

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

FORD MOTOR COMPANY,)
)
 Petitioner,)
)
 vs.) Case Number
) IPR2014-00875
 PAICE LLC and ABELL)
 FOUNDATION, INC.,)
)
 Patent Owner.)

DEPOSITION OF JEFFREY L. STEIN, Ph.D.

Southfield, Michigan

Friday, May 29, 2015

Reported by:

RACHEL F. GARD, CSR, RPR, CLR, CRR

REF NO. 14261A

TransPerfect Legal Solutions

May 29, 2015
9:04 a.m.

Deposition of JEFFREY L. STEIN, Ph.D., at the offices of Brooks Kushman, P.C., 1000 Town Center, Suite 2200, Southfield, Michigan, pursuant to notice before Rachel F. Gard, Certified Shorthand Reporter, Registered Professional Reporter, Certified LiveNote Reporter, Certified Realtime Reporter.

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BY: W. PETER GUARNIERI, ESQ.

(Witness sworn.)

MR. GUARNIERI: For the record, this is Pete Guarnieri for Fish & Richardson and the Abell Foundation.

MR. TURNER: This is Andrew Turner with Brooks Kushman for Ford, and with me is Frank Angileri also for Ford.

WHEREUPON:
JEFFREY L. STEIN, Ph.D.,
 called as a witness herein, having been first duly sworn, was examined and testified as follows:

CROSS-EXAMINATION
BY MR. GUARNIERI:

Q. Good morning, Dr. Stein.
A. Good morning.
Q. Could you state your full name and business address for the record.
A. Jeffrey L. Stein. University of Michigan, Department of Mechanical Engineering.
Q. And, Dr. Stein, this is the third time I believe that you've been deposed in these PAICE/Ford IPR matters; is that correct?
A. I haven't kept count.
Q. Feels like more than that?

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1 Well, you're familiar with the rules 09:04
 2 of the proceedings, familiar with how this 09:04
 3 deposition process works; am I correct on that? 09:05
 4 A. I am familiar with how things have 09:05
 5 been going so far, yes, in this -- in these 09:05
 6 related depositions. 09:05
 7 Q. So you understand that you've taken 09:05
 8 an oath; and you're obligated to testify 09:05
 9 truthfully and accurately just as if you were 09:05
 10 in a court, right? 09:05
 11 A. Correct. 09:05
 12 Q. All right. Are there any reasons 09:05
 13 today you wouldn't be able to provide accurate, 09:05
 14 fully accurate testimony, any special 09:05
 15 conditions, medical conditions, anything of 09:05
 16 that nature that we should know about? 09:05
 17 A. No. 09:05
 18 Q. What did you do to prepare for your 09:05
 19 deposition today? 09:05
 20 A. I reviewed my declaration, the '097, 09:05
 21 what I call '097 IPR 2. And I also reviewed, 09:06
 22 you know, the materials that are relevant to 09:06
 23 that declaration. And I also reviewed the '388 09:06
 24 reply declaration and materials related to 09:06
 25 that. 09:06

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1 Q. And approximately how much time 09:06
 2 would you say you spent preparing? 09:06
 3 A. How much time I spent preparing for? 09:06
 4 Q. This deposition. 09:06
 5 A. I mean, I'd have to look at my 09:06
 6 records to see how much time. But -- So I 09:06
 7 don't know any kind of hour content, then. But 09:06
 8 I've been spending the last week or so since 09:06
 9 I've understood that the deposition was going 09:07
 10 to be scheduled for today getting ready. 09:07
 11 Q. More or less than 40 hours? 09:07
 12 A. I guess I just don't really know 09:07
 13 what that number would be; but, you know, I 09:07
 14 can't imagine 40 is a long ways off from it. 09:07
 15 Q. Fair enough. And who did you talk 09:07
 16 to while you were preparing for today's 09:07
 17 deposition? 09:07
 18 A. I -- Who did I talk with about the 09:07
 19 deposition specifically? 09:07
 20 Q. Correct. 09:07
 21 A. So I spoke with the -- Mr. Turner 09:07
 22 and Mr. Angileri, Ms. Shah, and Mr. Kushman. I 09:08
 23 believe that's it. 09:08
 24 Q. Dr. Stein, do you have -- do you 09:08
 25 know sitting here today approximately how many 09:08

