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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte BRUNO KRISTIAAN BERNARD DE MAN, LIN FU, and
MARK ALAN FRONTERA

Appeal 2019-006259
Application 15/014,847
Technology Center 2800

Before JEFFREY B. ROBERTSON, N. WHITNEY WILSON, and
JANE E. INGLESE, *Administrative Patent Judges*.

WILSON, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant¹ appeals under 35 U.S.C. § 134(a) from the Examiner's July 3, 2018 decision finally rejecting claims 1–20 (“Final Act.”). We have jurisdiction over the appeal under 35 U.S.C. § 6(b).

We affirm.

¹ We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies General Electric Company as the real party in interest (Appeal Br. 1).

CLAIMED SUBJECT MATTER

Appellant's disclosure generally relates to a method for generating a high resolution X-ray image of a patient (Spec. ¶ 6). The method includes the use of small focal spot size for an X-ray source of an imaging system and positioning the patient offset from the center of the imaging volume (Abstract, Spec. ¶ 6). Details of the claimed method are set forth in representative claim 1, which is reproduced below from the Claims Appendix to the Appeal Brief:

1. A method for generating a high-resolution image, comprising:

specifying a focal spot size for an X-ray source of an imaging system that is less than a size of a detector cell of a detector of the imaging system;

positioning a region-of-interest of an imaged subject such that the region-of interest is offset from an iso-center of a field-of-view of the imaging system towards the X-ray source;

acquiring a first set of projection data over a limited angular range that is less than $180^\circ + \alpha$, wherein the X-ray source moves in the limited angular range on a first side of the field-of-view containing the region-of-interest when acquiring the first set of projection data;

changing one or both of a relative orientation of the region-of-interest or a relative position of the region-of interest within the field-of-view such that the region-of-interest remains offset from the iso-center after the change to its orientation or position;

acquiring a second set of projection data over the limited angular range, wherein the X-ray source moves in the limited angular range on a second side of the field-of-view containing the region-of-interest when acquiring the second set of projection data;

registering at least the first set of projection data and the second set of projection data to generate registered projection data; and

reconstructing the registered projection data to generate an image.

REJECTIONS

1. Claims 1–3, 5–8, 10–16, and 18–20 are rejected under 35 U.S.C. § 103(a) as unpatentable over Jensen² in view of Schoenmaekers³ and Sadakane.⁴

2. Claim 4 is rejected under 35 U.S.C. § 103(a) as unpatentable over Jensen in view of Schoenmaekers and Sadakane, and further in view of Heuscher.⁵

3. Claims 9 and 17 are rejected under 35 U.S.C. § 103(a) as unpatentable over Jensen in view of Schoenmaekers and Sadakane, and further in view of Pack.⁶

DISCUSSION

Appellant argues the claims together (*see* Appeal Br. 14, 15). Accordingly, we focus our discussion on the rejection of claim 1 over Jensen, Schoenmaekers, and Sadakane. The remaining claims will stand or fall with claim 1.

² Jensen et al., US 2016/0278719 A1, published September 29, 2016.

³ Schoenmaekers et al., US 8,199,878 B2, issued June 12, 2012.

⁴ Sadakane et al, US 2007/0041491 A1, published February 22, 2007.

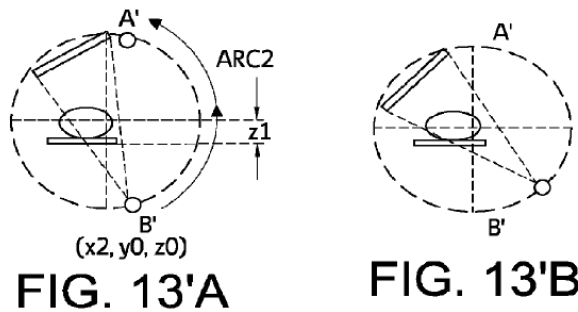
⁵ Heuscher et al, US 9,332,946 B2, issued May 10, 2016.

