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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte STEVEN DIAMOND, GABRIEL RISK, STANLEY HU, and SAMUEL YEONG-SHI CHANG

Appeal 2019-005515
Application 13/434,692
Technology Center 2800

Before GEORGE C. BEST, CHRISTOPHER C. KENNEDY, and MONTÉ T. SQUIRE, *Administrative Patent Judges*.

SQUIRE, *Administrative Patent Judge.*

DECISION ON APPEAL[1]

Appellant[2] appeals under 35 U.S.C. § 134(a) from the Examiner's decision to reject claims 1–20, which are all of the claims pending in this application. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

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[1] This Decision refers to the Specification filed Mar. 29, 2012 ("Spec."); Non-Final Office Action dated May 31, 2018 ("Non-Final Act."); Appeal Brief filed Oct. 31, 2018 ("Appeal Br."); and Examiner's Answer dated Mar. 7, 2019 ("Ans."). There is no reply brief.

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

CLAIMED SUBJECT MATTER

The invention relates to rechargeable battery systems and methods of operation within a battery system. Spec. ¶ 1, Figs. 5–9. Claim 1 illustrates the subject matter on appeal and is reproduced below from the Claims Appendix to the Appeal Brief:

> 1. A method of operation within a battery system, the method comprising:
>
> generating a plurality of ***initial estimate of state-of-charge (ESOC)*** values based upon open circuit voltage (OCV) corresponding to a plurality of battery blocks;
>
> ***charging the plurality of battery blocks in a battery pack during a first interval***;
>
> ***measuring respective charging voltages of the battery blocks after a start and before an end of the first interval*** to generate a respective ***actual initial state-of-charge (SOC)*** for each battery block;
>
> ***determining based on the charging and the measuring, for each battery block, a respective offset between the respective initial ESOC value and the respective actual initial SOC***;
>
> ***revising, for each battery block, the respective initial ESOC value*** based upon the determined respective offset to generate a ***revised ESOC***;
>
> identifying a first battery block of the plurality of battery blocks that has a charging voltage higher than a charging voltage of another of the battery blocks; and
>
> discharging the first battery block without discharging others of the plurality of battery blocks to reduce a difference between the charging voltage of the first battery block and the charging voltages of the other of the battery blocks wherein the discharging is based on the revised ESOC value for the first battery block wherein the discharging is executed before charging the plurality of blocks during a second interval.

Appeal Br. 1 (key disputed claim language italicized and bolded).

REFERENCES

The Examiner relies on the following prior art references as evidence in rejecting the claims on appeal:

Name	Reference	Date
Mabuchi et al. ("Mabuchi")	US 3,980,940	Sept. 14, 1976
Podrazhansky et al. ("Podrazhansky")	US 5,504,415	Apr. 2, 1996
Kadouchi et al. ("Kadouchi")	US 2003/0146737 A1	Aug. 7, 2003
Osborne	US 2004/0164706 Al	Aug. 26, 2004
Anderson et al. ("Anderson")	US 2011/0112781 Al	May 12, 2011
Kato[3]	JP 2010-220380A	Sept. 30, 2010

REJECTIONS

On appeal, the Examiner maintains (Ans. 3) the following rejections:

1. Claims 1, 5–6, 9–16, 19, and 20 are rejected under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over Kato in view of Mabuchi ("Rejection 1"). Non-Final Act. 8.

2. Claim 2 is rejected under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over Kato in view of Mabuchi in further view of Podrazhansky ("Rejection 2"). *Id.* at 26.

3. Claims 3 and 4 are rejected under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over Kato in view of Mabuchi in further view of Osborne ("Rejection 3"). *Id.* at 27.

[3] The Examiner refers to and cites the machine-generated translation of the Kato reference provided in the record.

4. Claims 7, 8, and 17 are rejected under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over Kato in view of Mabuchi in further view of Kadouchi ("Rejection 4"). *Id.* at 29.

5. Claim 18 is rejected under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over Kato in view of Mabuchi in further view of Anderson ("Rejection 5"). *Id.* at 31.

OPINION

Having considered the respective positions the Examiner and Appellant advance in light of this appeal record, we affirm the Examiner's rejections based essentially on the fact-finding and reasoning the Examiner provides in the Answer and Non-Final Office Action, which we adopt as our own. We add the following primarily for emphasis.

