:18, 62:20, 63:17, 64:22
actuator 33:10, 47:5, 67:14
actuators 46:2
add 85:4, 85:6, 85:15
added 66:8
adding 85:3
addition 16:17
address 20:1
addressed 74:15
adequately 28:17
adjust 8:2
adjusting 34:5
adjustments 58:15
advised 84:1
after 16:15, 67:5
again 15:2, 18:23, 24:20, 29:10, 30:10, 52:9, 76:9
against 8:2, 38:19
ago 48:9, 65:20
agree 6:22
ahead 50:2
all 6:25, 16:12, 17:13, 18:18, 20:3, 21:7, 28:21, 30:19, 36:7, 38:4, 49:20, 57:22, 57:24, 64:12, 64:16, 64:20, 65:7, 68:21, 68:23, 71:13, 80:14, 81:13, 81:22, 83:11
allow 59:18, 72:24
along 20:25, 38:19, 39:9, 39:25, 40:12, 40:13, 41:16, 41:21, 73:3, 74:5, 74:9, 74:13
already 49:20
also 2:18, 16:4, 16:23, 20:19, 27:24, 28:2, 29:10, 33:10, 52:4, 55:14, 61:1, 61:7, 61:11, 61:14, 72:9
always 55:10, 60:1
among 22:2, 33:6
amount 37:1, 37:10, 37:17, 60:23, 63:18
angeles 2:13
annotated 61:19
another 6:25, 14:2, 21:17, 25:13, 26:21, 41:2, 82:2
answer 37:22, 42:9, 76:13, 80:8, 80:11, 80:13, 81:21
answered 10:10, 10:19, 12:17, 15:16, 15:24, 28:6, 32:23, 34:7, 35:8, 46:10, 47:18, 48:23, 49:5, 63:5, 64:19, 65:6, 76:16, 79:4, 79:11, 81:11, 81:24
antegrade 50:21
any 6:8, 6:11, 7:20, 7:25, 16:19, 26:22, 36:16, 43:22, 54:9, 54:21, 55:22, 55:24, 59:21, 70:7,

70:20, 71:5, 76:22, 81:6, 82:16, 82:18, 82:22, 83:14, 86:18, 86:20
anybody 43:19, 82:18, 82:21
anything 7:17
apparently 17:5
appeal 1:2, 5:5
appear 19:8, 70:12
appearance 66:2
appearances 2:1
appeared 4:5
appears 52:18
application 13:18
applied 15:4, 15:18, 16:8, 18:4, 18:25, 19:13, 19:14, 22:4, 28:20, 29:8, 30:11, 32:15, 36:20, 39:9, 40:11, 40:15, 40:17
applies 39:21, 39:23, 39:25
apply 13:5, 23:10, 40:5, 41:12, 41:13, 57:4
applying 21:18, 21:22, 29:10, 37:4, 37:11, 37:18
appropriate 10:24, 32:4, 53:22, 64:3
appropriately 28:22
approximately 62:13
approximating 69:13
arc 74:19, 75:1, 75:2, 75:4, 75:6, 75:13, 75:15, 75:20, 75:23, 77:2, 77:5
arcs 76:2, 76:6, 77:8, 78:8
area 27:3, 43:5, 66:9, 66:12, 67:19, 68:2, 68:4, 70:1, 72:3, 72:8, 72:9, 72:11, 73:6, 73:7, 73:13, 73:14, 73:18, 74:1, 74:4, 77:6, 78:1, 78:3, 78:4
areas 30:18, 30:19, 30:21, 30:22, 41:19, 43:7, 72:8
aren't 65:21
argues 53:25
around 13:14, 14:5, 14:8, 14:20, 14:25, 15:11, 15:14, 15:22, 16:1, 17:13, 23:4, 24:16, 27:25, 28:4, 28:8, 28:9, 28:13, 29:4, 31:5, 31:6, 34:12, 39:18, 42:18, 45:19, 57:24, 58:10, 68:18, 68:19, 69:10, 74:4, 74:19, 76:7, 77:2, 79:15
art 16:12, 17:7, 20:15, 21:6, 24:24, 26:5, 32:7, 32:11, 32:21, 33:11, 34:2, 34:4, 34:25, 46:12, 48:19, 54:14, 56:25, 57:16, 58:13, 59:22, 60:3, 62:17, 83:8
asked 10:9, 10:18, 12:17, 15:16, 15:24, 28:5, 32:23, 34:7, 35:8, 46:10, 47:18, 48:22, 49:5, 63:5, 64:18, 65:5, 76:16, 79:4, 79:11, 80:6, 80:19, 81:11, 81:24
aspect 21:14, 34:16, 60:13, 61:10
aspects 20:15, 20:17, 20:18, 60:4, 60:17
assembled 71:24
assess 20:13
assume 22:10, 63:6
assumed 66:5
assuming 65:22
assumption 66:7
attached 39:24, 84:10
attaches 41:5
attachment 45:5
attorney 5:14, 86:20
attorney-at-law 2:4, 2:11
august 1:21, 4:2, 5:7, 85:11, 86:16, 86:25
aware 7:21, 7:22, 7:25, 54:21, 70:20, 71:5, 81:6, 83:5
axis 73:3

B

b2 1:9, 6:20
back 6:5, 29:16, 43:13, 52:22, 56:5, 56:6, 61:12, 82:10
balance 60:1, 60:8
balanced 60:18
ball 35:20
based 36:19, 51:9, 64:14, 65:2
basically 55:20
bear 2:3
because 8:2, 16:21,

17:15, 30:14, 34:23, 44:22, 51:4, 64:23, 77:14
been
7:1, 13:20, 35:11, 37:23, 82:2
before
1:2, 4:3, 5:4, 17:16, 18:1, 21:5, 30:20, 75:9, 86:7, 86:9
beginning
8:19, 16:15, 79:24, 80:1, 80:3
begins
5:1, 13:11, 25:25
behalf
5:24
being
5:24, 23:15, 30:11, 46:23, 49:21, 56:19, 57:23, 63:16, 66:2, 73:7, 83:5
believe
24:11, 24:23, 25:18, 51:2, 53:21, 56:2, 59:14, 62:6, 62:10, 63:17, 64:6, 64:20, 65:20, 65:24, 69:20, 71:2, 71:12, 71:24, 72:18, 76:24, 81:21
below
53:7, 53:8
bend
75:5
better
38:15
between
17:23, 25:13, 31:14, 37:11, 37:18, 44:22, 45:4, 60:1, 60:8, 67:15, 68:20, 72:24, 75:6
bight
72:6, 74:18, 77:1
bights
44:17, 71:18, 71:19, 72:12, 72:17, 73:9, 73:11, 73:15, 73:17, 73:25, 74:6, 74:18, 76:9, 76:11, 76:12, 76:15, 76:19, 76:23, 76:25, 77:20
block
36:16
blood
24:3, 51:2, 59:16, 86:19
board
1:2, 5:5
both
6:22, 18:6, 44:20, 65:9, 67:23, 86:11
bottom
13:12, 46:19, 47:9
boundary
69:25
break
37:25, 43:9, 43:20, 43:22, 82:3, 82:5, 82:16
brushing
8:2
bush
2:5, 4:3, 5:10
button
41:5
buttons
64:1

C

c-flex
25:8
california
2:6, 2:13, 4:3, 4:5, 4:8, 5:11, 86:4, 86:31
calipers
62:12
called
5:24
calls
59:6
can't
6:8, 32:5, 37:9, 37:22
care
1:4, 5:3, 5:18
case
1:8, 5:5, 20:4, 34:10, 45:2, 81:17, 85:10
cases
32:17, 32:25, 33:23, 33:25
categorization
57:14
category
56:21
catheter
61:1
cause
4:6, 21:2, 22:22, 36:25, 45:8
caused
31:1, 31:5
causes
51:12
central
14:4, 14:7, 14:17, 55:5
century
2:12
certain
30:18, 30:21, 37:1, 63:17
certainly
15:10, 15:25, 18:22, 24:11, 34:1, 61:13, 65:13
certificate
3:10, 86:1
certified
4:4, 86:3, 86:30
certify
86:4, 86:11, 86:14, 86:18
cetera
18:5, 20:10, 29:8, 54:13
change
7:17, 19:16, 19:17, 19:19, 81:21, 85:15
changes
3:9, 80:11, 80:13, 85:1
changing
30:24, 31:1
characterize
30:23
check
84:8
choice
10:24
choose
24:24, 26:6
chose
76:19
christa
1:31, 4:4, 5:20, 86:3
circle
69:12, 69:13, 69:14, 69:15, 69:16, 70:5, 75:11, 75:18, 75:24, 79:1, 79:12, 79:14, 79:15, 79:18, 79:22
circles
69:22

