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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ROBERT J. MACK, DALE B. TRESTER, RICHARD M. DEKEUSTER, JENNIFER L. CZARNECKI, and JASON D. FUHR

Appeal 2019-001983
Application 14/634,516
Technology Center 1700

Before JEFFREY T. SMITH, LINDA M. GAUDETTE, and CHRISTOPHER L. OGDEN, *Administrative Patent Judges*.

SMITH, *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant[1] appeals from the Examiner's decision to reject claims 1–9, 11–16, 18, 20, 21, 25, and 26. We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

[1] We use the word "Appellant" to refer to "applicant" as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as Johnson Controls Technology Company. Appeal Br. 2.

STATEMENT OF THE CASE

Appellant's invention is generally directed to structural features of Lithium-ion (Li-ion) battery modules. (Spec. ¶ 1.)

Claim 1 illustrates the subject matter on appeal and is reproduced below:

> 1. A battery module, comprising:
>
> a stack of electrochemical cells having terminals extending from terminal ends of the electrochemical cells of the stack, wherein the stack comprises a first end and a second end opposite the first end; and
>
> a bus bar carrier disposed over the stack of electrochemical cells such that bus bars disposed on the bus bar carrier interface with the terminals of the stack of electrochemical cells, wherein the bus bar carrier comprises opposing first and second guide extensions extending along a perimeter of the bus bar carrier, wherein the stack of electrochemical cells is disposed between the opposing first and second guide extensions, wherein the first guide extension comprises a first inner surface that physically contacts a first lateral face of a first outermost electrochemical cell, wherein the first lateral face is disposed at the first end of the stack, wherein the second guide extension comprises a second inner surface that physically contacts a second lateral face of a second outermost electrochemical cell, wherein the second lateral face is disposed at the second end of the stack, and wherein the first and second guide extensions guide the terminals of the stack of electrochemical cells toward appropriate ones of the bus bars disposed on the bus bar carrier;
>
> wherein the first and second lateral faces of the first and second outermost electrochemical cells, respectively, extend transverse to the terminal ends of the electrochemical cells of the stack,
>
> wherein the first and second guide extensions comprise first and second outer surfaces, respectively, opposite to the first and second inner surfaces, and wherein the first and second inner surfaces are tapered outwardly toward the first and second

> outer surfaces, respectively, from proximal ends to distal ends of the first and second guide extensions; and
>
> wherein, of the plurality of electrochemical cells, only the first outermost cell is contacted by the first guide extension, and only the second outermost cell is contacted by the second guide extension.

Appeal Br. 21, Claims Appendix.

The following rejections are presented for our review[2]:

I. Claims 1, 3–7, 11, 12, 15, 16, 18, 20, 21, 25, and 26 are rejected under 35 U.S.C. § 103(a) as unpatentable over Lee (US 2014/0212723 A1, pub. July 31, 2014) in view of Honeycutt (US 6,320,121 B1, iss. Nov. 20, 2001).

II. Claims 2, 8, and 14 rejected under 35 U.S.C. § 103(a) as unpatentable over Lee, Honeycutt, and further in view of Shin (US 2010/0136420 A1, pub. June 3, 2010).

III. Claims 9 and 13 are rejected under 35 U.S.C. § 103(a) as unpatentable over Lee, Honeycutt, and further in view of Callicoat (US 9,350,127 B2, May 24, 2016).

OPINION

After review of the respective positions provided by Appellant and the Examiner, we reverse the Examiner's rejections.

[2] The complete statement of the rejection on appeal appears in the Final Office Action. (Final Act. 2–10).

