

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 30

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte SHIGERU KAGAYAMA

Appeal No. 1999-1574
Application No. 08/321,324

HEARD: OCTOBER 10, 2001

Before FLEMING, LALL, and BARRY, Administrative Patent Judges.
LALL, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection¹ of claims 1 through 19 which constitute all the claims in the application.

The invention relates to an image forming apparatus with time-divisional electric-field control of data and selection

¹An amendment after the final rejection was filed as paper no. 18 and its entry was approved by the examiner, see paper no. 21.

Appeal No. 1999-1574
Application No. 08/321,324

electrodes. In conventional image forming apparatuses, each apparatus is controlled in accordance with the voltage to be applied to each control electrode. Thus, a problem arises that the cost of the driving circuit is high.

The image forming apparatus according to the present invention includes a carrier for carrying charge particles, and electric-field controller that is disposed so as to face the carrier and for directly controlling the charge particles within the electric field, and a back electrode that is disposed so as to face the carrier through the electric-field controller. Electric-field controller has openings through which the charge particles pass. The apparatus also includes a plurality of electrode units that are disposed adjacent the openings, the plurality of electrode units being time-divisionally driven. The plurality of electrodes are time-divisionally driven, and electric-field control operation is effectively performed. Accordingly, if data electrodes and selection electrodes are used, an image recording operation can be properly performed because both of the electrodes can provide sufficient toner flying (supplying) force to the toner, and in addition, the number of driving ICs can be

Appeal No. 1999-1574
Application No. 08/321,324

reduced, resulting in a reduction of cost. A further understanding of the invention can be achieved by the following claim.

1. An image forming apparatus comprising:
 - carrying means for carrying charged toner particles;
 - electric-field control means for controlling a flow of the charged toner particles; and
 - a back electrode disposed facing said carrying means through said electric-field control means wherein said electric-field control means comprises an electrode unit including a plurality of openings through which the charged toner particles pass, a data electrode adjacent at least two of the plurality of openings, and a selection electrode adjacent at least one of the plurality of openings; and
 - means for time-divisionally driving said data electrode and said selection electrode.

The examiner relies on the following references:²

Saito et al. (Saito)	59214053	Dec. 03,
1984 (published Japanese Patent Application)		
Kitamura	5-84963	Apr. 06,
1993 (published Japanese Patent Application)		

Claims 1 to 3, 7 to 13 and 17 to 19 stand rejected under 35 U.S.C. § 102 as being anticipated by Kitamura.

²Our decision takes into account the English translation of these two Japanese references. These two translations are enclosed with this decision.

Appeal No. 1999-1574
Application No. 08/321,324

Claims 4 to 6 and 14 to 16 stand rejected under 35 U.S.C.
§ 103 as being unpatentable over Kitamura in view of Saito.

Appeal No. 1999-1574
Application No. 08/321,324

Rather than repeat the arguments of appellant and the examiner, we make reference to the briefs³ and the answer for the respective details thereof.

OPINION

We have considered the rejections advanced by the examiner and the supporting arguments. We have, likewise, reviewed the appellant's arguments set forth in the briefs.

We reverse.

We note that there are two separate statutory grounds of rejection⁴ which we consider below.

Rejection under 35 U.S.C. § 102

A prior art reference anticipates the subject of a claim when the reference discloses every feature of the claimed invention, either explicitly or inherently. See Hazani v. United States Int'l Trade Comm'n, 126 F.3d 1473, 1477, 44 USPQ2d 1358, 1361 (Fed. Cir. 1997), and RCA Corp. v. Applied

³A reply brief was filed as paper no. 24 on May 7, 1999. The examiner noted the entry of the reply brief but filed no further response to the arguments in the reply brief, see paper no. 27.

⁴The rejection based on 35 U.S.C. § 112, second paragraph, has been overcome and is not on appeal, see answer at page 2.

Appeal No. 1999-1574
Application No. 08/321,324

Digital Data Sys., Inc., 730 F.2d 1440, 1444, 221 USPQ 385,
388 (Fed. Cir. 1984).

The examiner rejects claims 1 to 3, 7 to 13, and 17 to 19 under this ground of rejection at pages 3 and 4 of the examiner's answer. We take claim 1 as illustrative of this group. On pages 16 to 19 of the brief, appellant argues how the Kitamura reference does not disclose the features recited in claim 1. More specifically, appellant argues, brief at page 19, that:

Appellant's specification discloses that the respective data for two apertures are alternately supplied to each data electrode 5 through an on/off operation of an applied voltage, and at the same time, a selection voltage for selecting one of the two apertures to be switched on is applied to the selection electrodes 4A, 4B. That is, an on/off voltage is applied to the selection electrodes 4A, 4B in synchronism with the transmitted data, and in this case, a time-divisional driving of $\frac{1}{2}$ duty can be performed. Therefore, the number of driving circuits used for the data electrodes can be reduced to a half, and the cost of the driving circuits can be greatly reduced.