circular
77:21, 78:4, 78:9, 78:12, 78:22, 78:24, 79:3, 79:9
circumference
26:9, 66:9, 66:21, 67:19, 68:2, 68:7, 68:10, 68:14, 68:17, 69:8, 69:9, 69:12, 69:20, 70:3, 74:6, 74:10, 74:13, 75:7, 75:9, 75:11, 75:18, 75:21, 76:3, 76:7, 79:15
circumferential
10:22, 31:6, 32:2, 50:11, 51:21, 71:2
circumferentially
23:3, 42:24, 66:25, 67:4, 67:16, 67:24, 68:24, 69:5, 70:8, 70:13, 70:17, 70:21, 71:6, 80:7, 80:14, 80:22, 81:1, 81:4, 81:8, 81:9, 81:13, 81:20, 81:22
citation
53:3
cite
53:4, 53:10
claim
67:4
claims
66:24, 67:1
clarify
35:17
clear
11:5, 25:4, 53:15, 66:16
clearly
48:24, 59:9
close
50:23, 74:2
closed
50:22
code
4:8
coie
2:10, 5:16
collapse
32:2, 51:12, 71:3
collapsed
52:10
collapses
51:21
column
52:8, 72:4, 72:15, 73:3, 77:25, 79:23, 79:25, 80:1
com
2:8, 2:15
combination
9:1, 9:8, 9:22, 9:23, 11:22, 12:8, 12:20
comes
24:20
coming
6:4, 78:12
commencement
86:8
commencing
86:16
communicate
43:19, 82:18, 82:21
compare
25:16, 59:12, 62:20
compared
26:17
comparing
18:13, 61:25
comparison
63:22, 64:14, 65:3
complete
6:9, 6:12, 75:17, 75:18
completely
79:15
compliance
15:4, 18:3, 32:5, 32:8, 34:6, 44:23
compliant
8:21, 9:18, 9:19, 9:24, 10:4, 10:7, 10:15, 10:23, 11:2, 11:3, 11:6, 11:10, 11:13, 11:18, 11:21, 13:13, 14:5, 14:9, 14:11, 15:7, 15:11, 15:21, 16:13, 17:1, 17:5, 17:8, 17:14, 17:24, 18:15, 19:25, 20:2, 20:12, 21:2, 21:12, 21:20, 22:7, 22:11, 22:23, 23:7, 23:9, 23:16, 23:23, 24:1, 24:15, 24:22, 25:15, 27:14, 27:24, 28:12, 29:1, 29:3, 29:21, 29:25, 30:3, 30:12, 30:17, 31:11, 31:23, 32:21, 33:5, 34:14, 34:19, 35:13, 35:21, 51:5, 53:9, 53:11, 53:19, 54:12, 54:15, 54:22, 55:7, 56:10, 56:20, 59:11
component
8:17, 21:16
components
20:16, 21:7, 21:8, 21:11, 33:1, 34:9, 35:11, 35:17, 64:17, 65:10, 65:24, 66:4, 72:23
compound
20:7, 50:25, 51:18, 53:14, 57:12
compress
42:23, 43:2, 43:6, 50:12, 51:3, 63:25, 74:3, 74:6
compressed
26:16, 36:2, 51:11, 51:16, 55:15, 55:20, 62:23
compresses
51:4
compression
14:16, 21:18, 21:23, 23:10, 29:11, 31:2, 37:4, 37:11, 37:18, 37:21, 38:18, 39:9, 39:13, 39:21, 39:23, 39:25, 41:12, 58:21, 58:24, 59:2, 59:4, 59:9, 59:13, 59:23, 62:1, 62:15, 62:19, 62:22, 63:3, 63:15, 63:25, 64:2, 64:4, 64:7, 64:10, 64:13, 74:5, 74:9, 74:12

compressive
52:10
conceivably
60:24
concluded
83:20
concrete
83:3
configuration
27:19, 27:20, 27:21, 52:7
confirm
11:20
confirmed
17:12
conform
31:16
connect
77:8, 77:15
connected
77:18
consider
22:17, 32:12, 70:25
considerations
61:14
considered
12:12, 13:8, 29:14, 37:7, 37:20, 42:5, 42:11, 42:16, 47:12, 47:23, 48:5, 54:24, 58:25, 63:14, 70:23, 71:8, 71:10, 73:23, 74:21, 77:5
considering
63:15
constraining
24:4
constrict
23:3, 66:25, 67:5, 70:8, 70:13, 70:17, 70:21, 71:6, 80:7, 81:1, 81:4, 81:8, 81:9, 81:23
constricting
67:24, 68:24, 69:5, 72:9, 80:15, 81:14
constricts
24:4, 67:16, 80:22, 81:21
construction
83:2
contact
30:5, 39:11, 39:17, 39:20, 40:4, 41:19, 41:21, 41:23, 43:5, 43:7
contacting
73:18, 73:25
contacts
42:3, 43:2
convey
63:17
correct
9:24, 10:8, 10:16, 11:25, 14:18, 18:14, 19:21, 20:6, 22:24, 23:11, 26:4, 26:12, 28:4, 28:13, 28:14, 29:5, 30:22, 31:21, 33:5, 33:25, 34:6, 34:15, 34:20, 36:20, 37:5, 39:10, 39:15, 39:22, 40:2, 40:20, 41:16, 41:22, 43:4, 44:20, 45:9, 45:16, 45:22, 46:9, 48:3, 48:10, 49:14, 49:18, 51:9, 51:17, 52:4, 52:14, 52:17, 55:25, 56:4, 56:11, 58:7, 58:14, 64:17, 65:3, 66:6, 72:13, 73:9, 74:13, 76:10, 81:17
corrections
3:9, 84:8, 84:10, 85:1, 85:14
could
8:5, 16:4, 16:11, 17:24, 18:9, 18:23, 24:8, 24:13, 24:17, 26:19, 27:9, 31:14, 32:7, 32:20, 33:11, 34:4, 36:17, 36:25, 43:24, 46:4, 47:23, 48:17, 48:18, 48:19, 48:20, 49:6, 49:22, 54:8, 54:14, 55:2, 56:3, 56:13, 56:22, 57:6, 60:15, 60:24, 60:25, 61:1, 61:7, 61:17, 65:17, 69:17, 75:21, 76:2, 76:11, 76:14, 76:17, 76:18, 77:4, 79:23
couldn't
26:3
counsel
5:12, 8:1, 12:1, 12:5, 44:4, 44:6, 66:11, 86:12
couple
6:15, 8:10, 38:2
coupled
67:5, 67:6
course
33:9
court
5:20
create
23:3, 34:12, 44:3, 45:11, 59:22, 66:4, 66:7, 67:17
created
45:14
creating
58:10
criticize
53:8
cross-section
30:25, 38:11, 38:13, 38:14, 38:16, 38:20, 38:24, 40:1, 40:2, 41:1, 41:2, 41:7, 41:8, 42:6, 42:17, 49:10, 64:21
cross-sectional
41:22
crusher
50:21
csr
1:31
curve
75:5, 75:24
curved
77:4
cylindrical
51:20
cylindrically
51:12

D

damage
60:25, 61:1, 61:7, 61:14
date
5:7, 85:11
day
4:1, 4:2, 86:25
declaration
7:5, 7:8, 7:13,

7:14, 7:18, 7:20, 7:24, 8:5, 12:10, 12:13, 12:22, 14:1, 16:5, 16:16, 29:17, 31:9, 31:10, 37:22, 38:5, 42:7, 42:17, 43:25, 47:13, 49:18, 52:23, 61:18, 65:17, 66:20, 70:24, 70:25, 71:9, 71:11, 73:24, 74:16, 83:1
define
66:9, 67:19, 68:2, 72:8, 73:5
definition
68:11, 79:17, 79:21
deflected
36:2
deform
22:23, 30:9, 35:13, 35:14, 35:22, 36:12, 36:15, 36:16, 36:19, 40:18, 41:15, 41:18, 42:20
deformable
55:7, 56:10, 57:23
deformation
36:9, 37:1, 37:10, 37:17, 42:2, 44:15, 55:16
deformed
30:15, 55:18
deforming
30:22, 45:19, 51:9
deforms
42:6, 42:11
delete
85:6, 85:7, 85:15
deleting
85:5
depend
12:24, 13:3, 16:7, 18:1, 19:12, 33:14
depending
18:9, 30:19, 32:16, 33:1, 46:1, 49:19, 60:16
depends
15:2, 15:17, 18:23, 22:15, 29:7, 30:10, 35:9, 35:25, 47:20, 60:23
depict
11:9, 29:21, 31:20
depicted
8:11, 8:13, 16:22, 19:23, 38:8, 40:7, 44:8, 45:5, 46:5, 47:5, 47:7, 47:16
depicting
9:16, 32:19, 32:24, 45:2, 45:17, 46:15, 46:20, 46:22, 47:4, 49:14, 53:9
depiction
8:25, 9:3, 9:7, 9:11, 38:15, 44:11, 44:14
depos
5:9, 5:21
deposition
1:19, 5:2, 5:10, 83:17, 83:19, 84:2, 85:9, 85:11, 85:14, 86:6, 86:8, 86:12, 86:14
describe
24:2, 24:12, 26:14, 53:17, 53:20, 55:15, 56:19, 69:21, 77:25
described
8:23, 9:18, 9:19, 10:4, 15:25, 23:15, 29:21, 29:25, 46:23, 51:6, 52:14, 53:9, 57:7
describing
55:22, 56:1, 56:5, 79:21
description
25:7, 25:19, 27:17, 55:14, 71:12
descriptions
48:14, 56:6
design
17:23, 20:16, 28:1, 28:3, 32:17, 34:23, 35:4, 51:1, 53:23, 57:22, 57:24, 58:11, 58:14, 58:18, 59:25, 60:5, 60:19, 61:13
designed
28:9
designs
20:10, 25:20, 26:7, 59:15, 59:16, 78:20
desired
45:11
detail
70:22, 71:7, 82:1
details
71:3
determine
13:24, 20:20, 64:9, 65:10
device
11:23, 66:3
devices
60:2, 60:10, 61:12, 61:14
diameter
62:15, 63:15, 64:11
diameters
44:17
dictionary
68:11, 68:13
differ
30:2
difference
15:5, 51:17, 68:20, 75:6
different
13:3, 15:5, 16:20, 19:14, 20:10, 20:15, 20:16, 21:7, 21:8, 21:11, 30:13, 30:14, 47:24, 48:3, 50:10, 51:20, 56:17, 60:4, 72:5, 75:13
dimension
41:8, 45:5, 69:21
dimensions
21:8, 22:1, 22:3, 22:16, 58:17, 65:14, 66:8
disclose
48:19, 70:7
disclosed
35:21, 54:3, 80:7
discloses
34:18, 44:25, 70:16
disclosure
44:25, 49:24, 50:8, 53:3,

54:19
discuss
14:10, 71:2, 81:13
discussed
26:24, 27:1, 52:25
discusses
27:3, 55:5
discussing
14:2, 35:11, 41:9, 52:23
distance
38:20, 39:14, 45:4
doctor
60:13
document
27:7, 28:16, 45:25, 72:14
documents
43:22, 82:16
drawings
62:6, 65:23
drawn
19:7, 61:22, 61:23, 62:4, 62:7, 62:10, 62:12
duly
5:25, 86:7
during
43:20, 43:22, 82:16

