

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

3 MEDTRONIC, INC., AND MEDTRONIC
4 VASCULAR, INC.,

5 Petitioners,

6 vs.

7 TELEFLEX INNOVATIONS S.A.R.L.,

8 Patent Owner.

9 IPR2020-00126 (Patent 8,048,032 B2)
10 IPR2020-00127 (Patent 8,048,032 B2)
11 IPR2020-00128 (Patent RE45,380 E)
12 IPR2020-00129 (Patent RE45,380 E)
13 IPR2020-00130 (Patent RE45,380 E)
14 IPR2020-00132 (Patent RE45,760 E)
15 IPR2020-00134 (Patent RE45,760 E)
16 IPR2020-00135 (Patent RE45,776 E)
17 IPR2020-00136 (Patent RE45,776 E)
18 IPR2020-00137 (Patent RE47,379 E)
19 IPR2020-00138 (Patent RE47,379 E)

20 VIDEOTAPED DEPOSITION OF
21 PETER KEITH

22 DATE: November 24, 2020

23 TIME: 9:00 a.m. (Central Standard Time)

24 PLACE: Veritext Virtual Videoconference

25 REPORTED BY: PAULA K. RICHTER, RMR, CRR, CRC

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Page 2	<p>1 APPEARANCES</p> <p>2 (All parties appeared via videoconference)</p> <p>3</p> <p>4 ON BEHALF OF THE PETITIONERS:</p> <p>5 Mr. Cyrus A. Morton, Esq.</p> <p>6 Mr. Christopher A. Pinahs, Esq.</p> <p>7 ROBINS KAPLAN, LLP</p> <p>8 800 LaSalle Avenue, Suite 2800</p> <p>9 Minneapolis, Minnesota 55401</p> <p>10 (612) 349-8500</p> <p>11 cmorton@robinskaplan.com</p> <p>12 cpinahs@robinskaplan.com</p> <p>13</p> <p>14 ON BEHALF OF THE PATENT OWNER:</p> <p>15 Mr. Joseph W. Winkels, Esq.</p> <p>16 Mr. J. Derek Vandenburg, Esq.</p> <p>17 CARLSON, CASPERS, VANDENBURGH & LINDQUIST</p> <p>18 225 South Sixth Street, Suite 4200</p> <p>19 Minneapolis, Minnesota 55402</p> <p>20 (612) 436-9600</p> <p>21 jwinkels@carlsoncaspers.com</p> <p>22 dvandenburg@carlsoncaspers.com</p> <p>23</p> <p>24</p> <p>25 (APPEARANCES continued on next page)</p>	Page 4
Page 3	<p>1 APPEARANCES (Continued)</p> <p>2</p> <p>3 ON BEHALF OF PATENT OWNER:</p> <p>4 Mr. Kenneth E. Levitt, Esq.</p> <p>5 THE DORSEY FIRM</p> <p>6 50 South Sixth Street, Suite 1500</p> <p>7 Minneapolis, Minnesota 55402</p> <p>8 (612) 340-2600</p> <p>9 levitt.kenneth@dorsey.com</p> <p>10</p> <p>11</p> <p>12 ALSO PRESENT BY VIDEOCONFERENCE:</p> <p>13 Craig Jones - Videographer</p> <p>14 Grant Franks - Veritext Concierge</p> <p>15 Greg Smock - Teleflex</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p>	Page 5
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Page 3	<p>1 PROCEEDINGS</p> <p>2 THE VIDEOGRAPHER: Good morning. We</p> <p>3 are going on the record at 9:00 a.m. CST, on</p> <p>4 Tuesday, November 24th, 2020. Audio and video</p> <p>5 recording will continue to take place unless all</p> <p>6 parties agree to go off the record.</p> <p>7 This is Media Unit 1 of the</p> <p>8 video-recorded deposition of Peter Keith, in the</p> <p>9 matter of Medtronic versus Teleflex Innovations,</p> <p>10 filed in the Patent Trial and Appeals Board, case</p> <p>11 number IPR2020-00127.</p> <p>12 The deposition is being held via</p> <p>13 video conference. My name is Craig Jones, from</p> <p>14 the firm Veritext Midwest, and I'm the</p> <p>15 videographer. The court reporter is Paula</p> <p>16 Richter, from the firm Veritext Midwest.</p> <p>17 I am not related to any party in</p> <p>18 this action, nor am I financially interested in</p> <p>19 the outcome.</p> <p>20 Counsel and all present in the room</p> <p>21 and everyone attending remotely will now state</p> <p>22 their appearance and affiliations for the record.</p> <p>23 If there are any objections to proceeding, please</p> <p>24 state them at the time of your appearance,</p> <p>25 beginning with the noticing attorney.</p>	Page 5

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<p style="text-align: right;">Page 6</p> <p>1 MR. MORTON: Good morning. This is 2 Cyrus Morton from the law firm of Robins Kaplan, 3 on behalf of Petitioner Medtronic. With me also 4 is Christopher Pinahs. 5 MR. WINKELS: On behalf of patent 6 owner, Joe Winkels with the Carlson Caspers firm. 7 With me from Carlson Caspers is Derek Vandenburg. 8 Also on the line is Ken Levitt, from The Dorsey 9 Firm, and Greg Smock from Teleflex. 10 THE VIDEOGRAPHER: Will the court 11 reporter please swear in the witness. 12 PETER KEITH, 13 duly sworn, was examined and testified as follows: 14 EXAMINATION 15 BY MR. MORTON: 16 Q. All right. Good morning, Mr. Keith. I know 17 you were deposed yesterday and a lot of your 18 background was covered, so I'll try not to be too 19 repetitive on that. But I do want to walk through 20 some things that are in your declaration, 21 specifically your declaration for the '032 patent 22 in IPR2020-00127. 23 Do you have that available? 24 A. I do. 25 Q. Okay. And we'll be walking through that and</p>	<p style="text-align: right;">Page 8</p> <p>1 inspected the devices, does that mean basically 2 you had a version of them and looked at it, 3 checked it over outside of kind of the operating 4 context? 5 A. Yes. In more of a -- like an R&D lab-type 6 setting. 7 Q. And you note that you've performed testing on 8 the GuideLiner, QXM, and Medtronic guide extension 9 catheters. 10 Do you see that? 11 A. Yes. 12 Q. What testing did you do on GuideLiner? 13 A. On GuideLiner, I -- in addition to my visual 14 inspections, I did some flexibility 15 characterizations, some bending, stiffness 16 characterizations on different portions of the 17 device. 18 Q. Any other testing besides bending and 19 stiffness testing? 20 A. I don't recall any others sitting here right 21 now. 22 Q. Okay. And then how about same question for 23 the QXM Boosting Catheter; what testing did you do 24 on that? 25 A. I did similar types of testing on that</p>
<p style="text-align: right;">Page 7</p> <p>1 through some of the other exhibits and prior art 2 as we go through the day. 3 So looking at that declaration, you 4 note in paragraph 18 that you have inspected the 5 GuideLiner devices, Boston Scientific Guidezilla, 6 QXM Boosting Catheter, and the Medtronic Telescope 7 guide extension catheter. 8 Do you see that? 9 A. Yes. 10 Q. And in addition to inspecting, you said you 11 performed testing? 12 A. Correct. 13 Q. Okay. So first, is it true you haven't 14 actually used any of those devices to perform a 15 procedure on a patient, correct? 16 A. That's correct. 17 Q. Have you witnessed any procedures using those 18 devices? 19 A. I have not witnessed any in person. I -- you 20 know, over the course of the years, I may have 21 seen some video snippets or certainly, you know, 22 read some references related to the use of these 23 devices, but I have not seen a device used in 24 person. 25 Q. Okay. So for this case, when you say you</p>	<p style="text-align: right;">Page 9</p> <p>1 device, and I think I also did some dimensional 2 measurements. I think I -- yeah, that's -- 3 sitting here right now, those are the types of 4 tests that I recall doing on that device. 5 Q. All right. And finally, for the Medtronic 6 Telescope guide extension catheters, what testing 7 did you perform? 8 A. Again, similar types of flexibility testing 9 that I did on the other devices. 10 Q. All right. Do you have, in your history or 11 experience, any experience as a librarian? 12 A. No. 13 Q. Have you ever worked as an editor of an 14 engineering journal? 15 A. No. 16 Q. All right. Let's jump ahead. 17 You get into your declaration in, 18 say, paragraph 38. You're going through a lot of 19 background and teaching, and here you're teaching 20 about the use of balloons and stents. 21 Do you see that? 22 A. Yes. 23 Q. And can you tell me -- and take yourself back 24 into the 1990s -- how does a stent operate? What 25 is its function? How does it work?</p>

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<p style="text-align: right;">Page 10</p> <p>1 A. I think I outlined it pretty well in my 2 report. I'm not sure -- you want me to add more 3 to that or -- I guess I'm not quite sure what 4 you're asking. I mean, at a high level, they're 5 devices that are implanted into blood vessels to 6 dilate and maintain a dilation of a blockage. 7 Q. Okay. So does the stent dilate the vessel? 8 A. Typically the stents are mounted on a balloon 9 catheter, and it's the combination of the stent on 10 the balloon that's inflated to dilate the lesion. 11 Q. I think you said the stent is there to 12 maintain that dilation; is that correct? 13 A. Yeah. The stent is something that's left 14 behind as an implant in the patient. 15 Q. And does it have to then basically press out 16 against the artery that it's in, or how much force 17 does it have to apply to maintain that dilation? 18 A. It's really a function of what -- how much 19 resistance the dilated lesion is presenting back 20 onto the stent, so it could be different depending 21 on the patient's anatomy. 22 Q. All right. So -- but the stent is designed 23 to withstand whatever it needs to in order to 24 maintain that dilation, right? 25 A. I would say for the most part, yes.</p>	<p style="text-align: right;">Page 12</p> <p>1 Q. So what is a normal advancement for? 2 A. I'm not sure I understand the question. What 3 I said here is that -- I think I'm describing sort 4 of a relative comparison. If it's a tighter 5 lesion versus one that's not as tight; you may 6 have to push harder to get across that lesion. 7 Q. Right. But from an engineering standpoint, 8 is that something that can be measured, that you 9 can talk about whether a normal advancement force 10 versus a higher advancement force? 11 A. I think it can be measured. I don't have 12 those numbers in my head right now. 13 Q. So when you say "higher," do you have any way 14 to quantify this or give me any idea of what 15 you're talking about in terms of a higher 16 advancement force? 17 A. Sitting here right now, I can't really 18 quantify that, but I think it's -- I think one 19 could measure that in different types of lesions. 20 Q. How would you measure it? 21 A. Again, I mean, I haven't thought about it. I 22 don't know exactly how you'd measure it. But, you 23 know, I think it would be possible to measure -- 24 with a force gauge measure, you know, an 25 advancement force on the proximal end of the</p>
<p style="text-align: right;">Page 11</p> <p>1 Q. If you want to follow along in your 2 declaration, you get to paragraph 57 and you're 3 now talking about -- you say, "Numerous variables 4 can impact how easy or difficult it is to treat a 5 particular patient lesion." 6 Do you see that? 7 A. Yes. 8 Q. Okay. Can you list all the variables you can 9 think of, please? 10 A. I -- again, at a high level, I think the 11 variables that can impact that are the nature of 12 the lesion itself, the tightness of the lesion. 13 Is it heavily calcified? Where is it located? Is 14 it in tortuous anatomy? Is there tortuous anatomy 15 leading up to it? Is it, you know, in a vein 16 graft versus in a native coronary artery? 17 Those are some of the variables that 18 I can think of sitting here right now. 19 Q. All right. Let's go down on one of them. 20 Let's go with a tighter lesion. And I know you 21 talk about that here, and you say, "tighter lesion 22 will require a higher advancement force." 23 Do you see that about halfway down 24 that paragraph? 25 A. Yes.</p>	<p style="text-align: right;">Page 13</p> <p>1 device. You could measure a force being applied 2 to a lesion if you were doing more of a bench-type 3 test. I think there are ways that it could be 4 done, but, again, I haven't given that a whole lot 5 of thought. 6 Q. Have you ever done that in your long history 7 of working on catheters and catheter design? 8 A. I may have. I don't recall specifically. 9 Q. And you talk about here the reactive force 10 for the end, right, and it could cause a guide 11 catheter to back out. 12 Do you see that? 13 A. Yes. 14 Q. So for that reactive force, again, is there 15 any way to quantify that for me or tell me how 16 much force will be required to make the guide 17 catheter back out? 18 A. Again, I mean, I think it would depend on 19 different factors, but for a given situation, I 20 think that is something that could possibly be 21 measured. I wouldn't know exactly how to do that 22 just off the top of my head. 23 Q. Okay. And so is there sort of a range of 24 forces that might cause it to back out? 25 A. There probably is, but I don't know exactly</p>