⁶ Pack et al., US 2014/0254905 A1, published September 11, 2014.

The Examiner finds, inter alia, that Jensen teaches most of the limitations set forth in claim 1, including:

changing one or both of a relative orientation of the region-of-interest or a relative position of the region-of interest within the field-of-view (Fig. 12, s602, position of the region of interest is changed to a second position), ***wherein the region-of-interest remains offset from the iso-center*** (Fig. 13'A-13'B, Region of interest offset) after the change to its orientation or position.

(Final Act. 4, emphasis added). Thus, the Examiner finds that FIGS. 13'A and 13'B, reproduced below, show the region of interest being offset from the iso-center:



Jensen's FIGS. 13'A and 13'B show an image acquisition mode according to one or more embodiments of its disclosed subject matter.

Appellant provides a detailed explanation of how Jensen moves its target volume along the X-axis to be able to generate its images (Appeal Br. 10–11), but does not specifically explain why the Examiner's finding that FIGS. 13'A and 13'B show its region of interest is offset from isocenter is erroneous (*id.*).

Appellant points to Paragraphs 49 and 50 of Jensen as supporting its position. However, those paragraphs do not specifically state or suggest that the region of interest is not offset from isocenter during treatment. At most, Paragraph 49 states: "For isocentric treatment, the treatment center is aligned

with the isocenter 191 *during a set up procedure*” (Jensen ¶ 49, emphasis added). As shown in the emphasized portion above, alignment with the treatment center with the isocenter is only done during set up. Then, as explained by Appellant, the treatment center is moved along the x-axis prior to the images being taken. Moreover, as found by the Examiner, Jensen specifically states that movement of the patient treatment couch moves the target volume from the first position (where the treatment center is aligned with the isocenter) to different positions (Ans. 8, citing Jensen ¶ 56).

Thus, Appellant’s arguments pertaining to the teachings relating to offset positioning from the isocenter are not persuasive of reversible error in the rejection.

The Examiner finds that Jensen does not specifically disclose a focal spot for an X-ray source of an imaging system that is smaller than the size of the detector cell (Final Act. 5). The Examiner finds that Schoenmaekers teaches this relative size of the focal spot and the detector cells, and determines that it would have been obvious to incorporate this feature into Jensen’s system “to increase the quality of the images by reducing the noise,” and that doing so would have yielded predictable results (Final Act. 5, citing Schoenmaekers 23:61–24:5).

Appellant asserts simply that “Schoenmaekers fails to teach or even suggest, ‘specifying a focal spot size for an X-ray source of an imaging system that is less than the size of a detector cell of a detector of the imaging system,’” but does not explain why the portions of Schoenmaekers cited by the Examiner do not support the finding relied on in the rejection. This undeveloped assertion is unpersuasive of reversible error. *In re Lovin*, 652

F.3d 1349, 1357 (Fed. Cir. 2011) (a cognizable argument requires more substantive arguments than a mere recitation of the claim elements and a naked assertion that the corresponding elements were not found in the prior art).

Appellant’s arguments with respect to Sadakane are unpersuasive for the same reasons. Moreover, as explained by the Examiner, the rejection is based on a combination of references, and arguments simply asserting that any one reference does not teach each of the claim elements cannot be persuasive of reversible error. Appellant “cannot show non-obviousness by attacking references individually where, as here, the rejections are based on combinations of references.” *In re Keller*, 642 F.2d 413, 426 (CCPA 1981).

Accordingly, we affirm the rejections.

CONCLUSION

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1–3, 5–8, 10–16, 18–20	103	Jensen, Schoenmaekers, Sadakane	1–3, 5–8, 10–16, 18–20	
4	103	Jensen, Schoenmaekers, Sadakane, Huescher	4	
9, 17	103	Jensen, Schoenmaekers, Sadakane, Pack	9, 17	
Overall Outcome			1–20	

Appeal 2019-006259
Application 15/014,847

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED