

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ADC SOLUTIONS AUTO LLC,
Petitioner,

v.

THE NOCO COMPANY,
Patent Owner.

IPR2024-00577 (Patent 11,447,023 B2)
IPR2024-00671 (Patent 11,584,243 B2)

Record of Oral Hearing
Held: May 29, 2025

Before DAVID C. MCKONE, AVELYN M. ROSS, and
JASON M. REPKO, *Administrative Patent Judges*.

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The above-entitled matter came on for hearing Thursday, May 29, 2025, commencing at 1:00 p.m. EDT, at the U.S. Patent and Trademark Office, 600 Dulany Street, Alexandria, Virginia/via Video-conference.

P-R-O-C-E-E-D-I-N-G-S

1:01 p.m.

JUDGE ROSS: Let's go on the record. We are here for the final hearing in IPR2024-00577 concerning U.S. Patent Number 11,477,023 and IPR2024-00671 concerning U.S. Patent Number 11,584,243.

I am Judge Ross, and joining me today are Judge McKone and Judge Repko.

We're conducting this hearing remotely, and there may be a delay or lag in the audio or video feeds. So please make every effort to speak clearly and try to avoid speaking over each other. That will help the court reporter.

Also hearing no objection, we authorized a public line for today's hearing, so be aware that there may be members of the public listening in.

As we mentioned in our April 25th order granting oral argument, each side will have 60 minutes to present their arguments. Because Petitioner bears the burden of persuasion, Petitioner will go first. Patent Owner will then have a chance to respond, and you may each reserve time for rebuttal.

We do have electronic versions of the slides, but we ask that you refer to the slides so that the record is clear.

We also have access to the entire case file. So if you need to refer to papers, exhibits that are not part of your presentation, please feel free to do so.

We will use the clock that you see above Judge Repko as the official clock to keep track of the parties' time. I will do my best to keep an eye on the clock as well and give you a warning when I see that you're approaching the end of your argument. But I do ask that you pay attention as well.

1 Counsel for Petitioner, when you are ready, you may begin. Please
2 remember to introduce yourself, those in your party, and let us know how
3 much time you would like for rebuttal. Please proceed when you're ready.

4 MS. MANNING: Good afternoon, Your Honors. I'm Daisy Manning
5 with the law firm Husch Blackwell.

6 I'm here on behalf of Petitioner ADC Solutions Auto LLC. Here with
7 me today is my co-counsel Paul Smelcer and paralegal Anna Florian.

8 I would like to reserve 15 minutes for rebuttal. And if I may proceed.

9 This IPR boils down to one primary issue, whether a POSITA
10 would've been motivated to combine known USB charging technology with
11 known portable jump starters.

12 The short answer to that question is yes. There is no dispute that the
13 secondary references to Zhao and Paparrizos in both petitions disclose the
14 USB circuitry and connectors of the challenged claims.

15 That led to allowance. There's also no dispute that primary references
16 to Richardson and Yu teach all the remaining limitations of the challenged
17 claims with the exception of one discrete limitation in two claims of the '023
18 Patent that are only relevant to Ground 2.

19 The Petition sets forth substantial evidence of motivation to combine,
20 including numerous prior art patents, USB specifications, industry
21 publications, and expert testimony discussing the myriad advantages of USB
22 charging technology.

23 NOCO does not address any of these known advantages or evidence,
24 including the most glaring advantage of all, USB's universal compatibility.

1 Instead, NOCO relying solely on its expert's unsupported testimony
2 hones in on one known disadvantage that was admitted in the Petition:
3 USB's longer charging times compared to other charging technologies like
4 barrel chargers.

5 NOCO argues that these longer, undefined charging times are so
6 unreasonable that they trump all of the known advantages to USB charging
7 at the time of the inventions.

8 But NOCO's arguments are both irrelevant and wrong. First, NOCO's
9 charging time argument is irrelevant because the claims do not include any
10 limitations directed to charging voltages, battery capacities, or USB charging
11 times.

12 This specification is also silent on this alleged problem that NOCO
13 now raises in opposition to these IPRs, an alleged problem that was
14 evidentially so monumental that it would've outweighed all of these other
15 known advantages.

16 But nothing in NOCO's patents purports to decrease charge times or
17 otherwise improve USB charging technology.

18 In fact, '023 and '243 Patents do not even suggest or allude to any
19 problems with charging times associated with USB technology, let alone
20 provide a solution or an improvement.

21 Instead as explained in the specifications, NOCO's patents utilize
22 standard USB chargers, standard micro USB connectors, standard USB
23 cables, and an off the shelf DC-DC use converter in a conventional way.

24 Not only are NOCO's arguments that charging times utilizing USB
25 technology are relevant, they're just plain wrong.

1 As demonstrated by our expert, Dr. MacCarley, USB charging times
2 are, in fact, quite reasonable, even with portable jump starters.

3 This is unsurprising considering that the '023 and '243 patents as I just
4 mentioned are silent on this alleged problem.

5 In other words, the '023 and '243 Patents involve no more than the
6 predictable use of prior art elements according to their established functions.
7 This is textbook obviousness.

8 JUDGE REPKO: So isn't the relevant question, though, whether you
9 would combine these references, not necessarily that the invention is related
10 in that way to the charging times but that -- I think the argument is that
11 would -- one of ordinary skill in the art would've been deterred from using
12 the USB because of the charging times. How do you respond to that?

13 MS. MANNING: Yes, we disagree with that. So you are correct that
14 the relevant inquiry would be whether a person of skill in the art would have
15 modified Richarson in view of Zhao or modified view in view of Paparrizos.

16 And as of the date -- the priority date of the challenged patents, USB
17 charging technology has already become fairly ubiquitous.

18 The USB specification, Revision 1, was published in 2007. Version
19 2.0 was published in 2012.

20 The USB specifications had already established that it was achieving
21 the goal of universal compatibility.

22 We advanced a significant amount of evidence on pages 45 to 50 of
23 this '023 Petition.

24 And let me clarify. My references will be by default the '023
25 proceedings. And if anything specific to the '243, I will indicate as such.

1 So while you are correct that the motivation to combine analysis is
2 whether you would combine these known elements, we believe that we have
3 established a great deal of evidence as to why a person of skill would've
4 been motivated in the form of the USB specification.

5 Prior art patents that explicitly acknowledged all of the benefits,
6 including the lack of need for proprietary charges, the ease of use of USB,
7 and how it's becoming common to find USB ports in the vehicles before the
8 time of the invention.

9 So we believe as a whole the prior art does indicate that a person of
10 skill in the art would not have been deterred by those longer charging times.

11 And the reason for that is because especially for the second way that
12 we have argued that a person of skill would have combined these references
13 is by adding USB as an additional power source.

14 People know that USB was going to be a little slower. It's got a 5 volt
15 capability. And as of 2007, it was able to provide a current of 1.5 amps. As
16 of 2012, that was up to 5 amps.

17 That wasn't necessarily slower than barrel charger at 12 volts running,
18 however. But notwithstanding that fact, there's pros and cons in any
19 obvious analysis.

20 And we do not believe anything in the prior art part of this record or
21 any of the evidence set forth by NOCO would lead to a person of skill in the
22 art determining that the no longer charging times would outweigh all of the
23 other known advantages at the time.

24 JUDGE REPKO: Thank you. I have no further questions on that.

25 MS. MANNING: Great, thank you. So let's go to Slide 4, please.

1 So the '023 and '243 Patents are directed to the recognized problems
2 in the art with regard to battery detection and reverse polarity.

3 As the background of the inventions states and recognizes problems
4 with the prior art arose and either jump terminals or clamps, the cables were
5 inadvertently brought into contact with each other or whether the positive
6 and negative terminals were connected the opposite polarity terminal in the
7 vehicle to be jumped.

8 The background of the invention, however, makes no reference to any
9 problems with USB or charging the internal batteries of a jump starter
10 generally or the battery capacity or any of the issues that NOCO now raises
11 in these proceedings. If we could turn to Slide 5, please.

12 So again, to address the safety issues in the prior art, '023 and '243
13 Patents teach two safety features of the equal battery isolation sensor and a
14 reverse polarity sensor.

15 And the majority of the specifications of both patents focus on
16 detailed embodiments of these two safety features. And turn to Slide 6,
17 please.

18 Now I'm going to briefly go through the prosecution history of the
19 '023 and '243 Patents to highlight how we got here, how we landed on the
20 two safety features and problems in the prior art with dangerous reverse
21 polarity conditions and how we got to a point of novelty of USB input
22 connectors and circuitry.

23 So during prosecution of the '023 Patent, the original claims as filed
24 were very similar to prior patents in the same family.

1 And NOCO focused on the claim's safety features that I just
2 discussed.

3 As you will see, Independent Claim 1, which is used as the exemplary
4 claim throughout this argument did not reference anything about what type
5 of charging input was used for the jump starters.

6 However, there wasn't the pending Claim 11 that did claim a USB
7 charging port configured to provide charging power from an external power
8 source to set internal power by. If we can go to Slide 7, please.

9 NOCO submitted two preliminary amendments, one in October 2019,
10 and if you could turn to Slide 8 now, please, and then another one in March
11 2020.

12 Neither of these preliminary amendments added USB charging
13 circuitry or connectors.

14 Shortly after this March 2020 amendment, a third party, Carku, filed a
15 petition for inter partes review of the '015 Patent, a parent patent to the '023
16 and '243 Patents.

17 Then shortly thereafter in August 2020, the Examiner rejected the
18 claims of the '023 Patent, the claims that you're looking at here, finding that
19 all of the claims were anticipated by Richardson.

20 Similarly and only a few months thereafter, the Board, including
21 Judge McKone and Judge Repko here today, instituted IPR of the '015
22 Patent, finding a reasonable likelihood that independent claim of the '015
23 Patent would be found unpatentable, as anticipated by Richardson. Slide 9,
24 please.

1 It was only after those events, the Examiner's rejection of the claims
2 without USB technology during examination and this Board's institution of
3 inter partes review of the '015 Patent that NOCO added the USB charge,
4 circuitry, and USB connector limitations.

5 Shortly thereafter, the Examiner rejected the claims again in view of
6 Richardson and prior art patent of Xinfang.

7 And NOCO thereafter amended the claims to require that the USB
8 charger was an input charger. Slide 10, please.

9 The Examiner rejected those claims in view of Richardson and
10 Tinaphong.

11 In response, NOCO amended the claims to add the USB input charge
12 circuit comprises a DC-DC converter to increase charge voltage. Slide 11,
13 please.

