



1 UNITED STATES PATENT AND TRADEMARK OFFICE  
2 BEFORE THE PATENT TRIAL AND APPEAL BOARD  
3  
4 VISA INC. and VISA USA, INC., )  
5 )  
6 Petitioner )  
7 )  
8 vs. ) Patent No. 8,856,539  
9 )  
10 )  
11 UNIVERSAL SECURE REGISTRY LLC, )  
12 )  
13 Patent Owner )  
14 \_\_\_\_\_ )  
15  
16 Deposition of Justin Douglas Tygar, Ph.D.,  
17 taken on behalf of Respondent, at One Market Plaza,  
18 Spear Street Tower, Floor 3300, San Francisco,  
19 California, beginning at 9:01 a.m., on Friday,  
20 April 19, 2019, before Joanne M. Farrell, Certified  
21 Shorthand Reporter No. 4838.  
22  
23  
24  
25

Page 2

1 APPEARANCES:  
2 For Petitioner:  
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12 For Patent Owner:  
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19 Also Present: Christina Hollander, Senior Counsel,  
20 Visa  
21  
22  
23  
24  
25

Page 3

1 INDEX  
2 WITNESS  
3 Justin Douglas Tygar, Ph.D.  
4 EXAMINATION PAGE  
5 BY MR. MESSERIAN 5  
6  
7 EXHIBITS  
8 NUMBER PAGE  
9 Exhibit 1 International Publication 11  
10 Number WO 00/14648  
11 Exhibit 2 Declaration of Justin Douglas 36  
12 Tygar, Ph.D.  
13 Exhibit 3 United States Patent, Weiss, 41  
14 Patent Number 4,885,778  
15  
16 Exhibit 4 United States Patent Desai, et 73  
17 al., Patent No. 6,820,204  
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Page 4

1 San Francisco, California, Friday, April 19, 2019  
2 9:01 a.m.  
3 ---o0o---  
4 Justin Douglas Tygar, Ph.D.,  
5 having been administered an oath, was examined and  
6 testified as follows:  
7 EXAMINATION  
8 BY MR. MESSERIAN:  
9 Q. Good morning.  
10 A. Good morning.  
11 Q. How are you?  
12 A. Very well, thank you. And yourself?  
13 Q. Good. So my name, again, is Raz Messerian.  
14 I'm from Quinn Emanuel.  
15 Today we are here for the IPR of U.S.  
16 Patent Number 8,856,539. You understand that,  
17 correct?  
18 A. I do.  
19 Q. Okay. And could you please state your name  
20 for the record.  
21 A. My name is Justin Douglas Tygar. The last  
22 name is spelled T-Y-G-A-R.  
23 Q. That clarifies it for me too. I wasn't  
24 sure if it's Tygar or Tygar. Thank you.  
25 I understand you've been deposed before,

Page 5

1 right?  
2 A. I have.  
3 Q. So you're pretty familiar with the ground  
4 rules, I assume, but I'm going to go through them  
5 quickly anyway.  
6 You understand you're here to testify and  
7 you're taking an oath, the same oath that would be  
8 before a court; is that right?  
9 A. Yes.  
10 Q. Is there anything that would interfere with  
11 your ability to testify today; for example, are you  
12 on any medication or anything of that sort?  
13 A. There's no medication that I'm on that  
14 would interfere with my ability to testify and give  
15 accurate answers.  
16 Q. Great. And do you understand the court  
17 reporter is here today to transcribe everything you  
18 say?  
19 A. Yes.  
20 Q. And to make that easier for her, it would  
21 be helpful if you could provide only audible answers  
22 and refrain from gestures such as nodding your head  
23 yes or no.  
24 Do you understand that?  
25 A. Yes.

Page 6

1 Q. And do you also understand that it would be  
2 helpful for her if we don't talk over one another  
3 and let us finish each other's sentences so she can  
4 get it all down?  
5 A. Yes.  
6 Q. And so at any point in time if I'm unclear  
7 with my questions, I ask that you tell me to  
8 clarify; otherwise I'll presume that you understood  
9 what I asked.  
10 Could you do that for me, please?  
11 A. I'll do my best.  
12 Q. So if you answer a question, I'm going to  
13 presume that you understood my question; is that  
14 fair?  
15 A. Of course.  
16 Q. If at any point you want to take a break,  
17 just let me know; but I ask that if we are in the  
18 middle of a question, that you answer the question  
19 first before we do so.  
20 And then, finally, Mr. Argenti here might  
21 make objections, I'm sure, to some of my questions.  
22 If he does so I ask that you, unless specifically  
23 told not to answer the question, to go ahead and  
24 answer the question.  
25 Can you do that for me, please?