The Examiner finds Lee teaches a battery module comprising a bus bar carrier which comprises opposing first and second guide extensions (lips) extending along a perimeter of the bus bar carrier. (Final Act. 3.) The Examiner specifically states:

> Regarding Claims 1, 15, and 26, Lee teaches:
> • a battery module 300 comprising a stack of cells 10 having a plurality of terminals 11 extending from terminal ends of the cells of the stack, wherein the stack comprises a first end and a second end opposite the first end (Figs. 1–2 and paras 0059-0060)
> • a bus bar carrier 230 disposed over the stack of electrochemical cells such that bus bars 233 disposed on the bus bar carrier interface with the terminals of the stack of cells, wherein the bus bar carrier comprises opposing first and second guide extensions (see extensions at either end that are visible, but not explicitly numbered, in Fig. 2) extending along a perimeter of the bus bar carrier, wherein the stack of cells is disposed between the opposing guide extensions, wherein the first guide extension comprises a first inner surface that is interpreted to physically contact a first lateral face of a first outermost cell, wherein the first later face is disposed at the first end of the stack (see Figs. 1 and 2, wherein the "guide extension" lips on 230 are interpreted to be fitted over cells 10 of the stack 200 and covered by housing part 210 and 220 to be secured to the terminal ends) and wherein the second guide extension similarly has an inner face that physically contacts a second lateral face of a second outermost cell, wherein the second lateral face is disposed at the other end of the stack, and wherein the first and second guide extensions guide the terminals of the stack of electrochemical cells toward appropriate ones of the bus bars disposed on the bus bar carrier and are interpreted to "compress" the cells of the stack together within the meaning of the instant specification (Figs. 1 and 2).

(Final Act. 3.)

The Examiner also finds Lee does not teach the shape of the guide

extensions on the bus bar carrier 230. (Final Act. 4.) The Examiner finds Honeycutt describes a complementary cover 100 for a housing having guide extensions 110 wherein the inner surfaces are tapered outwardly from proximal ends to distal ends of the guide extensions. (Final Act. 5.)

The dispositive issue on appeal is:

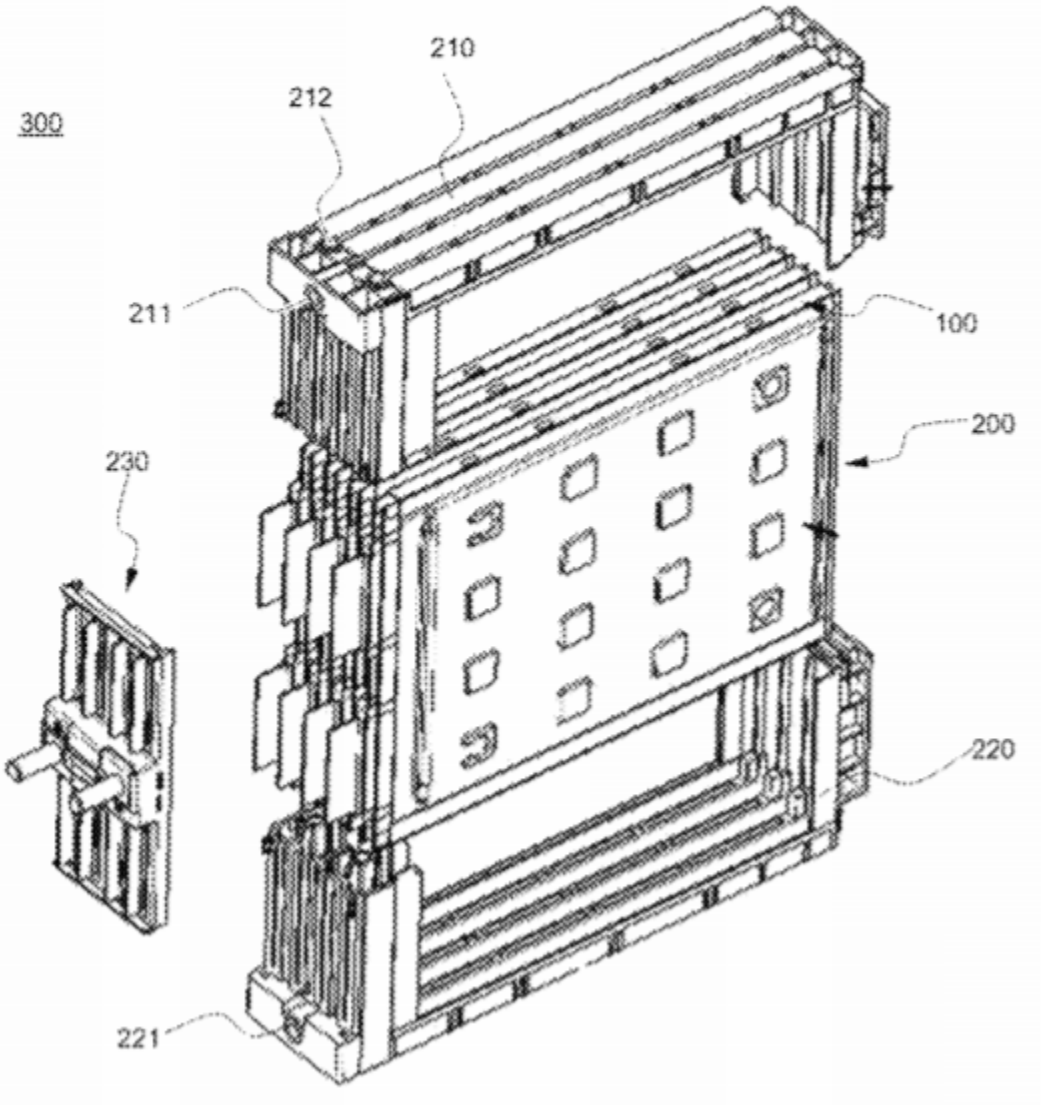
Did the Examiner err in determining that lips of Lee's bus bar assembly 230 physically contact lateral faces of Lee's cell units 100, as recited independent claims 1, 15, and 26?

