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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JANG FUNG CHEN and CHRISTOPHER DENNIS BENCHER

Appeal 2019-006777
Application 15/910,775
Technology Center 2800

Before JAMES C. HOUSEL, N. WHITNEY WILSON, and
BRIAN D. RANGE, *Administrative Patent Judges*.

RANGE, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the
Examiner’s decision to reject claims 1, 3–5, 9–11, 13, 14, 16–18, and 20.
We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

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 Applied
Materials, Inc. Appeal Br. 3.

CLAIMED SUBJECT MATTER²

Appellant describes the invention as relating to an apparatus for a photolithography process. Spec. ¶ 2. Claims 1, 9, and 16 are the independent claims on appeal. Claim 1 is illustrative:

1. An illumination tool, comprising:
 - a microLED array, wherein the microLED array comprises two or more microLEDs, wherein each microLED is a vertical cavity surface-emitting laser and produces at least one light beam;
 - a beamsplitter adjacent the microLED array;
 - a camera adjacent the beamsplitter;
 - a projection optics system adjacent the beamsplitter;
 - a projection lens adjacent the projection optics system;
 - a focus sensor adjacent the camera; and
 - a distortion compensator coupled to the projection optics system and disposed between the projection lens and the beamsplitter.

² In this Decision, we refer to the Non-Final Office Action dated May 18, 2018 (“Non-Final Act.”), Final Office Action dated October 17, 2018 (“Final Act.”), the Advisory Action dated January 14, 2019 (“Adv. Act.”), the Appeal Brief filed April 3, 2019 (“Appeal Br.”), the Examiner’s Answer dated August 6, 2019 (“Ans.”), and the Reply Brief filed September 16, 2019 (“Reply Br.”).

REFERENCES

The Examiner relies upon the prior art below in rejecting the claims on appeal:

Name	Reference	Date
Luttikhuis et al. ("Luttikhuis")	US 2006/0132734 A1	June 22, 2006
Dodoc et al. ("Dodoc")	US 2008/0043345 A1	Feb. 21, 2008
Kiuchi et al. ("Kiuchi")	US 2011/0013162 A1	Jan. 20, 2011
Chen et al. ("Chen")	US 2012/0026478 A1	Feb. 2, 2012
De Jager	US 2016/0266498 A1	Sept. 15, 2016
Eugene Hecht, <i>Optics</i> : 4 th Edition, 218, 266, 267, San Francisco: Addison-Wesley, 2002 ("Hecht").		
William Henry, <i>MicroLED Arrays Find Applications in the Very Small</i> , Photonics Media, 2013, www.photonics.com/Article.aspx?AID=53224%PID=5&VID=109%ID=672 ("Henry").		

REJECTIONS

The Examiner maintains (Ans. 3) the following rejections on appeal:

- A. Claim 5 under 35 U.S.C. § 112(b) as indefinite. Final Act. 3.
- B. Claims 1, 3–5, 9–11, 13, and 14 under 35 U.S.C. § 103 as obvious over Chen in view of De Jager. *Id.* at 4.
- C. Claims 16–18 and 20 under 35 U.S.C. § 103 as obvious over Chen in view of De Jager and Luttikhuis. *Id.* at 6.

For rejections B and C, the Examiner further relies upon Dodoc, Kiuchi, and Hecht as supporting evidence. Adv. Act.; Ans. 3–5.

OPINION

We review the appealed rejections for error based upon the issues identified by Appellant and in light of the arguments and evidence produced thereon. *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential), cited with approval in *In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011) (“[I]t has long been the Board’s practice to require an applicant to identify the alleged error in the examiner’s rejections.”). After considering the evidence presented in this Appeal and each of Appellant’s arguments, we are not persuaded that Appellant identifies reversible error. Thus, we affirm the Examiner’s rejections for the reasons expressed in the Final Office Action and the Answer. We add the following primarily for emphasis.

Rejection A, indefiniteness. Appellant does not dispute the Examiner’s rejection of claim 5 under 35 U.S.C. § 112(b) as indefinite. Final Act. 3. We, therefore, summarily sustain the rejection. *Ex parte Frye*, 94 USPQ2d at 1075.

Rejections B and C, obviousness. Appellant does not, substantively, argue any claims separately. *See* Appeal Br. 7–9. Therefore, consistent with the provisions of 37 C.F.R. § 41.37(c)(1)(iv) (2018), we limit our discussion to claim 1, and all other claims on appeal stand or fall together with claim 1.