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1 declarations you've submitted across all the 09:08
 2 various PAICE/Ford IPRs? 09:08
 3 A. Could you repeat the question, 09:08
 4 please? 09:08
 5 Q. Sure. Do you know sitting here 09:08
 6 today approximately how many declarations 09:08
 7 you've submitted for all the PAICE/Ford IPRs? 09:08
 8 10, 15, 20? 09:09
 9 A. I mean, I'd have to look at my 09:09
 10 records to count up the number. But there's 09:09
 11 some number, you know, in the area of 10-ish. 09:09
 12 Q. And for all of those, whatever that 09:09
 13 number is, roughly how much time have you spent 09:09
 14 working on those declarations? 09:09
 15 A. I mean, I don't know how to answer 09:09
 16 that question without going back and looking at 09:09
 17 my records. I've been working on this case. I 09:09
 18 was retained, as you know, over a year ago. I 09:09
 19 don't remember the exact date off the top of my 09:09
 20 head. And I've worked on declarations over 09:09
 21 that period of time. 09:09
 22 Q. How about this: Roughly how much 09:10
 23 money have you billed for your work on these 09:10
 24 IPRs? 09:10
 25 A. I don't know the answer to that 09:10

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1 question without looking at my invoices. 09:10
 2 Q. More or less than \$100,000? 09:10
 3 A. I would say that over the total, 09:10
 4 billing has been probably in excess of 09:10
 5 \$100,000. 09:10
 6 Q. More than \$500,000? 09:10
 7 A. I don't believe so. 09:10
 8 Q. Somewhere between 100- and \$500,000? 09:11
 9 A. Again, without looking at my 09:11
 10 records, I can't be more specific than that. 09:11
 11 (Stein Exhibit Number 1 marked for 09:11
 12 identification.) 09:11
 13 BY MR. GUARNIERI: 09:11
 14 Q. This is -- The court reporter has 09:11
 15 just handed you what's been marked as 09:11
 16 Exhibit 1. It's Ford Exhibit 1003. This is 09:11
 17 U.S. Patent No. 5,586,613 to Ehsani, 09:11
 18 E H S A N I. 09:11
 19 A. Can I ask you a question? So we're 09:11
 20 going to be focusing on my reply dec, the '388 09:12
 21 reply dec? 09:12
 22 Q. I think we're going to start with 09:12
 23 IPR2014-875, which is your reply declaration. 09:12
 24 You seem to have brought some binders today. 09:12
 25 What are in those binders? 09:12

