

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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. 20

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte THOMAS L. TOTH
and
ARMIN H. PFOH

Appeal No. 1999-0831
Application No. 08/576,066

ON BRIEF

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

HAIRSTON, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1 through 16. In an Amendment After Final (paper number 6), claims 1 and 9 were amended.

The disclosed invention relates to a system and method for determining and adjusting x-ray beam position in a multi-slice computed tomography system. A detector used in the

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multi-slice

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computed tomography system has at least two rows of detector cells that are displaced along the z-axis.

Claim 1 is illustrative of the claimed invention, and it reads as follows:

1. A system for determining and adjusting x-ray beam position in a multi-slice computed tomography system, the computed tomography system including an x-ray source having a focal spot and a multi-slice detector having at least two rows of detector cells displaced along a z-axis, the x-ray source producing an x-ray beam along the z-axis, said beam position determining and adjusting system comprising an adjustable prepatient collimator aligned with the x-ray source so that a beam from the x-ray source is directed towards said collimator, a collimator tracking unit coupled to said collimator for adjusting the position of said collimator, and a control computer coupled to the detector cells for receiving signals from the cells, said control computer coupled to said collimator tracking unit for providing control signals thereto, said control computer configured to:

obtain separate signals from a first detector cell in the first detector cell row and a second detector cell in the second detector cell row of the detector;

determine beam position from the intensities of the separate signals; and

provide control signals to said collimator tracking unit to control adjustment of said prepatient collimator based on a determined beam position.

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The references relied on by the examiner are:

Lonn 1993	5,241,576	Aug. 31,
Yamazaki et al. (Yamazaki)	5,469,429	Nov. 21, 1995
Dobbs et al. (Dobbs)	5,550,886	Aug. 27, 1996
1994)		(filed Nov. 24,

Claims 1 through 3 and 9 through 11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamazaki in view of Dobbs.

Claims 4 through 8 and 12 through 16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamazaki in view of Dobbs and Lonn.

Reference is made to the reply brief (paper number 12), the supplemental brief (paper number 17) and the answer (paper number 11) for the respective positions of the appellants and the examiner.

OPINION

We have carefully considered the entire record before us, and we will reverse the obviousness rejection of claims 1 through 16.

According to the examiner (answer, page 3), "Yamazaki et al. disclose all of the elements of applicant's [sic, applicants'] invention except for the correction of the 'Z'

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shift being made with a prepatient collimator instead of X-ray tube positioning." The examiner notes (answer, page 4) that focal spot dislocation "is determined by taking $(A-B)/(A+B)$ where A and B are the outputs of detectors located side-by-side in the slice direction (column 7, lines 4-17)." The examiner concludes (answer, page 4) that "[g]iven this equation and the explicit statement that the detector can be used for position detecting, the main detecting unit must be a multi slice array." With respect to the alleged missing teaching in Yamazaki, the examiner indicates (answer, page 4) that "Dobbs et al. teach that it is well known in the X-ray CT art to correct for focal spot positioning by adjusting a prepatient collimator instead of moving the X-ray source." Based upon the teachings of Dobbs, the examiner reaches the conclusion (answer, page 4) that "[i]t would have been obvious to one of ordinary skill in the art to move the collimator instead of the source motivated by the inherent benefits to moving the lighter and more easily manipulated structure of the collimator."

Although we agree with appellants' argument (supplemental brief, pages 16 and 17) that Yamazaki fails to disclose

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"correction with a prepatient collimator," we note that such an argument is beside the point since the examiner relied on Dobbs for such a teaching. In any event, appellants have not challenged the propriety of combining the teachings of Dobbs with those of Yamazaki. Instead, appellants argue (supplemental brief, pages 17 through 19 and 25; reply brief, pages 1 and 2) that the system in each of the applied references uses a single-slice detector as opposed to a multi-slice detector.

The examiner's contentions to the contrary notwithstanding, we agree with the appellants' argument that the applied references only teach single-slice systems (Yamazaki, column 5, lines 17 through 21 and column 8, lines 1 through 15 and 64 through 67; Dobbs, column 4, lines 42 through 47 and column 7, line 53 through column 8, line 14). Although Yamazaki indicates that "there may be provided a plurality of detectors in the channel direction that is perpendicular to the slice position" (column 8, lines 64 through 67), Yamazaki never indicates how many rows/columns of detectors are provided in "the channel direction that is perpendicular to the slice position." We refuse to speculate

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as to the teachings of this reference. In summary, the 35 U.S.C. § 103(a) rejection of claims 1 through 3 and 9 through 11 is reversed.

Turning to the obviousness rejection of claims 4 through 8 and 12 through 16, Lonn discloses a plurality of detectors 41 through 49 of a detector array 14 that are arranged in a plurality of rows (Figures 5 and 6; column 5, lines 46 through 56). Lonn explains that the output signals from the detectors 41 through 49 are summed together to produce detector attenuation values 32 (column 5, lines 57 through 62). Inasmuch as this processing step by Lonn differs from the detector signal processing performed in the disclosed and claimed invention, Lonn can not be used to cure the noted shortcoming in the teachings of Yamazaki and Dobbs. Accordingly, the 35 U.S.C. § 103(a) rejection of claims 4 through 8 and 12 through 16 is reversed.

DECISION

The decision of the examiner rejecting claims 1 through 16 under 35 U.S.C. § 103(a) is reversed.

REVERSED

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KENNETH W. HAIRSTON)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
JOSEPH F. RUGGIERO)	APPEALS AND
Administrative Patent Judge)	INTERFERENCES
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KWH:hh

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