Rejection 1

The Examiner rejects claims 1, 5–6, 9–16, 19, and 20 under § 103(a) as obvious over the combination of Kato and Mabuchi. In response to the Examiner's rejection, Appellant presents argument for the patentability of independent claims 1, 10, 11, and 20 as a group but does not present separate argument for the patentability of any dependent claims. Appeal Br. 6, 11. We select claim 1 as representative and claims 5–6, 9–16, 19, and 20 stand or fall with claim 1. 37 C.F.R. § 41.37(c)(1)(iv).

The Examiner determines that the combination of Kato and Mabuchi suggests a method satisfying all of the elements of claim 1 and concludes the combination would have rendered the claim obvious. Non-Final Act. 8–14.

Appellant argues principally that the Examiner's rejection of claim 1 should be reversed because the Examiner misconstrues certain claim terms

and misapplies the improperly construed claim terms to Kato's disclosure. Appeal Br. 7 ("The Examiner has erred by misconstruing claim terms, Kato, or both."); *see also id.* at 6 ("**The rejection relies on an incorrect alleged showing of claim terms in Kato.**').

In particular, Appellant argues the Examiner misconstrues the term "charging voltages" and the phrases "charging the plurality of battery blocks in a battery pack during a first interval" and "measuring respective charging voltages of the battery blocks after a start and before an end of the first interval," as recited in the claim. *Id.* at 9–10. Appellant contends that, in contrast to the Examiner's interpretation, the term "charging voltages" is properly interpreted as measurements of battery block voltages while charging the battery block and the "charging the plurality of battery blocks in a battery block during a first interval" and "measuring respective charging voltages of the battery blocks after a start and before an end of the first interval" are properly interpreted to mean charging the battery blocks during the first interval and measuring the charging voltages of the battery blocks occurs during the same first interval. *Id.* at 9.

Appellant further argues the Examiner misconstrues the "initial estimate of state-of-charge (ESOC)," "actual initial state-of-charge (SOC)," and "revised ESOC" recitations of the claim. Appeal Br. 9. Appellant contends these phrases should be interpreted as all referring to the same, initial SOC for each battery block, as estimate, actual, and revised estimate respectively. *Id.* at 9. Appellant further contends the phrase "respective offset between the respective initial ESOC value and the respective actual initial SOC" is properly interpreted as a value by which the actual initial state-of-charge (SOC) is offset from the initial estimate of state-of-charge

(ESOC) as the ESOC is revised and all referring to the same initial SOC. *Id.* at 9–10. Appellant also contends that, because the term "revises" is used differently in Kato than in the claims, the portion of Kato the Examiner cites and relies on for disclosing the recitation "revised ESOC" does not teach or suggest that element of the claim. *Id.* at 10–11.

We do not find Appellant's arguments persuasive of reversible error in the Examiner's rejection based on the fact-finding and reasoning the Examiner provides at pages 5–18 of the Answer and pages 8–14 of the Non-Final Office Action, which a preponderance of the evidence supports. Rather, as we discuss below, in view of the claim construction analysis the Examiner provides at pages 8–14 of the Answer, we determine that the Examiner's interpretation of the claim language, including each of the claim terms and phrases at issue, constitutes the broadest reasonable interpretation consistent with the Specification. We also determine that the Examiner properly applies the broadest reasonable interpretation of the claim language to the cited art and provides the requisite factual basis and technical reasoning sufficient to support the Examiner's determination that the combination of Kato and Mabuchi suggests a method, which satisfies each of the limitations of claim 1 and the Examiner's conclusion that the combination would have rendered the claim obvious.