14 Along with these amendments, NOCO argued that prior art reference
15 to Tinaphong actually taught away from the claimed invention because it
16 taught dropping down or decreasing the voltage, not increasing the voltage
17 through a DC-DC boost converter. Slide 12.

18 The Examiner subsequently allowed the claims based on the USB
19 limitations and the DC-DC converter configured to increase voltage, not
20 decrease it.

21 The Examiner also noted another prior art reference to like which also
22 found a teach away as it decreased voltage. It did not increase voltage.

23 Now despite the foregoing, Patent Owner now claims on page 23 of
24 the Patent Owner response that it, quote, does not dispute that DC-DC boost
25 conversion was known in the art at that time.

1 Now this evidently was a fact that was withheld from the Examiner at
2 the time.

3 In any event, I would also like to note that at no point during this
4 prosecution of the '023 Patent were jump starter battery capacities for USB
5 charging times discussed or referenced whatsoever.

6 The focus was entirely on boost conversion. We can go to Slide 13,
7 please.

8 I'm not going to belabor the point. The '243 Patent had exceedingly
9 similar prosecution history.

10 It had a USB charging input which was again rejected under
11 Richardson and Tinaphong.

12 And that's when the claims were amended to increase the charge
13 voltage. And if we could go to Slide 14, please.

14 And again, like the '023 patent, NOCO argued that Tinaphong taught
15 away because it decreased voltage, not increased it. Slide 16, please.

16 Ultimately, the Examiner issued another final rejection over
17 Richardson and a new reference, Balmeffrezol. I apologize for the
18 pronunciation.

19 And in response, NOCO amended the claims to still require increasing
20 the voltage.

21 But they slightly modified the language to up-converting voltage. It
22 means the same thing. Slide 16. Oh, we're right there.

23 The claims were subsequently allowed after distinguishing this new
24 secondary reference.

1 It also taught decreasing voltage. And again, like the '023 patent,
2 there was no mention of capacities or charging feeds during prosecution.

3 The focus was entirely on boosting the 5 volt input from a USB to a
4 higher voltage to charge the internal battery of the jump starter. Slide 17,
5 please.

6 Okay. So how do we get here? What does the specification say?

7 So even though NOCO now admits that DC-DC boost conversion was
8 well known in the art as of 2014 and there can be no reasonable dispute that
9 the Examiner of the '023 and '243 patents allowed the claims based on the
10 USB charging input and DC-DC converter configured to boost the USB
11 voltage, what do the patents say about this?

12 Well, the USB charging input is briefly discussed in only two places
13 in the specification.

14 First, it teaches at column 5, lines 15 to 17 that USB charge circuit 52
15 converts power from any USB charger power source, charge voltage, and
16 current for charging the lithium battery pack 52.

17 Second, it teaches at column 7, lines 21 to 25 that the USB charge
18 circuit 52 allows the internal lithium battery pack 32 to be charged using
19 standard USB charger.

20 This charge input uses a standard micro-USB connector 48, allowing
21 standard cables to be used. So it not only describes the --

22 JUDGE MCKONE: Counsel --

23 MS. MANNING: -- the standard USB -- yeah?

24 JUDGE MCKONE: -- is this discussion on the specification here and
25 the prosecution history important?

1 The USB limitation is in the claim. So we've got to evaluate that and
2 whether it's in the prior art.

3 Why are we going at length through prosecution history and
4 specification?

5 MS. MANNING: Yes, Your Honor.

6 JUDGE MCKONE: Just so I know what I'm supposed to pay
7 attention to here.

8 MS. MANNING: Understood. Based on the Federal Circuit
9 precedent which we cite in the reply brief, Paper 15 at page 8, there's two
10 cases, *Smith & Nephew v. Wright* and then *Janssen Pharmaceuticals v. Teva*
11 *Pharmaceuticals*.

12 And in these two cases, the Federal Circuit made it very clear. I have
13 a quote from the *Smith & Nephew* case.

14 An unclaimed and undisclosed feature cannot be the basis for finding
15 since the Patent Owner's patent be nonobvious over the prior art.

16 *Janssen Pharmaceuticals* likewise states that on their face, the claims
17 only recite a dosing regimen for a psychiatric patient.

18 Because what matters is the objective reach of the claims. The
19 District Court erred to the extent it effectively defined its obviousness
20 inquiry as one concerning the generalized suitability of dosing regimen.

21 What these cases mean is that if you -- that you cannot distinguish
22 your patent claims from the prior art if the patent claims do not claim those
23 features.

1 And especially if the patent does not even discuss or disclose those
2 features and does not provide a solution to the alleged problem that's being
3 raised by the Patent Owner in hindsight.

4 In fact, NOCO's claims are not limited to any particular battery,
5 capacity, voltage, or to any USB charging times.

6 So arguably, a 48 volt battery of any capacity with any resulting
7 charging times would be covered by these claims.

8 And so we believe it is relevant under Federal Circuit precedent that
9 the '023 and '243 Patents do not acknowledge a problem with charging
10 times, do not acknowledge issues.

11 We're charging so-called high capacity batteries which NOCO does
12 not define where that threshold is between low and high capacity batteries.

13 When these problems are not at all claimed, these features are not
14 claimed.

15 These problems are not discussed in the patent, that they have very
16 little if no relevance to the obviousness inquiry here.

17 JUDGE MCKONE: I don't understand Patent Owner to be arguing
18 that these are limitations in the claims.

19 Rather, this goes to the reasons why an artisan would or would not
20 combine the references.

21 So charging time might be relevant to why someone might not want to
22 combine the two references as, for example, you proposed.

23 I don't understand Patent Owner to be arguing that this is a claim
24 limitation that you have to prove.

1 I'd be more interested in hearing why we should be combining these
2 references in light of Patent Owner's arguments that these are factors that a
3 skilled artisan would have considered when combining -- deciding whether
4 to combine the references.

5 MS. MANNING: Absolutely. So let me go straight to the evidence
6 that we have presented regarding motivation to combine.

7 So if we could please turn to Slide 37. So we have provided two
8 reasons a person of skill in the art would've been motivated to modify the
9 design of Richardson to include USB.

10 One is to replace the existing charging circuitry. Richardson was
11 asked about the charging system or a Zhao step-up charging system as an
12 additional and alternative pathway for charging the jump starter batteries.

13 We explained in the Petition and Dr. MacCarley also testifies that
14 with the first option, this option allows the supplier to avoid the need to
15 supply a proprietary charger or other type of AC power brick.

16 We discuss that. Dr. MacCarley discusses that at Exhibit 1003,
17 paragraph 88.

18 In the second option, there might be some increased cause for
19 providing a second USB input connector and a DC-DC convertor which is
20 also explained by Dr. MacCarley in paragraphs 88 and 89 of Exhibit 1003.

21 Providing this alternative pathway would enable a user to charge the
22 jump starter when a proprietary charge is unavailable, lost, or damaged.

23 And I have actually been thinking about this second option for
24 modifying Richardson at length recently.

1 For example, as you may have seen in the news, there was a tornado
2 that touched down in St. Louis a few weeks ago.

3 I was lucky, but I didn't have power for several days. And my car
4 roughly had two USB charging ports.

5 And I was able to keep every one of my rechargeable electronic
6 devices powered throughout a power outage.

7 While it took a little longer as expected, I still had powered operable
8 devices.

9 And this is what Dr. MacCarley has discussed at length. Now if we
10 jump to Slide 39, you don't just have to rely on Dr. MacCarley's testimony as
11 to why a person of skill in the art would've been motivated to use USB
12 notwithstanding the longer charging times which I'm going to get in a
13 moment to that.

14 The charging times are not unreasonable. But before we get there, I'd
15 like to focus on the advantages that were very well known.

16 USB stands for Universal Serial Bus as I'm sure you're aware. And
17 even the USB specification, seven years before the priority date of the '023
18 and '243 Patents acknowledges that even as of the time of Revision 1 that
19 USB has allowed portable devices to use the same USB cable to charge
20 either a PC or from a dedicated charger. We can go to Slide 40.

21 Okay. Now even the prior art packets discuss these same or very
22 similar motivations.

23 Prior art patent is out, stated that in order to achieve the greatest user
24 convenience, modern mobile devices should support 5 volt any universal
25 serial bus charging.

1 JUDGE MCKONE: So this is modern mobile devices here in this
2 paragraph.

3 But there's some testimony that says really the vehicle jump starters
4 are more like lawnmowers, snowblowers, or powered tools. So how should
5 we view this sentence in view of that testimony?

6 MS. MANNING: First, I would say that that testimony is
7 unsupported, uncorroborated.

8 That is the testimony of Dr. Fayed. Notwithstanding that, NOCO has
9 not provided a line where they divide low capacity batteries versus high
10 capacity batteries.

11 For instance, laptops come in a variety of battery capacities all the
12 way up to 40 to 60 watt-hours.

13 The battery capacity disclosed in the '023 and '243 Patents, it's 29.6
14 watt-hours.

15 I supposed NOCO was stating that as a high capacity battery. I do not
16 know how it differs from other mobile devices.

17 We're talking about a portable jump starter. Just like the prior art
18 discusses, portable electronic devices.

19 We're talking about rechargeable portable electronic devices
20 regardless of battery capacity.

21 We don't even know where that line is. Is the line at 10 volts, 12
22 volts, 16 volts? NOCO does not indicate that. But using USB technology --

23 JUDGE MCKONE: Petitioner, since Petitioner has the burden here
24 and we don't know where that line is, wouldn't that favor Patent Owner?

1 MS. MANNING: We do not believe -- because the claims do not
2 require any limitations on voltage or battery capacity, it was not our burden,
3 I think, to define where those capacities are because the USB charging
4 technology used the same way regardless of the battery capacity as the
5 portable or mobile device it is charging.

6 JUDGE MCKONE: Patent Owner pointed out that Richardson is
7 dealing with not just a vehicle charger but a large vehicle charger that would
8 be on wheels that is used to charge a fleet of trucks and then made the
9 argument that maybe you shouldn't be relying on low -- I guess low voltage
10 and current systems like USB to try to charge these large capacity batteries
11 in order to recharge or to jump start a fleet of trucks. I think that's the
12 question that we're being asked to answer here.

13 MS. MANNING: Yes, so, Your Honor, NOCO's argument regarding
14 Richardson, that it is an embodiment required to charge up to 48 volts is
15 unsupported by Richardson itself.