E

each
40:9, 41:22, 65:25, 66:6, 73:18, 73:25, 74:18, 77:1
earlier
7:8, 14:9, 23:17, 53:16, 80:6
easier
35:13, 35:22, 35:23, 37:10, 37:17
easily
26:16
east
2:12
either
17:23, 39:24, 72:18, 83:14
elastic
55:7, 56:10
eller
9:1, 9:8, 9:23, 11:23, 12:9, 12:21
eller's
8:16
ellipses
69:22
elongate
72:9
embodiment
14:3, 23:21, 24:9, 24:17, 25:9, 27:15, 28:14, 47:1, 50:6, 50:13, 50:15, 52:16, 52:23, 53:12, 54:4, 56:4, 57:8, 59:21, 70:20, 71:5, 81:7, 81:13
embodiments
10:1, 23:15, 23:17, 24:2, 24:3, 48:12, 50:11, 50:20, 53:16, 70:7, 70:12, 70:17, 71:13, 72:5, 72:7, 72:16, 80:4, 80:6, 80:14, 80:17, 80:21, 80:25, 81:3, 81:20, 81:22
employed
86:20
encircle
68:18, 68:19, 69:10
encircled
66:9, 66:12, 66:13, 67:19, 68:2, 68:4, 72:3, 72:8, 72:10, 73:6, 73:7, 73:14, 73:18, 74:1, 74:3, 77:6, 78:1, 78:3
encircles
77:21
encircling
8:16, 67:23, 75:10
end
14:13, 24:21, 27:18, 39:24, 40:18, 40:19, 40:23, 52:5, 52:19, 53:18, 59:9, 67:11, 67:13, 83:17
ends
26:1
engineer
34:1, 35:3, 35:6, 36:23
enough
10:15, 11:18, 11:21, 27:20, 27:24, 28:12, 32:22, 34:19, 74:2
entire
39:25, 41:16
entirely
46:13, 46:14
equal
18:19
ergonomic
60:13
ergonomically
64:2
especially
45:18, 46:15
et
18:4, 20:9, 29:8, 54:12
even
13:14, 14:6, 14:21, 15:11, 45:3, 46:4, 65:15
ever
83:8
every
70:16
everything
34:11
exact
20:9, 53:10, 85:4, 85:5
exactly
36:18, 40:22, 65:22
examination
6:2
examinations
3:1
examined
4:6
example
25:8, 36:15, 44:21, 46:20, 48:11, 83:2
examples
49:7, 69:4
excessive
60:11, 60:15, 60:20
excuse
31:10, 52:2, 61:18
exert
60:15
exerted
46:3
exerting
31:5, 60:20
exhibit
3:16, 6:16, 6:17, 6:21, 6:23, 7:1, 7:2,

7:12, 7:13, 7:14, 7:18, 7:21, 13:21, 43:24, 52:2, 55:3, 71:1, 71:16
exhibit's 7:1
exhibits 3:17, 14:14
exist 16:23, 17:22, 18:13, 19:5, 19:9, 19:20, 19:24, 20:25
expand 32:3
expect 63:11
experiment 57:17, 57:20
experimentation 58:16
explain 16:18, 74:9
explanation 71:13
external 31:2, 50:11
extremely 10:3, 10:12, 10:23, 23:15, 25:15, 26:15, 30:3, 30:17, 36:1, 51:5, 56:19, 59:11

F

fact 17:12, 63:24, 81:19
fair 75:20
fairly 64:1
farthest 40:18, 40:19, 40:23
fast 67:9
features 57:22
few 65:20
figure 8:8, 8:10, 8:11, 8:13, 8:18, 8:25, 10:16, 11:19, 12:16, 16:5, 16:12, 29:18, 30:1, 30:2, 32:9, 33:20, 35:1, 38:5, 38:8, 38:12, 38:15, 39:1, 40:7, 40:8, 40:25, 46:6, 47:10, 51:2, 53:8, 54:11, 61:19, 62:9, 63:23, 65:25, 66:5, 70:16, 73:6, 73:9, 76:6, 76:9, 76:20, 76:22
figured 32:8
figures 23:22, 24:9, 24:14, 24:17, 24:25, 25:9, 25:20, 26:3, 28:14, 43:25, 44:3, 44:5, 44:6, 44:9, 44:12, 44:20, 45:6, 47:1, 47:5, 47:7, 50:5, 50:6, 50:9, 50:10, 50:17, 50:18, 50:24, 51:8, 51:15, 51:23, 51:25, 52:17, 52:18, 52:24, 53:4, 53:13, 53:23, 54:3, 54:4, 56:4, 57:8, 59:15, 61:21, 64:21, 65:18, 65:21, 67:22, 70:10, 70:11, 70:13, 70:19, 71:3, 71:15, 71:18, 71:24, 76:25, 80:18, 80:19
filament 43:8, 67:6, 67:13, 67:15, 80:22, 81:8, 81:14, 81:20
fill 9:20, 10:15, 11:19, 11:22, 14:24, 15:7, 15:14, 15:21, 16:4, 17:8, 17:25, 20:3, 21:2, 29:4, 30:18, 30:21, 32:9, 32:22, 34:19, 58:2
filled 16:13, 20:21, 33:13
filling 14:18, 30:4, 30:8, 58:6
financially 86:21
find 79:6
first 6:16, 7:18, 7:20, 22:6, 36:7, 55:3, 55:5, 55:21, 56:12, 67:5, 67:6, 67:14, 67:15, 70:25, 71:11, 72:5, 72:7, 72:16
fixed 45:5
flat 47:6, 47:16, 47:21, 48:10, 48:15, 48:17, 48:19, 48:20, 49:3, 49:14, 49:16
flattened 48:25, 49:6, 49:7, 49:11, 49:13
flexibility 18:4, 19:1, 20:24, 22:2, 44:23, 45:18, 46:13, 65:13
flexible 20:20, 35:14, 44:16, 45:15, 45:21, 46:9, 46:18, 46:25, 47:9, 47:15, 47:20, 62:18, 63:12, 63:19, 64:9, 64:23, 65:10
floor 2:5
fluid 14:15
focus 28:24
following 85:14
follows 6:1
force 10:21, 10:22, 21:1, 24:4, 31:2, 31:5, 31:6, 32:2, 32:3, 32:15, 33:9, 36:25, 37:11, 37:18, 38:19, 39:9, 39:13, 40:5,

40:11, 40:15, 40:17, 46:3, 51:21, 52:10, 60:1, 60:9, 60:11, 60:13, 60:14, 60:15, 60:16, 60:20, 64:13
foregoing 84:2
form 12:9, 12:15, 12:21, 13:6, 14:7, 17:15, 18:7, 18:9, 22:24, 31:14, 45:3, 46:4, 48:7, 50:24, 58:23, 72:2, 73:18, 74:1, 74:19, 76:2, 76:6, 77:2, 77:5, 77:20, 77:24, 78:8, 85:7
format 4:7
formed 17:1, 26:23, 27:9, 44:21, 45:3, 45:22, 48:3, 49:17, 49:19, 52:20, 54:10, 59:4
forming 14:15, 74:3
forms 13:14, 14:5, 14:17, 15:11, 22:8, 22:11, 23:7, 23:8, 23:10, 24:16, 51:8, 52:13
forth 57:1, 86:7
forward 61:12
found 24:8
four 39:4
francisco 2:6, 4:3, 5:11, 86:15
friction 61:12
friday 1:21, 4:1
front 71:15
full 6:8, 6:12, 58:10
fully 13:18
function 53:18, 53:22, 55:22
functions 22:21, 32:4, 56:23
further 83:11, 86:11, 86:14, 86:18

G

gap 13:6
gaps 9:17, 9:20, 10:16, 11:19, 11:22, 12:9, 12:15, 12:21, 14:18, 14:24, 15:8, 15:14, 15:22, 16:4, 16:12, 16:23, 16:25, 17:8, 17:15, 17:22, 17:25, 18:7, 18:9, 18:12, 18:13, 19:4, 19:8, 19:11, 19:18, 19:20, 19:24, 20:1, 20:3, 20:20, 21:3, 29:4, 30:4, 30:8, 31:13, 32:9, 32:22, 33:13, 34:3, 34:20, 44:20, 44:21, 45:2, 45:3, 45:8, 45:11, 45:14, 45:22, 46:4, 47:11, 48:3, 48:7, 49:17, 49:19, 58:3, 58:6, 58:9
garcia 2:19, 5:9
gary 2:19, 5:9
gas-tight 14:16
gave 83:1
gel 36:3, 36:7
gel-like 10:4, 36:1, 53:19
gelatinous 23:16, 24:11, 24:23, 25:16, 26:6, 26:10, 26:17, 27:11, 30:10, 30:17, 34:24, 54:12, 54:16, 59:12
gelatinous-type 14:11
geometric 69:11, 69:16, 70:3, 75:23
geometry 30:13, 30:14, 30:24, 31:1, 33:15, 33:19, 47:19, 47:23, 48:2, 70:5
give 6:8, 49:7, 57:13, 64:21
given 19:7, 71:25, 86:10
gives 48:11
giving 6:12, 62:16, 69:4
go 8:3, 25:16, 29:16, 38:2, 50:2, 72:24
goal 15:7, 28:1, 28:3, 28:7, 34:1, 34:5, 35:3, 58:4, 58:11, 58:14
goes 13:12
going 6:15, 6:25, 7:12, 7:14, 13:20, 35:10, 37:23, 43:10, 49:17, 60:2, 60:10, 61:1, 61:7, 61:15, 82:2, 82:7, 83:18
good 6:4, 36:18, 37:24, 58:24, 82:3
graphic 31:18, 31:20, 33:22
great 7:16, 82:1
green 8:16
guess 67:1, 74:2, 74:23
guidance 27:21

H

half 82:3

hamilton-ptab@perkinscoie
2:15
hand
6:15, 6:25, 13:20, 86:24
handheld
66:3
hands-free
53:17, 59:18
happen
42:12, 44:16, 46:20, 47:1, 47:14
hard
35:14, 35:22, 35:25, 36:3, 36:6, 36:7, 37:11, 37:20
harder
36:8, 36:11, 36:14, 37:5, 37:18, 60:12
hardness
25:13, 26:1, 26:11, 26:13, 26:15, 56:18, 57:1, 57:8, 57:10, 57:11
hardnesses
57:14
hartley
8:15, 9:1, 9:8, 9:23, 11:23, 12:9, 12:21
help
80:8
hemostasis
58:5, 58:23, 83:6, 83:9
hemostatic
28:8, 45:12, 58:18, 66:3
here
5:1, 18:12, 19:4, 30:13, 35:18, 37:9, 37:16, 46:15, 47:12, 47:23, 50:7, 52:23, 55:14, 61:25, 63:22, 64:14, 65:7, 68:5, 81:6, 82:19
hereby
84:4, 86:4
hereinbefore
86:7
hereunto
86:24
high
60:15
higher
60:14
highly
9:24, 10:7, 15:21, 16:13, 23:25, 35:21, 54:12, 54:15, 54:21, 55:6, 56:9
hour
4:2, 37:23, 82:2
however
22:23
hypothetical
9:2, 13:7, 16:6, 18:20, 22:14, 23:13, 31:4, 35:16, 35:24, 36:10, 36:22, 55:12, 63:13

I

idea
63:2
identical
47:20, 63:9, 73:15
identification
3:16
identified
8:17
identify
5:12
ignored
64:16
illustrated
44:21
illustrating
34:10
illustration
8:14, 8:19, 9:4, 9:17, 11:9, 16:19, 16:22, 17:4, 17:11, 19:6, 19:23, 29:20, 33:22
image
31:10, 45:19, 46:15
images
48:6
impact
28:21
imperative
1:4, 5:3, 5:18, 85:10
implies
24:22
imply
80:25
implying
49:10
important
20:22, 21:25, 34:10, 58:23, 61:13, 64:12
improve
18:18, 18:23
in-person
1:19
inari
1:10, 5:3, 85:10
inc
1:4, 1:10, 5:3
include
9:23, 10:7, 10:11, 11:3, 22:2, 23:22, 26:25, 31:23, 48:20, 51:24, 56:3, 56:9, 61:14
included
30:1, 53:12, 54:4
includes
52:24, 55:6
including
14:10, 26:23, 27:10, 28:18, 32:12, 52:21, 69:22, 70:13, 71:3
inclusive
84:3
incomplete
9:2, 13:7, 16:6, 18:20, 22:13, 23:13, 31:3, 35:16, 35:24, 36:10, 36:21, 55:11, 63:13
index
3:1
indicating
8:3
indication
62:16, 62:17
inflexible
46:14
information
63:18
input
44:4
inserted
11:25, 12:10, 12:22, 26:16, 31:17, 32:16, 32:20, 33:15, 35:10, 45:4
inside
18:24, 22:3, 23:4, 55:20, 71:23
instance
76:6
instances
49:19

instrument
14:8, 14:25, 15:15, 15:22, 22:17, 26:17, 29:5
instruments
8:15, 11:24, 12:9, 12:21, 12:25, 13:14, 13:15, 14:5, 14:6, 14:21, 15:11, 15:12, 15:17, 16:2, 16:9, 16:19, 18:2, 18:24, 24:16, 27:25, 28:4, 28:8, 28:9, 28:13, 30:6, 58:10
intended
15:21
inter
7:6
interested
86:21
interlock
72:21
interlocked
73:11, 73:15, 73:16, 73:17, 77:17, 77:20
interlocking
71:18, 71:20, 72:1, 72:2, 72:12, 72:18, 73:9, 73:13, 74:12, 76:9, 76:11, 76:14, 76:15, 76:18, 76:19, 77:11, 77:14
interpret
70:11
interpretation
70:19
intrinsically
25:15, 26:14, 56:20
ipr
1:8, 5:5
irregularly
13:15, 14:6, 14:8, 14:21, 14:25, 15:12, 15:15, 15:22, 16:1, 27:25, 28:4, 28:13, 29:4
issue
20:1, 47:11
itself
14:15, 24:12, 26:16, 36:4, 60:17

J

joseph
2:11, 5:15
joshua
2:4, 2:8, 5:17
judge
21:9

K

keep
7:11
keeps
8:2
kind
23:10
knew
36:23
knobbe
2:3, 5:17, 86:15
know
12:15, 13:8, 16:14, 20:12, 20:15, 20:19, 20:22, 21:1, 21:6, 21:7, 21:25, 22:15, 29:13, 30:23, 32:24, 34:21, 37:7, 42:12, 47:12, 47:14, 47:19, 48:7, 54:18, 54:24, 60:22, 60:24, 61:4, 64:4, 64:8, 65:14, 66:2
knowing
20:8
kraton
25:8

L

large
9:17
larger
45:3
last
14:3, 26:20, 58:19
later
56:16
leak
11:24, 12:2
least
27:3, 36:3, 36:6, 36:7, 52:10, 70:11, 80:22, 81:20
length
38:19, 38:22, 39:10, 39:14, 40:1, 40:12, 40:13, 40:19, 41:1, 41:3, 41:4, 41:7, 41:11, 41:16, 62:19, 62:20, 62:22, 69:12, 75:15
less
17:5, 18:15, 75:17, 75:18
let's
13:5, 16:24, 25:3, 28:24, 29:16, 31:9, 32:19, 33:18, 35:20, 36:15, 37:25, 38:4, 40:7, 50:18, 52:22, 63:1, 82:3, 82:5
level
32:5, 32:8, 34:19
light
14:16, 58:20, 58:24, 59:4, 59:9, 59:13, 59:23
likely
29:3
line
72:4, 72:16, 77:21, 78:4, 78:9, 78:12, 78:21, 78:24, 79:3, 79:9, 79:24, 80:1, 80:3, 85:15
listed
68:11
listing
56:22
lists
53:1
llp
2:3, 2:10
long
39:7
longer
63:3, 63:7, 63:10, 63:11
longest
38:20, 39:10, 39:14, 40:1, 40:12, 40:14, 41:8, 41:21
look
8:18, 11:15, 11:20, 13:11, 13:18, 13:24, 16:15, 22:6, 30:24, 38:4, 38:24, 40:7, 40:25, 42:17,

47:10, 52:1, 52:22, 58:19, 70:22, 71:7
looked 62:13, 82:1
looking 11:8
los 2:13
lots 13:3
low 26:15, 59:16
lower 45:19, 46:5, 46:15
lumen 24:5, 31:14, 52:6, 52:9, 67:17

M

made 56:25
make 15:5, 25:3, 34:2, 34:5, 54:14, 58:15, 85:14
mandatory 49:8
manufactured 57:7, 64:5, 64:9
many 13:1, 15:4, 20:15, 22:17, 32:12, 32:17, 33:6, 34:9, 34:16, 63:10, 63:11, 65:9
marked 3:17, 7:1, 13:21
marks 83:17
marriage 86:19
martens 2:3, 5:17, 86:15
match 31:15
materials 14:11, 15:18, 19:8, 20:9, 25:8, 26:6, 26:23, 26:25, 27:9, 27:10, 32:15, 35:4, 35:7, 36:24, 49:8, 52:20, 54:10, 56:7, 56:17, 56:18, 56:22, 57:5, 57:17, 59:10, 63:9
matter 5:2, 7:9, 82:22, 86:22
mean 11:5, 13:13, 13:16, 14:24, 15:14, 16:17, 30:9, 38:22, 40:22, 48:18, 48:20, 55:24, 57:20, 59:5, 60:11, 68:10, 68:21, 69:9, 69:15, 71:22, 75:4, 76:14, 77:18, 78:14, 80:17
meaning 41:4
meaningful 36:16
means 13:25, 49:4, 54:7, 66:22, 68:8, 68:14, 68:17, 69:12, 73:3, 75:2, 78:6, 78:17, 78:19, 78:21, 78:22
meant 73:1
measure 26:13, 65:13
measurement 57:15, 70:4, 75:10
measurements 66:4
mechanical 32:13, 32:14, 63:20
mechanism 23:1, 23:19, 51:19
media 5:1
medical 1:10, 5:3
medications 6:11
meets 22:10
member's 51:16
members 10:2, 16:21, 16:23, 16:25, 17:19, 17:21, 18:4, 18:6, 18:14, 18:18, 19:1, 19:14, 19:21, 19:24, 20:5, 20:20, 20:23, 23:4, 25:22, 26:22, 27:8, 28:12, 28:19, 31:16, 32:13, 32:14, 33:10, 33:16, 33:19, 38:7, 38:10, 40:8, 40:11, 41:12, 41:13, 41:15, 41:18, 42:1, 42:13, 42:21, 43:4, 44:15, 44:16, 45:17, 45:21, 46:2, 46:9, 46:13, 46:18, 46:22, 48:15, 48:25, 51:17, 54:10, 56:1, 58:17, 62:18, 62:20, 63:4, 64:23, 65:3
mention 61:10
mentioned 17:16, 18:10, 30:20, 33:2
metal 46:23, 46:24, 46:25, 47:4, 47:6, 48:13, 49:1
method 50:21
mic 8:2, 12:6
middle 49:23, 54:7
might 6:11, 19:12, 37:20, 42:17, 44:16, 45:3, 47:24, 56:13, 57:16, 57:25, 59:22, 61:13, 61:14
mindful 12:5
minutes 37:24
mismatch 44:22
misstates 9:25, 10:9, 10:18, 18:8, 21:4, 23:12, 25:11, 27:7, 28:5, 28:15, 37:13, 42:15, 45:24, 48:22,

64:18, 65:5, 72:14
mistakes
7:20, 7:25
mm-hmm
67:3
modeled
36:25
modeling
37:3
module
8:17, 10:3, 12:25, 13:1, 13:2, 18:25, 26:22, 27:14, 27:18, 30:12, 31:6, 31:7, 31:20, 31:23, 32:1, 32:2, 32:15, 32:21, 33:5, 33:7, 33:8, 34:8, 34:15, 34:16, 34:18, 38:19, 40:16, 40:17, 41:15, 41:18, 41:19, 41:24, 42:2, 42:3, 42:11, 42:20, 42:23, 43:3, 43:6, 43:7, 46:3, 50:12, 50:23, 52:20, 53:2
module's
34:6
moment
8:1, 48:9, 83:15
moments
65:20
monitor
5:8
more
17:8, 17:14, 17:24, 19:25, 20:2, 21:2, 26:23, 27:9, 29:3, 30:12, 36:8, 36:12, 38:2, 45:19, 46:4, 52:20, 54:8, 54:10, 56:17, 63:12, 66:16, 70:22, 71:3, 71:7
morning
6:4
most
54:8, 61:23, 62:6, 65:23
move
61:11
moveable
67:15
much
21:1, 30:11, 33:8, 36:18, 36:19, 36:25, 37:4, 63:3
multiple
18:10
must
28:12

N

nature
14:14, 27:12, 59:13
nearly
14:15
necessarily
55:13, 62:7, 66:1
necessary
21:2, 57:25
need
10:21, 13:18, 13:24, 20:12, 20:14, 20:15, 20:19, 21:1, 21:6, 26:7, 50:1, 53:19, 60:7, 60:8, 60:18, 64:8, 65:14, 68:13
needs
25:22, 26:8
next
13:13, 49:22
noncompliant
9:16, 16:22, 17:12, 17:22, 19:22
noncompressible
55:8, 55:17, 56:11
nondeformable
57:23
noninterlocking
72:17, 72:19, 76:12, 76:18, 76:19, 76:22, 77:1
note
85:3
nothing
6:1
nothing's
55:20
number
5:1, 5:5, 7:7, 28:18

O

o'clock
82:8
oath
6:1, 6:6, 43:16, 82:14
objection
9:2, 9:9, 9:14, 9:25, 10:9, 10:18, 11:4, 11:14, 12:11, 12:17, 12:23, 13:7, 14:19, 15:1, 15:9, 15:16, 15:24, 16:6, 17:3, 17:10, 18:8, 18:20, 20:7, 21:4, 22:13, 22:25, 23:12, 23:24, 24:19, 25:11, 27:7, 27:16, 28:5, 28:15, 29:6, 29:12, 31:3, 31:12, 31:25, 32:10, 32:23, 33:21, 34:7, 35:8, 35:16, 35:24, 36:10, 36:21, 37:6, 37:13, 38:21, 39:16, 40:3, 40:21, 41:17, 42:4, 42:15, 42:22, 44:13, 45:1, 45:10, 45:24, 46:10, 47:3, 47:18, 48:4, 48:22, 49:5, 50:14, 50:25, 51:10, 51:18, 53:14, 54:17, 54:23, 55:11, 56:15, 57:12, 58:8, 59:6, 59:24, 61:3, 61:9, 62:5, 62:21, 63:5, 63:13, 64:18, 65:5, 65:12, 66:10, 67:20, 68:3, 68:22, 69:3, 69:19, 70:2, 70:9, 72:14, 73:4, 73:19, 74:8, 74:14, 74:20, 75:8, 75:14, 75:22, 76:4, 76:16, 77:3, 77:10, 77:16, 77:23, 78:5, 78:10, 78:25, 79:4, 79:11, 79:16, 80:9, 81:2, 81:11, 81:24,

82:25
obviously
20:24
occlusively
14:15
occur
42:2, 46:8
occurred
86:15
office
1:1, 5:4
offices
86:15
okay
7:15, 7:16, 13:5, 16:24, 22:12, 38:2, 41:10, 43:9, 50:3, 68:17, 80:2, 82:6, 82:7, 83:15
olson
2:3
once
15:2, 18:23, 24:20, 26:8, 30:10
one
8:1, 10:13, 17:7, 17:21, 17:24, 20:14, 20:17, 20:18, 21:12, 21:14, 21:16, 21:17, 26:13, 26:23, 27:3, 27:9, 28:25, 32:17, 32:20, 33:4, 34:14, 34:16, 35:23, 37:3, 37:25, 40:12, 40:13, 40:18, 40:25, 44:17, 48:19, 50:17, 52:20, 54:8, 54:10, 56:25, 58:3, 59:22, 60:18, 63:10, 63:11, 65:13, 71:21, 71:23, 79:14, 80:22, 81:20, 83:15
one)____
84:8
ones
27:11, 35:1
open
8:5, 25:23, 27:20, 60:14
operate
59:16
operates
22:24
operation
53:17, 59:18
opinion
81:17
opposed
47:15
optimize
35:4, 57:18, 57:20, 58:14, 58:18, 60:4, 60:7, 60:8, 60:18
optimized
34:11
option
25:13, 26:21, 71:21, 71:25
options
10:13
order
20:13, 23:3, 25:23, 28:17, 45:11, 55:19, 58:17, 64:2, 64:13, 72:24, 72:25
ordinary
16:11, 32:7, 33:11, 34:4, 34:25, 46:11, 54:14, 58:13, 62:16, 64:22, 83:8
orientation
72:5, 72:6
other
7:13, 13:1, 13:6, 15:19, 16:9, 17:16, 18:18, 19:2, 22:2, 22:4, 30:19, 30:22, 34:9, 35:10, 35:11, 36:20, 37:5, 40:9, 40:13, 40:19, 44:18, 55:17, 59:21, 59:22, 61:10, 63:10, 64:16, 65:9, 65:25, 66:6, 69:17, 71:23, 72:16, 73:18, 73:25
others
26:14, 28:21, 33:6
otherwise
86:22
out
16:12, 30:5, 30:8, 30:18, 30:21, 32:8, 35:1, 62:9
outcome
86:22
outer
69:25
outside
9:14, 12:11, 12:23, 17:10, 24:4, 27:16, 42:4, 47:3, 48:4, 51:16, 51:20, 59:24, 66:15, 68:22, 69:3, 69:12, 70:4, 70:9, 75:8, 75:14, 76:4, 77:3, 77:23, 78:25, 79:16, 80:9, 81:2, 82:25
oval
69:17, 70:5
ovals
69:22
over
13:12
overall
58:5, 66:1
overlap
71:22, 72:8, 72:22, 72:23, 73:1, 73:3, 73:5
overlapped
73:7
overlapping
71:19, 72:25, 73:14
own
25:22, 26:8
owner
1:12, 2:9, 5:16, 5:24, 8:14, 16:18, 19:7, 53:8, 53:25
owner's
8:19, 9:4, 11:9, 29:20

P

page
3:2, 3:16, 8:6, 8:8, 8:13, 10:16, 11:8, 11:19, 11:25, 12:10, 12:22, 13:6, 13:12, 13:13, 16:5, 16:16, 18:12, 19:4, 19:17, 22:7, 23:8, 24:16, 29:16, 30:2, 31:9, 32:20, 38:4, 38:5, 43:24, 44:1, 46:6,

46:16, 49:14, 49:18, 49:21, 49:22, 52:1, 52:22, 52:24, 61:17, 61:19, 65:17, 65:18, 85:15
pages 84:2
pair 48:5
paragraph 8:24, 9:15, 10:5, 11:11, 11:15, 14:2, 14:12, 14:13, 24:13, 24:21, 25:5, 25:6, 25:12, 25:25, 26:19, 26:20, 27:1, 27:2, 27:10, 27:18, 29:16, 29:22, 30:1, 49:23, 49:24, 50:7, 52:2, 52:3, 52:5, 52:14, 52:15, 52:16, 52:19, 53:4, 53:10, 53:12, 53:18, 54:6, 54:9, 55:2, 56:16, 57:1, 57:7, 57:11, 58:19, 59:9, 59:19, 80:19, 80:21, 81:19
parallel 40:9
park 2:12
part 40:4, 41:23, 53:1, 75:24
partes 7:6
partial 75:20, 75:21
partially 52:10
particular 12:13, 49:24, 50:8
particularly 54:12
parties 86:11, 86:19, 86:20
passage 73:2
passive 24:3, 53:17
patent 1:1, 1:2, 1:9, 1:12, 2:9, 5:4, 5:5, 5:16, 5:24, 6:19, 6:22, 7:7, 8:14, 8:19, 9:3, 11:9, 13:17, 16:18, 19:7, 23:2, 23:19, 29:20, 51:6, 53:8, 53:20, 53:25, 64:7, 65:23, 66:24, 67:2, 70:7, 70:11, 71:6, 71:16, 71:20, 76:5, 76:23, 77:25, 79:6, 79:23, 81:7, 81:22
patents 61:23, 62:6, 68:25, 69:6, 78:20
perfectly 32:25, 34:11
perform 20:10, 32:4, 56:22
perimeter 69:21, 70:4, 75:10
perkins 2:10, 5:15
permanent 55:16
permanently 55:18
person 16:11, 20:14, 21:6, 24:24, 26:5, 32:7, 32:11, 33:11, 34:2, 34:4, 34:25, 46:11, 54:14, 57:16, 58:13, 60:3, 62:16, 64:22, 83:8
personal 2:1
personally 2:18, 4:4, 4:5
petitioner 1:6, 2:2, 5:18
petitioner's 7:6
phrase 58:20
physician 59:1, 60:12, 63:25, 64:3
pick 35:4, 35:6
picture 29:23
pictures 46:19
piece 63:7
place 5:10, 18:17, 42:2, 42:13, 42:21
planet 5:9, 5:21
plastic 47:6, 48:13
plastically 57:23
please 5:12, 12:5, 84:1
points 45:5
polymer 32:15, 46:23, 47:21, 49:1, 49:7, 49:11
poor 45:8
portion 38:13, 39:11, 39:17, 39:20, 39:21, 77:4
position 67:15
possible 18:22, 33:16, 33:20, 33:23, 33:25, 46:4
possibly 15:18
potential 31:13, 49:8, 56:7
potentially 16:9, 19:2, 22:4, 30:18, 30:21
predict 36:17, 37:10, 37:17, 37:21
predictable 36:8
prepared 4:7
present 2:18
pressure 21:21, 24:3, 36:19, 51:2, 59:16, 59:17, 60:24
pressure's 30:11
pretty 36:18, 37:3, 48:24
prevent 6:11

preventing
58:9
previous
52:8
previously
7:1, 13:20
print
85:3, 85:5
prior
12:18, 56:6
probably
28:21, 30:4, 30:7, 34:22, 62:17, 64:23
problem
60:20, 60:22
processed
65:15
project
58:4
properties
13:2, 14:10, 16:8, 18:25, 19:12, 20:9, 20:23, 20:24, 21:7, 21:11, 21:12, 22:1, 22:2, 22:3, 22:4, 22:16, 26:3, 26:11, 26:24, 27:1, 27:4, 28:19, 28:20, 28:25, 29:8, 30:19, 32:4, 32:13, 32:14, 33:1, 33:5, 33:7, 33:10, 33:12, 34:9, 34:17, 34:22, 35:5, 35:7, 35:10, 36:24, 46:1, 47:20, 47:22, 49:20, 52:21, 53:25, 60:2, 60:9, 60:16, 63:20, 64:16, 65:9
property
33:6
proposed
9:1, 9:7, 9:22, 9:23, 11:22, 12:8, 12:20
proposing
47:22
provide
38:18
provided
8:14, 9:4, 10:13, 19:6, 27:22
provides
25:14, 34:21
push
50:22, 60:12
pushing
51:3
put
42:13