During prosecution, claims are given their broadest reasonable interpretation consistent with the specification. *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). The words used in a claim must be read in light of the specification, as they would have been interpreted by one of ordinary skill in the art at the time of the invention. *Id.* at 1364. Consistent with the broadest reasonable interpretation, claim terms are

presumed to have their ordinary and customary meaning (i.e., plain and ordinary meaning) as understood by a person of ordinary skill in the art in the context of the entire patent disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

Regarding the "charging the plurality of battery blocks in a battery pack during a first interval" and "measuring respective charging voltages of the battery blocks after a start and before an end of the first interval" recitations of claim 1, as the Examiner finds and explains (Ans. 8–9), the Specification does not provide any special definition for the terms "charging voltages" or "first interval" beyond the language recited in the claim. As the Examiner further finds (Ans. 9), neither the claim language nor the Specification impose a specific order on the performance of the recited steps. Appellant also does not identify or direct us to any description in the Specification indicating that these limitations must be construed narrowly to mean that the step of charging the battery blocks and the step of measuring respective charging voltages of the battery blocks is during the same first interval, as Appellant argues.

Thus, absent any special or scope-limiting definition in the Specification, we determine the Examiner correctly construes and applies the broadest reasonable interpretation of the phrases "charging the plurality of battery blocks in a battery pack during a first interval" and "measuring respective charging voltages of the battery blocks after a start and before an end of the first interval" so as not to impose a specific order on the performance of these method steps. *In re ICON Health & Fitness, Inc.*, 496 F.3d 1374, 1379 (Fed. Cir. 2007) ("[W]e look to the specification to see if it

provides a definition for claim terms, but otherwise apply a broad interpretation.").

Applying the broadest reasonable interpretation of the "charging the plurality of battery blocks in a battery pack during a first interval" and "measuring respective charging voltages of the battery blocks after a start and before an end of the first interval" claim language to the cited art, we discern no reversible error in the Examiner's finding that Kato discloses those limitations of the claim. Rather, we find a preponderance of the evidence supports the Examiner's analysis and determination (Ans. 10) that Kato teaches charging the plurality of battery blocks in a battery pack during a first interval (Kato, Figs. 10, 12, ¶ 43) and measuring respective charging voltages of the battery blocks after a start and before an end of the first interval to generate a respective actual initial state-of-charge (SOC) for each battery block (Kato, Figs. 4, 14, ¶ 46), which, because Appellant has not filed a reply brief, stand unrebutted.

For similar reasons, as the Examiner finds and explains at pages 11–14 of the Answer, we determine the Examiner correctly construes and applies the broadest reasonable interpretation for each of the remaining claim terms and phrases at issue, including the "initial estimate of state-of-charge (ESOC)," "actual initial state-of-charge (SOC)," "revised ESOC," and "respective offset between the respective initial ESOC value and the respective actual initial SOC." *ICON Health & Fitness*, 496 F.3d at 1379. Similarly, applying the broadest reasonable interpretation of the claim language to the cited art, we discern no reversible error in the Examiner's analysis and determination (Ans. 11–14) that Kato teaches or suggests each of those elements of the claim (Kato, Figs. 2, 4, 10, 12, 14, ¶¶ 36, 37, 43–46,

57), which we find a preponderance of the evidence supports and stand unrebutted.

Appellant also argues Kato does not teach or suggest "determining based on the charging and the measuring, for each battery block, a respective offset between the respective initial ESOC value and the respective actual initial SOC" in the manner claimed. Appeal Br. 12–14. Appellant contends that, in contrast to the Examiner's rejection, "Kato isn't measuring or determining an offset as described in the claims" (*id.* at 13) and "Mabuchi does not remedy the deficiencies of Kato" (*id.* at 14).

We do not find Appellant's argument persuasive of reversible error in the Examiner's rejection based on the fact-finding and reasoning the Examiner provides at page 16 of the Answer and page 9 of the Non-Final Action, which we find a preponderance of the evidence in the record supports. *See* Kato, Figs. 10–12, ¶¶ 36–39, 44, 45. As the Examiner finds (Ans. 16), Kato discloses a "ΔSOCn" parameter. Kato ¶ 45. According to Kato, ΔSOCn reflects SOC that fluctuated during the current system operation of each secondary battery cell and is obtained from the measured cell voltage fluctuation ΔVn and the voltage-SOC characteristic. *Id.* at 45. As the Examiner further finds (Ans. 16), Kato discloses that ΔSOCn can be obtained by calculating the difference between the respective initial ESOC value (SOC(SVn)), which is based on the startup voltage "SVn" of all the secondary battery cells and the respective actual initial SOC (SOC(EVn)), which is based on the stop-time cell voltage "EVn" of all of the secondary battery cells. *See* Kato, Fig. 12, ¶¶ 44–45. Kato also discloses that both SVn and EVn are measured and used in calculations for determining the minimum full charge capacity cell. *Id.* ¶¶ 36–39.

