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Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO. Includes application details for 14/502,723 and 15602 7590, inventor Kem M. Obasih, attorney Boardman & Clark LLP, examiner SHEIKH, HAROON S, art unit 1724, and notification date 10/24/2019.

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte KEM M. OBASIH and RICHARD M. DEKEUSTER

Appeal 2019-000773
Application 14/502,723
Technology Center 1700

Before BEVERLY A. FRANKLIN, LINDA M. GAUDETTE, and
MERRELL C. CASHION, JR., *Administrative Patent Judges*.

GAUDETTE, *Administrative Patent Judge*.

DECISION ON APPEAL¹

¹ This Decision includes citations to the following documents: Specification filed Sept. 30, 2014 (“Spec.”); Final Office Action dated Nov. 29, 2017 (“Final”); Appeal Brief filed May 18, 2018 (“Appeal Br.”); Examiner’s Answer dated Sept. 5, 2018 (“Ans.”); and Reply Brief filed Nov. 5, 2018 (“Reply Br.”).

The Appellant² appeals under 35 U.S.C. § 134(a) from the Examiner’s decision finally rejecting claims 1, 2, 5–16, and 20–28.³

We REVERSE.

CLAIMED SUBJECT MATTER

The invention relates to battery systems for use, e.g., in providing power to electric vehicles (xEVs) and other high voltage energy storage/expending applications (e.g., electrical grid power storage systems). Spec. ¶ 24. The battery systems may include one or more battery module. *Id.* A battery module in accordance with the invention is illustrated in Figure 4, reproduced below.

² We use the word “Appellant” to refer to the “Applicant” as defined in 37 C.F.R. § 1.42(a). The Appellant is Kem M. Obasih, Richard M. Dekeuster, and Johnson Controls Technology Company. The Appellant identifies Johnson Controls Technology Company as the real party in interest. Appeal Br. 2.

³ We have jurisdiction under 35 U.S.C. § 6(b).