16 Richardson repeatedly characterizes its invention without regard to
17 voltage capability or not. And it never references battery capacity. We
18 could go to Slide 27, please.

19 For example, the summary of invention of Richardson, it explains the
20 present invention, provides an apparatus method for temporarily delivering
21 supplemental power to an electrical system of a vehicle.

22 It also states the system includes one or more internal batteries and
23 capacitors to provide power of the battery of the vehicle to be jump started.

24 There's no discussion of voltage or battery capacity. Go to Slide 28,
25 please.

1 Paragraph 34, Richardson is the most relevant portion of Richardson
2 with regard to this argument.

3 It explains that the jump starter 10 may be configured for 12, 18, 24,
4 30, 36, 42, or 48 volts, for example, using a selector jumper.

5 There's nothing mandatory about this. The invention is not defined by
6 being able to select the full array of voltages that are discussed in paragraph
7 34.

8 Paragraph 34 also goes on to provide some more detailed
9 embodiments wherein if both batteries 23 or 12 volt batteries, the system
10 may be configured for 12 volts or 24 volt operations.

11 In that embodiment, you couldn't even get up to 48 volts with two 12
12 volt batteries in series.

13 The second example is similar but it adds a 6 volt battery to provide
14 18 to 30 volt options.

15 Richardson further explains at the end of this paragraph that it should
16 be understood that two or more batteries of the same or different voltage
17 levels may be used to meet voltage requirements of the vehicle to be started.

18 Indeed as Dr. MacCarley testified in paragraph 88 of his first
19 declaration at 1003, that most cars have a car battery of generally 12 volts.

20 So Richardson is not limited to a jump starter that is capable of going
21 up to 48 volts. In fact --

22 JUDGE REPKO: Before you go on, though, this is great. This is a
23 great paragraph.

24 Wouldn't you say that even if it's not capable, you're saying it's
25 possible to use it.

1 Wouldn't that degrade the performance of Richardson, right? You
2 have all of these options here.

3 It goes up to 48. And under your configuration, you're saying it can't
4 even reach that level.

5 It can't go the full range of what is disclosed as being capable of doing
6 here in paragraph 34.

7 So doesn't that go toward the weighing of these advantages and
8 disadvantages when you see that Richardson is actually being -- the
9 performance of Richardson is being degraded and not being able to fulfill its
10 full potential here.

11 MS. MANNING: I would disagree with that premise. I think in any
12 patent, you're going to have numerous embodiments that are disclosed.

13 And depending on the application, you might want to choose one
14 embodiment over the other.

15 I'd also like to point out that the claims of Richardson are not limited
16 to any voltages either, that they leave that wide open.

17 Now I think the idea that Richardson is intended only for commercial
18 applications is also not supported by Richardson.

19 And so you do not need the 48 volt capability which as Dr.
20 MacCurley testified is really limited to, I think, one vehicle that he was
21 aware of that even required those kind of voltage inputs.

22 Whereas a standard user is going to be charging a 12 volt battery.

23 In fact, if you can go to Slide 30, Richardson -- or NOCO claims that
24 Richardson is limited to commercial applications, Patent Owner response,
25 page 9.

1 They cite -- NOCO cites paragraph 14 of Richardson. Richardson
2 does not discuss any commercial applications in that paragraph.

3 In fact, Richardson does not use the word commercial whatsoever.

4 The closest Richardson comes to discussing a commercial application
5 in contrast to standard consumer application like your car died sitting in your
6 driveway and you need to jump start it to get to work is in paragraph 55.

7 And so I brought Richardson up, this slide, just so you can see that
8 Richardson claims do not require any voltage.

9 And in fact, the Independent Claim 26 does not even require the
10 selection of a voltage.

11 JUDGE REPKO: But going back to the question of obviousness,
12 right?

13 We're thinking about weighing the advantages and disadvantages.

14 So you're saying advantages is ubiquitous. It's conventional. But at
15 the time of the invention, was it ubiquitous in jump starters and lawnmowers
16 and snowblowers, or other high capacity versus the cell phones and other
17 small electronics?

18 So that's sort of the advantage of it on weighing toward obviousness.

19 And so what about the disadvantages? Here again with Richardson,
20 you're sort of weighing that.

21 And you're saying, well, the claims don't have a specific voltage.

22 But you can't -- even if there is that one vehicle, you can't charge it
23 now using Richardson.

24 So I mean, the advantages of having the USB compared to the
25 disadvantages, I mean, can you speak a little bit to that?

1 What are the advantages that are going to outweigh the loss of the
2 ability to charge that one vehicle that you mentioned?

3 MS. MANNING: So I would actually disagree that you could not
4 have Richardson with the capability of up to 48 volts and still use USB as an
5 additional charging input.

6 I think the charging time as an alternative are still quite reasonable.
7 So in paragraph 55 of Richardson which NOCO points to frequently
8 throughout its briefing, that is where it discusses the option of rapid
9 recharging of the internal batteries of the jump starter through charged
10 vehicle batteries when you're charging a fleet of vehicles.

11 That is the closest it comes to a commercial application and it is the
12 very last substantive paragraph of Richardson and it's described as optional.

13 Earlier on the specification, it discusses a different battery charger
14 that's not shown. If we could go to Slide 47, please.

15 JUDGE REPKO: But what are the advantages --

16 MS. MANNING: Slide --

17 JUDGE REPKO: -- to offset that, though? That is still some
18 advantage -- or some disadvantage.

19 Are there any advantages that sort of offset that loss of functionality?

20 MS. MANNING: Yes, I would argue that the additional ability to
21 charge, so you don't have a fully charged vehicle battery to reverse charge
22 your jump starter.

23 You're going to need to use your alternative battery charger. Now
24 barrel chargers as discussed, I believe it's in reference to Yu, a 12 volt, 1
25 amp barrel charger that Dr. Fayed did testify was standard in jump starters at

1 that time did not produce much more power than the USB specifications
2 from 2007 which as this chart shows in the column second to the right at 7.5
3 watts power.

4 Or even by 2012, you could deliver 25 watts power with USB. That's
5 more than a barrel charger would provide and therefore charge faster.

6 So before we get to these charging times, I can go back some of the
7 slides that discuss additional evidence to support Dr. MacCarley's discussion
8 of the advantages. Let's go to Slide 41.

9 JUDGE REPKO: Are you also saying there are essentially two
10 disadvantages that we've identified so far?

11 It's with the charging times and then different functionality, B equals
12 Z, you can no longer charge -- vehicle batteries you can no longer charge.

13 So yeah, it would be interesting to see, like, what offsets that? What
14 outweighs that in terms of the convenience?

15 MS. MANNING: So I'm sorry. Could you repeat that question? I
16 want to make sure I'm answering your question properly.

17 JUDGE REPKO: Right. So we're going to weigh the advantages and
18 disadvantages of using this USB, right?

19 And so we're thinking about the loss of functionality, the slower
20 charging times, the voltages that it can't handle.

21 What are the advantages that we can point to, to offset that, offset
22 those disadvantages that might -- when we're balancing the disadvantages
23 and advantages, what can we say actually outweighs that?

24 MS. MANNING: Yes, so again, I keep on coming back to the
25 universal compatibility.

1 Paparrizos is a secondary reference used in Ground 2. It expressly
2 discloses a mobile device.

3 And it doesn't just say small mobile devices or low battery capacity
4 devices or moving batteries packs with two or more lithium ion batteries or
5 three stacks or so.

6 That's exactly what's disclosed in '023 and '243 Patents. It further
7 discusses how USB specifications have become very popular.

8 And consumers are used to being able to charge their devices with
9 USB. We can go to the next slide, 42, please.

10 Ease of use was another issue or consumer demand by the priority
11 date.

12 USB ports were now common in cars. And in fact, if you go to the
13 next slide, 43, Kelley Blue Book article indicated that USB ports were the
14 number one must have feature in new cars.

15 As Dr. MacCarley explained, paragraph 90 of Exhibit 1003, the
16 tremendous increase in USB ports in cars at the time would've enabled users
17 to store these jump starters in their cars to recharge so they were ready and
18 available to use when needed.

19 Also with regard to the fact that NOCO does claim that there were no
20 jump starters with USB inputs at the time of the invention, let's make two
21 points about that.

22 Number one, adoption of that argument would essentially eviscerate
23 103.

24 We're bringing obviousness grounds. We are not bringing in an
25 anticipation argument here.

1 But I also say that they're wrong. And we have brought in another
2 reference. If we can go to Slide 44.

3 Exhibit 1023 is a Chinese utility model that was filed months before
4 the priority date of the '023 and '243 Patents.

5 You can see it was filed on April 18th, 2014, priority date of the
6 challenged patent since July 3rd, 2014.

7 However, because this didn't publish until August of 2014, it does not
8 qualify as prior art.

9 However, as described in this patent, the Chinese utility model
10 discloses a portable jump starter with USB charging input, including voltage
11 boost circuit. Next slide, please.

12 545 of the Chinese utility model demonstrates that all of the
13 advantages I've been discussing were acknowledged.

14 Essentially, this utility model really summarizes all of these
15 advantages.

16 When the emergency automotive starter power supply is out of power
17 and the user does not carry a specialized charger, the user can charge the
18 emergency automotive starter power supply using a common universal
19 mobile communication device charger through the USB interface.

20 This avoids the need to configure a specialized charger separately
21 when charging the emergency automotive starter power supply.

22 Now while this is a prior art under Federal Circuit precedent,
23 including *Cross Med v. Medtronic* which is cited in the Petition at page 49,
24 that non-prior art that demonstrates that at the time of the invention, other
25 persons of skill in the art identified the same problem and solution.

1 This can be evidence in motivation to combine. Although I venture to
2 say there is no problem in the solution identified in the '023 and '243 Patent.

3 Again, what evidence indicates is that the inventors of the '023 and
4 '243 Patents may have recognized USB's slower charging times.

5 They were known in the art. But they also knew the known
6 advantages and decided to use it anyway with absolutely no improvement to
7 these alleged charging time problems.

8 So the '023 and '243 Patent claims would cover a 48 volt battery just
9 like that or jump starter battery disclosed in Richardson in an embodiment
10 with USB charging with, again, no modifications from the charging circuitry
11 to improve those charging times. And if we can go to Slide 47.