	Page 10		Page 12	
1	A. One is my '388 binder, which has my	09:12	1 the case that when the engine is operated,	09:17
2	'388 reply declaration in it as well as my	09:12	2 Ehsani tries to operate the engine in an	09:17
3	original declaration and some of the prior art	09:12	3 efficient manner and efficient region so he's	09:17
4	references.	09:12	4 trying to operate the engine at a constant	09:17
5	Q. And the second binder?	09:12	5 power, right?	09:17
6	A. Is related to the '097 declaration	09:12	6 A. I agree with the idea that the	09:17
7	and prior art references.	09:12	7 engine has a region in its power speed curve	09:17
8	Q. Okay. You can feel free to refer to	09:12	8 where it can be more efficient, and that's also	09:17
9	those throughout the day. We'll mark exhibits	09:12	9 true in its torque speed curve and that Ehsani	09:18
10	as we go.	09:12	10 is trying to take advantage of that in his	09:18
11	MR. GUARNIERI: I'd ask that I be	09:12	11 invention that he is describing in the '613 by	09:18
12	allowed to just check those maybe on a	09:12	12 at times operating the engine at a kind of	09:18
13	break sometime.	09:12	13 average -- at a constant power output.	09:18
14	MR. TURNER: That's fine.	09:12	14 Q. Dr. Stein, do you agree that when	09:18
15	BY MR. GUARNIERI:	09:12	15 the engine is operated, Ehsani tries to operate	09:18
16	Q. Okay. Well, looking at Exhibit 1	09:12	16 the engine in an efficient manner and efficient	09:18
17	that's in front of you, do you recognize this	09:12	17 region, so Ehsani is trying to define to	09:18
18	reference, Dr. Stein?	09:12	18 operate the engine at a constant power?	09:18
19	A. Yes, I do. It looks like the Ehsani	09:13	19 A. I thought I just answered that	09:18
20	that I used in my declaration, referred to in	09:13	20 question.	09:18
21	my declaration.	09:13	21 Q. You didn't, Dr. Stein. Do you agree	09:19
22	Q. And, Dr. Stein, in the Ehsani	09:13	22 with my statement or do you not?	09:19
23	control system, Ehsani tries to operate --	09:13	23 A. I agree with my answer. If you'd	09:19
24	always operate the engine in an efficient	09:13	24 like me to repeat it ...	09:19
25	manner and region; is that correct?	09:13	25 Q. Maybe this might help. Do you	09:19
	Page 11		Page 13	
1	A. So what do you mean by a control	09:13	1 recall testifying on March 3rd, 2015, you were	09:19
2	system?	09:14	2 asked: Does the engine run at a constant power	09:19
3	Q. Well, do you agree that Ehsani	09:14	3 in Ehsani?	09:19
4	discloses a control system to control a hybrid	09:14	4 You answered: When the engine is	09:19
5	electric vehicle?	09:14	5 operated, he tries to operate the engine in an	09:19
6	A. I agree that he talks about the	09:14	6 efficient manner and efficient region, so he's	09:19
7	control of the hybrid electric vehicle. And so	09:14	7 trying to define to operate engine at a	09:19
8	I just want to be specific about which	09:14	8 constant power, but the engine isn't always	09:19
9	controller you're talking about or which	09:14	9 run.	09:19
10	control concept when we're using that word	09:14	10 Do you recall giving that testimony?	09:19
11	because there can be multiple things that are	09:14	11 A. It sounds -- I'd have to look at	09:19
12	being controlled.	09:14	12 transcript. I don't -- It sounds familiar, but	09:19
13	Q. So when Ehsani talks about the	09:14	13 I'd have to look at transcript to see if that's	09:19
14	control of the hybrid electric vehicle, it's	09:14	14 a precise representation of what I said.	09:19
15	the case that when the engine is operated,	09:14	15 Q. Do you have any reason to doubt that	09:19
16	Ehsani tries to operate the engine in an	09:14	16 that's what you testified to?	09:19
17	efficient manner and efficient region, so he's	09:14	17 A. I just haven't -- don't see the	09:19
18	trying to operate the engine at a constant	09:14	18 transcript. I have to look at it to know those	09:19
19	power, right?	09:14	19 are the exact words. I don't have a	09:20
20	MR. TURNER: Objection. Vague.	09:15	20 photographic recall of what I said.	09:20
21	BY THE WITNESS:	09:17	21 Q. Well, let me ask the question again.	09:20
22	A. Okay. Could you repeat your	09:17	22 Do you now disagree or agree with your prior	09:20
23	question again, please, now?	09:17	23 testimony that I'm representing to you was:	09:20
24	Q. So when Ehsani talks about the	09:17	24 When the engine is operating, he tries to	09:20
25	control of the hybrid electric vehicle, it's	09:17	25 operate the engine in an efficient manner and	09:20

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1 efficient region, so he's trying to define to 09:20
 2 operate the engine at a constant power, but the 09:20
 3 engine isn't always run? 09:20
 4 MR. TURNER: Objection. Compound. 09:20
 5 BY THE WITNESS: 09:20
 6 A. Can I read my transcript or 09:20
 7 statement? 09:20
 8 Q. Sure. 09:20
 9 MR. GUARNIERI: Why don't we mark 09:20
 10 this. 09:21
 11 (Stein Exhibit Number 2 marked for 09:21
 12 identification.) 09:21
 13 BY MR. GUARNIERI: 09:21
 14 Q. Dr. Stein, the court reporter has 09:21
 15 handed you what's been marked as Exhibit 2, 09:21
 16 which is the deposition transcript of Jeffrey 09:21
 17 L. Stein from March 3rd, 2015. 09:21
 18 A. That's correct. 09:21
 19 Q. And if you'll look on Page 69 of the 09:21
 20 transcript, starting at Line 23, and why don't 09:21
 21 you read the question and answer into the 09:21
 22 record that starts on Line 23. 09:21
 23 A. Does the engine run at a constant 09:21
 24 power in Ehsani? 09:21
 25 ANSWER: When the engine is 09:21

