

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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VARIAN MEDICAL SYSTEMS, INC.,  
Petitioner,

v.

WILLIAM BEAUMONT HOSPITAL AND ELEKTA, LTD.,  
Patent Owner.

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Case IPR2016-00187  
Patent 7,826,592 B2

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Before MICHAEL W. KIM, KALYAN K. DESHPANDE, and  
MATTHEW R. CLEMENTS, *Administrative Patent Judges*.

KIM, *Administrative Patent Judge*.

FINAL WRITTEN DECISION  
*35 U.S.C. § 318(a) and 37 C.F.R. § 42.73*

## I. INTRODUCTION

### A. Background

Varian Medical Systems, Inc. (“Petitioner”) filed a Petition requesting *inter partes* review of claims 25–29 and 35–42 of U.S. Patent No. 7,826,592 B2 (Ex. 1001, “the ’592 patent”). Paper 1 (“Pet.”). William Beaumont Hospital and Elekta, Ltd. (collectively “Patent Owner”) filed a Preliminary Response. Paper 11 (“Prelim. Resp.”). On May 6, 2016, based on the record before us at the time, we instituted an *inter partes* review of claims 25–29 and 35–42. Paper 14 (“Decision to Institute” or “Dec.”). We instituted review on the following challenges to the claims:

Reference(s)	Basis	Challenged Claim(s)
Jaffray ’97 <sup>1</sup> and Span <sup>2</sup>	§ 103(a)	25–28
Jaffray ’97, Span, and Antonuk <sup>3</sup>	§ 103(a)	29
Jaffray ’97	§ 102(b)	35 and 40–42
Jaffray ’97 and Lim <sup>4</sup>	§ 103(a)	36–39

Dec. 22–23.

After institution, Patent Owner filed a Patent Owner Response (Paper 25, “PO Resp.”), and Petitioner filed a Reply (Paper 41, “Reply”). Petitioner relies on the Declarations of Dr. James J. Balter (Exs. 1003, 1500). Patent

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<sup>1</sup> D.A. Jaffray and J.W. Wong, *Exploring “Target of the Day” Strategies for a Medical Linear Accelerator With Conebeam-CT Scanning Capability*, PROCEEDINGS OF THE XII<sup>TH</sup> INTERNATIONAL CONFERENCE ON THE USE OF COMPUTERS IN RADIATION THERAPY, MEDICAL PHYSICS PUBLISHING, pp. 172–75 (May 27–30, 1997) (Ex. 1004, “Jaffray ’97”)

<sup>2</sup> U.S. Patent No. 4,459,485, issued July 10, 1984 (Ex. 1005).

<sup>3</sup> U.S. Patent No. 5,262,649, issued Nov. 16, 1993 (Ex. 1006).

<sup>4</sup> WO 91/06876, published May 16, 1991 (Ex. 1008).

Owner relies on the Declaration of Ali Bani-Hashemi, Ph.D. (Ex. 2080). We heard oral argument on January 31, 2017. A transcript of the argument has been entered in the record (Paper 59, “Tr.”).

We have jurisdiction under 35 U.S.C. § 6. The evidentiary standard is a preponderance of the evidence. *See* 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73.

For the reasons expressed below, we conclude that Petitioner has demonstrated by a preponderance of evidence that claims 25–29 and 35–42 are not patentable.

#### *B. Related Proceedings*

Petitioner and Patent Owner identify the following district court proceeding concerning the ’592 Patent: *Elekta Ltd. v. Varian Medical Systems, Inc.*, No. 2:15-cv-12169-AC-MKM (E.D. Mich.). Pet. 1; Paper 9, 1. Patent Owner identifies further the following *inter partes* reviews directed to U.S. Patent No. 6,842,502 B2, to which the ’592 Patent claims priority: IPR2016-00160, IPR2016-00162, IPR2016-00163, and IPR2016-00166. Paper 9, 2. Patent Owner identifies additionally the following *inter partes* reviews directed to U.S. Patent No. 7,471,765 B2, to which the ’592 Patent claims priority: IPR2016-00169, IPR2016-00170, and IPR2016-00171. *Id.*

#### *C. The ’592 Patent*

The ’592 Patent discloses that it is directed to a conebeam computed tomography system that employs an amorphous silicon flat-panel imager for use in radiotherapy applications where images of a patient are acquired with

the patient in a treatment position on a treatment table. Ex. 1001, 1:29–34.  
Figure 17(b) of the '592 Patent is reproduced below.

