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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte TOMIO AOKI, MASATAKE HAYASHI, SHOZO MASUDA,
and TADASHI MORIMOTO

Appeal 2019-001643
Application 12/579,856
Technology Center 2800

Before JEFFREY T. SMITH, JEFFREY B. ROBERTSON, and
BRIAN D. RANGE, *Administrative Patent Judges*.

ROBERTSON, *Administrative Patent Judge*.

DECISION ON APPEAL¹

STATEMENT OF THE CASE

Appellant² appeals under 35 U.S.C. § 134(a) from the Examiner's Final Rejection of claims 1, 2, 8, and 14–18. (Appeal Br. 6–13.) We have jurisdiction pursuant to 35 U.S.C. § 6(b).

¹ This Decision includes citations to the following documents: Specification filed October 15, 2009 (“Spec.”); Non-Final Office Action mailed December 15, 2017 (“Non-Final Act.”); Appeal Brief filed May 10, 2018 (“Appeal Br.”); Examiner’s Answer mailed October 16, 2018 (“Ans.”); and Reply Brief filed December 17, 2018 (“Reply Br.”).

² 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 Saturn

We REVERSE.

THE INVENTION

Appellant states the invention relates to a surface light source device and a liquid crystal display unit. (Spec. 1, ll. 13–14.)

Claim 1 is representative and reproduced below from the Claims Appendix to the Appeal Brief:

1. A surface light source device which illuminates a transmission type liquid crystal display unit from a back surface, the liquid crystal display unit having a display area including pixels arranged in a two-dimensional matrix, the surface light source device comprising:

PxQ surface light source units corresponding to PxQ imaginary display area units obtained by assuming that the display area of the liquid crystal display unit is divided into the PxQ imaginary display area units,

wherein:

light sources included in the surface light source units are individually controlled and are configured to emit white light,

the PxQ surface light source units comprise at least one first surface light source unit and each of the at least one first surface light source units includes first light sources, the white light emitted by the first light sources of each of the at least one first surface light source units has a luminance profile, and

for each luminance profile of the white light emitted by the first light sources of each of the at least one first surface light source unit, a center of mass of that luminance profile is located inside a circle of diameter D drawn around a center of mass of a corresponding first surface light source unit of the at least one first surface

light source unit, such that the first light sources of that corresponding first surface light source unit are configured to emit white light for an entirety of the surface light source unit, where D is determined by the equation $D = 0.2 S_0^{1/2}$ and S_0 is a surface area of that corresponding first surface light source unit.

(Appeal Br. (Claims Appendix) 14–15.)

Claims 2 and 8 are also independent, and recite a surface light source device, and transmission-type liquid crystal display unit, respectively, each claim reciting a center of mass of a luminance profile that coincides with or is located inside a circle diameter drawn around a center of mass of a surface light source unit. (*Id.* at 15–17.)

REJECTIONS

1. The Examiner rejected claims 1, 2, 5, 7, 9, 19, and 21 under pre-AIA 35 U.S.C. § 103(a) as obvious over Han et al. (US 7,780,312 B2, issued August 24, 2010, hereinafter “Han”) and Lee et al. (US 2007/0081330 A1, published April 12, 2007, hereinafter “Lee”).
2. The Examiner rejected claims 3, 4, 8, 20, and 22 under pre-AIA 35 U.S.C. § 103(a) as obvious over Han, Lee, and Minami (US 7,812,510 B2, issued October 12, 2010).

(Non-Final Act. 4–8.)

We limit our discussion to independent claim 1, which is sufficient for disposition of this appeal.

Rejection 1

ISSUE

The Examiner found, *inter alia*, Han discloses a surface light source device as recited in claim 1, including where the first surface light sources have a luminance profile that have a center of mass located inside a circle of diameter D drawn at a center of mass corresponding first surface light source unit. (Ans. 2–4; Non-Final Act. 4–5.) The Examiner found that Han does not disclose the light sources are individually controlled. (Non-Final Act. 5.) The Examiner found Lee discloses individual control of a plurality of LEDs located in a surface light source in order to obtain desired color of illumination, and determined, therefore, it would have been obvious to provide individual control to the LEDs of Han’s device. (*Id.*)

Appellant argues claim 1 recites two different centers of mass, a “center of mass of [a] luminance profile” and a “center of mass of a corresponding first surface light source unit,” and the Examiner does not set forth a sufficient basis to support that Han discloses a “center of mass of [a] luminance profile.” (Appeal Br. 8–12; Reply Br. 3–7.)

