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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte SCOTT A. MYERS and RICHARD H. KOCH

Appeal 2020-003218
Application 15/840,725
Technology Center 2600

Before JEAN R. HOMERE, JASON V. MORGAN, and
JEREMY J. CURCURI, *Administrative Patent Judges*.

CURCURI, *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 and 4–20. Appeal Br. 2. The Examiner has objected to claims 2 and 3 as being dependent upon a rejected base claim, but indicated these claims would otherwise be allowable if rewritten in independent form to include the limitations of the base claim. Final Act. 17. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM IN PART.

¹ We use the word Appellant to refer to “applicant” as defined in 37 C.F.R. § 1.42(a). Appellant identifies the real party in interest as Apple Inc. Appeal Br. 2.

CLAIMED SUBJECT MATTER

The claims are directed to “electronic devices with displays.” Spec.

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

1. An electronic device, comprising:

a housing that bends about a bend axis;

a display in the housing;

a temperature sensor; and

control circuitry configured to heat a portion of the display that overlaps the bend axis by illuminating pixels in the portion of the display in response to temperature information from the temperature sensor.

REFERENCES

The prior art relied upon by the Examiner is:

Name	Reference	Date
Cok	US 2006/0152454 A1	July 13, 2006
Kitagawa	US 2009/0144934 A1	June 11, 2009
Cassar	US 2013/0076658 A1	Mar. 28, 2013
Lee	US 2017/0064879 A1	Mar. 2, 2017
Wood	US 2018/0164854 A1	June 14, 2018
Shah	US 2018/0284856 A1	Oct. 4, 2018

REJECTIONS

Claims 1, 4, 6, 8–12, 18, and 19 are rejected under 35 U.S.C. § 103 as being unpatentable over the combination of Wood and Cok. Final Act. 2–9.

Claims 13–15 are rejected under 35 U.S.C. § 103 as being unpatentable over the combination of Wood, Cok, and Kitagawa. Final Act. 9–11.

Claims 5 is rejected under 35 U.S.C. § 103 as being unpatentable over the combination of Wood, Cok, and Cassar. Final Act. 11–12.

Claim 7 is rejected under 35 U.S.C. § 103 as being unpatentable over the combination of Wood, Cok, and Shah. Final Act. 12.

Claims 16 and 17 are rejected under 35 U.S.C. § 103 as being unpatentable over the combination of Wood, Cok, and Lee. Final Act. 13–14.

Claim 20 is rejected under 35 U.S.C. § 103 as being unpatentable over the combination of Wood, Cok, Lee, and Cassar. Final Act. 14–15.

OPINION

The Obviousness Rejection of Claims 1, 4, 6, 8–12, 18, and 19 over Wood and Cok

The Examiner finds Wood and Cok teach all limitations of claim 1. Final Act. 2–3; *see also* Ans. 3–5. The Examiner finds Wood teaches most limitations of claim 1. *See* Final Act. 2. The Examiner finds “[a]lthough Wood does disclose that its thermal elements 274 and 275 may be ‘**any heating device**’ that enables an increase in temperature in proximity to hinge 270 and 272’ [], Wood does not expressly disclose that the control circuitry heats the portion by illuminating pixels.” Final Act. 3 (quoting Wood ¶ 33).

The Examiner finds Cok “teach[es] that the control circuitry heats the portion by illuminating pixels.” Final Act. 3 (Cok ¶ 27); *see also* Cox ¶ 27 (“OLED devices exhibit a significant amount of self-heating.”). The Examiner reasons “it would have been obvious to a person having ordinary skill in the art at the time of [the] invention to add or substitute the teachings of Cok into that of Wood [] for the predictable result of generating heat resulting in an [] increase of temperature.” Final Act. 3 (citing Cox ¶ 27).

Appellant presents the following principal arguments:

“Removing Wood’s thermal elements 274 and 275 and using OLED pixels to heat the display would render Wood’s device inoperable for its intended purpose, as Wood teaches that thermal elements 274 and 275 are needed despite the presence of the OLED display.” Appeal Br. 9.

