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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* KAZUNORI OKUMOTO

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Appeal 2018-008615  
Application 14/315,373  
Technology Center 2600

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Before JOHNNY A. KUMAR, JOHN P. PINKERTON, and JASON M. REPKO, *Administrative Patent Judges*.

KUMAR, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant<sup>1</sup> appeals under 35 U.S.C. § 134(a) from the Examiner's Final Rejection of claims 1–17, which constitute all the claims pending in this application. We have jurisdiction over the pending claims under 35 U.S.C. § 6(b).

We affirm.

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<sup>1</sup> We use the word “Appellant” to refer to Applicant as defined in 37 C.F.R. § 1.42(a). According to Appellant, the real party in interest is the Assignee, Mitsubishi Electric Corporation. App. Br. 2.

STATEMENT OF THE CASE <sup>2</sup>

Disclosed embodiments of Appellant's invention relate to "a liquid crystal display device for controlling orientation directions of liquid crystal molecules using an electric field between electrodes provided on the same substrate." Spec. 1.

*Representative Claim*

A liquid crystal display device including a plurality of pixels arranged on a substrate, and rotating and controlling a liquid crystal molecule within a plane parallel to said substrate in each of said pixels,

each of said pixels comprising:

a liquid crystal layer;

a pixel electrode arranged below said liquid crystal layer; and

a counter electrode arranged below said pixel electrode with an insulation film located therebetween, wherein

pixels of the plurality of said pixels having a first slit formed to have an inclination angle with respect to a rubbing direction in said pixel electrode are defined as first pixels, said first slit being formed in said pixel electrode,

pixels of the plurality of said pixels having a second slit formed to have an inclination angle opposite to said first slit with respect to the rubbing direction in said pixel electrode are defined as second pixels, said second slit being formed in said pixel electrode,

in a case where a positive polarity or a negative polarity is allocated to each of said pixels for each frame, at least one of said first pixels having said positive polarity allocated thereto and at least one of said first pixels having said negative polarity allocated thereto exist in the same frame, and at least one of said second pixels having said positive polarity allocated thereto and at least one of said second pixels having said negative polarity allocated thereto exist in the same frame,

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<sup>2</sup> We herein refer to the Final Office Action, mailed October 19, 2018 ("Final Act."); Appeal Brief, filed March 19, 2018 ("App. Br."); Examiner's Answer, mailed July 13, 2018 ("Ans."); and the Reply Brief, filed August 31, 2018 ("Reply Br.").

at least one row of said pixels includes said first pixels and said second pixels,  
at least one column of said pixels includes said first pixels and said second pixels, and  
every slit in each pixel of said plurality of pixels is formed in said pixel electrode.

App. Br. 19 (Claims Appendix).

*Rejections*

- A. Claims 1–8 and 11–17 are rejected under 35 U.S.C. §103 as being unpatentable over Onogi in view of Lee in further view of Kwon.
- B. Claims 9 and 10 are rejected under 35 U.S.C. §103 as being unpatentable over Onogi in view of Lee in view of Kwon and in further view of Fujita.

<b>Name</b>	<b>Reference</b>	<b>Date</b>
Kwon et al.	US 2002/0047971 A1	April 25, 2002
Lee et al.	US 2005/0286003 A1	Dec. 29, 2005
Onogi et al.	US 2007/0222907 A1	Sept. 27, 2007
Fujita	US 2007/0229748 A1	Oct. 4, 2007

*Grouping of Claims*

Based upon Appellant’s arguments, and our discretion under 37 C.F.R. § 41.37(c)(1)(iv), we decide the appeal of §103 Rejection A of claims 1–8, and 11–17 on the basis of representative claim 1. We separately address §103 Rejection B, *infra*.

ANALYSIS

We have considered all of Appellant's arguments and any evidence presented. We have reviewed Appellant's arguments in the Briefs, the Examiner's obviousness rejections, and the Examiner's responses to Appellant's arguments. On this record, Appellant does not proffer sufficient argument or evidence to persuade us of error regarding the Examiner's underlying factual findings and ultimate legal conclusion of obviousness. In our analysis below, we highlight and address specific findings and arguments for emphasis.

*Rejection A of claims 1–8 and 11–17 under § 103*

Claim 1 recites, *inter alia*:

pixels of the plurality of said pixels having a first slit formed to have *an inclination angle* with respect to a rubbing direction in said pixel electrode are defined as *first pixels*, said first slit being formed in said pixel electrode, pixels of the plurality of said pixels having a second slit formed to have an *inclination angle opposite to said first slit* with respect to the rubbing direction in said pixel electrode are defined as *second pixels*, said second slit being formed in said pixel electrode,

...

at least one *row of said pixels includes said first pixels and said second pixels*, at least one column of said pixels includes said first pixels and said second pixels.

App. Br. 19 (Claims Appendix) (hereinafter, "the disputed limitation," emphasis added).

Regarding the disputed limitation, Appellant argues:

There is no suggestion whatsoever in Lee that pixels with slits having different inclination angles can alternate *in a row direction and a column direction*.

...

If Lee were combined with this [Fig. 12] embodiment of Onogi, it might be possible to achieve a configuration in which

vertically adjacent pixels A (or vertically adjacent pixels B) could have opposite inclination angles. Thus, this combination might arguably achieve the claimed feature of "*at least one column of said pixels includes said first pixels and said second pixels.*" However, this combination cannot reasonably be interpreted to render obvious the claimed feature of "*at least one row of said pixels includes said first pixels and said second pixels*" or a combination of these two claimed features.

App. Br. 11–13.

Appellant also argues:

***Onogi, Lee, and Kwon fail to disclose or suggest the “first pixels” and the “second pixels,” and the features that “at least one row of said pixels includes said first pixels and said second pixels” and “at least one column of said pixels includes said first pixels and said second pixels,” recited in claims 1 and 11-13.***

...

Onogi does not disclose or suggest the claimed first pixels and second pixels or forming all of the slits (e.g., in both pixels A and B) in only one of a pixel electrode or a counter electrode.

...

Lee at best suggests that pixels with slits having different inclination angles can alternate *in a column direction*. There is no suggestion whatsoever in any of the cited references that pixels with slits having different inclination angles can alternate *in row direction and a column direction*. Furthermore, as is argued on pages 12-13 of the Appeal Brief, it is unreasonable to combine Lee with the embodiments shown in Figs. 12-14 of Onogi to achieve the above-noted claimed features.

Reply Br. 1–3.

In other words, Appellant argues that the combination of Onogi, Lee, and Kwon does not teach or suggest pixels with slits having different

inclination angles that can alternate in a row direction and a column direction.

Regarding alternating pixels in a row direction and a column direction, the Examiner finds:

the office relied upon prior art Onogi et al display device wherein slits can be formed on pixel electrodes as well as common (i.e. counter) electrodes wherein at least two pixels (i.e. first and second pixels) having slits can be disposed on at least one row and on at least one column.

Ans. 4.

We agree with the Examiner. Figure 13 of Onogi shows different pixels A and B in alternate rows and alternate columns:

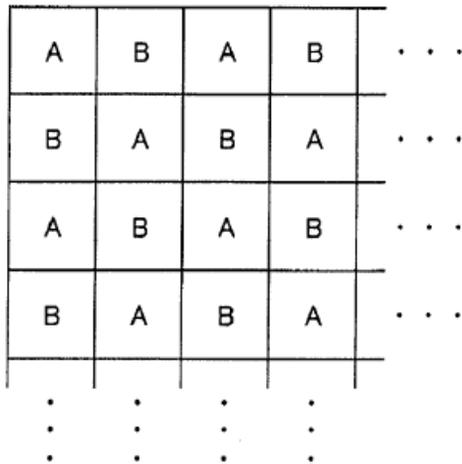


FIG. 13 shows a layout of a whole pixel region in a liquid crystal display device.

In addition, paragraph 61 of Onogi states:

the pixels A and B alternate in the left to right direction in each row and further alternate in the column direction (vertical direction) as well, as shown in FIG. 13. In other words, the pixels A and B are alternately disposed in the left to right direction in odd-numbered rows, and are alternately disposed in

the left to right direction in the opposite order in even-numbered rows.

As to pixels with slits with different inclination angles, the Examiner relies upon:

Lee et al (Par 0042 line 5-11) discloses a pixel electrode comprising a slit having inclination angel with respect to a rubbing direction and (Fig 4A and Par 0049) discloses pixels (P2) of the plurality of said pixels (P1 and P2) having a second slit being formed in pixel electrode and the second slit formed to have an inclination angle opposite to first slit.

Final Act. 6-7.

Figure 4a of Lee shows slits having different inclination angles:

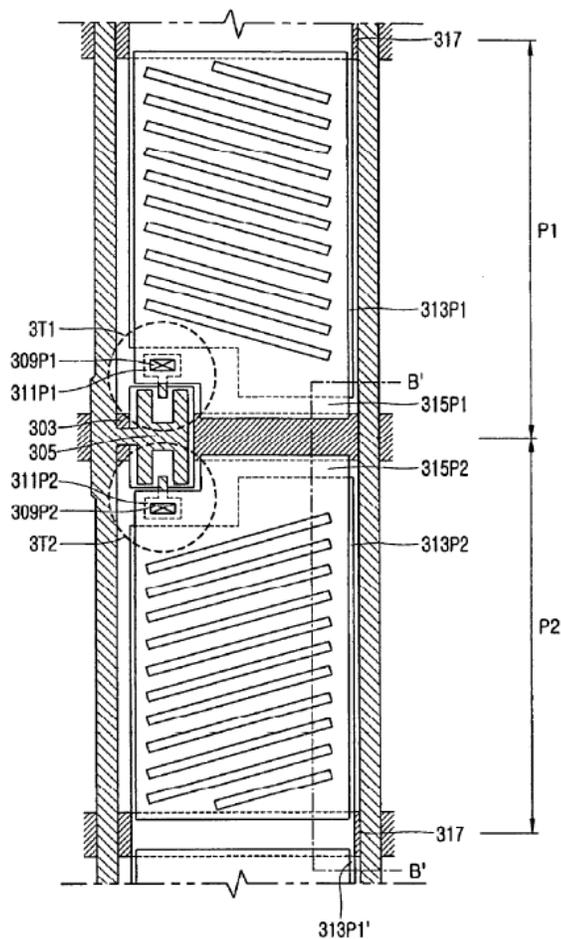


FIG. 4A is a plan view illustrating a unit pixel of an LCD device.

Regarding the disputed limitation, the Examiner finds, and we agree:

Therefore it would have been obvious and within the realm of skilled person in the art to modify Onogi et al display device with the teaching of Lee et al in view of Kwon et al produce display device wherein the first and second pixels are having slits with different inclination angel disposed in at least one row and in at least one column and said slits formed on a pixel electrodes or counter (i.e. common) electrodes as disclosed to yield same predictable result.

Ans. 5.

Based upon our review of the record, we find a preponderance of the evidence supports the Examiner's underlying factual findings. *Id.* As guided by our reviewing court: “the question under 35 U.S.C. § 103 is not merely what the references expressly teach but what they would have *suggested* to one of ordinary skill in the art at the time the invention was made.” *Merck & Co. v. Biocraft Labs., Inc.*, 874 F.2d 804, 807 (Fed. Cir. 1989) (quoting *In re Lamberti*, 545 F.2d 747, 750 (CCPA 1976)). (Emphasis added); *see also* MPEP § 2123.

Although Appellant additionally urges that combining Lee with the teachings of Onogi would be “unreasonable” (Reply Br. 3), we find Lee at least evidences that the general concept of *slits with opposite inclination angles* was well known in the art at the time of Appellant's invention, and thus would have produced predictable results when combined with the

teachings and suggestions of the primary Onogi, in the manner proffered by the Examiner. *See* Ans. 4–5; Lee, Fig. 4A.<sup>3</sup>

Our reviewing court provides applicable guidance. “Non-obviousness cannot be established by attacking references individually where the rejection is based upon the teachings of a combination of references.” *In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986) (citing *Keller*, 642 F.2d at 425). In determining obviousness, a reference “must be read, not in isolation, but for what it fairly teaches in *combination* with the prior art as a whole.” *Id.* (emphasis added).

On this record, we are not persuaded that combining the respective familiar elements of the cited Onogi, Lee, and Kwon references in the manner proffered by the Examiner would have been “uniquely challenging or difficult for one of ordinary skill in the art” at the time of Appellant’s invention. *Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007) (citing *KSR*, 550 U.S. at 418).

Based upon our review of the record, we find a preponderance of the evidence supports the Examiner’s underlying factual findings and ultimate legal conclusion of obviousness regarding Rejection A of representative independent claim 1.

Therefore, we sustain the Examiner’s obviousness Rejection A of independent representative claim 1. Grouped claims 2–8, and 11–17 are also rejected under Rejection A, and were not separately argued. Accordingly,

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<sup>3</sup> *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 401 (2007) (“[A] combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.”).

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these grouped claims fall with representative independent claim 1. *See* 37 C.F.R. § 41.37(c)(1)(iv).

*Rejection B of claims 9 and 10 under § 103*

Regarding Rejection B of dependent claims 9 and 10, Appellant argues that “Fujita, which is applied by the Examiner as allegedly disclosing arrangements of pixels having specific color materials allocated thereto, fails to overcome the above-noted deficiencies of Onogi, Lee, and Kwon.” App. Br. 18.

However, we have fully addressed above the specific reasons why we find Onogi, Lee, and Kwon teach or at least suggest the disputed limitation as discussed above regarding Rejection A of independent claim 1. Appellant advances no further separate, substantive arguments regarding the remaining claims rejected under Rejection B. Arguments not made are waived. *See* 37 C.F.R. § 41.37(c)(1)(iv). Accordingly, we sustain the Examiner’s obviousness Rejection B of dependent claims 9 and 10.

CONCLUSION

The Examiner did not err in rejecting claims 1–17, as being obvious under 35 U.S.C. § 103, over the combined teachings and suggestions of the cited references.

DECISION SUMMARY

<b>Claims Rejected</b>	<b>35 U.S.C. §</b>	<b>Reference(s)/Basis</b>	<b>Affirmed</b>	<b>Reversed</b>
1-8, 11-17	103	Onogi, Lee, Kwon	1-8, 11-17	
9, 10	103	Onogi, Lee, Kwon, Fujita	9, 10	
<b>Overall Outcome</b>			1-17	

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