Q

quantify
64:13
question
12:3, 12:18, 22:20, 26:18, 36:24, 37:14, 41:12, 41:14, 42:9, 54:1, 66:16, 66:18, 69:8, 71:10, 74:23, 74:25, 80:8
questions
8:10, 38:2, 83:12, 83:14
quote
16:16, 22:7
quoted
13:25, 24:16

R

range
20:25, 27:10, 34:21, 35:9, 57:2, 57:13, 57:16, 57:17
ranges
14:10
reach
37:24, 82:3
read
50:1, 51:23, 72:12, 73:2, 80:20, 83:15, 84:1
readily
36:12
reading
79:6
reads
26:21
really
37:22, 42:5, 48:5, 51:3, 55:21, 58:25, 59:14, 67:9, 74:21
reason
6:8, 59:22
reasonably
66:2
rebar
82:24, 83:2, 83:5, 83:9
recall
7:8, 44:7, 81:3
receive
72:25
received
72:10
receiving
72:7
recess
43:12, 82:9
recognize
6:17, 7:2
recollection
11:16, 81:12, 81:25
record
43:10, 43:13, 82:7, 82:10, 83:18, 86:9
recover
25:22, 33:9, 55:16
recovery
57:23
rectangle
38:25, 39:15, 40:13, 40:14
rectangles
41:22
rectangular
38:11, 38:14, 38:20, 41:7, 49:10
rectangular-shaped
48:12
red
8:15
reenforcing
83:3
refer
6:21, 7:11, 7:12, 7:14, 11:10, 56:5, 56:6, 59:11
reference
78:15, 79:7
referencing
8:22, 25:5, 59:3, 68:5
referred
24:8, 72:9
referring
13:22, 23:16, 25:4, 26:2, 26:11, 53:16, 59:10, 59:14, 66:19, 72:6, 72:18, 78:16
refers
50:8, 52:4, 52:9
refresh
11:16
regarding
43:19, 82:19,

82:21
regulations
4:8
relate
52:18, 68:23
related
86:18
relates
52:16, 53:3, 68:25, 69:6, 79:5
relative
26:24, 36:17, 52:21, 65:25, 66:5
relatively
17:5, 17:12, 17:22, 18:15, 19:22, 62:18, 63:18, 63:19, 64:23, 64:24
released
10:22, 25:21, 26:9, 32:3, 33:9
relook
67:1
remembered
4:1
rendering
81:16
reopen
10:21, 25:22, 26:8, 28:2, 55:21
repeat
12:18, 37:14, 80:12
replaced
10:2, 16:20, 17:20, 42:1
reply
7:6
reporter
1:31, 4:5, 5:20, 12:1, 21:20, 21:24, 66:11, 66:14, 67:8, 67:11, 80:12, 86:1, 86:3, 86:30
reporter's
3:10
represent
5:13
represented
86:11
representing
5:9, 5:16, 5:18, 5:21
require
59:17
required
57:22
requirement
22:11
requirements
57:25, 58:2
resilience
33:8
resilient
27:20
respect
54:3, 67:21, 71:10, 76:5, 78:20
respective
26:22, 54:9
restate
12:3
retract
27:19, 27:20, 52:7
review
7:6, 43:22, 82:16
right
6:25, 17:2, 17:9, 17:19, 18:7, 18:19, 21:3, 21:13, 21:19, 23:6, 23:23, 24:10, 29:1, 29:17, 29:22, 30:16, 31:2, 35:4, 35:7, 36:7, 37:12, 38:4, 38:16, 38:25, 39:4, 39:7, 47:17, 51:24, 52:25, 56:14, 58:3, 63:23, 65:4, 65:11, 65:21, 69:10, 69:18, 70:18, 72:22, 74:7, 81:10, 81:23, 83:11
rigid
20:20, 21:17, 21:22, 35:14, 45:15, 46:9, 46:14
rigidity
20:25, 22:2
roundish
70:5
rpr
1:31

S

s
38:15
said
4:2, 4:6, 4:7, 12:2, 16:18, 17:20, 18:1, 19:10, 19:17, 21:5, 21:21, 42:16, 47:16, 48:9, 66:12, 68:19, 69:9, 75:9, 79:12, 79:25
same
6:22, 9:9, 17:13, 17:18, 18:12, 19:4, 19:7, 19:10, 19:17, 19:20, 19:23, 23:2, 23:18, 39:14, 41:25, 47:11, 53:10, 62:10, 62:13, 62:15, 68:21, 76:12
san
2:6, 4:3, 5:10, 86:15
say
11:9, 15:2, 18:12, 19:4, 25:3, 25:12, 26:10, 29:20, 30:7, 32:5, 35:20, 36:6, 36:14, 36:15, 48:18, 55:24, 60:7, 62:9, 63:1, 70:10, 74:2, 75:20, 80:17
saying
17:4, 50:7, 50:8, 52:15, 67:11
says
14:3, 24:21, 27:5, 27:8, 27:18, 52:19, 54:9, 56:12, 73:5, 76:17, 80:21, 81:19
scale
25:14, 26:1, 56:19, 57:2, 57:15, 59:10, 61:22, 61:24, 62:4, 62:7, 62:11, 62:12, 65:21, 65:22, 65:25, 66:5
scales
56:18
schaffer
9:1, 9:8, 9:18, 9:20, 9:22, 10:1, 10:4, 10:13, 10:21, 11:11, 11:20, 11:23, 12:8, 12:20, 13:17,

13:18, 13:21, 13:25, 14:13, 15:10, 16:1, 23:2, 23:8, 23:14, 23:18, 23:22, 23:25, 24:21, 25:1, 25:6, 26:19, 27:5, 27:8, 27:17, 34:18, 34:21, 35:21, 44:11, 44:15, 44:25, 45:9, 45:14, 45:22, 46:21, 46:23, 47:2, 47:16, 48:10, 48:11, 48:15, 48:18, 48:24, 49:16, 50:9, 50:19, 52:1, 53:10, 53:16, 55:2, 55:25, 56:1, 58:20, 59:3, 59:4, 61:22, 64:6, 64:21, 67:22
schaffer's
8:17, 8:23, 11:15, 20:6, 29:21, 30:1, 38:12, 41:25, 42:13, 44:24, 45:6, 45:21, 46:8, 46:12
scope
9:14, 12:11, 12:23, 17:10, 27:16, 42:4, 47:3, 48:4, 59:24, 66:15, 68:22, 69:3, 70:9, 75:8, 75:14, 76:4, 77:3, 77:23, 78:25, 79:16, 80:9, 81:2, 82:25
sealing
8:21, 8:23, 9:16, 9:19, 9:24, 10:7, 11:10, 11:13, 11:18, 11:21, 13:12, 18:18, 18:23, 23:6, 23:9, 23:11, 24:7, 26:8, 31:23, 32:8, 51:19, 53:9, 72:25
seals
15:23
second
67:6, 67:7, 67:11, 67:13, 67:14, 72:6, 72:7, 72:17
section
4:8, 72:15, 79:6
sections
14:10
see
8:8, 11:11, 22:8, 26:20, 29:18, 29:22, 38:5, 38:7, 38:24, 40:8, 40:9, 41:3, 43:25, 49:23, 49:24, 50:18, 52:11, 53:5, 55:3, 55:8, 58:20, 61:18, 62:2, 65:18, 71:15, 80:4, 80:23
select
32:21, 33:12
self-closing
14:14, 59:13, 59:17
self-seal
51:5
self-sealing
10:12
sense
36:17, 64:22
sentence
8:18, 13:11, 13:19, 13:25, 14:3, 16:15, 16:17, 22:6, 24:20, 25:25, 26:20, 49:23, 55:3, 55:5, 55:21, 56:12, 58:19, 59:8, 79:24, 80:1, 80:3
separate
7:11, 71:19
set
57:1, 86:7, 86:24
several
18:10, 60:17
shape
12:25, 13:5, 15:3, 18:24, 20:24, 30:15, 31:15, 33:15, 33:18, 49:9, 69:17
shaped
13:15, 14:6, 14:8, 14:22, 14:25, 15:12, 15:15, 15:22, 16:1, 27:25, 28:4, 28:13, 29:4
shapes
44:22
shirt
8:3
shore
25:12, 25:14, 26:1, 26:11, 26:15, 56:17, 56:18, 57:1, 57:8, 57:10, 57:11, 57:13, 57:14, 59:10
short
39:7
shorter
39:6
shorthand
4:4, 86:1, 86:3, 86:30
show
14:12, 30:4, 30:7, 31:10, 38:13, 44:20, 50:19, 51:25, 71:18, 73:11, 76:12, 76:14, 76:15, 76:19
showing
8:15, 9:17, 17:11, 23:14, 31:13, 31:18, 32:1, 44:15, 64:20, 65:7, 73:6, 76:22
shown
11:25, 12:10, 12:15, 12:22, 13:6, 16:4, 24:2, 27:10, 30:12, 30:13, 32:9, 33:19, 42:6, 45:18, 49:9, 49:17, 49:21, 50:5, 51:1, 51:2, 53:23, 57:16, 59:15, 63:15, 63:16, 63:23, 65:18, 71:13, 71:24, 76:6, 76:18, 80:14, 80:17
shows
17:5, 38:12, 48:11, 48:24, 73:9, 76:9, 76:11
side
39:10, 39:14, 40:1, 40:12,