Furthermore, at the oral hearing, held on October 10, 2001, the appellant's attorney represented that the recited "means for time-divisionally driving said data electrode and said selection electrode" clause in claim 1 should be interpreted in light of the disclosure in the specification

Appeal No. 1999-1574
Application No. 08/321,324

stated above and also at page 8, lines 17-28 of the specification. In view of this interpretation of the "time-divisionally driving" phrase, the examiner's position, that any image forming apparatus such as Kitamura's system would have a time-divisional application of the voltage to the various electrodes in order for the system to operate, otherwise there will be blobs of ink all at one time if all the electrodes were applied the charge voltage at the same time, is not sustainable to meet the limitation recited in the claim.

Appellant further argues, brief at page 18, that "[n]o explanation has ever been provided throughout prosecution as to how the gate electrodes 3 and data electrodes 4 of JP 963 [Kitamura], which are vertically spaced apart from each other, can possibly be interpreted as being adjacent the same opening of an aperture." Appellant's attorney reiterated the argument at the oral hearing that the recited clause "wherein said electric-field control means comprises an electrode unit including a plurality of openings through which the charged toner particles pass, a data electrode adjacent at least two of the plurality of openings, and a selection electrode

Appeal No. 1999-1574
Application No. 08/321,324

adjacent at least one of the plurality of openings;" implies that the data electrode and the selection electrode are in the same plane and are adjacent to the same opening in the appellant's disclosure, see Figure 3A and Figure 3B, whereas in Kitamura (Figure 1) selection (i.e., gate) electrodes 3 and data electrodes 4 are at the opposite planes of the opening 5 which is clearly different from the appellant's disclosure. With this interpretation of the location of the data electrodes and the selection electrodes, we agree with the appellant's argument that Kitamura does not disclose the physical structure which appellant has recited in claim 1 as supported by the disclosure of Figures 3A and 3B of the specification.

Therefore we do not sustain the anticipation rejection of claim 1 by Kitamura.

With respect to the other independent claim, claim 11, it also contains the same two limitations discussed above. Furthermore, Appellant's attorney at the hearing advocated the interpretation of the phrase "circuitry" to be the same as the means-plus-function phrase, and also the same interpretation of the recitation of the location of the data electrode and

Appeal No. 1999-1574
Application No. 08/321,324

the selection electrode being on the same plane, as interpreted in regard to claim 1. Therefore, for the same rationale, we do not sustain the anticipation rejection of claim 11 by Kitamura. Since claims 2 to 3, 7 to 10, 12, 13, and 17 to 19 are dependent on the independent claims 1 and 11, they also contain the same limitations, and therefore, the anticipation rejection of these claims by Kitamura is also not sustained.

Appeal No. 1999-1574
Application No. 08/321,324

Rejection under 35 U.S.C. § 103

As a general proposition, in an appeal involving a rejection under 35 U.S.C. § 103, an examiner is under a burden to make out a prima facie case of obviousness. If that burden is met, the burden of going forward then shifts to the applicant to overcome the prima facie case with argument and/or evidence. Obviousness, is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. See In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); In re Hedges, 783 F.2d 1038, 1039, 228 USPQ 685, 686 (Fed. Cir. 1986); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); and In re Rinehart, 531 F.2d 1048, 1051-52, 189 USPQ 143, 147 (CCPA 1976).

The examiner rejects claims 4 to 6, and 14 to 16 under this ground at pages 4 and 5 of the examiner's answer. The examiner has used Saito for the teaching of two selection electrodes for each of said data electrodes recited in claim 4, for example. However, Saito does not cure the deficiency of Kitamura noted above. Therefore, we do not sustain the obviousness rejection

Appeal No. 1999-1574
Application No. 08/321,324

of claims 4 to 6, and 14 to 16 over Kitamura and Saito.

Appeal No. 1999-1574
Application No. 08/321,324

The decision of the examiner rejecting claims 1 to 3, 7
to 13, and 17 to 19 under 35 U.S.C. § 102, and claims 4 to 6,
and
14 to 16 under 35 U.S.C. § 103 is reversed.

REVERSED

MICHAEL R. FLEMING)	
Administrative Patent Judge)	
)	
)	
)	
PARSHOTAM S. LALL)	BOARD OF PATENT
Administrative Patent Judge)	APPEALS AND
)	INTERFERENCES
)	
)	
LANCE LEONARD BARRY)	
Administrative Patent Judge)	

PSL:hh

Appeal No. 1999-1574
Application No. 08/321,324

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