12 Dr. MacCarley -- because NOCO and its expert, Dr. Fayed, did not
13 actually perform any calculations to demonstrate what these charging times
14 were, Dr. MacCarley did in the Petitioner's Reply.

15 And as Dr. MacCarley testified, depending on your application, none
16 of these charging times are necessarily unreasonable.

17 At least NOCO does not give us any factors as to what it or a person
18 skill in the art would've considered unreasonable.

19 Here if you take, say, Example 2, 12 volt output voltage, standard car
20 battery with an output car jump starter, 500 amps.

21 Even under 2007 specification that delivers 7.5 watts of power, it
22 would only take .44 hours to charge, less than 30 minutes to charge after a
23 single jump start.

1 And then even if you took the 29.6 watt-hour battery of the '023 and
2 '243 Patents and you fully depleted them, say, you put it in your garage for a
3 year and didn't use it and it completely lost its charge.

4 All you would have to do, the 29.6 watt-hour capacity is roughly 11
5 times the power discharge for a single jump start.

6 So you would just need to take the charging time, multiply it by 11,
7 and you've got a little under 4 hours to recharge a fully depleted 29.6 watt-
8 hour battery.

9 Even if you take the higher voltages discussed by Richardson, that's
10 with the second half of the calculations are at 48 volt output voltage.

11 That 500 watts after a single jump, that's 1.78 hours to recharge.
12 Depending on your application, especially in Richardson, if you're using the
13 USB charging input as an alternative charging source when you don't have a
14 fully charged vehicle battery, these charge times are not necessarily
15 unreasonable at all.

16 And in fact, NOCO doesn't explain to us where that line is or factors a
17 person of skill in the art would've considered for reasonable or unreasonable
18 depending on the application.

19 JUDGE REPKO: You're making the argument that these are
20 reasonable.

21 What are we comparing against? Do you have any data from the
22 existing chargers, non-USB?

23 MS. MANNING: Yes, so Yu discloses a 12 volt, 1 amp barrel
24 charger to charge its internal battery.

1 Yu is cited as the primary reference in Ground 2. That would only
2 provide 12 watt power.

3 So that's not even twice as much power as, say, the 2012 stock. And
4 in fact, it's only half the power of the 2012 USB specification that brought
5 25 watts.

6 JUDGE REPKO: Well, the charging times, I'm looking for the data
7 on the charging times for that, not just the output.

8 MS. MANNING: It's just -- if you can go to Slide 47, please. So as
9 Dr. MacCarley explained, the way that you calculate charging time is you
10 first charge the amount of energy discharge that needs to be recharged.

11 You take your voltage times your amps times your hours to get watt
12 hours.

13 And then you divide that watt hours by the amount of watt delivered
14 to recharge.

15 So in this example, if you go back to 47, please. If you were using a
16 12 volt, 1 amp charger, that would deliver 12 watts of energy.

17 And that's in contrast to the 7.5 watts of USB and the 25 watts of
18 charging time. So it's just a simple plugging in the different variables.

19 JUDGE REPKO: Right, right. So --

20 MS. MANNING: So here's a --

21 JUDGE REPKO: -- I guess let me ask the question in a different way.

22 MS. MANNING: Okay.

23 JUDGE REPKO: Perhaps I wasn't clear. So let's say that -- you
24 originally said earlier there are certain voltages that the USB can't reach,
25 right? That's correct.

1 MS. MANNING: No, I do not think that's correct. Sorry. Let me
2 back up.

3 USB permits 5 volts. And I don't believe there's a limit on how much
4 you can boost. At least you can boost it up to 48 volts.

5 JUDGE REPKO: Okay.

6 MS. MANNING: And that's demonstrated by Exhibit 1047.

7 JUDGE REPKO: All right. And then so the standard charges at the
8 time, what was their output voltage?

9 What was sort of the expected output voltage at the time? Because
10 you can just change that variable and that's going to determine the amount of
11 time, right, the charging time. So what was sort of the expected one? We
12 had data on that.

13 MS. MANNING: Yes, so the reference to you, Exhibit 1008 and
14 Figure 9 and then paragraph 21 discusses a traditional 12 volt, 1 amp barrel
15 port charger for its internal battery.

16 JUDGE REPKO: So 12 was sort of the standard then, you think,
17 according to you?

18 MS. MANNING: A barrel port charger at that time and a jump starter
19 before USB was available.

20 JUDGE REPKO: Right.

21 MS. MANNING: So we're talking about 12 volt, 1 amp versus 5 volt,
22 1.5 amp or 5 volt, 5 amp.

23 JUDGE REPKO: I see. Thank you. That clarifies it. Appreciate
24 that.

25 MS. MANNING: Thank you.

1 JUDGE ROSS: Just to jump in for a second, you have one and a half
2 minutes left in your opening.

3 MS. MANNING: Yes.

4 JUDGE ROSS: Of course, you can go into your rebuttal time if you'd
5 like.

6 MS. MANNING: If there aren't any more questions, I would like to
7 save the remainder for rebuttal. Thank you very much.

8 MR. SAUER: Hi, Your Honors. Joe Sauer for Patent Owner NOCO.
9 And I'm here today with co-counsel, Dave Cochran and Jack Graves.
10 I'm going to try to share my screen here. Just bear with me a second.
11 I'd like to save ten minutes --

12 JUDGE ROSS: Mr. Sauer, when you get -- thank you.

13 MR. SAUER: Ten minutes, please. Can you see my screen okay?

14 JUDGE ROSS: We can. Thank you.

15 MR. SAUER: Right. And I'm using the microphone on my
16 computer today.

17 So if for some reason you can't hear me, please let me know. So we're
18 talking today, as Your Honors pointed out, about two NOCO patents.

19 And I'll refer to them today as the '023 and the '243 Patents. Before I
20 get to the arguments before the Board, I thought it'd be helpful to just for a
21 couple minutes give you a little background about NOCO and how these
22 patents fit into their business.

23 NOCO is a Cleveland-based company that was established back in
24 1914.

25 And they initially made a product for preventing battery corrosion.

1 These patents relate as Counsel said portable jump starters which
2 NOCO was the first to bring to the market back in 2014 under the brand
3 name Boost.

4 So if you hear me refer today about NOCO's Boost jump starter, that's
5 what I'm talking about. In fact, I have one right here. This is the Boost
6 jump starter.

7 Turning hopefully -- let's see. Sorry. There we go. Turning to Slide
8 3, there are six instituted grounds across the two IPRs.

9 The grounds are all primarily based on two combinations, Richardson
10 in view of Zhao and Yu in view of Paparrizos. That's how you pronounce it.

11 Looking at Slide 4, Slide 4 shows Independent Claim 1 of the '023
12 Patent.

13 And Slide 5 shows Independent Claim 1 of the '243 Patent. And I
14 think as Petitioner has already explained, most of the issues before the
15 Board, they relate to the language that highlighted in Slides 4 and 5 the
16 required jump starter apparatus with the USB input.

17 It's used to charge internal power supply and a USB charge circuit that
18 increases or converts power from the USB supplies. Or it can be used to
19 charge the power supply in the jump starter.

20 And you can see a detailed diagram of this USB charge circuit. And
21 I've put it here on the slide.

22 And it's in Figures 2C of the patent, and it spans several pages of
23 drawings.

1 So we've put them together for you here. And the USB charge circuit
2 does everything here within the dotted box that's labeled 52 that spans three
3 drawing figures.

4 So ADC tries to make this charge circuit out to be trivial. And the
5 POSITA would just hook up a USB charger to a high power jump start like
6 Richardson or Yu. No problem.

7 But as you can see from these three figures, there's really nothing
8 trivial about it.

9 In Figure 2C shows the kind of circuit you would need to safely
10 implement the USB charge circuit and a high power jump starter.

11 Now understand the alternative to this, the 12 volt barrel charger that's
12 used by everyone else at the time for this type of device doesn't require any
13 of this complexity at all.

14 Quickly before I get to the substance of Petitioner's allegations, I
15 thought it was worth one more time just to remind the Board that this is at
16 least the fifth time that these claims or similar claims directed to a jump
17 starter with a USB charger in this family have been reviewed.

18 Both Richardson and Yu were reviewed by the patent office during
19 prosecution.

20 The PTAB and the Federal Circuit already considered whether the
21 person of skill in the art would combine -- would put a USB charger into
22 Richardson and concluded that they wouldn't.

23 The Petitioner says that's because the secondary reference in front of
24 the Board at that time wasn't as good as the secondary references they're
25 relying on now.

1 But understand their argument was essentially the same. Their
2 argument then before the PTAB and before the Federal Circuit was it
3 would've been trivial to put a USB charger into Richardson's jump starter.

4 And the Board and the Federal Circuit disagreed. And that's the same
5 argument they're making today. Make no doubt about it.

6 And maybe most notably, the same exact Petitioner brought the same
7 combination of Richardson and Zhao unsuccessfully at the ITC.

8 And the ITC's conclusion that the person of skill in the art wouldn't
9 have combined these two references is probably significant because the ITC
10 had the opportunity not only to listen to the testimony of at least our expert
11 and the inventors.

12 But they also had a chance to see Richardson's device which I'll talk
13 about here in a minute. But it was a heavy duty jump starter, and I think --

14 JUDGE MCKONE: Counsel, Counsel. You talk about the ITC case
15 here.

16 All I remember seeing in your brief is maybe one or two sentences
17 that mention the ITC case.

18 We don't have anything. You haven't argued the record of that case or
19 compared it in any kind of detail to what we're dealing with in the record of
20 this case, have you?

21 MR. SAUER: Sure, Your Honor. And my only point and I believe
22 that was addressed mostly in our preliminary Patent Owner response.

23 I mainly point to these same arguments have been around and around
24 and this is the fifth time.

1 I just wanted to point that out one more time for the record before I
2 jump into it here.

3 Turning to Slide 8, sets forth -- and these arguments are set forth in
4 the Patent Owner response and the Surreply.

5 There are a number of reasons that the Petitioner's challenges should
6 fail.

7 And I want to just focus on a few of these reasons today. First, turn to
8 Slide 9 where I think there's the biggest disconnect and where the Petition
9 really goes wrong is this serious misrepresentation of the nature of jump
10 starters and the state of the art in 2014.

11 And this cuts across all the grounds. And I'll get into specifically
12 Richardson and Yu in a moment.

13 But I thought it was first beneficial to talk about that for a minute.

14 Turning to Slide -- excuse me -- 10. First, to fully understand the
15 Patent Owner's perspective on these patents, you need to appreciate the
16 power engineering that's required to make a portable jump starter like this
17 possible.

18 It's really no small feat to jump start an automobile with a device that
19 can fit into your hand.

20 And Petitioner has quibbled about the exact numbers, but there's
21 really no dispute it takes a ton of current to jump start your automobile and
22 even more current to jump start a larger vehicle like a truck or a tractor
23 trailer.

24 That's why vehicle battery jump starters can be dangerous if you don't
25 handle them properly.

1 And most jump starters today and in 2014 for that matter were
2 designed to supply over 1,000 amps of current. This one in my hand says
3 it's rated for 1,500 amps.

4 Petitioner had argued that only 400 amps is necessary. I don't think
5 that's right. But honestly, it's not relevant.

6 Because either way, that's a huge amount of current. And the only
7 way you can get that amount of current, whether it be 400 amps or 1,000
8 amps, 1,500 amps out of a handheld device like this.

9 And to be able to use that device in a commercially viable way where
10 it can be stored in the trunk of your car until you need it and then
11 successfully jump start the car is by utilizing a powerful high capacity
12 battery that can store a ton of energy.

13 There's really no dispute about that. And our expert has explained it.

14 Now the Petitioner has focused on their initial Petition that maybe
15 they're backtracking from was on the voltage of the jump starter battery and
16 whether it would be obvious to step up USB, charge a battery to that voltage.

17 But that's probably not the critical issue. The issue is the amount of
18 power that you need to store in the jump starter battery to be able to operate
19 effectively and consequently how much power and time is necessary to
20 recharge to replenish these batteries once they've been depleted.

21 But to appreciate this, you really need to think of a portable jump
22 starter more like a power tool than a consumer electronic device.

23 And as I've highlighted on the slide here, our expert explained the
24 jump starter's power requirements are really more equivalent to an electric

1 lawnmower or a cordless power tool than they are to a cell phone or other
2 consumer electronic device. Now --

3 JUDGE REPKO: Can you explain a little bit in terms of, I guess, the
4 estimated charging times and the expectations of the consumer and how long
5 they would expect to wait for charging?

6 We saw the table that was presented by Petitioner. Put that argument
7 in terms of that table and kind of explain that a little bit more about the
8 expectations of the consumer.

9 MR. SAUER: Sure. And first of all, there's all sorts of problems with
10 the Petitioner's calculations. They didn't put them into the Petition that came
11 into the reply brief.

12 JUDGE MCKONE: Can we hold on -- can we hold on one minute?

13 MR. SAUER: Sure.

14 JUDGE MCKONE: We're having technical issues for Judge Ross.
15 We want to get her back on. Maybe now we can pause the timer.

16 MR. SAUER: Sure. No problem.

17 JUDGE MCKONE: Technology works great most the time. Every
18 now and then we have a little bit of a hiccup.

19 MR. SLAY: Hello, Judge Ross. Can you hear me?

20 JUDGE MCKONE: Give me a sec.

21 MR. SLAY: Hello, Judge Ross. Can you hear and see us?

22 JUDGE ROSS: Yes, thank you.

23 MR. SLAY: All right. Is your camera on? Oh, there it is. Okay.
24 Thank you.

1 JUDGE REPKO: Judge Ross, how much time should I put back on
2 the clock? I wasn't sure when you actually dropped off.

3 JUDGE ROSS: It hasn't been very much time, maybe a minute and a
4 half. It was pretty quick.

5 JUDGE REPKO: Okay. Let me put that back on there.

6 MR. SAUER: Should I start again?

7 JUDGE REPKO: Just a moment.

8 MR. SAUER: Take your time, please.

9 JUDGE REPKO: All right. I'm going to start it up now. Thank you.

10 MR. SAUER: Sure. And Your Honor's question, Judge Ross, I don't
11 know if you heard it, was asking me to address the time expectations for
12 recharging.

13 And I believe the calculations of the Petitioner on that in their chart,
14 first, to the expectations.

15 Despite their calculations which I can get into if you like, remember
16 this isn't really hypothetical.

17 NOCO's Boost jump starter that was released in 2014 had a USB
18 charger on it.

19 So we know exactly how long it took, 2014 era USB to charge this
20 type of device.

21 And it took a half a day to 12 hours. And it was four to eight times
22 longer than it would have taken using a traditional barrel charger.

23 And that's in the deposition of the co-inventor Rick Stanfield that
24 Petitioner actually put into the record at Exhibit 1046.

1 So this isn't really some hypothetical question that requires new
2 calculations in a reply brief that we don't have the opportunity to give expert
3 reply to.

4 The fact is before NOCO's insight in putting USB into a jump starter,
5 this was considered to be an unreasonably long amount of time, four to eight
6 times longer than the standard barrel charger.

7 And especially since there was no recognized problem with the
8 existing barrel charger.

9 With that, let me back up for a minute. Slide 11, because I think
10 much of the disconnect here and much of Petitioner's arguments here and in
11 their briefing are directed to whether it would've been desirable, would've
12 been a good idea in 2014 to add USB charging to a portable jump starter,
13 whether the pros outweigh the cons.

14 But before you really even get to that question, we need to remember
15 that the desirability to make a prior art combination is only part of the
16 motivation to combine analysis.

17 To establish motivation to combine, the Petitioner first needs to show
18 the recognition in the field of a known problem that needs to be solved.

19 And ADC hasn't done this and they can't be in 2014, there was no
20 recognized need for universal charging in a jump starter for any other similar
21 high powered tool.

22 It was limited to consumer electronic devices. And what the
23 Petitioner I think fails to recognize, it was the anticipation of this need by the
24 inventor, Jon Nook that provided really the invented spark for adding USB
25 to charge the Boost jump starter.

1 And so it's the recognition of this problem by the inventors, especially
2 Jon Nook, it's a big part of the invention itself here.

3 And that's detailed also in the declaration of co-inventor Rick
4 Stanfield which I think is notable because even the co-inventors, even Rick
5 Stanfield and the other inventors, other than Jon Nook, didn't recognize this
6 need to put USB into a jump starter.

7 In fact, they thought it was a bad idea. It was only Jon Nook's
8 foresight and his inventiveness that made this happen.

9 And now after NOCO started putting USB into jump starters in 2014,
10 the industry, the quickly followed suit and started doing the same.

11 But prior to NOCO's Boost jump starter, there was no recognized need
12 in the field.

13 So there can be no motivation to combine. And the best evidence of
14 this is the prior art that's relied on by the Petitioner.

15 Now the Petitioner recognizes, I think I said earlier, that by 2014,
16 USB charging had been around for a long time.

17 It'd been around for many years. It was well known. But despite this,
18 neither the Petitioner or the patent office or any other of the challengers to
19 NOCO's patents have been able to identify a single prior reference that
20 suggests the use of USB to charge a high powered device, any high powered
21 device let alone a jump starter.

22 And this is because, as I mentioned, there wasn't a recognized need for
23 universal charging in a jump starter until NOCO had the inventive foresight
24 to add one.

1 And this really should be the end of the inquiry. Without a recognized
2 need in the field, there can't be a motivation to combine and there's no need
3 to really even get into whether the combination is a good idea or whether the
4 benefits outweigh the drawbacks.

5 Now here I should -- or I can turn to the Wang utility model which is
6 Exhibit 2023 that the Petitioner was just talking about with reference to
7 Slide 44.

8 You might want to pull up their Slide 44 and address that. The Wang
9 utility model is not prior art.

10 And it's our position in view of the recent decision in *Qualcomm v.*
11 *Apple* that just came down in April that it should not be considered here
12 under Section 311B.

13 Now there's obviously no briefing on that because the case only came
14 down in April and we'd be happy to provide supplemental briefing if you'd
15 like.

16 But the gist of it is that like the prior art that was at issue in the
17 *Qualcomm* case, if the Wang utility model is relied on here, it would be a
18 gap filling reference.

19 It provides a necessary component of the IPR grounds that's not
20 provided by any other prior art reference -- by any prior art reference.

21 So it's more of a mere background to show the general knowledge and
22 the art for claim construction or something like that.

23 So the reasoning that *Qualcomm* applies, it should be excluded from
24 IPR under Section 311B under the reasoning of that case.

1 And further, even if it considered, you have to understand that this
2 reference is highly, highly suspicious.

3 And to understand that, you have to look at -- you have to back up a
4 minute and look at the circumstances and the timing that surrounds it.

5 This Wang utility model was filed in April 2014. The patent family
6 that led to these patents at issue today were filed in July 2014.

7 And the Boost jump starter was then released in September that year,
8 September 2014.

9 So understand the product design for Boost was complete when the
10 patent was filed.

11 And you can tell that by the detail of the schematics and the figures.

12 And with a completed design, what was happening is back in late
13 2013, early 2014, same time this utility model was filed, NOCO was
14 meeting with manufacturing companies in China to find the manufacturing
15 partner for this device.

16 And including numerous companies in this exact same industrial park,
17 the Xinghua (phonetic) industrial park from whence this utility model was
18 filed.

19 And I understand this is a giant industrial park with a bunch of
20 companies.

21 And NOCO met with several over there. And lo and behold at the
22 same time --

23 JUDGE MCKONE: Are you trying to say that the inventors of this
24 utility model took this from your client?

25 MR. SAUER: Well, that's just --

1 JUDGE MCKONE: And if you are, let's see some evidence of it
2 otherwise.

3 MR. SAUER: Well, I can't say that, right, because that's the --
4 (Simultaneous speaking.)

5 MR. SAUER: Sure. But my point is to get to the bottom of that
6 would require discovery that's just not available in an IPR setting. And this
7 is precisely why --

8 JUDGE MCKONE: Then why are you arguing it here today?

9 MR. SAUER: Well, I'm only arguing it here today -- I'm only raising
10 the issue because our position on that -- our contention on that is based on
11 the recent decision in *Apple v.* -- or *Qualcomm v. Apple* that just came down
12 in April.

13 So I wanted to put that on the record. And if Your Honors need
14 further briefing on that since we weren't able since it was after briefing was
15 closed, in this case, we'd be happy to supplement.

16 JUDGE REPKO: I do want to circle back to the consumer
17 expectation and charging times. To me, that's an important issue. And they
18 did say -- Petitioner presented some evidence about consumer demand.

19 And I characterize USB ports as being in small electronics. But they
20 do have some evidence in the record here that says that the USB ports were
21 common in cars. Can you speak to that issue?