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1 operated, he tries to operate the engine in an 09:21
 2 efficient manner and efficient region so he's 09:21
 3 trying to define to operate the engine at a 09:21
 4 constant power, but the engine isn't always 09:22
 5 run, period. 09:22
 6 Q. Is that testimony still accurate, 09:22
 7 sir? 09:22
 8 A. I have to see what the context was 09:22
 9 for that answer. 09:22
 10 So could you just, to get us going 09:22
 11 again -- I'm trying to understand what your 09:28
 12 question is. And just to be clear, could you 09:28
 13 just repeat your question? 09:28
 14 Q. So you've had a chance to read your 09:28
 15 testimony from your March 3rd, 2015 deposition 09:28
 16 at Page 69, Lines 23 to Page 70, Line 4, my 09:28
 17 question was: Is that testimony still accurate 09:28
 18 today, sir? 09:28
 19 A. I think it's an accurate statement 09:28
 20 about the general nature of Ehsani's invention 09:29
 21 that he's trying to operate his engine in an 09:29
 22 efficient manner, and one of his ideas is to 09:29
 23 run the engine at a constant power. He does 09:29
 24 say in the context of his invention in 09:29
 25 Column 7 of Line 10, 11, 12, other control 09:29

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1 techniques may be used without departing from 09:29
 2 the intended scope herein. 09:29
 3 So I think that the general nature 09:29
 4 of his idea is to run the engine at a constant 09:29
 5 power. That's one of the things that he 09:29
 6 describes and to run the engine in a more 09:29
 7 efficient rather than less efficient region. 09:30
 8 Q. And you also say in that testimony 09:30
 9 that the engine isn't always run in Ehsani's 09:30
 10 control system. Is that still accurate? 09:30
 11 A. The possibility exists for turning 09:30
 12 off the engine. As I just said, other control 09:30
 13 techniques can be used without departing from 09:30
 14 the intended scope therein, so the engine could 09:30
 15 be turned off. 09:30
 16 Q. So how does Ehsani teach when to 09:30
 17 turn the engine on and when to turn the engine 09:30
 18 off? 09:30
 19 A. I don't know that he specifically 09:30
 20 provides that particular detail within his 09:30
 21 reference. I'd have to look back to see. 09:30
 22 Q. You have Ehsani in front of you. 09:30
 23 Feel free to take a look at it and let me know 09:31
 24 if you can identify where Ehsani teaches when 09:31
 25 to turn the engine on and when to turn the 09:31

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1 engine off. 09:31
 2 A. So Ehsani does provide in some of 09:39
 3 his embodiments a clutch for being able to 09:40
 4 disengage the engine, and he also describes 09:40
 5 that other control techniques may be used 09:40
 6 without departing from the scope. 09:40
 7 And so I think what I was referring 09:40
 8 to in my deposition transcript, that the engine 09:40
 9 isn't necessarily always run, is in the context 09:40
 10 of this ability to decouple the engine from the 09:40
 11 drive wheels and to -- and when it's decoupled, 09:40
 12 you could, if the batteries, for example, were 09:40
 13 fully charged, you could -- you would not need 09:40
 14 to run the engine during those times. There 09:40
 15 may be other, you know, situations where that 09:40
 16 might be appropriate as well. That's just one 09:40
 17 that comes to my mind at the moment. 09:40
 18 Q. Now, in the examples you just 09:41
 19 described in your prior answer, does Ehsani 09:41
 20 describe the control algorithm that would be 09:41
 21 used to, for example, decouple the engine from 09:41
 22 the drive wheels and propel the vehicle using 09:41
 23 the motor with charge from the battery? 09:41
 24 A. So are you asking me does Ehsani 09:41
 25 specifically call out an electric motor mode 09:41

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