Transcript of Martin C. Peckerar, Ph.D. (Volume 2)

Date: June 3, 2021
Case: PEAG LLC, et al -v- VARTA Microbattery GMBH. (PTAB)

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

PEAG LLC (d/b/a JLab Audio), AUDIO PARTNERSHIP LLC and AUDIO PARTNERSHIP PLC (d/b/a Cambridge Audio),

Petitioner,

v.

VARTA MICROBATTERY GMBH,

Patent Owner.

Case IPR2020-01211 USP 9,496,581
Case IPR2020-01212 UPS 9,153,835
Case IPR2020-01213 USP 9,799,858
Case IPR2020-01214 USP 9,799,913

VIDEOTAPED DEPOSITION OF:

MARTIN C. PECKERAR, Ph.D. (Volume 2)

TRANSCRIPT OF TESTIMONY, as reported by Cindy A. Hayden, Certified Court Reporter, RMR, CRR and Notary Public of the State of North Carolina, conducted virtually via Zoom Videoconference on Thursday, June 2, 2021, commencing at 9:01 a.m. EST.

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APPEARANCES:

(All participated remotely via Zoom Videoconference)

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PROCEEDINGS

* * *

THE TECHNICIAN: Thank you to everyone for attending this proceeding remotely, which we anticipate will run smoothly. Also, please stand by for the technician read-on and backup recording. Zoom will prompt you for your consent to video-record this meeting for backup purposes.

Please remember to speak slowly and do your best not to talk over one another. Please be aware that we are recording this proceeding for backup purposes.

Any off-the-record discussions should be had away from the computer. Please remember to mute your mic for those conversations. Please have your video enabled to help the reporter identify who is speaking. If you're unable to connect with video and are connecting via phone, please identify yourself each time before speaking. I apologize in advance for any technical-related interruptions. Thank you.

THE VIDEOGRAPHER: Here continues the

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video deposition of Dr. Martin Peckerar in the matter of PEAG, LLC, et al., versus VARTA Microbattery GmbH, held in the United States Patent and Trademark Office. Cause Number IPR2020-01211; -12, -13, and -14.

Today's date is Thursday, June 3rd, 2021. The time is 9:01 a.m. Eastern Standard Time. Your videographer today is Brendan Case, representing Planet Depos. This deposition is taking place by video teleconference via Zoom.

Would counsel present please identify themselves and whom they represent.

MR. RAGUSA: Paul Ragusa and Nicholas Palmieri for the petitioners, PEAG and JLab.

MR. MUELLER: Wes Mueller and Bob Wittmann, representing the patent owner, VARTA Microbattery GmbH.

THE VIDEOGRAPHER: Your court reporter today is Cindy Hayden, representing Planet Depos. Counsel, please proceed.

MR. RAGUSA: Thank you.

* * *

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MARTIN C. PECKERAR, Ph.D.,
having been previously sworn, was examined and testified as follows:

* * *

EXAMINATION

BY MR. RAGUSA:

Q Good morning, Dr. Peckerar.

A Good morning.

Q I just would like to remind you that you are still under oath from yesterday, and I would like to just start off by again asking the same question I started off with yesterday.

Are you physically okay? Is there any health issue or otherwise that would prevent you from giving testimony today?

A No.

Q Okay. Terrific.

So we had gone through some prior art yesterday, and I think we'll continue with that same pattern. Let's turn to the next exhibit, which will be the Ryou patent.

MR. RAGUSA: And if Mr. Palmieri can let

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me know what exhibit number that is, we'll -- we'll get that on the record.

(PECKERAR EXHIBIT 1007, European Patent Specification EP 1 886 364 B1, was marked for identification.)

BY MR. RAGUSA:

Q Okay. Do you now see the Ryou patent?

A Yes, I do.

(EXHIBIT 2043, Corrected Declaration of Martin C. Peckerar, Ph.D., was previously marked for identification.)

BY MR. RAGUSA:

Q Okay. And I think what we'll -- we'll go back and forth, but why don't we turn to your declaration, as we did yesterday. I think you have nicer figures than the patent doc is themselves, as I've said. Let's turn to --

A Yes.

Q Let's turn to Figure 6. And I see that this is -- was marked as IPR Exhibit 1007, so we'll stay with that nomenclature.

What type of cell is disclosed in Ryou?

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A It's a zinc-air cell.

Q Okay. Is it a button cell?

A It could be formed as a button cell.

Q And turning to the type of battery, can you describe your experience, if any, with zinc-air batteries?

A A lot of experience with zinc. I did a little zinc-air, of course, in my explorations, certainly at FlexEl. What would you like to know?

Q Yeah. Let's start from the beginning. When did you first have exposure to a zinc-air battery, and what was that experience?

A Of course, in my career as an electrical engineer, I'm well aware of the large number of battery types, and zinc-air is one. We -- the -- the primary cell that I started my own research with was what's called a Leclanché cell, which is a zinc metal battery and -- but -- but one that doesn't require exposure to -- to atmosphere to -- to generate a -- an electric current or -- or a voltage draw.