We answer this question in the affirmative.

Appellant argues that there is no evidence that the "lips" of Lee's bus bar assembly 230 physically contact lateral faces of Lee's cell units 100, as recited in each of the independent claims. Appellant argues Lee is silent regarding any portion of the bus bar assembly 230 physically contacting lateral faces of the cell units 100 and the lips do not appear to extend far enough from the bus bar assembly 230 to contact a lateral face of the cell units 100 upon assembly. (Appeal Br. 13.)

Lee FIG. 2 is reproduced below:

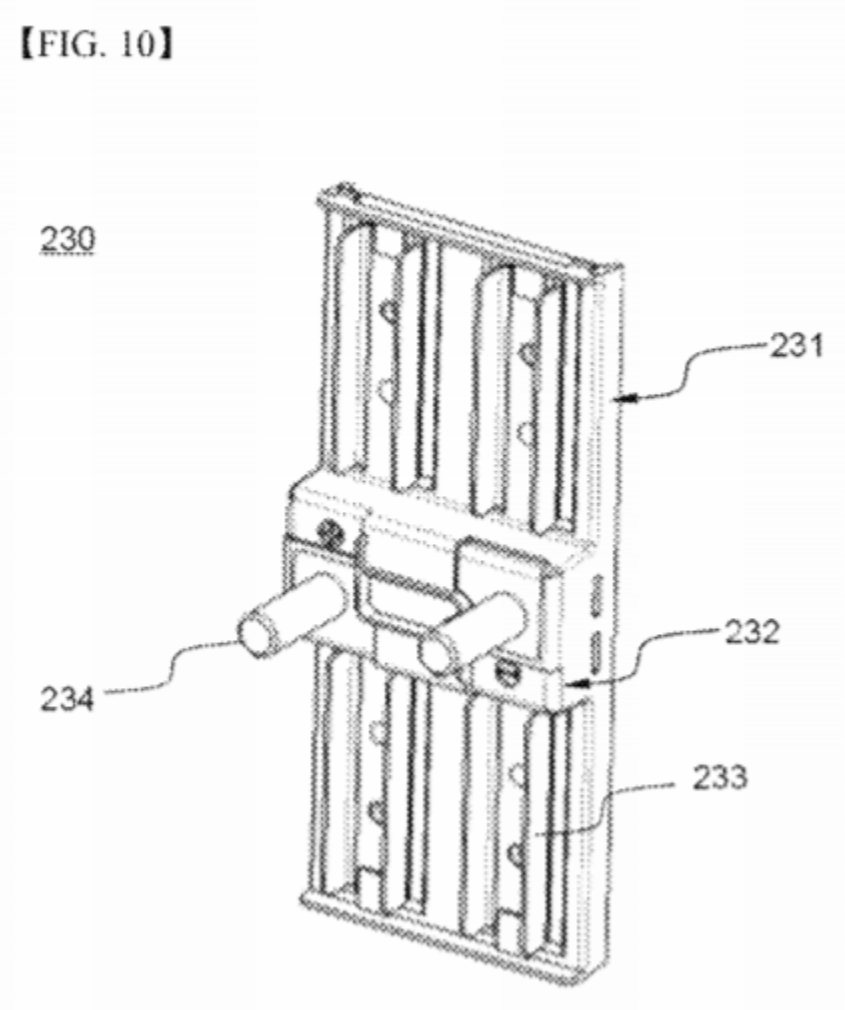
【FIG. 2】



Lee FIG. 2 depicts an exploded perspective showing the battery module assembly 300 including the bus bar assembly 230, battery modules 200, cell units 100, the top of the upper case 210, and the bottom of the lower case 220.

Lee FIG. 10 is reproduced below:

【FIG. 10】



Lee FIG. 10 depicts the bus bar assembly 230 including a cover plate 231. FIG. 10 illustrates representative dimensions of the side walls of the cover plate 231.

The Examiner has not directed us to evidence that the bus bar assembly 230 includes guide extensions (lips) that physically contact the lateral faces of the cell units 100. (*See* Figs. 1, 2.) The lips of bus bar assembly 230 appear to only contact an upper case 210 and/or a lower case 220. Lee is silent regarding any portion of the bus bar assembly 230 physically contacting lateral faces of the cell units 100. We note that the

Examiner in the Answer provides a marked up version of Lee's Figure 2 identifying the guide extensions. (Ans. 12.) However the portions identified as representative of the guide extensions are portions of the upper case 210. The upper case and lower case are separate components from the bus bar assembly. The Examiner has not provided an explanation as to why it would have been obvious to a person of ordinary skill in the art to modify Lee's bus bar assembly to incorporate guide extensions that would contact the lateral faces of the cell units.

