Paper No. 14

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte LESTER L. HODSON
and CHARLES E. PRIMM

Appeal No. 1998-0888
Application 08/314,036[1]

ON BRIEF

Before HAIRSTON, BARRETT, and DIXON, Administrative Patent Judges.

BARRETT, Administrative Patent Judge.

DECISION ON APPEAL

[1] Application for patent filed September 28, 1994, entitled (as amended in Paper No. 4) "Large Field Emission Display (FED) Made Up Of Independently Operated Display Sections Integrated Behind One Common Continuous Large Anode Which Displays One Large Image Or Multiple Independent Images."

This is a decision on appeal under 35 U.S.C. § 134 from the final rejection of claims 1-6 and 9.

We reverse.

BACKGROUND

The disclosed invention is directed to a flat panel field emission device (FED) and, more particularly, to the use of multiple emitter (cathode) plates and a single anode to create a large FED display.

Claim 1 is reproduced below.

> 1. A large display electron emission apparatus comprising:
>
> a memory;
>
> at least one microprocessor coupled to said memory;
>
> a controller coupled to said microprocessor;
>
> at least two row drivers and at least two column drivers coupled to said controller;
>
> at least two emitter plates coupled to said row and column drivers; and
>
> a single anode coupled to said emitter plates.

The Examiner relies on the following prior art:

Spindt et al. (Spindt)	4,857,799	August 15, 1989
Van Gorkom et al. (Van Gorkom)	5,347,199	September 13, 1994
Yamagishi et al. (Yamagishi)	5,488,386	January 30, 1996

Claims 1-6 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Spindt.

Claim 9 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Spindt in view of Yamagishi or Van Gorkom.

We refer to the Final Rejection (Paper No. 6) (pages referred to as "FR__") and the Examiner's Answer (Paper No. 12) (pages referred to as "EA__") for a statement of the Examiner's position, and to the Brief (Paper No. 11) (pages referred to as "Br__") for a statement of Appellants' arguments thereagainst.

OPINION

35 U.S.C. § 102(b)

"Anticipation is established only when a single prior art reference discloses, expressly or under principles of inherency, each and every element of a claimed invention." RCA Corp. v. Applied Digital Data Systems, Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984).

Claim 1 recites, in part, "at least two row drivers and at least two column drivers coupled to said controller; at least two emitter plates coupled to said row and column drivers . . . ."

First, Appellants argue that Spindt teaches a structure having a single anode plate 12 and a single emitter plate 13 (Br4) and, so, does not disclose at least two emitter plates. The Examiner finds that Spindt shows "a display panel (11) which is made up of a single anode and a plurality of cathodes (emitter plates)" (FR2). The Examiner provides a little more detail in the Examiner's Answer and finds that Spindt teaches "at least two emitter plates coupled to said row and column drivers (figure 2, item 14 or figure 5, item[s] 31-33)" (EA4) and "item 13 is the back plate structure that holds the multiple emitter plates[;] its [sic, it's] not a single emitter plate as interpreted by Appellant" (EA8). The Examiner also states that figure 2 shows a cut section of 4 X 10 emitter plates and that figures 3 and 5 show details of the individual emitter plates of figure 2 (EA5).

It appears that the Examiner interprets the common bases 14 for each pixel in figures 2 and 13 as emitter plates. However, bases 14 are not separate plates, but are diffusion regions in the single plate backing structure 13 (col. 3, lines 27-33):

> The backing structure 13 can be of a semiconductive material, such as silicon, and the three cathodes of each

> pixel are provided with a common base 14 which is an electrically conductive section extending through the backing structure and provided by, for example, standard diffusion or thermal migration (a form of diffusion) techniques.

Accordingly, we find that Spindt does not teach at least two emitter plates. The Examiner states that "[t]he present language in the claims is very broad facilitating many possible interpretations of the claims" (EA9). However, the Examiner has not provided any interpretation that would show that the language of "at least two emitter plates" would read on a single plate with doped regions. Nor has the Examiner advanced an interpretation of "two emitter plates" being other than two separate planar structures.

In addition, we note that the Examiner's rejection of claim 1 appears to be inconsistent with the rejection of claim 9, wherein the Examiner admits that Spindt does not teach plural emitter plates coupled to a common anode plate.

Second, Appellants argue that Spindt does not teach multiple emitter plates which are independently controlled (Br4-5). While claim 1 does not require independent control, it requires that each emitter plate has its own row driver and column driver coupled to the controller. These separate

drivers permit, but do not positively require, the emitter plates (or at least a row and column on each emitter plate) to be independently controlled; compare claims 2 and 4 wherein the controller operates a first emitter plate or a first section of the single anode independently. The Examiner finds that Spindt teaches "at least two row drivers and at least two column drivers coupled to said controller (figure 4, item 28 and 29)" (EA4).