The Examiner finds that Chen teaches an illumination tool having most limitations of claim 1. Final Act. 4. The Examiner finds that Chen teaches LED illumination but does not explicitly teach the “vertical cavity surface-emitting laser” as claim 1 recites (i.e., a “VCSEL”). *Id.* The Examiner finds that De Jager teaches VCSELs as a light source for lithography. *Id.* at 4–5. The Examiner determines that it would have been obvious to one of ordinary skill in the art to modify Chen to include

VCSELs as a substitutable equivalent means of producing a scanning exposure pattern. *Id.*

With respect to claim 1’s recitation of a “distortion compensator,” the Examiner finds that Chen “fails to explicitly teach a distortion compensator disposed between the projection lens and the beamsplitter.” *Id.* at 5. The Examiner finds, however, that optical elements compensating for distortion were “well-known.” *Id.* The Examiner, in the Answer, cites three references—Dodoc, Kiuchi, and Hecht—to support the “well-known” finding. Ans. 4–5; *see also* Non-Final Act. 6 (citing Dodoc and Kiuchi); Adv. Act. (citing Hecht). The Examiner determines that it would have been obvious to one of ordinary skill in the art to modify Chen to include an arrangement of elements to compensate for distortion in order to produce a desired image on the substrate with the level of accuracy needed for microlithography. Final Act. 5.

Appellant disagrees with the Examiner’s statement as to what is “well-known” and argues that the Examiner errs by failing to cite references to support the “well-known” finding. Appeal Br. 7–8. Appellant appears to argue that we should assess the Examiner’s rejection based upon Chen and Henry alone without considering Dodoc, Kiuchi, or Hecht. *Id.* For the reasons explained below, this argument does not establish reversible error.

We begin our analysis by summarizing key portions of the prosecution history that led to the present dispute:

March 2, 2018: Claim 1 of Appellant’s originally filed application does not recite “a distortion compensator.” Spec. 14. Original claim 7 recited, among other things, “a distortion compensator coupled to the projection optics system.” *Id.*

May 18, 2018: The Examiner’s Non-Final Office Action rejects then-pending claim 1 as obvious over Chen and Henry. Non-Final Act. 3–4. With regard to claim 7, the Examiner acknowledges that Chen does not explicitly teach a distortion compensator but finds that optical elements compensating for distortion were well-known. *Id.* at 4–5. The Examiner explains why it would have been obvious to modify Chen to include well-known distortion compensation lens elements. *Id.*

The Examiner further states that “prior art made of record and not relied upon is considered pertinent to applicant’s disclosure,” and then discusses the disclosure of that art. *Id.* at 6. The Examiner finds that Kiuchi teaches a lithography apparatus having an array of projection optical systems “wherein lenses are actuated to correct distortion” and finds that Dodoc teaches a lithography projection optical system with “a pair of aspheric lenses configured to correct distortion.” *Id.*

August 20, 2018: Appellant responds to the Non-Final Office Action by amending claim 1 to recite a distortion compensator. Appellant argues that Chen and Henry lack distortion compensation, but Appellant does not directly dispute the Examiner’s prior finding that such systems were well-known. Reply to Office Action of May 18, 2018.

October 17, 2018: When addressing claim 1, the Examiner’s Final Office Action, now at issue, restates the Examiner’s position with respect to well-known distortion compensation lens elements. Final Act. 4–5. The Examiner notes that “Applicant did not traverse the well-known in the art statement presented in the previous action.” *Id.*

December 11, 2018: In a Response to the Final Office Action, Appellant, for the first time, disagrees with the Examiner’s position that a

distortion compensator is well-known, but Appellant does not address Kiuchi or Dodoc on the merits.

January 14, 2019: The Examiner's Advisory Action states that Dodoc and Kiuchi teach distortion compensation. The Advisory Action introduces Hecht as further evidencing that lens systems compensating for distortion were "well-known."

April 3, 2019: Appellant files the present Appeal Brief.

The history above does not indicate that the Examiner took any improper actions. The Manual of Patent Examining Procedure (9th Ed., Rev. 10.2019, June 2020) ("MPEP"), at Section 2144.03(A), explains that an Examiner may assert that facts are "well-known." Here, the Examiner did this in the Non-Final Office Action.