Page 7

1 A. I'll do my best.  
2 Q. Thank you. All right.  
3 What did you do to prepare for this  
4 deposition?  
5 A. I reread my declaration in this matter. I  
6 reread the '539 patent, the Weiss reference, the  
7 Brener reference and the Desai reference.  
8 I had a telephone meeting with Mr. Argenti  
9 and Ms. Otto, and I had two days of in-person  
10 meetings with Mr. Argenti, Ms. Otto, and in-house  
11 counsel at Visa.  
12 Q. Roughly how many hours would you say you  
13 spent preparing for this deposition?  
14 A. Perhaps 20.  
15 Q. So it seems to me that you reviewed your  
16 declaration and you understand, I presume, the  
17 opinions that you laid out in your declaration?  
18 MR. ARGENTI: Objection. Form.  
19 THE WITNESS: Could we do one question at a  
20 time, please?  
21 BY MR. MESSERIAN:  
22 Q. Sure. Do you understand the opinions that  
23 are laid out in your declaration?  
24 MR. ARGENTI: Objection. Form.  
25 THE WITNESS: I believe so.

Page 8

1 BY MR. MESSERIAN:  
2 Q. And so you stand by those opinions in your  
3 declaration?  
4 A. There are some minor grammar errors, but  
5 there's nothing substantive in my declaration that  
6 I've changed my mind about.  
7 Q. So there's no substantive inaccuracies,  
8 right?  
9 A. Not to the best of my knowledge.  
10 Q. All right. I've read through your CV. Is  
11 it fair to say that you know a little bit about  
12 cryptography?  
13 MR. ARGENTI: Objection. Form.  
14 THE WITNESS: No. I think I know a lot  
15 about cryptography.  
16 BY MR. MESSERIAN:  
17 Q. I thought you'd say that. Would you  
18 consider yourself an expert in cryptography?  
19 A. Yes.  
20 Q. Would you say that you're also an expert in  
21 computer and network security?  
22 A. Yes.  
23 Q. And you were retained by Visa to provide  
24 opinions on the invalidity of the '539 patent,  
25 correct?

Page 9

3 (Pages 6 - 9)

1 A. I don't recall the exact wording in my --  
2 in my retainer agreement, but among the tasks I was  
3 asked to do was to look at and provide opinions on  
4 the '539 patent.  
5 Q. What were some of your other tasks?  
6 MR. ARGENTI: Objection. Form. Scope.  
7 THE WITNESS: I don't remember, as I said,  
8 what was in the retainer letter. I think I  
9 summarize in my declaration what I was retained to  
10 do.  
11 BY MR. MESSERIAN:  
12 Q. Were you asked to ever consider Visa's  
13 infringement of the '539 patent?  
14 MR. ARGENTI: Objection. Scope.  
15 Relevance.  
16 THE WITNESS: I am not aware that Visa  
17 infringes. I've been told that there is some  
18 litigation, patent litigation in district court, but  
19 I don't know anything about it. I've never looked  
20 at infringement issues associated with this matter.  
21 BY MR. MESSERIAN:  
22 Q. Okay. All right. I'd like to turn to some  
23 of the prior art references that you address in your  
24 declaration. Let's start with what I'd like to mark  
25 PCT Publication Number WO 00/14648, which is the

Page 10

1 Brener reference, as Exhibit Number 1 in the Tygar  
2 deposition.  
3 (Exhibit 1 was marked for identification by  
4 the court reporter and is attached hereto.)  
5 MR. ARGENTI: Sorry. Before you get  
6 started, Counsel, just as a point of clarification.  
7 Would it be more clear if we used the  
8 existing exhibit numbers from the IPR? We'd be fine  
9 with that from our perspective.  
10 BY MR. MESSERIAN:  
11 Q. Are you okay with calling it just the  
12 "Brener reference"? Would you understand it that  
13 way?  
14 A. I understand what you mean when you say the  
15 "Brener reference."  
16 Q. Let's do that. It's easier for me to call  
17 it Brener, Weiss, Desai.  
18 This is Exhibit Number 1 in the IPR.  
19 Now, is that a copy of the Brener reference  
20 that I'm handing you now that you're familiar with?  
21 A. It appears to be.  
22 Q. Great. And you mentioned that you reviewed  
23 the Brener reference. When is the last time you  
24 read through it?  
25 A. From beginning to end?

Page 11

1 Q. Let's start with that.  
2 A. I did read through it, albeit rather  
3 quickly, last week.  
4 Q. Okay. Did you review it last night or this  
5 morning?  
6 A. I reviewed portions of it.  
7 Q. All in all, would you say you've spent  
8 sufficient time going through the Brener reference  
9 so that you have a good understanding of what it  
10 teaches?  
11 A. With regard to the issues that came up in  
12 my analysis, yes.  
13 Q. Okay. Based on your understanding of  
14 Brener, is it fair to say that Brener generally  
15 describes a system that allows customers to  
16 anonymously purchase goods or anonymously shop?  
17 A. The summary, which is on page 1, beginning  
18 at line 6, specifically identifies:  
19 "Conducting electronic commerce allowing a  
20 customer to anonymously visit vendor  
21 websites, anonymously purchase goods, and  
22 anonymously receive goods without  
23 disclosing the customer's identification  
24 and home address information to the website  
25 vendor."