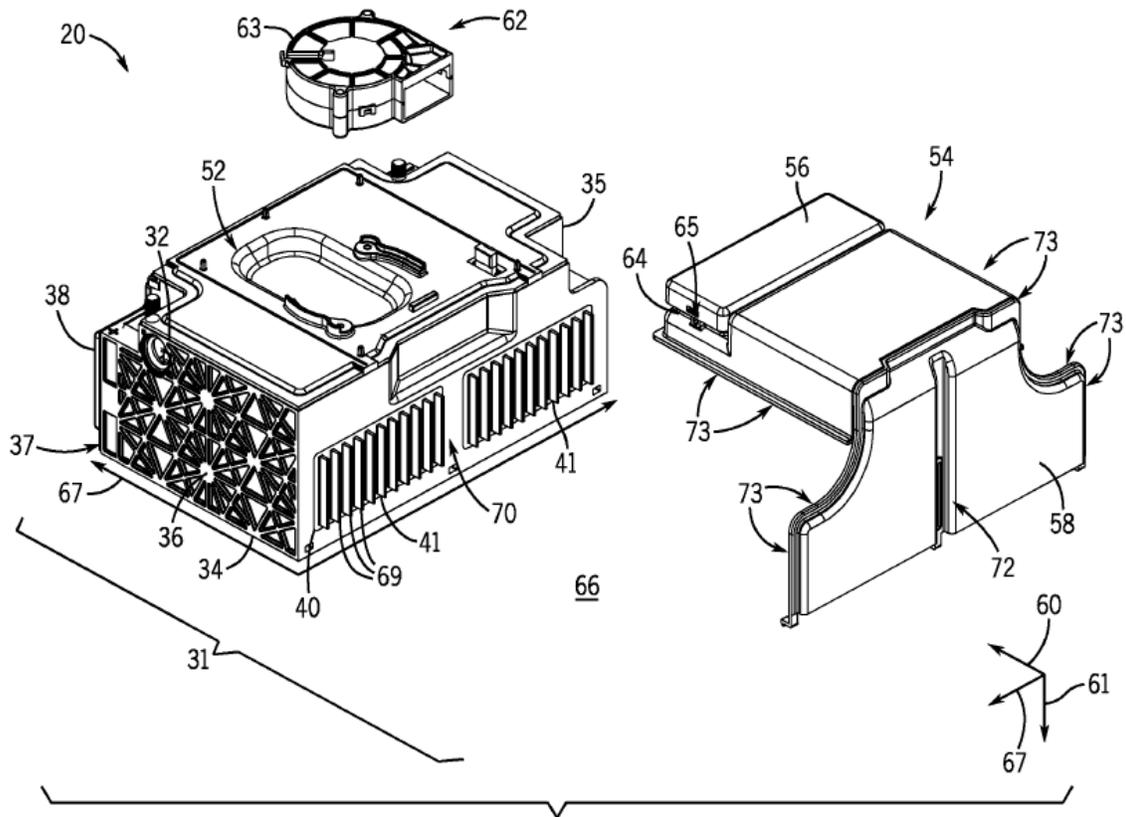


FIG. 4

Figure 4, above, is a partially-exploded, back, perspective view of lithium-ion battery module 20. Spec. ¶ 45. Heat sinks 41 are disposed in (e.g., in-molded with) back side 40 of housing 31. *Id.* Heat sinks 41 are thermally conductive (e.g., metal) plates. *Id.* Heat sinks 41 may include cooling fins 69, as illustrated in the Figure 4 embodiment. *Id.* Central portion 70 of back side 40 separates heat sinks 41 from each other. *Id.* Hood 54 may be disposed over top cover 52 of housing 31. *Id.* ¶ 42. Fan 62 is configured to blow air within the airspace underneath hood 54. *Id.* ¶ 43. Hood 54 may include features to block airflow proximate to central portion 70, such that the airflow (e.g., from fan 62) is diverted primarily over heat sinks 41 and generally avoids less efficient heat transfer with central portion 70. *Id.* ¶ 46. In the embodiment illustrated in Figure 4, airflow is diverted away from

central portion 70 and proximate to heat sinks 41 only by central ridge 72 in second portion 58 of hood 54. *Id.*

Claim 1, reproduced below, is illustrative of the claimed subject matter:

1 A battery system, comprising:

a battery module;

a housing of the battery module, wherein the housing comprises a top side, a lateral side, and an edge extending along and between the top side and the lateral side;

a plurality of electrochemical cells disposed in the housing;

a heat sink disposed on the lateral side of the housing;

a fan disposed over the top side of the housing; and

a hood comprising a first hood portion disposed over the top side of the housing and the fan and a second hood portion coupled to the first hood portion and disposed over the lateral side of the housing, wherein the hood defines an airspace between the hood and the housing and the hood is configured to guide an airflow through the airspace from the fan on the top side of the housing, over the edge between the top side and the lateral side of the housing, and over the heat sink disposed on the lateral side of the housing;

wherein the heat sink comprises two thermally conductive plates in-molded with the lateral side of the housing and the two thermally conductive plates are separated by a central portion of the lateral side of the housing, and wherein the second portion of the hood comprises a central ridge disposed proximate to the central portion of the lateral side of the housing and the central ridge is configured to guide the airflow away from the central portion of the lateral side of the housing to the two thermally conductive plates on either side of the central portion.

Appeal Br. 17 (Appendix of Claims on Appeal).

REFERENCES

The Examiner relies on the following prior art as evidence of unpatentability:

INUI	US 6,448,741 B1	Sept. 10, 2002
AOKI	US 2012/0028099 A1	Feb. 2, 2012
YOUNGS	US 2012/0282510 A1	Nov. 8, 2012

REJECTIONS

1. Claims 1, 2, 5–10, 12–16, 20–25, 27, and 28 are rejected under 35 U.S.C. § 103 as unpatentable over Youngs in view of Inui. Final Act. 4–9.

2. Claims 11 and 26 are rejected under 35 U.S.C. § 103 as unpatentable over Youngs in view of Inui and Aoki. Final Act. 9–10.