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<p style="text-align: right;">Page 14</p> <p>1 what those would be.</p> <p>2 Q. You don't know what the minimum force would</p> <p>3 be required to cause it to back out, right?</p> <p>4 A. Well, again, it would depend on other factors</p> <p>5 too. It could depend on the guide catheter</p> <p>6 itself, the anatomy. But for a given scenario, I</p> <p>7 think that's something that could be measured.</p> <p>8 Q. Okay. And how could it depend on the guide</p> <p>9 catheter?</p> <p>10 A. Shape, size, construction. Those things can</p> <p>11 influence how much -- how easily a guide catheter</p> <p>12 could back up -- back out. Sorry.</p> <p>13 Q. Okay. And how about the anatomy you said?</p> <p>14 How could that impact how much a reactive force is</p> <p>15 required to have it back out?</p> <p>16 A. Some things I think would be the size of the</p> <p>17 aorta, how the guide catheter is positioned within</p> <p>18 the aorta relative to the -- to the coronary</p> <p>19 artery. Those are a couple examples.</p> <p>20 Q. Okay. And are there any other factors</p> <p>21 besides the structure or whatever of the guide</p> <p>22 catheter and the patient anatomy that can affect</p> <p>23 the amount of reactive force required for the</p> <p>24 guide catheter to back out?</p> <p>25 A. There may be. I can't think of any right</p>	<p style="text-align: right;">Page 16</p> <p>1 know, the guide catheter itself, the construction</p> <p>2 details, how far it's being deep-seated.</p> <p>3 Those are some of the variables that</p> <p>4 could affect that if you were to deep seat a guide</p> <p>5 catheter.</p> <p>6 Q. All right. And how about another thing that</p> <p>7 you discuss in here, the mother and child</p> <p>8 arrangement for addressing backup support like the</p> <p>9 Shockey patent you discuss. In the mother and</p> <p>10 child context, do you have any idea how much extra</p> <p>11 force can be applied?</p> <p>12 A. I don't have a specific number for that.</p> <p>13 And, again, I think it would depend on some</p> <p>14 variables of what that mother and child</p> <p>15 arrangement is.</p> <p>16 Q. Again, in the mother and child context, you</p> <p>17 could measure how much extra backup support that's</p> <p>18 giving, but that's not something you've done for</p> <p>19 this case, right?</p> <p>20 A. I think it is something that could be</p> <p>21 measured. I have not specifically done that.</p> <p>22 Q. Okay. Paragraph 61, your -- again, here</p> <p>23 you're talking about teaching mother and child was</p> <p>24 known prior to May 2006 to provide backup support;</p> <p>25 is that right?</p>
<p style="text-align: right;">Page 15</p> <p>1 now.</p> <p>2 Q. Okay. And, again, this reactive force, this</p> <p>3 is something that you could measure, but you</p> <p>4 haven't done that for this case; is that right?</p> <p>5 A. Not specifically. Correct.</p> <p>6 Q. Let's talk about some of the other things</p> <p>7 that were done to address this backout problem.</p> <p>8 How well does deep-seating work in</p> <p>9 terms of preventing backout?</p> <p>10 A. I believe that it works to some extent. It's</p> <p>11 just a very risky thing to consider, so it's --</p> <p>12 it's -- I think it tends to be rarely employed</p> <p>13 because of the concerns that can come about by</p> <p>14 deep seating a conventional guide catheter into a</p> <p>15 patient.</p> <p>16 Q. Sure. And I'm aware of the concerns to the</p> <p>17 anatomy. I want to focus just on how much</p> <p>18 additional backup support, if you will, can be</p> <p>19 offered by deep-seating.</p> <p>20 Do you know that in any kind of</p> <p>21 qualitative or quantitative sense, how much extra</p> <p>22 force can be applied to crossing a lesion if the</p> <p>23 guide catheter is deep-seated?</p> <p>24 A. I don't. Again, I think that also would</p> <p>25 depend on some different variables, like, you</p>	<p style="text-align: right;">Page 17</p> <p>1 A. Correct.</p> <p>2 Q. And, in fact, mother and child was known to</p> <p>3 provide increased backup support for, like, a</p> <p>4 decade or more prior to May 2006, right?</p> <p>5 A. I don't know how long it was known.</p> <p>6 Q. You don't know when the earliest mother and</p> <p>7 child catheters were?</p> <p>8 A. Sitting here right now, I don't recall that.</p> <p>9 Q. In paragraph 62 of your declaration, you say,</p> <p>10 "The Shockey patent was 1991."</p> <p>11 Does that refresh your recollection</p> <p>12 that it's been more than a decade of mother and</p> <p>13 child known to provide backup support prior to</p> <p>14 2005, 2006 time frame?</p> <p>15 A. Yes. So that particular reference is from</p> <p>16 1991.</p> <p>17 Q. Let's go back to your example in paragraph 61</p> <p>18 that you give.</p> <p>19 You say the child catheter is more</p> <p>20 flexible than the larger diameter guide catheter,</p> <p>21 right?</p> <p>22 A. I believe so.</p> <p>23 Q. Well, what materials is the child catheter</p> <p>24 typically made of?</p> <p>25 A. It would depend on what child catheter you're</p>

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