We also agree with Appellant that Lee and Honeycutt, alone or in combination, fail to teach guide extensions of a bus bar assembly having inner surfaces that are tapered outwardly toward outer surfaces from proximal ends to distal ends of the guide extensions as required by independent claims 1 and 15. (Appeal Br. 17–18.) Honeycutt discloses fingers 110 that extend downwardly from the top plate 106 of cover 100 and are directed inwardly toward the fence 102. (Honeycutt 4, ll. 54–56; Fig. 4.) Honeycutt's Figure 4 fails to disclose that the fingers 110 are tapered outwardly from proximal ends to distal ends as required by independent claims 1 and 15.

Accordingly, for the reasons presented by Appellant and those given above we do not sustain the appealed rejections. All of the appealed rejections rely on Lee and Honeycutt to reject claims 1–9, 11–16, 18, 20, 21, 25, and 26 some in combination with additional prior art references. We did not sustain the Examiner's rejection of independent claims 1, 15, and 26 over Lee and Honeycutt for the reasons presented by Appellant and given above. The Examiner cited the additional references to address limitations not included in the dispositive issue. We need not reach whether the

Examiner's reliance on these other references in addition to Lee was supported by the evidence of record.

CONCLUSION

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1, 3–7, 11, 12, 15, 16, 18, 20, 21, 25, 26	103(a)	Lee, Honeycutt		1, 3–7, 11, 12, 15, 16, 18, 20, 21, 25, 26
2, 8, 14	103(a)	Lee, Honeycutt, Shin		2, 8, 14
9, 13	103(a)	Lee, Honeycutt, Callicoat		9, 13
Overall Outcome				1–9, 11–16, 18, 20, 21, 25, 26

REVERSED