The MPEP further explains that if an applicant traverses an assertion that a fact is well-known, the Examiner must provide documentary evidence supporting the assertion. The MPEP explains that, to traverse, "an applicant must specifically point out the supposed errors in the examiner's action, which would include stating why the noticed fact is not considered to be common knowledge or well-known in the art." MPEP § 2144.03(C). If the applicant traverses, the Examiner then must provide documentary evidence. *Id.*

Here, Appellant disagreed with the Examiner's finding that distortion compensation lenses are well-known for the first time in the December 11, 2018, Response to Final Office Action. Contrary to the MPEP's requirements, however, Appellant did not state why distortion compensation elements would not have been common knowledge or well-known in the art. MPEP § 2144.03(C). The Examiner, nonetheless, responded by citing

Dodoc, Kiuchi, and Hecht as supporting the Examiner's finding that distortion compensation elements were well-known. Adv. Act. Appellant, even now on appeal, provides no evidence or substantive argument attempting to refute this finding.

Based on the circumstances explained above, Appellant fails to identify error in the Examiner's determination that distortion compensation elements were well-known. The Examiner properly cited Dodoc, Kiuchi, and Hecht as supporting this finding. In addition, Appellant's challenge of this determination for the first time in a Response after the Final Office Action was not timely as the Examiner made this determination in the Non-Final Office Action, and Appellant failed to explain why the challenge could not have been made earlier.

In reaching our determinations above, we are cognizant of *In re Hoch*, 428 F.2d 1341 (CCPA 1970). In that decision, Judge Rich, writing for the United States Court of Customs and Patent Appeals, addressed an appellant's complaint that the Board approved the Examiner's use of two prior art patents that the Examiner did not mention in the statement of rejection. *Id.* at 1342 n.3. The court explained that references should be included in a statement of rejection even if used in a minor capacity: "Appellant's complaint seems to be justified Where a reference is relied on to support a rejection, whether or not in a 'minor capacity,' there would appear to be no excuse for not positively including the reference in the statement of the rejection." *Id.*

The present circumstances are distinguishable from *In re Hoch*.³ Here, as explained above, the Examiner found that distortion compensation elements were “well-known” in the Non-Final Office Action and explicitly referred to Dodoc and Kiuchi in that Non-Final Office Action. Non-Final Act. 4–6. Although the Examiner states that Dodoc and Kiuchi were “not relied upon,” the Examiner also stated that they were “considered pertinent to applicant’s disclosure.” *Id.* at 6. Pursuant to the MPEP, the Examiner had no need to rely on Dodoc and Kiuchi until Appellant timely disputed the Examiner’s finding that distortion compensation elements were well-known. MPEP § 2144.03. Although the Examiner determines that Appellant’s challenge to the Examiner’s finding was untimely, once Appellant raised such a dispute, the Examiner properly responded by relying on Dodoc, Kiuchi, and Hecht. *See Adv. Act.*

Moreover, while we determine that Dodoc, Kiuchi, and Hecht are properly part of the Examiner’s rejection for the reasons explained above, even if they were not, Appellant’s arguments would not identify reversible error. The Examiner, as explained above, found that distortion compensation elements are well-known, and Appellant has not provided any persuasive evidence or argument refuting that finding on the merits. Appellant’s arguments unpersuasively exalt form over substance.

Appellant also argues that the Examiner has failed to explain how and why a person of skill in the art would be motivated to modify the

³ We also note that the portion of *In re Hoch* that we address here is dicta because the court affirmed the board’s determination based on the soundness of “rejections based solely on Molotsky and the French patent.” *In re Hoch*, 428 F.2d at 1342 n.3.

combination of Chen and Henry with Dodoc, Henry, or Hecht. Appeal Br. 8; Reply Br. 3–4. As explained above, however, the Examiner uses Dodoc, Henry, and Hecht to support the finding that distortion compensation elements were well-known. The Examiner states a reason why a person of skill in the art would have incorporated these well-known elements into the modified Chen apparatus (Final Act. 4; Ans. 5), and Appellant does not identify evidence or provide persuasive arguments refuting the Examiner’s stated reason to combine.

Because Appellant’s arguments do not identify reversible Examiner error, we sustain the Examiner’s rejections.

CONCLUSION

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
5	112(b)	Indefiniteness	5	
1, 3–5, 9–11, 13, 14	103	Chen, De Jager, Dodoc, Kiuchi, Hecht	1, 3–5, 9–11, 13, 14	
16–18, 20	103	Chen, De Jager, Lutikhuis, Dodoc, Kiuchi, Hecht	16–18, 20	
Overall Outcome			1, 3–5, 9–11, 13, 14, 16–18, 20	

TIME PERIOD FOR RESPONSE

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

AFFIRMED