OPINION

The Appellant’s arguments in support of patentability of all rejected claims are based on limitations common to independent claims 1, 16, and 22. In particular, the Appellant contends the Examiner reversibly erred in determining that the following modifications to Youngs’s battery module would have been obvious (*see* Final 7): (1) using “two thermally conductive plates” (claims 1, 16, 22) instead of a single plate as the heat sink; (2) “separat[ing]” the two thermally conductive plates “by a central portion of the lateral side of the housing” (*id.*); and (3) providing “the hood,” rather than the heat sink with “a central ridge” (*id.*). *See generally* Appeal Br. 8–15. For the reasons discussed below, we are persuaded of reversible error in the Examiner’s conclusion of obviousness.

The Examiner cited Youngs paragraph 130 and Youngs Figure 27, reproduced below, as evidence of unpatentability. *See, e.g.*, Final 5.

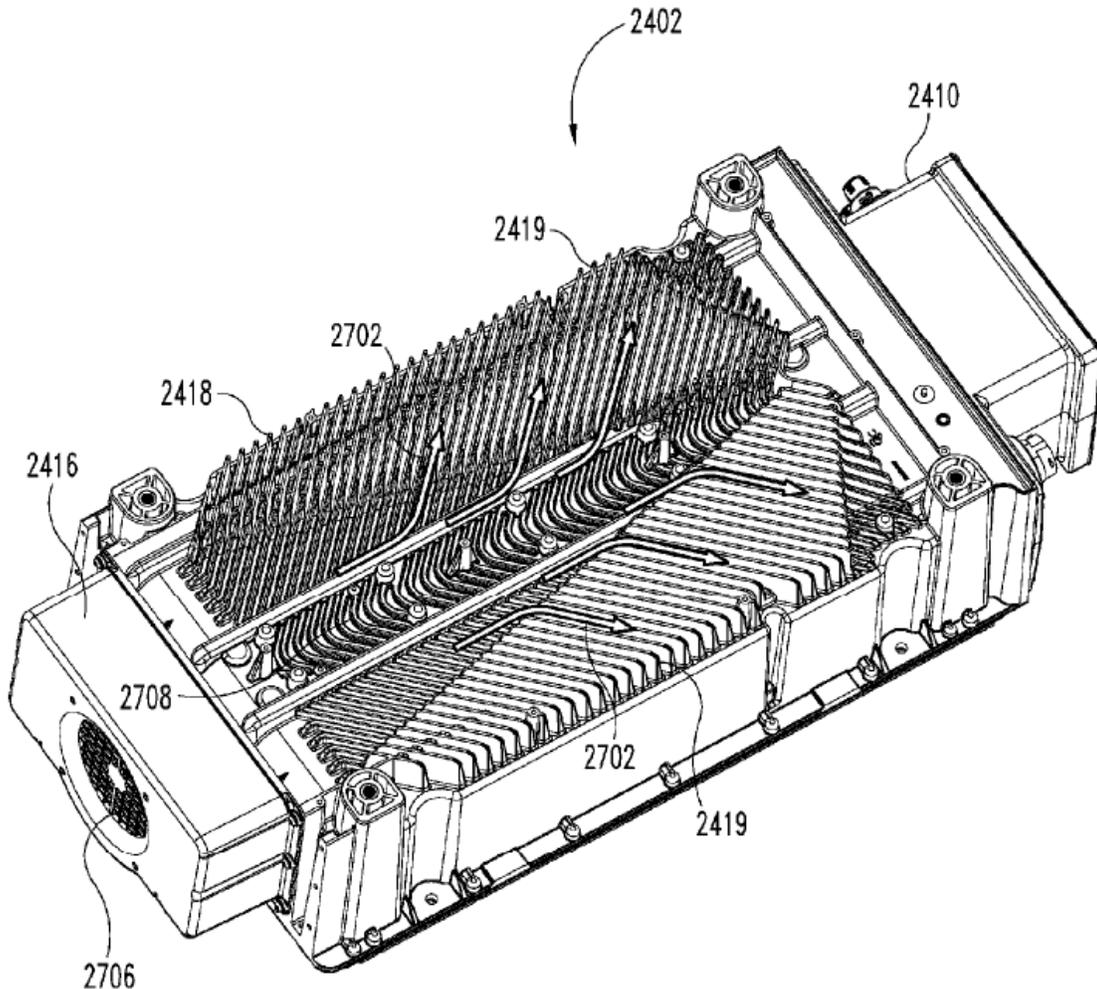


Fig. 27

Youngs Figure 27 is a bottom perspective view of the heat sink arrangement. Youngs ¶ 130. Heat sink 2418 includes a plurality of fins 2419. *Id.* When cooling is required, fan 2706 directs air through central cavity 2708 in the direction indicated by arrows 2702. *Id.* The air is then directed between fins 2719 in an angularly outward direction on each side of energy storage module 2402. *Id.*