Accordingly, the dispositive issue with respect to this rejection is:

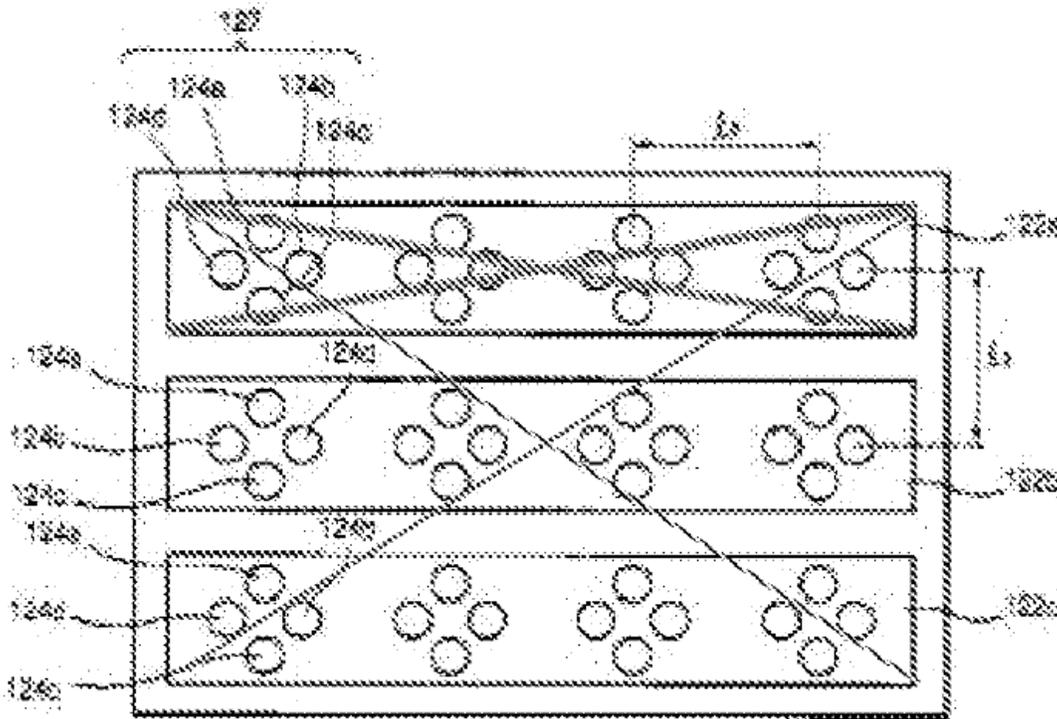
Did the Examiner err in finding Han discloses a “center of mass of [a] luminance profile” such that the first light sources are arranged with respect to the first surface light source unit as recited in claim 1?

DISCUSSION

We are persuaded that the Examiner erred in finding Han discloses the arrangement of first light sources as recited in claim 1. In the Answer, the

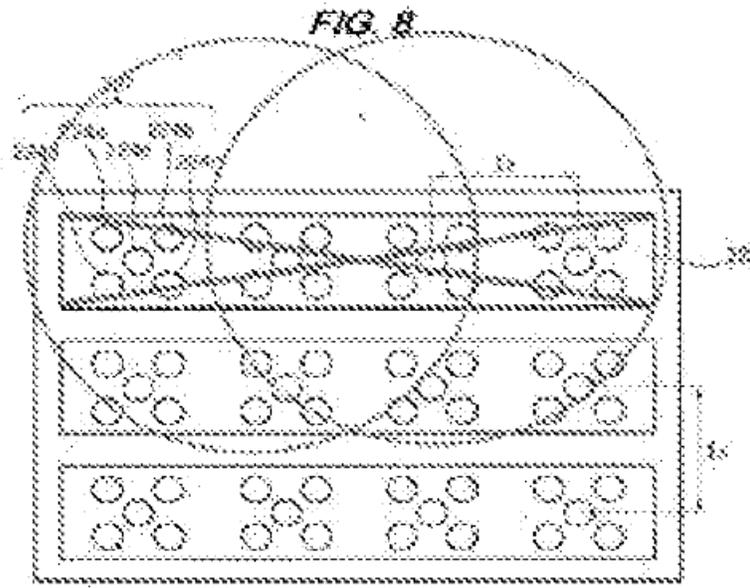
Examiner produced annotated versions of Figures 6 and 8 of Han, which are reproduced below (Ans. 4; best available copies):