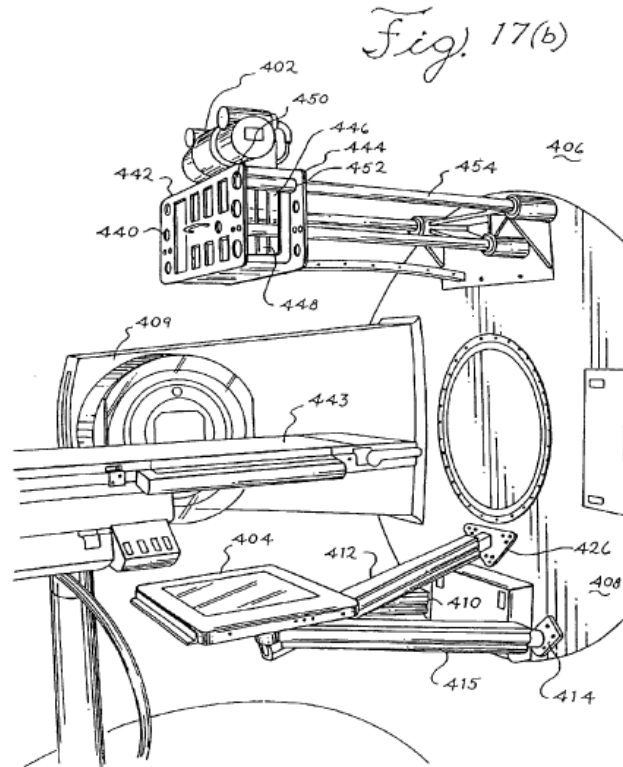
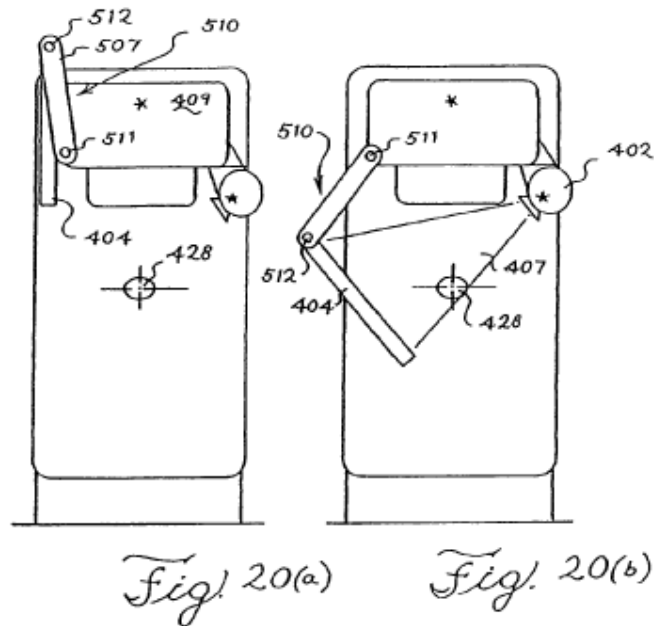


Figure 17(b) depicts a diagrammatic view of one orientation of an exemplary wall-mounted cone beam computerized tomography system employing a flat-panel imager. Ex. 1001, 6:60–63. Specifically, wall-mounted cone beam computerized tomography system 400 includes an x-ray source, such as x-ray tube 402, and flat-panel imager 404 mounted on gantry 406. Ex. 1001, 19:53–58. X-ray tube 402 generates beam of x-rays 407 in a form of a cone or pyramid. Ex. 1001, 19:58–61. Flat-panel imager 404 is mounted to a face of flat, circular rotatable drum 408 of gantry 406. Ex. 1001, 20:11–14. X-ray beam 407 produced by x-ray tube 402 is approximately orthogonal to treatment beam 411 produced by radiation therapy source 409. Ex. 1001, 20:14–16. Attachment of flat-panel imager

404 is accomplished by imager support system 413, which includes arms 410, 412, 415 that are attached to plate 424. Ex. 1001, 20:17–19.

Figures 20(a)–(b) of the '592 patent are reproduced below.



Figures 20(a)–(b) show a front view of a wall-mounted cone beam computerized tomography system of Figure 17, but employing another mechanism for attaching flat-panel imager 404. Ex. 1001, 7:6–9.

Specifically, imager support system 507 includes pivoting arm 510 that has one end 511 pivotably attached to a lower corner of radiation therapy source 409, and another end 512 pivotably attached to an end of flat-panel imager 404. Ex. 1001, 21:33–38. Using this mechanism, flat-panel imager 404 is movable from a retracted position, as shown in Figure 20(a), to an extended position, as shown in Figure 20(b), and vice versa. Ex. 1001, 21:38–41.

#### *D. Illustrative Claims*

Petitioner challenges claims 25–29 and 35–42 of the '592 Patent. Claims 25 and 35 are the only independent claims at issue, and are reproduced below:

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