22 MR. SAUER: Sure. They were common in cars, Your Honor, so that
23 you could charge your cell phone or other consumer electronic device.

24 You weren't using the USB to charge the car. In fact, that would be
25 more akin to what is happening here with the jump starter.

1 Understand that USB in 2014 was directed to consumer electronic
2 devices.

3 And then the standard started to -- at that time, did move to some high
4 powered devices, higher powered devices.

5 But that was so you would charge your tablet or maybe some small
6 laptop.

7 It wasn't until quite a bit after that, that when you moved finally to
8 USB-C that you even had the capability of charging much higher powered
9 devices.

10 But even today, even with the ability of -- the availability of USB-C,
11 other than jump starters thanks to NOCO's innovation, you wouldn't look to
12 USB to charge this kind of high power tool.

13 I think we all have rechargeable power tools in our garage like a
14 power drill or maybe even a rechargeable lawnmower.

15 You wouldn't go in there expecting -- your garage expecting to see
16 USB-C to power these things.

17 It's just not the reason for USB. The need was so that you can have
18 universal charging for your gadgets, your phone, your other related devices,
19 not for power tools. And they have no evidence of --

20 JUDGE REPKO: Yeah. Well, I guess when we're thinking about this
21 in terms of your argument, though, your argument is someone would've been
22 deterred by these long charging times.

23 Depending about weighing the benefits and advantages of this, their
24 argument is, well, this is ubiquitous.

1 In fact, it is in your cars. This is something that you'd have around the
2 car.

3 It's not just something that you would have at home to charge a
4 camera or something like that.

5 It would be a port that would be in your vehicle. It would be also
6 helpful to have USB cables around or whatever to charge other things too.

7 So I think it's the convenience versus the weighing or the charging
8 time is sort of this pros and cons.

9 So this is the relevant issue how ubiquitous the USB is around the
10 vehicle.

11 (Simultaneous speaking.)

12 JUDGE REPKO: Do you agree?

13 MR. SAUER: I agree, Your Honor. I don't dispute that. In fact, it is
14 the condition that those advantages that prior to NOCO putting this into the
15 jump starter, it'd only been thought of to apply to consumer electronic
16 devices.

17 It was the recognition by Jon Nook that those advantages made it
18 worth putting those exact same advantages, made it worth putting USB into
19 a jump starter, and that the consumer could tolerate the long charge time.

20 That's part of the inventive spark here. The recognition of that when it
21 hadn't been recognized in the art before now, that's the whole point.

22 And that's why I wanted to bring you back to that. So yeah, I agree
23 with all of those advantages.

24 Our argument isn't that they didn't exist. Our argument is that they
25 weren't looked at to be applicable to this type of technology prior.

1 JUDGE REPKO: Okay. And even though in the automotive space,
2 like, if you're in your car or whatever, there's going to be USB there.

3 MR. SAUER: Sure.

4 (Simultaneous speaking.)

5 MR. SAUER: Once that USB -- once you would recognize that USB
6 as being useful.

7 The fact that it's in the car, like I said, you're not using it to charge the
8 car.

9 You're using the USB connection to the car to charge some other
10 device.

11 So the critical question is, well, what type of device would you use
12 that to charge?

13 NOCO recognized, hey, it would be useful to be able to charge a jump
14 starter with this, even though there are all these drawbacks, including the
15 charge time.

16 And even though nobody is recognized to do this, my co-inventors say
17 it's a bad idea.

18 I think it'd be worthwhile. But having USB in a car is no different
19 than having a USB anywhere. It's what you're using it to charge.

20 JUDGE REPKO: So the expectation to charge the jump starter with
21 the higher output voltage you're saying isn't there?

22 MR. SAUER: With a higher output voltage, I will get to that in
23 Richardson right now.

1 Once you get to those higher output voltages, like, 48 volts, it's just
2 still not -- just not possible because remember or know that the more you
3 boost that 5 volts, the more lossy it gets.

4 DC converters are lossy. So it's one thing maybe to take 5 volts up to
5 12 volts and use it.

6 But to take 5 volts up much higher than that, the velocity of the DC-
7 DC converter starts to outweigh anything -- any other advantages.

8 And in fact, as I make this point with respect to Richardson's device.

9 But it is worth noting that just like Richardson's device, and we'll talk
10 about it in a second, NOCO actually has a commercial -- a couple
11 commercial grade jump starters that like Richardson can provide multiple
12 output voltages, 12 volt or a 24 volt.

13 But because of that lossiness going all the way up to 24 volts, they
14 don't, still to this day, have USB charging on those types of devices, only a
15 barrel charger --

16 (Simultaneous speaking.)

17 JUDGE REPKO: Yeah, I have a question about that too then. Just if
18 you could elaborate a little on that.

19 Because we looked at Richardson paragraph 34. And they said in that
20 paragraph a jump starter may be configured for 12, 18, 24, 30, 36, 42, 48.

21 So in terms of switching to USB to charge something like that, I
22 mean, how much of a degradation of performance would it be in your view?

23 There are some of those higher end voltages. Is that --

24 (Simultaneous speaking.)

1 MR. SAUER: I don't think it would be possible. You would loss so
2 much in efficiency of a DC-DC converter.

3 But I'm not sure it's even possible. But even if it is possible, it would
4 take so ridiculously long that it's not just a viable solution.

5 JUDGE REPKO: Let's say it's not possible, right?

6 (Simultaneous speaking.)

7 JUDGE REPKO: -- limitation would that be if it's not possible for 48,
8 for example?

9 MR. SAUER: Well, that's exactly what I want to talk to next about
10 Richardson.

11 And there's argument that the foray of the voltages here, 12 volt, 18
12 volt, all the way to 48 volt are the options.

13 But it's worth making a point that even if this foray of voltages isn't
14 required in Richardson, certainly a multiple -- the option of having multiple
15 output voltages is critical to Richardson.

16 It's in every single embodiment. Richardson doesn't describe any
17 embodiments that don't include multiple internal batteries that can be
18 configured in multiple output voltages that's shown on the face of the patent
19 here.

20 You can see the jumpers that are used to configure the internal
21 batteries to provide multiple outputs.

22 In fact, Richardson even describes a safety check process to make sure
23 you have the right type of vehicle battery connected up.

24 So for example, you don't accidentally try to jump start a 12 volt
25 battery when it's set to 48 volts or vice versa.

1 Everything in Richardson is set up for heavy duty high power jump
2 starter that can jump start multiple vehicle types, multiple battery types.

3 This isn't a portable jump starter that you would put into your car.

4 And as I mentioned, our expert got to see one of these in the ITC.

5 This is roughly the size of a suitcase weighing about 100 pounds.

6 You wheel it around from vehicle to vehicle so you can start a fleet of
7 trucks.

8 This is a completely, completely different animal. So even if it
9 doesn't have to go up to 48 volts, it certainly has to have multiple outputs so
10 you can do multiple battery types.

11 And back to your question, Your Honor. That makes it just unusable
12 with USB.

13 Even if it only went to 24 volts, for example, maybe you can get 24
14 volts or 36 volts.

15 Once you get up that high, the lossiness from the DC-DC converter
16 and the amount of time -- even if it's possible to get up that high, 5 volts, the
17 amount of time it would take just makes it unusable.

18 JUDGE MCKONE: Okay. So I have a question. So what legal
19 theory are you working under here?

20 Are you working under the theory that Richardson teaches away from
21 a combination?

22 Or are you working under the theory that the combination would
23 destroy Richardson's principle of operation?

24 MR. SAUER: Yes, sorry, Your Honor. Probably we jumped forward
25 too fast.

1 No, the theory is that the person of skill in the art wouldn't have
2 combined Zhao with Richardson because of these reasons.

3 Well, there's two basis. One, there's two problems with their analysis.

4 One, that it doesn't address these motivation to combine issues
5 correctly because it misinterprets the nature of Richardson.

6 And two, they haven't demonstrated how you would do that. And so
7 the nature of Richardson and the fact that USB charging just is an
8 unreasonable solution for this goes to motivation to combine.

9 It was Zhao that provides USB step-up charger. Does that answer
10 your question?

11 JUDGE MCKONE: No.

12 MR. SAUER: So --

13 JUDGE MCKONE: Go ahead.

14 MR. SAUER: So then the other thing in Richardson I wanted to
15 quickly address is part of this intended use as a commercial jump starter,
16 Richardson also describes the ability to be charged directly from the vehicle
17 battery after it's been started.

18 And Petitioner talked a little bit about that and argues that it's another
19 optional embodiment.

20 But it's not. In fact, the -- oops, I'm sorry. I'm on the wrong slide,
21 Slide 16.

22 We're on Slide 16. The only charging circuitry that Richardson shows
23 as highlighted here is the charging circuitry for recharging from -- directly
24 from the vehicle battery.

1 You can see that Richardson's batteries are connected directly to the
2 vehicle battery through the clamp connector.

3 It's saying it's recharged by the vehicle alternator. So the ability to
4 recharge rapidly and also I should mention as I've highlighted here,
5 Richardson describes his ability with reference to Figures 1 and 2 which are
6 the only figures in Richardson that describe its circuitry.

7 So all of the embodiments in Richardson are described with reference
8 to the rapid rechargeability.

9 So understanding this intended purpose in Richardson would further
10 persuade a person of skill in the art to add a USB.

11 Jumping to Slide 19, in addition to failing to establish a motivation to
12 combine, Petitioner has also failed to establish how exactly a person of skill
13 in the art would've allegedly combined Richardson and Zhao.

14 It's not enough to address jump starters generally. The Petitioner
15 needs to establish how Richardson specifically could've been modified and
16 they haven't done so.

17 Petition gives two generic explanations as to how Richardson
18 would've allegedly been modified to add the USB step-up converter Zhao
19 and that the person of skill in the art would somehow modify Richardson to
20 either one, replace the existing charging circuitry with Zhao circuitry, or add
21 Zhao circuitry as an additional or alternative charging pathway.

22 The first suggestion, replacing Richardson's charging circuitry in
23 Zhao, that one is just really a nonstarter.

24 Richardson has no circuitry -- charging circuitry to replace other than
25 direct connection to the vehicle battery.

1 So somehow replacing this functionality with Zhao would completely
2 undermine Richardson's ability to rapidly recharge the battery. So it's not
3 viable.

4 But the second proposal of adding Zhao's USB charging as an
5 additional or alternative means for charging might sound a little more
6 plausible at first.