40:14, 41:21, 73:25, 74:1, 74:18, 77:1, 77:12
side-by-side 40:9, 78:8
sides 30:5, 30:8, 39:4, 39:6, 39:7
sign 85:7
signature-5tm1q 86:27
significantly 30:12
similar 19:8, 19:10, 19:24, 47:24, 48:2, 63:16
simple 37:3
simply 63:22
single 74:13
singular 77:21, 78:4, 78:8, 78:19, 78:21, 79:3, 79:9
sit 37:9, 37:16, 81:6
size 12:24, 15:3, 15:18, 16:8, 18:2, 18:24, 20:23, 22:16, 31:15, 31:17, 33:14, 33:18, 34:12, 46:3, 60:2, 60:10, 65:24
sized 66:3
sizes 44:22
skill 16:11, 21:6, 32:7, 32:11, 32:20, 33:11, 34:2, 34:4, 34:25, 46:11, 54:14, 58:13, 60:3, 62:17, 64:22, 83:8
skilled 17:7, 20:14, 24:24, 26:5, 48:19, 56:25, 57:16, 59:22
slightly 47:24, 48:2
small 45:2
smaller 44:17, 44:18, 45:4, 45:20, 46:5
soft 14:11, 25:15, 26:6, 26:10, 26:15, 27:11, 30:3, 30:11, 30:17, 34:23, 35:14, 36:1, 36:18, 51:5, 53:19, 56:19, 57:5, 59:10, 59:11, 64:1
softer 35:23, 36:12, 36:17, 37:12, 37:19
solely 65:2
some 14:11, 16:22, 17:15, 17:22, 20:3, 22:21, 23:6, 23:10, 30:4, 30:7, 33:23, 33:25, 34:22, 45:18, 46:13, 49:19, 62:16, 62:17, 69:17, 71:12, 72:4, 80:3, 80:21, 81:14, 81:19
something 12:12, 26:2, 42:10, 54:11, 69:13, 73:23, 75:17, 75:18
somewhat 44:16
somewhere 68:12
sorry 12:1, 21:15, 50:1, 52:3, 66:11, 67:8, 67:10, 73:14, 80:12
speaking 67:9
specific 11:10, 56:17
specification 48:14, 70:21, 70:23, 71:8, 76:17
specify 85:6
speculation 59:7
spot 37:24
spread 39:13
spring 28:18, 32:14, 60:1, 60:9, 60:11, 60:13, 60:14, 60:15, 62:2, 62:15, 62:19, 62:22, 63:3, 63:7, 63:16, 63:25, 64:2, 64:5, 64:7, 64:10, 64:12, 64:13, 64:16
springs 39:24, 58:16
st 2:5
stacking 64:12
standpoint 69:11, 69:16, 70:4, 75:23
start 6:16, 57:17
starting 5:13, 13:12, 22:7
state 4:5, 5:13, 5:25, 9:15, 62:23, 62:24, 63:1, 63:4, 63:6, 84:4, 86:4, 86:31
stated 23:8
statement 11:8, 13:17
states 1:1, 5:4, 14:9, 14:13, 14:20, 15:10, 52:5, 72:4
steel 36:15, 36:16, 63:7, 82:24, 83:2, 83:5, 83:9
stenographer 86:1
stenographic 1:31, 12:1, 21:20, 21:24, 66:11, 66:14, 67:8, 67:11, 80:12, 86:3, 86:30
stickiness 57:4
sticks 14:15, 24:12
sticky 10:4, 10:12, 10:23, 23:16,

24:22, 25:16, 26:7, 26:11, 26:14, 27:11, 34:24, 54:15, 54:22, 55:10, 55:14, 56:13, 56:14, 56:20, 57:3, 59:12
still
17:14, 17:15, 43:16, 45:22, 48:3, 81:21, 82:13
stop
16:24
stowell@knobbe
2:8
street
2:5, 4:3, 5:10
string
8:15, 10:3, 11:22, 16:20, 16:25, 17:18, 17:20, 18:6, 18:13, 18:17, 18:22, 19:1, 19:21, 20:5, 22:22, 42:1, 42:3, 42:11, 42:12, 42:17, 42:21, 43:2, 43:8, 46:19, 46:21, 47:10, 47:15, 47:22
strings
48:6
subcategory
56:21
submitting
7:8
substance
24:12, 25:17, 26:17, 43:20, 59:12
substantially
77:21, 78:4, 78:9, 78:11, 78:17, 78:21
sufficient
50:22
sufficiently
31:17
suggest
44:6
suite
2:12
super-soft
24:22
supplemental
7:5, 7:13, 7:23, 8:5, 12:13, 29:17, 31:10, 37:21, 43:25, 61:18, 71:9
supplementary
70:24
support
7:6
sure
9:10, 18:1, 25:4, 28:1, 28:10, 38:3, 38:22, 40:22, 42:10, 50:2, 57:4, 58:25, 66:19, 68:4, 74:15, 74:22, 78:6, 78:11, 78:18, 78:21, 79:5, 82:5
surround
68:18, 68:19, 69:9
surrounding
75:10
suture
19:15
sworn
5:22, 5:25, 86:7
synonyms
69:2
system
61:13
systems
71:4

T

take
32:19, 33:18, 34:5, 37:24, 37:25, 38:4, 43:9, 82:5
taken
43:12, 82:9, 86:9
taking
5:10, 5:13, 63:22
talk
55:16, 56:17
talked
49:20, 54:18
talking
23:6, 35:18, 54:6, 67:2, 67:5
talks
64:6
tell
37:9, 37:16
tension
15:4, 15:18, 16:8, 18:3, 18:25, 19:13, 19:14, 22:4, 25:21, 26:8, 28:18, 28:20, 29:8
term
23:25, 36:2, 49:4, 57:4, 59:17, 59:18, 66:25, 67:4, 69:20, 71:20, 75:1, 75:2
terms
37:10, 68:20
testified
6:1, 43:3, 58:1, 65:20
testimony
6:9, 6:12, 9:25, 10:9, 10:17, 10:18, 12:16, 18:8, 19:17, 21:4, 22:19, 23:12, 23:21, 24:7, 25:7, 25:11, 28:5, 37:13, 42:14, 42:15, 43:20, 45:23, 48:22, 54:2, 64:18, 65:5, 72:22, 82:19, 85:3, 85:5, 86:9
th
4:1, 5:7, 86:24
thank
6:4, 12:6, 21:24, 66:14, 83:13
themselves
5:12, 32:13
theoretically
36:11
thicker
20:2
thickness
13:1, 13:5, 15:3, 16:8, 17:13, 18:2, 28:20, 28:25, 29:7, 33:8, 60:23, 61:25, 62:1, 62:10, 62:14, 63:10, 63:16, 63:23, 64:15, 65:2, 65:3
thicknesses
20:9
thin
30:18, 30:21, 63:18, 63:19, 64:24
thing
68:21
things
6:15, 18:19, 34:14, 61:23, 69:21

think
9:4, 10:20, 15:17, 17:11, 20:8, 20:14, 20:22, 21:5, 21:25, 26:5, 26:13, 28:7, 32:11, 33:14, 34:8, 36:24, 46:3, 46:11, 48:11, 48:17, 48:24, 49:8, 53:15, 54:6, 55:13, 55:14, 55:21, 56:5, 56:16, 58:1, 58:4, 58:15, 59:1, 59:2, 59:25, 60:3, 61:12, 61:23, 62:4, 67:21, 68:23, 69:11, 71:20, 73:13, 73:22, 75:9, 76:5, 76:11, 77:4, 77:24, 79:12, 79:17, 79:21, 80:10, 80:13
thinning
30:5, 30:8
third
14:4, 14:7, 14:17, 24:1, 50:4, 50:13, 50:18, 50:19, 51:4, 51:24, 52:4, 52:6, 52:9, 52:13, 54:2, 54:7, 55:5
thornton
1:20, 4:6, 5:2, 5:23, 6:4, 7:5, 43:17, 82:13, 83:18, 84:15, 85:9, 86:6, 86:14
thought
48:9, 61:5, 73:20
three
68:20, 69:2
through
23:17, 23:18, 23:22, 24:9, 24:14, 24:18, 25:1, 25:9, 25:20, 26:3, 27:15, 28:14, 45:6, 47:1, 47:6, 48:12, 48:25, 49:10, 50:5, 50:6, 50:9, 50:10, 50:17, 50:19, 51:1, 51:8, 51:15, 51:23, 52:17, 52:19, 52:24, 53:4, 53:13, 53:21, 53:23, 54:4, 54:5, 54:11, 56:4, 56:6, 57:9, 59:15, 60:3, 60:10, 61:1, 61:7, 61:15, 67:22, 84:2
throughout
55:25
time
5:7, 43:11, 43:14, 82:3, 82:8, 82:11, 83:13
times
18:10, 63:10, 63:11
title
85:10
today
5:8, 5:20, 6:9, 6:13, 73:24, 81:6, 82:1, 82:19, 83:13
today's
5:7
together
76:6, 77:5
took
62:12
tool
31:14, 31:17, 32:19, 32:20, 33:14, 33:15, 33:18, 33:19, 34:12, 44:17, 45:4, 45:20, 46:3
tools
22:3, 31:14, 32:16, 35:9, 46:5, 57:24, 61:7
top
16:16
total
41:4
toward
27:17
trace
79:14
trademark
1:1, 5:4
transcript
4:7
tree
69:22
trial
1:2, 5:5
troy
1:20, 4:5, 5:2, 5:23, 7:5, 83:17, 84:15, 85:9, 86:6, 86:14
true
19:18, 46:5, 69:14, 69:15, 69:16, 69:22, 86:9
trunks
69:23
truth
5:25, 6:1
truthful
6:9, 6:12
try
58:18, 60:4
trying
43:6, 53:7, 53:11, 55:14, 60:18, 62:9
tube
23:3, 33:7
tubing
25:22, 72:24, 74:3, 74:4, 74:6
tubular
51:21, 56:23, 61:15, 67:23, 68:24, 74:19, 77:2, 77:22, 80:15, 80:23, 81:9
turn
26:19, 31:9, 43:24, 49:22, 55:2, 61:17, 65:17, 79:23
twice
41:11
two
7:11, 8:15, 11:24, 12:2, 12:9, 12:21, 16:9, 16:19, 16:21, 17:19, 17:21, 36:24, 39:6, 39:7, 40:8, 40:11, 41:11, 41:13, 41:15, 43:25, 44:6, 44:8, 44:11, 46:19, 58:1, 63:9, 64:1, 71:19, 76:2, 77:8, 78:8
type
24:13, 25:18, 34:23, 70:5, 81:14