Page 12

1 Q. Would you believe that to summarize the  
2 invention?  
3 MR. ARGENTI: Objection. Form.  
4 THE WITNESS: I think it's a fair summary.  
5 BY MR. MESSERIAN:  
6 Q. Fair enough. Does Brener describe the  
7 cryptographic scheme to secure this anonymous  
8 purchase, you know, transaction system? Strike  
9 that.  
10 Does Brener describe a cryptographic  
11 process to secure the system?  
12 A. He does make reference to cryptography in  
13 the application.  
14 Q. In particular, does Brener state a  
15 preference for any one particular cryptographic  
16 scheme to secure its anonymous purchase  
17 transactional system?  
18 THE WITNESS: Madam Court Reporter, could  
19 you please reread that question to me slowly.  
20 THE COURT REPORTER: "Question: In  
21 particular, does Brener state a  
22 preference for any one particular  
23 cryptographic scheme to secure its  
24 anonymous purchase transactional system?"  
25 MR. ARGENTI: Objection. Form.

Page 13

<p>1 THE WITNESS: On page 13 at line 6, Brener 2 states that: 3 "Credit card transactions, when authorized 4 by the customer or customer object 5 identifier, are preferably done through 6 secure transaction protocols." 7 And then he has an additional comment, 8 "Such as digital signatures and digital 9 certificates." 10 So I understand from this passage that 11 Brener prefers the use of secure transaction 12 protocols, including secure transaction protocols 13 that use asymmetric cryptography. 14 Elsewhere, on page 15 in the paragraph 15 beginning at line 25, the reference states: 16 "In order to provide for secure 17 transmissions over the Internet, the 18 present invention can use different 19 inscription methods to provide users with 20 anonymity and to prevent third parties from 21 improperly obtaining a user's credit card 22 number or bank account number. To this 23 end, in one preferred embodiment the system 24 uses an RSA public encryption." 25 I understand from this passage that he</p> <p style="text-align: right;">Page 14</p>	<p>1 "beginning on line 11." Let me reread the passage. 2 Q. Sure. 3 A. Would you repeat your question? 4 Q. Yes. So in that passage starting at 5 line 20, Brener recites: 6 "The bank computer 150 can then request 7 that the customer computer 100, using the 8 private key, quote, sign for the purchase." 9 What is Brener talking about there? 10 A. So reading the paragraph in context, this 11 is talking about a, as I mentioned, going back to 12 page 15, one preferred embodiment. 13 In this embodiment, the -- in this 14 embodiment, as you can see from line -- as you can 15 see from line -- beginning at line 15, the customer 16 computer has notified the vendor computer the 17 customer wants to make a purchase, and the 18 transaction number and the amount of the purchase is 19 going to be forwarded to a bank computer. 20 The bank computer is then asking the 21 customer computer to do an operation that in 22 asymmetric cryptography is called "digital 23 signatures." 24 There are multiple ways to do digital 25 signatures. One way in which to do a digital</p> <p style="text-align: right;">Page 16</p>
<p>1 states that in one embodiment his system would use 2 RSA. 3 BY MR. MESSERIAN: 4 Q. That passage that you just read, would you 5 say that Brener expresses that it's one embodiment 6 or a preferred embodiment? 7 A. As I just said, the literal wording, and 8 this is at page 15, line 28, is "One preferred 9 embodiment." 10 Q. So Brener uses public-key cryptography to 11 secure its system, at least in one preferred 12 embodiment, correct? 13 A. Yes. 14 Q. Can you flip to page 16. Starting at 15 line 11 through 24, if you could just read that 16 either to yourself or out loud. 17 A. Go ahead. 18 Q. Can you explain to me what it means when 19 Brener says that "The bank computer can then request 20 that customer computer 100 using its private key, 21 quote, sign for the purchase"? 22 A. I'm sorry. I must have been looking at a 23 different line. I thought you said page 16 line 11. 24 Q. 11 through 24, uh-huh. 25 A. I'm sorry. I only heard the sentence</p> <p style="text-align: right;">Page 15</p>	<p>1 signature is to take a message, compute a secure 2 hash on the message, and then encrypt that message 3 in the public key. 4 If you want, I can go into the mechanics of 5 how it's done in RSA. 6 Q. But at a very high level it provides a 7 digital signature to that bank computer -- and when 8 I say "it," I mean the customer computer -- is that 9 right? 10 MR. ARGENTI: Objection. Form. 11 THE WITNESS: Repeat the question, please. 12 THE COURT REPORTER: "Question: But 13 at a very high level it provides a 14 digital signature to that bank computer -- 15 and when I say "it," I mean the customer 16 computer -- is that right?" 17 THE WITNESS: It is not clear to me from 18 this passage that the digital signature is sent to 19 the bank computer directly from the customer 20 computer as opposed through an intermediary. 21 BY MR. MESSERIAN: 22 Q. Whether it flows through an intermediary or 23 it goes directly to the bank computer, is it fair to 24 say that the customer computer generates a digital 25 signature using one of various methods, as you</p> <p style="text-align: right;">Page 17</p>

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