One of ordinary skill would not add an OLED display underneath Wood’s display, at least because the additional OLED display would not function as a display to a user, it would obfuscate Wood’s actual display, and it would not heat Wood’s display satisfactorily as taught by Wood (because of Wood’s requirement of non-display heating).

Appeal Br. 9.

“Cok fails to show or suggest selectively activating portions of the display to produce heat and is instead focused on mitigating the effects of heat on OLED elements.” Appeal Br. 9–10 (citing Cok ¶ 33).

“Although the Examiner suggests that it would [have been] obvious to selectively illuminate portions of a display in view of the Wood and Cok references, applicant respectfully submits that this is a positively claimed element missing from both references.” Reply Br. 3–4.

We are not persuaded of any reversible error in the Examiner’s contested findings. We concur with the Examiner’s conclusion of obviousness.

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).

When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103

likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. *Sakraida* [*v. Ag Pro, Inc.*, 425 U.S. 273 (1976)] and *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57 (1969)] are illustrative—a court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions.

KSR Int'l Co. v. Teleflex, Inc., 550 U.S. 398, 417 (2007).

The modification proposed by the Examiner is not a bodily incorporation of Cok's system into Wood's.² Cok's teaching of OLED devices exhibiting a significant amount of self-heating is readily-applicable to Wood's display because Wood recognizes the need to increase temperature in the proximity to hinge 270, 272 and Cok teaches a way to generate heat by illuminating pixels. *See* Cox ¶ 27, Wood ¶ 33. In short, using Wood's pixels to increase temperature in the proximity to hinge 270, 272, in light of Cok's teachings, would have been a predictable use of prior art elements according to their established functions—an obvious improvement. *See KSR*, 550 U.S. at 417.

Because Appellant has not demonstrated that the Examiner's proffered combination would have been “uniquely challenging or difficult

² “The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art.” *In re Keller*, 642 F.2d 413, 425 (CCPA 1981). “The obviousness analysis cannot be confined by the formalistic conception of the words teaching, suggestion, and motivation, or by overemphasis on the importance of ... the explicit content of issued patents.” *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 402 (2007).

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for one of ordinary skill in the art,” we agree with the Examiner that the proposed modification would have been within the purview of the ordinarily skilled artisan. *See Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007) (citing *KSR*, 550 U.S. at 418).

Regarding Appellant’s arguments, the proposed combination does not require removing Wood’s thermal elements. Nor does the proposed combination require adding an OLED display underneath Wood’s display. Further, regarding Appellant’s arguments direct to Wood and Cok individually, the rejection is based on the combined teachings of the references, as explained above. *See KSR*, 550 U.S. at 417; *see also* Final Act. 3, Ans. 3–5.

We, therefore, sustain the Examiner’s rejection of claim 1.

Regarding claim 6, Appellant argues

as discussed above in connection with claim 1, neither Wood nor Cok shows or suggests illuminating pixels to heat a display. Moreover, none of the cited references show or suggest illuminating pixels in a region of the display that overlaps a bend without illuminating pixels in adjacent portions to heat the display.

Appeal Br. 11; *see also* Reply Br. 4.

We do not see any error in the Examiner’s contested findings, and concur with the Examiner’s conclusion of obviousness.

Wood in Figure 5 depicts “a thermal element (506) that is configured to apply heat to an area of foldable display 504.” Wood ¶ 55. For the same reasons explained above when addressing claim 1, when combined with Cok, using Wood’s pixels in the area to increase temperature in the area would have been a predictable use of prior art elements according to their

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established functions—an obvious improvement. *See KSR*, 550 U.S. at 417; *see also* Final Act. 4, Ans. 5.

We, therefore, also sustain the Examiner’s rejection of claim 6.

Regarding claims 10 and 18, Appellant presents arguments similar to the arguments presented for claims 1 and 6. *See* Appeal Br. 11–12, 13–14; *see also* Reply Br. 4.

For reasons discussed above when addressing claims 1 and 6, we also sustain the Examiner’s rejection of claims 10 and 18.