U

u-shape
10:2

u-shaped
16:21, 16:23, 16:25, 17:19, 17:21, 18:4, 18:6, 18:14, 18:18, 19:1, 19:13, 19:20, 19:24, 20:5, 20:19, 20:23, 22:22, 31:15, 33:10, 38:7, 38:10, 38:13, 38:18, 40:8, 40:18, 40:19, 41:1, 41:2, 41:4, 41:11, 41:13, 41:15, 41:18, 42:1, 42:13, 42:18, 42:21, 43:3, 44:14, 44:16, 45:15, 45:17, 45:21, 46:2, 46:9, 46:18, 46:22, 46:24, 47:4, 47:9, 47:15, 47:21, 51:16, 62:1, 62:14, 62:20, 63:4, 64:15, 72:23
unclear
17:15, 20:8
uncompressed
62:23
under
6:6, 14:16, 43:16, 58:20, 58:24, 59:4, 59:13, 59:16, 59:23, 82:14
underneath
8:18, 29:22
understand
6:6, 8:11, 13:19, 42:20, 43:16, 44:8, 49:4, 49:17, 53:7, 53:11, 66:18, 66:21, 66:24, 67:12, 68:7, 68:13, 74:25, 75:2, 78:14, 78:15, 78:17, 78:19, 78:22, 79:9, 82:13
understanding
25:10, 44:24, 50:4, 51:11, 61:21, 63:24, 68:17, 70:16, 73:2, 81:16, 81:18
understood
46:12, 49:4
united
1:1, 5:4
unless
17:1
unseal
28:2
unsealed
27:19, 27:21, 52:7
unwound
62:23, 63:1, 63:4, 63:6
usability
59:1
use
16:24, 17:1, 17:7, 17:21, 17:24, 18:15, 23:25, 24:1, 27:5, 48:14, 50:11, 50:13, 56:7, 59:18, 59:19, 64:3, 66:3, 66:25, 68:15, 83:9
uses
67:4, 71:20
using
18:17, 51:16, 59:8, 69:2, 75:1, 81:14, 83:2
utterance
11:24, 21:18, 67:7
utterance)i
80:10

V

vague
11:4, 11:14, 12:11, 12:23, 14:19, 15:1, 15:9, 15:16, 15:24, 18:21, 21:4, 22:13, 22:25, 23:24, 24:19, 27:16, 28:15, 29:6, 29:12, 31:3, 31:12, 31:25, 32:10, 33:21, 34:7, 36:21, 37:6, 37:13, 38:21, 39:16, 40:3, 40:21, 41:17, 42:22, 44:13, 45:1, 45:10, 45:24, 47:3, 48:4, 51:10, 51:18, 53:14, 54:17, 54:23, 55:11, 56:15, 57:12, 58:8, 59:6, 59:24, 61:3, 61:9, 62:5, 62:21, 65:12, 66:10, 67:20, 68:3, 69:19, 70:2, 73:4, 73:19, 74:8, 74:14, 74:20, 75:16, 75:22, 76:4, 77:3, 77:10, 77:16, 77:23, 78:5, 78:10, 78:25, 80:9, 81:2, 82:25
valve
25:23, 28:8, 31:14, 45:12, 50:22, 58:5, 58:18, 58:23, 59:2, 60:14, 83:6, 83:9
variables
13:2, 13:3, 13:6, 15:5, 15:19, 16:9, 16:12, 17:16, 18:10, 19:2, 22:17, 28:18, 32:12
variety
28:9, 58:10
various
28:8
versus
5:3, 47:21
video
5:8, 5:9
videographer
2:19, 5:1, 5:8, 5:20, 8:1, 12:5, 43:10, 43:13, 82:7, 82:10, 83:15
videotaped
1:19, 5:2
virtually
55:7, 56:10
voice
5:12
vs
1:8

W

want
7:17, 8:1, 19:16, 19:19, 22:10, 35:22, 59:22, 61:11, 79:24, 85:4, 85:6

way
17:13, 19:7, 22:21, 23:8, 24:2, 30:23, 82:18, 82:22, 86:21
we'll
6:15
we're
23:6, 25:4, 35:17, 46:15, 65:7, 83:18
we've
35:11, 37:23, 49:20, 82:2
whatever
48:2, 62:12
whereas
9:17, 53:21, 72:16
wherein
25:21, 67:13, 67:15
whereof
86:24
whereupon
83:19
whether
16:24, 17:15, 17:18, 20:4, 33:16, 37:17, 45:15, 46:8, 49:1, 72:21, 73:15, 74:5
whole
5:25
wide
20:25, 27:10, 34:21, 57:13, 57:15
wire
8:16, 10:2, 11:23, 16:20, 17:19, 18:13, 18:17, 18:23, 19:1, 19:21, 20:5, 43:8, 46:25, 47:6, 47:16, 47:21, 47:22, 48:10, 48:13, 48:16, 48:17, 48:19, 48:20, 49:3, 49:6, 49:11, 49:13, 49:14, 49:16, 64:11, 71:23
wires
48:6
withdraw
12:3, 22:19, 26:18, 41:12, 41:13, 54:1
within
56:1, 61:12, 72:10, 86:4
without
20:8, 55:16
witness's
3:9, 85:1
word
66:21, 68:7, 68:10, 68:14, 69:8
words
55:17, 69:2, 78:14, 78:15, 85:4, 85:6
work
24:3, 34:22, 35:1, 50:20, 51:2, 71:4
working
44:4
works
32:17
wouldn't
10:3, 19:11, 25:8, 27:1, 35:2, 36:9, 36:16, 77:15, 77:17
wrap
68:18, 68:19, 69:10
wrapped
42:18
wraps
39:18

Y

yan
1:31, 4:4, 5:21, 86:3
yeah
9:10, 29:13, 29:19, 38:12, 39:8, 48:5, 49:1, 52:5, 60:22, 63:14, 67:4, 74:21, 80:24, 82:5
yellow
8:16

Z

zalesky
9:5
zero
55:20

0

00
25:14, 26:1, 56:19, 57:2, 57:15, 59:10, 82:8
001
6:21
01
4:2, 5:8, 86:16
011
6:19, 6:21, 23:1, 23:19, 67:2, 67:22, 70:7, 70:11, 71:5, 71:14, 71:16, 76:23, 79:23, 81:7, 81:13, 81:22
01157
1:8, 5:6

1

10
24:2, 43:11, 43:14, 61:17, 61:19
100
26:22, 27:18, 52:20, 53:2
1001
6:16, 6:17, 6:23, 71:16
1003
7:14, 7:18, 7:21, 71:1
1005
13:21, 52:2, 55:3
1014
7:2, 7:12, 43:24
11,697,011
1:9, 6:20, 7:7
12
50:5, 50:9, 50:10, 50:17, 50:18, 51:1, 51:8, 51:23, 52:24, 53:4, 54:3, 59:15, 65:17, 65:18, 82:8, 82:11, 83:18, 83:20, 86:16
13
51:2, 51:8, 72:15, 73:3
132
72:10
14
72:4, 77:25
14316
1:31
15
1:21, 4:1, 5:7, 25:14, 37:24, 50:5, 50:9, 50:10, 50:17, 50:19, 51:1, 51:23, 52:24, 53:4, 54:4, 57:14, 57:15,

59:15, 85:11, 86:16
165
14:4, 50:19, 50:24, 51:4, 51:8, 51:24, 52:4, 52:6, 52:9, 52:13, 52:25, 53:1, 54:3, 54:7, 55:6
166
14:3, 14:14, 25:13, 25:15
17
31:9, 32:20
170
51:3
1700
2:12
1888
2:12
19
38:4, 38:5
193
52:6, 52:9

2

20
25:14, 43:24, 44:1, 46:6, 46:16, 49:14, 49:18, 49:21, 57:15, 86:24
2024
1:8, 5:6
2025
1:21, 4:2, 5:7, 85:11, 86:16, 86:25
21
2:5, 8:6, 8:8, 8:13, 10:16, 11:8, 11:19, 11:25, 12:10, 12:16, 12:22, 13:6, 13:12, 16:5, 29:16, 30:2, 49:22, 52:22, 52:24
22
16:16, 18:12, 19:4, 19:17, 22:7, 23:8, 24:16
2473
4:8
25
43:11
260
13:14, 13:15, 14:6
270
50:21, 51:2

3

30
23:17, 23:18, 23:22, 24:9, 24:14, 24:18, 24:25, 25:9, 25:20, 26:3, 27:15, 28:14, 45:6, 47:1, 47:5, 48:12, 48:25, 49:10, 50:6, 50:9, 51:15, 52:17, 52:18, 53:13, 53:21, 53:23, 54:5, 54:11, 56:4, 56:6, 57:9, 67:22
310
2:14
32
38:12, 38:15, 39:1
3271
2:14
333
2:5, 4:3, 5:10
34
23:18, 23:22, 24:9, 24:14, 24:18, 25:1, 25:9, 25:20, 26:3, 27:15, 28:14, 40:8, 40:25, 45:6, 47:1, 47:6, 48:12, 48:25, 49:10, 50:6, 50:10, 51:15, 52:17, 52:19, 53:13, 53:21, 53:23, 54:5, 54:11, 56:4, 56:6, 57:9, 61:19, 67:22
35
9:15, 29:16, 43:14, 49:23, 82:11
37
83:18, 83:20, 86:16

4

4114
2:7
415
2:7

5

50
72:16
51
79:24, 80:1, 80:3
59
14:12, 14:13, 24:13, 25:6, 25:12, 25:25, 27:1, 27:10, 55:2, 56:16, 57:1, 57:11, 58:19, 59:9

6

67
52:11
68
8:24, 10:5, 14:2, 24:21, 29:22, 30:1, 53:4, 53:10, 53:12, 53:15
69
53:4, 53:15, 53:18, 59:19

7

70
52:1, 52:2, 52:3
75
26:19, 26:20, 52:19, 54:9
77
27:18, 52:3, 52:14, 52:15, 52:16, 54:6
788
2:14

8

800
72:17
808
72:8
814
72:11, 73:6, 73:7, 78:1
84
3:9
86
3:10, 84:3

9

9
4:2, 5:8, 86:16
90067
2:13
94104
2:6, 4:3
954
2:7