Figure 4 shows a single block 28 of base (row) drivers and a single block 29 containing gate (column) drivers, where there are three gates to be energized for each base (col. 5, lines 2-7). Compare this to Appellants' figure 2 where there are four emitter plates 50, 60, 70, and 80, each having its own row driver block and column driver block. However, there must be a driver for each base and three drivers for each column in Spindt; this is why, for example, block 29 refers to "GATE DRIVERS" (plural). The claim limitations to "row drivers" and "column drivers" are broad enough to refer to these individual row and column drivers, rather than an aggregation of individual row and column drivers. Nevertheless, Spindt still lacks plural emitter plates.

Third, Appellants argue that Spindt does not teach the use of an anode plate having independently controlled sections (Br5). This argument is related to the second argument. As noted, claim 1 does not recite independently controlled sections.

Lastly, we note that claim 1 recites "a single anode coupled to said emitter plates." This limitation does not require that the single anode structure is a single anode plate; compare claim 9 which recites "only one anode plate." A single anode could be plural anode plates electrically connected together.

Because we find that Spindt does not disclose the claimed "at least two emitter plates," the Examiner has failed to establish a prima facie case of anticipation. The rejection of claims 1-6 is reversed.

35 U.S.C. § 103(a)

Claim 9 recites, in part, "a plurality of emitter plates, each emitter plate including plural microtip electron emitters; only one anode plate coextensive with the emitter plates . . . ." Except for the emitter plate including plural

microtip electron emitters, these are the same limitations addressed with respect to the rejection of claim 1.

The Examiner finds that Spindt "does not build the FED back structure with multiple separate plate sections coupled to a single anode . . ., but instead the Spindt et al. display panel (11) is made up of a single cathode (emitter) backing plate with each [?, suggests plural] plate having plural electron emitters on it coupled to a single anode" (FR3). However, in the Examiner's Answer, the Examiner finds that Spindt teaches "a plurality of emitter plates (figure 2, item 14 or figure 5, item[s] 31-33)" (EA5), which is the same finding as with regard to claim 1. The Examiner's Answer further states (EA6):

> The Spindt et al. design[,] to summarize [the] above[,] meets all of the limitations of claim 9, except for if one was to interpret the claims in light of the specification. To be specific[,] Spindt et al. does not assemble separate individual emitter plates to form his back structure[;] in contrast[,] his emitter plates are in individual sections which make up a solid one piece continuous[-]type structure. Spindt et al. does not use this [disclosed] modular building technique.

The Examiner finds that Van Gorkom and Yamagishi disclose combining independent, modular FED emitter plates to form one large continuous FED image (FR3; EA6-7). The Examiner

concludes that using a single anode coupled to multiple emitter planes of the Van Gorkom or Yamagishi design would achieve the desired continuous pitch quality sought by Van Gorkom and would require only a single vacuum envelope (FR3; EA7).

Appellants argue that Van Gorkom and Yamagishi teach creation of a large display by combining multiple complete small displays, each emitter plate having an anode plate, and neither suggests a structure having a single anode plate and multiple emitter plates as claimed (Br7-8).

Initially, we do not understand what the Examiner means by his statement (EA6) that Spindt meets all of the limitations of claim 9 except if one was to interpret the claims in light of the specification. The Examiner does not explain what term(s) need interpretation in light of the specification. It seems that the only term which can be in question is "emitter plates," and we do not see how the Examiner can reasonably read plural plates onto the single backing plate 13 with diffused regions 14 in Spindt.

We agree with Appellants that none of the references suggests a display having a single anode plate and multiple

emitter plates. While the Examiner has invented reasons why it would have been obvious to provide a single anode (to maintain a continuous pixel pitch and to provide a single vacuum envelope), there is no factual support for these reasons in the references, which show combining complete small displays. The only motivation in the record before us for providing a single anode is found in Appellants' disclosure. This is hindsight. Although we find it hard to believe that using a common faceplate (not necessarily an anode for a FED) over a mosaic of display elements (not necessarily emitters for a FED) to provide a larger display was not known in the display art, there is no evidence of this in the record before us. Thus, we conclude that the Examiner has failed to establish a prima facie case of obviousness. The rejection of claim 9 is reversed.

CONCLUSION

The rejections of claims 1-6 and 9 are reversed.

REVERSED

KENNETH W. HAIRSTON Administrative Patent Judge	)
LEE E. BARRETT Administrative Patent Judge	) BOARD OF PATENT APPEALS AND INTERFERENCES
JOSEPH L. DIXON Administrative Patent Judge	)

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