Q Okay. Was that a zinc-air battery,

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though?
A No.
Q Okay. And so let's turn to specific experience with zinc-air batteries. Have you worked with zinc-air batteries in your career?
A We made a -- to -- to understand the -- the physical processes going on in various cells and seeing if we can carry over different techniques or technologies into our own batteries, we made a number of different cells. I -- I will say I don't have extensive experience with zinc-air, but -- but I'm aware of the basic operation.
Q Okay. Did you make a zinc-air battery?
A Myself, no.
Q And as part of the businesses that you've worked with, have those businesses worked with zinc-air batteries?
A Yeah, to understand their limitations, to understand where they fit in the -- in the array of possible battery types. And I supervised other employees and reviewed the data that they

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generated.
Q Okay. Which company was that for?
A FlexEl.
Q And what -- what exactly did you do for FlexEl that involved zinc-air batteries?
A Well, as I said, we were constantly experimenting with new -- new battery chemistries, and we wanted to understand the full range of -- of strengths and weaknesses of each of these cells to possibly bring on those technologies into our mainline product, which we discussed in some detail yesterday.
Q Okay. And so what was your role in connection with that study?
A Well, as the chief technology officer, I oversaw them. I mean, some batteries, the -- the Leclanché-type batteries, the -- the baticitor, as I mentioned yesterday, I made with my own hands, okay? These I did not. I just looked at the output data.
Q Now, were you -- this type of zinc -- excuse me -- the zinc-air battery uses something --

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A Yes.
Q -- called "fusion bonding"; is that correct?
A I don't recall the exact term. But the -- the cup and can, what passes through that, at least in Figure 6, are held together by an adhesive bond 56.
Q And let me -- let's actually turn to Ryou. It's always good to go to the document. If we could turn to Paragraph 33, I think there's some information.
And in Paragraph 33 -- let me make the text a little bit bigger for everybody -- Ryou states: In order to accomplish the above objects of the invention, according to one aspect of the invention, there is provided a battery comprising: an anode; a cathode; an anode can disposed to enable electrons to transfer against the anode; a cathode can disposed to enable electrons to transfer against the cathode; and a body forming a battery body, wherein one end of the body is fusion-bonded with an end portion of the anode can

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and the other end of the body is fusion-bonded to an end portion of the cathode can, thereby hermetically sealing the battery.
Do you see that passage, sir?
A Yes, I see it.
Q Okay. Does that refresh your recollection that fusion bonding is used to hermetically seal the can in Ryou?
A Yes, it's consistent with what I said earlier.
Q And so my question is --
A There is a line between --
Q I'm sorry. Go ahead.
A Yeah. Yeah, I didn't remember the exact term that they used, but thank you for refreshing my memory.
Q Okay. Can you describe the process of fusion bonding?
A Well, it appears to me -- I mean, normally -- and this is an issue of ambiguity here. Normally, when you fuse two materials together, one would create an intermingling of the two materials,

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creating a very firm atomic bond.
The -- as I read Ryou and I looked at the figure which you just cited, it appeared as though there were -- there was a secondary material, an epoxy, a sealant, that was used to -- to hold the -- the cup and -- well, the anode -- what passes through the anode contacting cathode contact together. And that would of necessity be an insulator because you couldn't -- you couldn't short the anode to the cathode cans.
Q That would be, as we discussed yesterday, an inherent feature that -- that you would -- you, as somebody of ordinary skill, would understand would need to be there?
MR. MUELLER: Objection to form.
THE WITNESS: Well, someone of ordinary skill would -- would understand what I just relayed.
BY MR. RAGUSA:
Q Okay. And to be clear, somebody of ordinary skill would understand that there would need to be something between the anode can and the

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cathode can to prevent a short; is that your testimony?
A Yes.
Q Okay. What is your experience, if any, with fusion bonding?
A As I said, I mean, you -- you can -- in integrated circuits, for example, one does metallization. And one -- in order to form an anode contact, a substrate, one would place the interconnect over an insulating layer. And there would be a hole cut in the insulating layer where you wanted to make contact, for example, through the substrate.
The metal would drape over that hole, and then you would heat it up, heat the material up. It's called -- a process called "sintering." And the sinter forms a fusion contact, and that is a process which I am very familiar with.
Q Okay. Have you performed fusion bonding yourself?
A In the sense that I've just given, yes. I've placed the material on a bolt, stuck it into

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the furnace, yes, physically.
Q Okay. And let me ask you, in connection with -- well, let me -- let me take a step back.
Can you describe how zinc-air batteries function? And I can go back to Figure 6, if that's helpful.
A Yeah. I mean, it's -- there's an aqueous electric-based electrolyte, which forms hydroxyls, which oxidize the anode, zinc. And on formation of the zinc hydroxide, two free electrons are generated, which can be transported to the opposite side of the battery when those are connect -- when the -- when the anode and -- can and the cathode can are connected via a load.
The -- the anode region supplies oxygen for the -- for the formation of the hydroxyls, and the -- the net result is a battery which cannot be truly sealed. It has to be open to atmosphere or some -- or some source of oxygen in order to function.
Q Did we just -- okay. Sorry. Just -- my screen changed. Everything went blank for a

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second. I wanted to make sure I didn't lose you.
(Technical difficulties.)
BY MR. RAGUSA:
Q So let's go to your Paragraph 179 where you note that conventional zinc-air batteries like Ryou do not use a jelly-roll design. Are you aware of other nonconventional zinc-air batteries that either use a jelly roll or use a different configuration?
A No, and I don't -- maybe -- to my knowledge, okay, if you do a jelly roll, you're shielding one of the -- you're shielding one of the electrode surfaces from -- from oxygen, and so that would impede the functioning of the battery. But I'm sure somebody can come up with something clever.
Q Okay. So let's talk about that a little further.
A But these are --
Q Go ahead. I'm sorry. You can say --
A As I said, that is not the general config -- yeah, that's not the general

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