7 But it's not a simple task. It's not a simple task that Petitioner makes it
8 out to be to add this to Richardson.

9 And it was their burden to explain in some workable way how it could
10 be done, and they just haven't done that. Looking at Slide 23, in deposition -
11 -

12 JUDGE MCKONE: How much would they have to show here? Do
13 they have to provide a circuit diagram that shows -- that their expert draws
14 that shows how Richardson would've been modified? Is it something less
15 than that?

16 MR. SAUER: I think it's something less than that. I don't think they
17 would need to go so far as a circuit diagram.

18 But I think they would at least need some expert testimony discussing
19 Richardson and how it works and how you could've modified it to put the
20 USB in.

21 And in fact, in deposition, I asked this question essentially of
22 Petitioner's expert.

23 And he suggested that the USB charge circuit Zhao would just simply
24 by hooked up to -- plug and play to Richardson's battery terminals.

1 And that's just clearly not the case. So whatever is required, it's
2 certainly more than that unless what he said is right. And it's not.

3 As we talked about Richardson -- all Richardson's embodiments
4 require it to be able to be configured for multiple battery voltages.

5 So the Petitioner has provided no explanation of how Zhao's charging
6 circuit would somehow work in this environment with this type of device.

7 How is Zhao supposed to be used in a high power jump starter where
8 you might need 12 volts or 24 volts or 36 volts depending on the current
9 configuration. We just don't know.

10 Agency hasn't met its burden of telling us. There are other
11 considerations. Safety concerns would have to be addressed.

12 It's just not -- it's not so simple as hooking up USB charging circuitry
13 to the battery terminals of Richardson.

14 It wouldn't work and frankly it would be dangerous because if you
15 overcharge a lithium ion battery, it can explode.

16 You can't just hook up a second charger to it and cross your fingers
17 and hope that it doesn't blow up.

18 So whatever the burden is there, I don't really have a specific red line
19 to draw.

20 But it's certainly more than they provided and I think less than you
21 suggested in a full circuit diagram.

22 Before I wrap up, I also want to briefly touch on Petitioner's proposed
23 combination of Yu and Paparrizos.

24 And sorry to Mr. and Mrs. Paparrizos. I'm probably butchering the
25 name.

1 Turning to Slide 26, the Petitioner argues that the jump starter in Yu
2 would've been modified by adding the step-up USB charging circuitry for
3 Paparrizos and this is in their second grounds.

4 But like all the prior art references identified by the Petitioner,
5 Paparrizos is limited to using USB on low power consumer electronic
6 devices highlighted here in the slide.

7 And as we've already discussed, the person of skill in the art wouldn't
8 have considered this type of low power to USB charging for a jump starter
9 in 2014.

10 But I think the best evidence of that is Yu itself. As I've highlighted,
11 Yu already had a USB port.

12 It had a 5 volt USB output that it used to supply power from the jump
13 starter to a consumer electronic device like a cell phone, just like the USB
14 cord in the car that you mentioned.

15 You knew that USB was available and that it was an advantage of
16 using it to charge consumer electronic devices.

17 He's aware of that obviously because he had a USB output port. But
18 nonetheless, you chose to utilize a barrel charging port as you can see here,
19 labeled 10, to charge the jump starter, not a USB port, even though
20 everything necessary to charge the USB -- excuse me, to charge a jump
21 starter was in Yu.

22 It just didn't recognize that it was a viable solution, nor did he
23 recognize there was a current need for incorporating USB charging input.

24 He already had a USB port. If it was a recognized need, he would've
25 done it. And again --

1 (Simultaneous speaking.)

2 JUDGE REPKO: Is there any evidence in the record about the safety
3 issue that you raised? Is there any expert testimony?

4 MR. SAUER: Yes, Your Honor. At least in our expert declaration,
5 we go into that to some extent about the concerns of adding a second charger
6 to -- and I believe it's Richardson in particular that you couldn't just add a
7 second charger.

8 You'd have to have some circuitry to account for the fact that you now
9 have two chargers and you can't overcharge the battery.

10 So there'd have to be some circuitry to account for that. And
11 Petitioner hasn't explained it.

12 I don't have at the tip of my fingers here an exact citation to that.

13 But it is definitely in at least our expert declaration, if not, in our --
14 probably our briefing.

15 JUDGE REPKO: Thank you.

16 MR. SAUER: Just quickly to wrap up here. Like with Richardson,
17 and I'm on Slide 28, Petitioner also failed to provide necessary details of
18 how you would allegedly combine Yu and Paparrizos.

19 Paparrizos is complicated. It's a complicated boost converter. It has
20 lots of operating modes, different configurations.

21 And some of them you can see in Figure 5 of Paparrizos they put on
22 Slide 29.

23 You clearly couldn't just hook up Paparrizos, plug and play in to use
24 high power jump starter. It wouldn't work.

1 How would it have worked? We don't know. How would you have
2 configured it?

3 Again, we don't know because ADC hasn't met their initial burden of
4 telling us.

5 And with that, Your Honor, unless there are questions, I'll reserve the
6 rest of my time. I'll stop sharing if I can figure out how to do it. Here we
7 go.

8 JUDGE ROSS: Thank you, Mr. Sauer. Ms. Manning, do you have
9 your rebuttal?

10 MS. MANNING: Thank you, Judge Ross. First --
11 (Simultaneous speaking.)

12 JUDGE REPKO: Just a moment. Let me set your timer first. Thank
13 you.

14 JUDGE ROSS: And Judge Repko, I think she had a minute and a half
15 left. So I think it should be around 16 and a half minutes. Thank you.

16 MS. MANNING: Thank you. Okay. So if we could turn to Slide 57.
17 I would first like to address NOCO's argument regarding the
18 IPR2020-00944 regarding the '015 patent.

19 In that case, Dependent Claim 11 claimed a USB input charging.

20 On the left, Petitioner's -- generally, the entire argument made in the
21 Petition is on the left.

22 The Petitioner in that case, Carku, a third party unrelated to ADC
23 presented no prior art showing USB input charging.

24 Only prior art showing USB output charging to charge other devices
25 from the portable jump starter.

1 Not only was Carku unable to -- or did not present any evidence
2 regarding USB input charging ports at all, it also gave conclusory and
3 unsupported expert testimony regarding motivation to combine.

4 All they said is that USB could also be incorporated into the portable
5 jump starters in place of or in addition to the 14 volt, 1 amp import port
6 charging internal batteries of the jump starter. That was it.

7 And in the final written decision, the panel which Judge Repko and
8 Judge McKone, I think you're familiar with this.

9 The evidence that both NOCO submitted in Patent Owner response
10 and the additional evidence that the Petitioner used to shore up their lack of
11 motivation to combine in the Petition was not even considered because, as
12 the board found, there's insufficient accounting by Petitioner of the
13 expectation of the time of one with ordinary skill in the art about the ease or
14 difficulty in locating a useable source to provide input charge to a USB on a
15 jump starter.

16 And at the very end, there's a lack of substantial evidentiary support.

17 So here we have come forth with a great deal of evidence that was not
18 presented in the Carku IPRs.

19 Second, I believe ITC was also mentioned. I just want to note that
20 NOCO was mistaken in stating that Richardson v. Zhao, the prior art
21 references presented in Ground 1 were presented in ITC.

22 It was, in fact, Richardson and a separate secondary reference to
23 Zhou. So very similar, Z-H-O-U, not Z-H-A-O. So I just wanted to clarify
24 that for the record.

1 Second, NOCO discussed -- brought up Figure 2C from '023 and '243
2 patents.

3 To say that the USB charged Circuit 2C is very complicated and that
4 this is very different than just the boost converter, the off the shelf XR3403
5 chip that the patents use.

6 But NOCO in its briefing and here today never explains anything in
7 this circuit that alleges improves charging time using USB with low battery
8 capacities or high battery capacities.

9 Third, Judge Repko, you had asked me during opening about charge
10 times using a conventional report.

11 I did do a little bit of the math. We can bring up Slide 47. So Slide
12 47 shows these exemplary charging times.

13 And I want to make clear too, Dr. MacCarley applied the output
14 currents to the higher 2 to 5 second charge cycle.

15 This was to account for variables. It wasn't overestimation as he
16 discusses in his declaration and deposition.

17 But I wanted an example too. It would take .44 hours or 26.4 minutes
18 to recharge after a single jump start at a 500 amp 12 volt output.

19 This decreased only 16.65 minutes using a 12 volt 1 amp barrel
20 charger.

21 So while there is a difference, it is not significant. All right. Let's go
22 to Slide 30.

23 I would like to discuss Richardson and Zhao and that combination just
24 a little further to respond to some of NOCO's arguments.

1 So NOCO seems to admit that Richardson does not, in fact, require all
2 the voltages set forth within Richardson as optional range of voltages to
3 select.

4 And we believe this is absolutely correct if you look at the claims of
5 Richardson, especially Claim 26.

6 Claim 26 does not require selection of any voltage whatsoever. Claim
7 1 does.

8 But it doesn't require any particular voltages that have to be selected.

9 Instead, that is in a dependent claim of Richardson. Dependent Claim
10 6 and 39 actually do require selection of particular voltages within that
11 range.

12 Otherwise, Richardson's claims arguably cover a range of, say, 3 volts
13 to 12 volts.

14 It is not at all directed to only jump starters that are capable of that full
15 range.

16 We can go to Slide 35, please. Okay. So NOCO has also questioned
17 how a person of skill in the art would incorporate Zhao's circuit into
18 Richardson.

19 Now as early as 2001-- actually, let's go back to -- let's stay here.

20 First, I want to discuss Zhao's circuit. So Zhao, not Zhou, which was
21 an issue in the ITC, on the left there -- actually, let's go to 34 to show the full
22 circuit first.

23 So Zhao step-up battery chargers illustrated in Figure 1, that's there on
24 the left.

1 Now the circuit shows a step-up battery charger 100 principally
2 includes step-up converter control circuit 102 there are the bottom of the
3 figure, charging control circuit 201 to the right, and a power stage circuit
4 101 to the top left.

5 The step-up converter portion 101 and 102 of the charger 100 receives
6 and boosts DC input voltage V in there at the top left-hand side of the figure
7 to generate an output of boosted output signal to charging control circuit 201
8 for charging a plurality of series connected batteries.

9 Zhao also states that V in can be provided by USB or any other
10 suitable low power supply system.

11 Now if we could go to Slide 35. Okay. Here we've honed in on the
12 plurality of series connected batteries that are charged by the signal from
13 control circuit 201.