As to the independent claims' requirement that the heat sink comprise two thermally conductive plates separated by a central portion, the Examiner found that the air flow in Youngs "is not only passed to the two regions via the central cavity, but it is also directly passed to the two regions individually." Final 7. The Examiner thus determined that providing the heat sink as two plates separated by a central portion of the lateral side of the housing, instead of as a single plate, would have been "a matter of design choice that, absent persuasive evidence that the particular configuration significantly achieves a better cooling effect of the battery module, is an obvious modification that [would have been] well-within the purview of an ordinary skilled artisan." *Id.*

As to the requirement that the hood comprise "a central ridge disposed proximate to the central portion of the lateral side of the housing" (claims 1, 16, 22), the Examiner found that "a central ridge" reads on Youngs's fins 2419 in central cavity 2708 that are configured to guide the airflow away from the central portion of the lateral side of the housing toward the thermally conductive plates on either side of the central portion. Final 7 (citing Youngs ¶ 128, Fig. 25). The Examiner determined that providing central cavity fins 2419 on Youngs's hood, rather than on the housing, would have been an obvious rearrangement of parts that would not have affected the manner in which the airflow is guided away from the central portion of the lateral side of the housing to the thermally conductive plates on either side of the central portion. *Id.* at 7–8.

The Appellant argues that the Examiner's determination that it would have been obvious to relocate central cavity fins 2419 (the alleged "central ridge") to Youngs's hood "conflicts with long-standing legal precedent

regarding ‘rearrangement of parts’ rejections, in addition to the teachings in the present Application. Indeed, the Appellant respectfully directs the Board to *Ex parte Chicago Rawhide Mfg. Co.*, 223 USPQ 351, 353 (Bd. Pat. App. & Inter. 1984).” Appeal Br. 11. The Appellant argues that Youngs’s “‘fan 2706 directs air *through central cavity 2708*,’ which differs from the claims requiring a central ridge disposed proximate to the central portion of the lateral side of the housing as a means to *divert* air away from the central portion of the lateral side of the housing. (Emphasis added.)” Appeal Br. 12 (quoting Youngs ¶ 130). The Appellant also argues that “fins 2419 *are a part of the heat sink 2418* and, thus, the air extracts heat from the fins 2419, whereas the claimed central ridge is not a part of the claimed heat sink, but instead is a part of the claimed hood.” *Id.* (citing Youngs ¶ 130).

The Appellant has argued persuasively that the Examiner failed to identify the requisite teaching or suggestion in the prior art to make the proposed rearrangement of Youngs’s central cavity fins. As explained by the predecessor to our reviewing court,

it is permissible to modify the disclosure of a reference unless such modification is prompted solely by appellant’s disclosure, rather than by a reasoned analysis of the prior art and by suggestions provided therein This is true regardless of whether the modification requires a reversal of parts or any other arrangement of . . . features.

In re Leslie, 547 F.2d 116, 120 (CCPA 1977). The Examiner has not identified a reason why the ordinary artisan would have made the proposed rearrangement of Youngs’s central cavity fins (*see* Ans. 11–12) and, therefore, appears to rely on improper hindsight reasoning. Accordingly, we do not sustain the rejection of independent claims 1, 16, and 22, or the rejections of dependent claims 2, 5–15, 20, 21, and 23–28.

CONCLUSION

Claims Rejected	35 U.S.C. §	Basis	Affirmed	Reversed
1, 2, 5–10, 12–16, 20– 25, 27, 28	103	Youngs, Inui		1, 2, 5–10, 12–16, 20–25, 27, 28
11, 26	103	Youngs, Inui, Aoki		11, 26
Overall Outcome				1, 2, 5–16, 20–28

REVERSED