FIG. 6



Annotated Figure 6 depicts a schematic perspective view of an arrangement of LED clusters according to an embodiment of Han's invention including a plurality of LED clusters 127 including four LEDs (124a-d) arranged in a diamond shape, where four LED clusters 127 are located on three metal core printed circuit boards (MCPCBs) (122a-c), the four LED clusters 127 and three MCPCBs (122a-c) are separated by distance 12. (Han, col. 4, ll. 37-39; col. 5, l. 35 - col. 6, l. 19; *see* Han, Fig. 6 and col. 1, ll. 57-58.) The Examiner has annotated the drawing to contain two sets of two diagonal lines, the first set having lines beginning at each diagonal corner of the rectangle representing MCPCB 122a and intersecting in the

center of MCPCB 122a, and the second set beginning at each corner at the top MCPCB 122a and extending diagonally to each corner of the bottom of MCPCB 122c, intersecting in the middle of MCPCB 122b, and asserts that the cross point with the two diagonal lines on the substrate are considered to be the center of mass of the illumination profile. (Ans. 4.)



Annotated Figure 8 depicts a schematic perspective view of an arrangement of LED clusters according to an embodiment of Han's invention including a plurality of LED clusters 227 including five LEDs (224a-e), where four LED clusters 227 are located on three metal core printed circuit boards (MCPCBs) (122a-c), the four LED clusters 127 and three MCPCBs (222a-c) are separated by distance 13. (Han, col. 4, ll. 43-45; col. 6, l. 57 - col. 7, l. 12; Fig. 8.) In addition to a similar annotation to the first set of diagonal lines at MCPCB 222a as described above for Figure 6, the Examiner has annotated Figure 8 to contain two intersecting circles, where the centers of the circles appear to be located within MCPCB 222a,

and which the Examiner asserts include the center of the luminance profile.
(Ans. 4.)

In addition to the annotated drawings, the Examiner made explicit findings that the surface light source units recited in claim 1 correspond to LED clusters 227 in Han (Fig 8) and also that a center of mass of a luminance profile of white light emitted by first light sources of source unit 227 is located inside a circle of diameter D drawn at a center of mass corresponding to a first light source unit (around LED 224e). (Ans. 2–3; Non-Final Act. 4.) The Examiner stated that the center of mass of the first luminance profile (122a) (Fig. 6) is at the point of intersection of the two diagonals shown in annotated Figure 6 as discussed above. (Ans. 3.) In addition, the Examiner found “the ‘center of mass’ can be considered in the middle of the whole panel including three luminance profiles [122a, 122b, 122c],” the second set of diagonal lines discussed above with respect to annotated Figure 6 of Han. (Ans. 3–4.)

However, as argued by Appellant, the Examiner has not provided a sufficient basis that the light sources of Han as annotated by the Examiner produce luminance profiles as shown by the annotations. In this regard, as Appellant points out, Han does not disclose any particular “luminance profile” for the LED light sources. (Appeal Br. 10; *See Han*, generally.) Han discloses an LCD device that has LEDs arranged for increasing brightness, contrast, and for preventing life span decrease in order to address problems with such properties found in prior art devices. (Han, col. 2, l. 46 – col. 3, l. 15.) Thus, although Han discloses arrangements that reduce heat emitted from the LEDs and produce bright, high quality images (Han, col. 5, ll. 28–34; col. 6, ll. 14–19; col. 7, ll. 25–27), there is no indication in Han

that a luminance profile produced by the LEDs would have a center of mass as indicated by the Examiner.

Moreover, the arrangement of LEDs in Han are different than the arrangement of LEDs leading to the particular relationship between the center of mass of the luminance profile of white light emitted by the first light sources and the center of mass of a corresponding first light source unit recited in claim 1. (Compare Figs. 6 and 8–11 of Han with Figs. 1A and 2A of the instant Application; *see also* Figs. 12A, 12B, 13A, 13b, 14A, and 14B of the instant Application showing other prior art LED arrangements.)

Thus, although we are of the view that the LEDs in Han would inherently have a luminance profile having a center of mass, there is insufficient support for the Examiner's position that the arrangement in Han would produce a luminance profile having a center of mass meeting the requirements recited in claim 1.

Accordingly, we reverse the Examiner's rejection of claim 1, as well as claims 8 and 14–18.

Rejection 2

For independent claim 2, which is the subject of Rejection 2, the Examiner relies on Minami for disclosing partition walls that specularly reflect a light. (Non-Final Act. 7.) Thus, the Minami fails to remedy the deficiencies noted above with respect to Rejection 1.

Accordingly, we reverse Rejection 2 for similar reasons as discussed above with respect to Rejection 1.

DECISION

Claims Rejected	Basis	Affirmed	Reversed
1, 8, and 14-18	§ 103(a) Han and Lee		1, 8, and 14-18
2	§ 103(a) Han, Lee, and Minami		2
Overall Outcome			1, 2, 8, and 14-18

REVERSED