We also sustain the Examiner’s rejection of claims 4, 8, 9, 11, and 12, which are not separately argued with particularity.

The Obviousness Rejection of Claims 13–15 over Wood, Cok, and Kitagawa

Claim 13 (emphasis added) further recites

engage the latching mechanism to hold the first and second housing structures to each other *in response to* measuring a temperature with the temperature sensor that is below a predetermined temperature; and

disengage the latching mechanism to release the first and second housing portions from each other *in response to* measuring a temperature with the temperature sensor that is above the predetermined temperature.

The Examiner finds Wood, Cok, and Kitagawa teach all limitations of claim 13. Final Act. 9–10; *see also* Ans. 5–7. In particular, the Examiner finds Kitagawa discloses a latching mechanism. *See* Final Act. 9 (citing Kitagawa Figs. 3–4, ¶¶ 13, 28–29). The Examiner reasons

it would have been obvious to a person having ordinary skill in the art at the time of [the] invention to add the teachings of Kitagawa to that of the combination of Wood and Cok for the

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predictable result of making it easy to lift a cover and stop the cover at a predetermined open/closed position to be held.

Final Act. 10 (citing Kitagawa ¶ 32).

Appellant presents the following principal arguments:

Kitagawa fails to show or suggest engaging the latch based [on] when “the temperature information corresponds to a temperature for the portion of the display that is below a predetermined temperature” and disengaging the latch when it is above the predetermined temperature. None of the cited references show or suggest this feature.

Appeal Br. 13. “Wood fails to show or suggest latching or otherwise restricting the movement of the display in response to determining that the temperature is below a predetermined threshold.” Reply Br. 4–5. “Although Kitagawa discloses an electromagnetic hinge mechanism that can selectively engage and disengage (Abstract), Kitagawa fails to show or suggest that the hinge is engaged or disengaged based on a measured temperature.” Reply Br. 5.

Appellant’s arguments persuade us the Examiner erred in rejecting claim 13. In short, Wood discloses heating in response to temperature information. *See* Wood ¶¶ 33–35. Kitagawa discloses a latching mechanism. *See* Kitagawa, Abstract. However, we do not see an adequate explanation supported by evidence drawn from the record that explains why one skilled in the art would have engaged/disengaged the latching mechanism *in response to temperature information* as recited in claim 13. *See* Reply Br. 4–5.

In reaching our decision, we emphasize that engaging a latching mechanism when the display in Wood is in the fully opened position, as suggested by the Examiner on page 7 of the Examiner’s Answer, still does not engage the latching mechanism *in response to temperature information*

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as recited in claim 13 because Wood (Wood, Fig. 7, block 704) describes generating heat in response to strain gauge measured semi-permanent deformation (Wood, Fig. 7, block 702).

We, therefore, do not sustain the Examiner's rejection of claim 13. We also do not sustain the Examiner's rejection of claims 14 and 15, which depend from claim 13.

The Remaining Rejections

Appellant does not present separate arguments for claims 5, 7, 16, 17, and 20. *See* Appeal Br. 6–14; *see also* Reply Br. 2–5.

We, therefore, sustain the Examiner's rejection of claim 5 as obvious over Wood, Cok, and Cassar; the Examiner's rejection of claim 7 as obvious over Wood, Cok, and Shah; the Examiner's rejection of claims 16 and 17 as obvious over Wood, Cok, and Lee; and the Examiner's rejection of claim 20 as obvious over Wood, Cok, Lee, and Cassar.

CONCLUSION

The Examiner's decision to reject claims 1 and 4–20 is affirmed in part.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	References	Affirmed	Reversed
1, 4, 6, 8–12, 18, 19	103	Wood, Cok	1, 4, 6, 8–12, 18, 19	
13–15	103	Wood, Cok, Kitagawa		13–15
5	103	Wood, Cok, Cassar	5	
7	103	Wood, Cok, Shah	7	

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16, 17	103	Wood, Cok, Lee	16, 17	
20	103	Wood, Cok, Lee, Cassar	20	
Overall Outcome			1, 4–12, 16–20	13–15

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 IN PART