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Paper 16
Date: January 5, 2022

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TIANMA MICROELECTRONICS CO. LTD.,
Petitioner,

v.

JAPAN DISPLAY INC.,
Patent Owner.

IPR2021-01058
Patent 7,636,142 B2

Before JO-ANNE M. KOKOSKI, KRISTINA M. KALAN, and ELIZABETH M. ROESEL, *Administrative Patent Judges.*

KOKOSKI, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314, 37 C.F.R. § 42.4

I. INTRODUCTION

Tianma Microelectronics Co. Ltd. ("Petitioner") filed a Petition to institute an *inter partes* review of claims 1–3, 5, 6, and 8 (the "challenged claims") of U.S. Patent No. 7,636,142 B2 ("the '142 patent," Ex. 1001). Paper 2 ("Pet."). Japan Display Inc. ("Patent Owner") filed a Preliminary Response. Paper 6 ("Prelim. Resp."). With Board authorization, Petitioner filed a Reply to the Preliminary Response ("Reply," Paper 7), and Patent Owner filed a Sur-reply to Petitioner's Reply ("Sur-reply," Paper 9).

Institution of an *inter partes* review is authorized by statute when "the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." 35 U.S.C. § 314 (2018); *see also* 37 C.F.R. § 42.4 (2021). Upon consideration of the Petition, the Preliminary Response, the Reply, the Sur-reply, and the evidence of record, we determine that Petitioner has established a reasonable likelihood of prevailing with respect to the unpatentability of at least one claim of the '142 patent, and we decline to exercise our discretion to deny institution. Accordingly, for the reasons that follow, we institute an *inter partes* review of claims 1–3, 5, 6, and 8 of the '142 patent.

A. Real Parties in Interest

Each party identifies itself as the real party-in-interest. Pet. 58; Paper 5, 1.

B. Related Matters

In their initial mandatory notices, the parties indicated that the '142 patent was asserted in *Japan Display Inc. v. Tianma Microelectronics Co. Ltd.*, No. 2:20-cv-00283 (E.D. Tex.) (the "District Court Action"). Pet. 59; Paper 5, 3. Patent Owner recently narrowed the number of patents and

claims asserted in the District Court Action pursuant to a court order (Ex. 1021, 2–3), stating that Patent Owner does "not currently assert claims from the '142 patent based solely on compliance with the Order" but intends "to seek reconsideration of the Order and reserve the right to amend this election to assert claims 1 and 6 of the '142 patent should the Court modify its Order" (Ex. 1022, 1). *See also* Paper 11, 1 (Petitioner's updated mandatory notice indicating that "Patent Owner has withdrawn the '142 patent from" the District Court Action). Patent Owner filed its Motion for Reconsideration of the Order in the District Court Action (Ex. 2017), and Petitioner filed an Opposition (Ex. 1023). On December 21, 2021, the District Court issued an Order denying Patent Owner's Motion for Reconsideration as moot, and ordering that Patent Owner "will proceed to trial asserting up to but not more than 8 patents and up to but not more than 20 asserted claims." Ex. 2019, 2.

C. The '142 Patent

The '142 patent, titled "Liquid Crystal Display Device," is directed to "a liquid crystal display device having upper and lower electrodes interposing an insulation layer therebetween in which an electric field opening part for passing an electric field is formed in the upper electrode and liquid crystal molecules are driven by applying a voltage between the upper and lower electrodes." Ex. 1001, code (54), 1:6–12. The '142 patent explains that, when the liquid crystal molecules rotate along an arc shape of the edge portions of the opening part, "there is a case where the rotation direction of the liquid crystal molecules is reversed" or "changes depending on locations." *Id*. at 2:3–8. "[T]his phenomenon in which the rotation direction changes depending on the locations is called disinclination." *Id*. at 2:8–10. The '142 patent further explains that, when disinclination occurs,

"display quality may be judged to be lowered." *Id*. at 2:33–35. The '142 patent teaches that "the shape, disposition, and the like of the opening part disposed in the upper electrode in relation with the lower electrode" must be considered in order to suppress the occurrence of disinclination. *Id*. at 2:41–44.

Figure 1 of the '142 patent is reproduced below.