Thus, on the record before us, we agree with the Examiner that Kato's teachings in this regard would have reasonably suggested to one of ordinary skill the "determining based on the charging and the measuring, for each battery block, a respective offset between the respective initial ESOC value and the respective actual initial SOC" limitation of the claim. In particular, as the Examiner finds and explains (Ans. 16), applying the broadest reasonable interpretation of the claim phrase "determining based on the charging and the measuring, for each battery block, a respective offset" to the prior art, we find that Kato's disclosures regarding ΔSOCn, ΔVn, SVn, and EVn, how these parameters are measured or obtained, and the relationships between them, including how certain of the parameters are used in and/or relate to determining the minimum full charge capacity cell (*see* Kato, Figs. 10–12, ¶¶ 36–39, 44, 45) would have reasonably suggested to one of ordinary skill that language of the claim.

Appellant's arguments do not reveal reversible error in the Examiner's factual findings in this regard. Appellant's comments at pages 12–14 of the Appeal Brief are not persuasive because they merely reflect what Appellant contends Kato discloses and Appellant does not adequately explain how or why they indicate reversible error in the Examiner's rejection. Appellant's disagreement as to the Examiner's factual findings as to what the prior art teaches and would have reasonably suggested to one of ordinary skill, without more, is insufficient to establish reversible error. *SmithKline Beecham Corp. v. Apotex Corp.*, 439 F.3d 1312, 1320 (Fed. Cir. 2006) ("[M]ere statements of disagreement . . . as to the existence of factual disputes do not amount to a developed argument.").

Accordingly, we affirm the Examiner's rejection of claims 1, 5–6, 9–16, 19, and 20 under pre-AIA 35 U.S.C. § 103(a) as obvious over the combination of Kato and Mabuchi.

Rejections 2, 3, 4, and 5

The Examiner rejects claim 2 under § 103 as obvious over the combination of Kato, Mabuchi, and Podrazhansky (Rejection 2); claims 3 and 4 under § 103 as obvious over the combination of Kato, Mabuchi, and Osborne (Rejection 3); claims 7, 8, and 17 under § 103 as obvious over the combination of Kato, Mabuchi, and Kadouchi (Rejection 4); and claim 18 under § 103 as obvious over the combination of Kato, Mabuchi, and Anderson (Rejection 5). Non-Final Act. 26–32.

In response to the Examiner's rejections, Appellant does not present any additional substantive arguments. Rather, Appellant relies on the same arguments it previously discusses and presents above in response to the Examiner's Rejection 1. *See* Appeal Br. 15–17.

Thus, based on the fact-finding and reasoning the Examiner provides in the record, and for principally the same reasons we discuss above for affirming the Examiner's Rejection 1, we affirm the Examiner's rejections of claim 2 under pre-AIA 35 U.S.C. § 103(a) as obvious over the combination of Kato, Mabuchi, and Podrazhansky (Rejection 2); claims 3 and 4 under pre-AIA 35 U.S.C. § 103(a) as obvious over the combination of Kato, Mabuchi, and Osborne (Rejection 3); claims 7, 8, and 17 under pre-AIA 35 U.S.C. § 103(a) as obvious over the combination of Kato, Mabuchi, and Kadouchi (Rejection 4); and claim 18 under pre-AIA 35 U.S.C. § 103(a) as obvious over the combination of Kato, Mabuchi, and Anderson (Rejection 5).

DECISION SUMMARY

In summary:

Claim(s) Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1, 5–6, 9–16, 19, 20	103(a)	Kato, Mabuchi	1, 5–6, 9–16, 19, 20	
2	103(a)	Kato, Mabuchi, Podrazhansky	2	
3, 4	103(a)	Kato, Mabuchi, Osborne	3, 4	
7, 18, 17	103(a)	Kato, Mabuchi, Kadouchi	7, 18, 17	
18	103(a)	Kato, Mabuchi, Anderson	18	
Overall Outcome			1–20	

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a) (1)(iv).

AFFIRMED