14 As you can see, three batteries are connected -- the three batteries are
15 connected in series with an ellipses indicating that even more batteries may
16 be connected in series.

17 And at column 4, lines 40 to 41 of Zhao, it explicitly describes an
18 embodiment where the final voltage can be at 8.4 volts if two lithium
19 batteries are connected in series.

20 This necessarily means that Zhao contemplates that each battery can
21 be 3.2 volts.

22 So three batteries in series would be 12.6 volts. Four batteries would
23 be 16.8 volts and so on.

24 We discuss this at Paper 15, page 15. If we can go to Slide 36. And
25 NOCO's expert, Dr. Fayed, admits the same.

1 During deposition, he was asked whether the three dots there indicate
2 ellipses which even more battery cells could be connected.

3 And he said that was correct. And he admitted that the path voltage
4 could actually go up to 12.6 volts if we wanted to.

5 He even added on that we can add even more cells to increase the
6 voltage even further.

7 So it's not true that Zhao only intended to charge 8.4 volt or less --
8 voltage or less of devices.

9 If we could go to Slide 29, please. Now I reference this briefly in the
10 opening.

11 NOCO focuses a great deal on paragraph 55 of Richardson which
12 discloses that a diode 35 may be connected across the contact 34 to charge
13 the capacitors and jump starter batteries from the vehicle charging system.

14 The charging system of the vehicle may be used to charge capacitors.

15 While we understand that Figures 1 and 2 only depict specifically
16 charging through the vehicle charging system, it ignores paragraph 28 of
17 Richardson that discusses that it's also charged through a battery charger that
18 is, quote-unquote, not shown.

19 And as Dr. MacCarley testified, it was unnecessary to show this
20 because it was well within the skill level of a person of ordinary skill in the
21 art to understand exactly how you would connect a battery charger to the
22 system of Richardson.

23 So you can go to Slide 54, please. Okay. So again, we've got the
24 circuit of Zhao.

1 Dr. MacCarley explained in his first declaration at paragraphs 85 to 91
2 that this is a basically, well known circuit in 2014.

3 And a person of skill in the art would've been readily able to
4 implement it.

5 Specifically, paragraph 87, Dr. MacCarley describes Zhao circuitry
6 and all the componentry that I just discussed with you and how to connect
7 the output voltages, circuits, or batteries.

8 As he says in paragraph 87, an output of power stage circuit 101 can
9 connect to charger control circuit 201 and can then be regulated or
10 controlled for purposes of charging the battery or battery powered device.

11 A POSITA would understand how to connect boosted output voltage
12 to a step-up charging system to Richardson jump starter for purposes of
13 charging its battery.

14 In fact, Zhao explains at Exhibit 1006 on 3, lines 8 to 11 that DC input
15 voltage VN on the top left-hand side can be provided to the step-up
16 converter by a USB charger or any other suitable low powered voltage
17 supply.

18 Dr. MacCarley further testified in paragraph 94 of his declaration that
19 a POSITA would have consulted USB standards capable of implementing
20 this circuit when designing a portable battery powered device.

21 In other words, a person of skill in the art would've known how to
22 wire a USB connector to be in on the left-hand of the circuit and wire the
23 output of the charging control circuit 201 on the right to Richardson's battery
24 pack.

1 And specifically when NOCO argued that person of skill in the art,
2 the Petition did not explain how you would implement this very basic use
3 converter circuit into Richardson.

4 Dr. MacCarley clarified again at Exhibit 1044, paragraph 3 that it
5 would've been as simple as wiring connections to the terminal anode and
6 cathode of the battery pack on the far right, the plurality of series connected
7 cells.

8 Now NOCO does seem to require a great deal of detail about exactly
9 how we're going to wire a connector to be in that power control circuit and
10 how we're going to wire the output of charging control circuit to a battery
11 pack.

12 But this really ignores the inferences and the creative steps in the
13 person of ordinary skill in the art would utilize when making this
14 combination as set forth in *KSR*.

15 In fact, in one of the cases cited by NOCO, *in re: Mouttet*, specifically
16 states that it is well established that a determination of obviousness based on
17 teachings from multiple references does not require an actual physical
18 substitution of elements.

19 We are actually providing a physical substitution of elements here.

20 But it was unnecessary to explain exactly how you would solder wire
21 these connections. You can just draw the circuit now into Richardson.

22 JUDGE REPKO: So does that account for, like, the safety risk of the
23 user plugging in two chargers at the same time?

24 MS. MANNING: Yes.

25 JUDGE REPKO: You just drop it in there?

1 MS. MANNING: Yes. So this would be something as simple -- and
2 Dr. Fayed admits this in his declaration, Exhibit 2011, paragraphs 99 and
3 122.

4 And Dr. MacCarley agrees at Exhibit 1044, paragraph 16 that that
5 alleged safety risk is easily prevented by commercially available switches,
6 diodes, current and voltage sensors, and/or control circuitry.

7 And Dr. MacCarley further explained that these types of components
8 are relatively inexpensive, in other words, generally less than a dollar to
9 implement those simple componentry to prevent multiple --

10 (Simultaneous speaking.)

11 JUDGE REPKO: It's additional components. So it's not just dropping
12 it in, right?

13 I just want to make sure I understand your position. So you're saying
14 you drop it in. You add the additional power switches.

15 (Simultaneous speaking.)

16 MS. MANNING: I think that is fair.

17 JUDGE REPKO: Okay.

18 MS. MANNING: I think that's fair. But as Dr. MacCarley and Fayed
19 admitted, this would be well within the skill level of a person of ordinary
20 skill in the art.

21 JUDGE REPKO: Okay. Thank you for that. No further questions.

22 MS. MANNING: Let me see where I was, what other points I want to
23 make sure I cover with you today.

24 Okay, yes. This was one other point I wanted to make regarding
25 implementation of standard DC-DC boost converters.

1 The XR3403 commercially available off the shelf boost converter
2 used by NOCO actually comes with a typical or exemplary application
3 circuit that tells a person of skill in the art exactly how to implement that
4 circuit in an electrical system.

5 And Dr. Fayed also admitted at his deposition, Exhibit 1045, page 56,
6 line 9, 57, line 7 that if the chip needs to be used in a way not shown in the
7 data sheet, that persons of skill in the art could figure out how to integrate it
8 themselves.

9 This is basic -- I'm not an electrical engineer. So I'm going off the
10 expert's testimony on this.

11 But both do seem to be in agreement that this is nothing more than
12 basic implementation of known components and their conventional ways.

13 And then I should with my minute remaining address some issues
14 with Yu and Paparrizos they have raised if I can find where I was looking
15 for that.

16 In any event, Paparrizos explains -- NOCO discusses that Paparrizos
17 discloses this very complicated circuit when in reality Paparrizos in column
18 9, I want to say around line 30-ish, that Figure 8A discloses a prior art boost
19 converter.

20 And that Figure 7A of Paparrizos which isolates the boost conversion
21 functionality of Paparrizos' circuitry is the same thing as a prior art boost
22 converter depicted in Figure 8A.

23 And with that, I have just run out of time. So if there are no other
24 questions, thank you very much.

1 JUDGE ROSS: Thank you. And Mr. Sauer, I have somewhere
2 around 18 minutes for your rebuttal. Does that sound about right?

3 MR. SAUER: Sure, Your Honor. I just have a couple points. So it
4 doesn't really matter because I think --

5 (Simultaneous speaking.)

6 JUDGE ROSS: Okay. Proceed when you're ready.

7 MR. SAUER: Thank you. I think I've addressed most of the things
8 that Counsel has brought up already.

9 But I just wanted to make a couple points. One, Counsel sort of
10 doubled down and again criticized us for not explaining in the patents how
11 NOCO's circuit fixes or addresses the problems with USB charging to make
12 it faster which demonstrates that they still don't understand the point that it
13 doesn't.

14 It was recognition of the fact that despite those problems and despite
15 those deficiencies that there would be an advantage of putting in USB into a
16 jump starter -- portable jump starter where no one had recognized that
17 problem before.

18 That was the inventive step. They're not fixing it to make it faster.

19 In fact, NOCO's jump starter when it came on 2014, it took a long
20 time to charge. It took half a day to charge using 2014 era USB.

21 It had those drawbacks. It was just the recognition that you can
22 tolerate those and a few of the advantages that nobody else could recognize
23 for high powered devices. That was the invention.

1 The other thing -- the only other thing I wanted to point out is if you
2 look at Petitioner's Slide 34, they try to make a lot out of Zhao's -- whatever
3 figure this is here.

4 But Zhao clearly tells us that it can go up to 8.4 volts. That's what
5 Zhao tells us.

6 But they pointed at the schematic diagram here and the ellipses and
7 say, well, this shows three batteries.

8 And if the batteries were all whatever, it could get up to 12 volts.

9 First of all, this is a standard schematic diagram way of showing that
10 you have multiple batteries.

11 This isn't indicating any particular number. This is just indicating that
12 you can have more than one.

13 So I don't think it demonstrates what they think it demonstrates. But
14 two, it's really irrelevant.

15 Because, again, the point here isn't whether or not Zhao can get up to
16 12 volts.

17 I'd say it probably could. It's not voltage. It's the capacity. It's not
18 whether you would use Zhao to boost all the way up to 12 volts instead of
19 boosting up to 8 volts.

20 It's whether you would use Zhao to put USB into a high powered,
21 high capacity power tool device instead of a consumer electronic device that
22 goes to the motivation to combine here and it simply wouldn't.

23 So with that, unless there are further questions, Your Honors, I rest.

24 JUDGE ROSS: Thank you both. Do we have any other questions
25 from the panel?

1 JUDGE REPKO: I do not. Thank you.

2 JUDGE ROSS: Okay. Well, then before we adjourn, I'd just like to
3 thank you both. You've done an excellent job fielding our questions. And
4 we really appreciate your preparedness.

5 Also, after we adjourn, if you could both stick around just briefly,
6 make sure that the court reporter doesn't have any questions for you, we'd
7 really appreciate that.

8 And with that, the case is under submission. We're adjourned. and
9 we'll issue a decision in due course. Thank you very much.

10 (Whereupon, the above-entitled matter went off the record at 2:49
11 p.m.)

IPR2024-00577 (Patent 11,447,023 B2)

IPR2024-00671 (Patent 11,584,243 B2)

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