FIG. 1

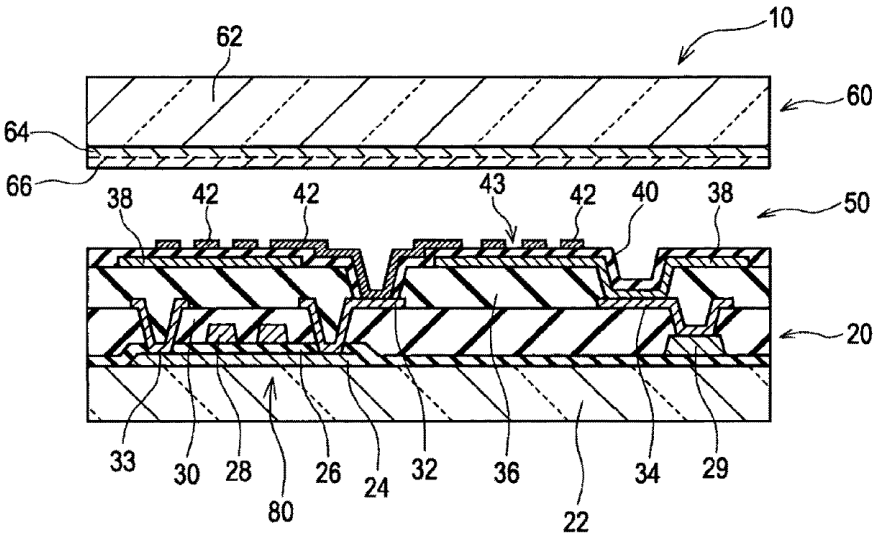

Figure 1 is a sectional view of one sub pixel of a color liquid crystal device using a fringe field switching ("FFS") mode. *Id*. at 5:6–7. Liquid crystal display device 10 includes component substrate 20 and opposing substrate 60 with "liquid crystal molecules 50 pinched in between." *Id*. at 5:18–22. Opposing substrate 60 includes glass substrate 62, black matrix 64, and color filter 66 in sequence from the side facing the user to the side facing component substrate 20. *Id*. at 5:25–29. Component substrate 20, also referred to a thin film transistor ("TFT") substrate, is "disposed on a side on which a TFT element used as a switching element 80 is disposed and faces the opposing substrate 60." *Id*. at 5:37–41. Component substrate 20 includes glass substrate 22, semiconductor layer 24,

gate insulation film 26, gate electrode wiring 28, common electrode wiring 29, interlayer insulation film 30, source wiring 32, drain wiring 33, common electrode connecting part 34, insulation film 36, common electrode 38, FFS insulation film 40, and pixel electrode 42. *Id*. at 5:47–54.

Slit 43, formed in pixel electrode 42, "is an electric field opening part for driving liquid crystal molecules using an electric field by applying a voltage between" pixel electrode 42 and common electrode 38. *Id*. at 6:43–47. A plurality of slits 43 "are disposed to be spaced apart from one another and be parallel to a longitudinal direction of the opening part." *Id*. at 6:49–52. Slit 43 has "a thin and long groove shape in which both ends in the longitudinal direction are closed, and thus the end portions in the longitudinal direction are formed to be round." *Id*. at 6:52–56.

The round end portions, also referred to as an "edge portion," is where the disinclination occurs, as shown in area D in Figure 4, reproduced below. *Id*. at 6:56–57.

FIG. 4

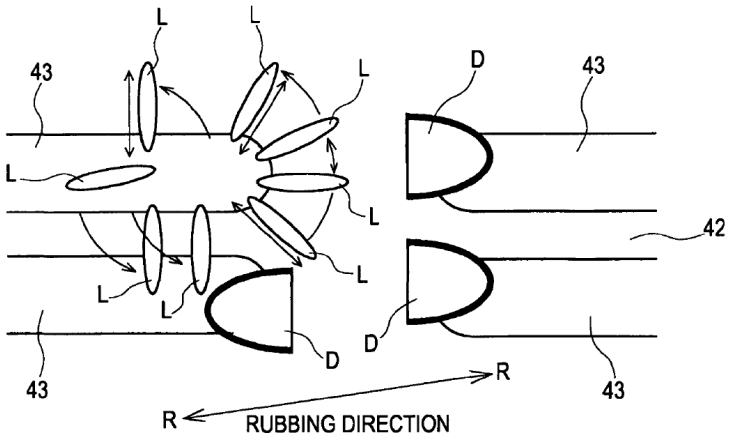

Figure 4 is "a schematic diagram showing the form of occurrence of the disinclination in the edge portion that is an edge portion of the slit 43." Ex. 1001, 7:1–4. Slit 43 is formed on a transparent conduction material film

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