

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,  
Patent Owner.

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Case IPR2016-00163  
Patent 6,842,502 B2

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

CLEMENTS, *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 to institute an *inter partes* review of claims 43–46, 48–55, 57, 59–66, and 68 of U.S. Patent No. 6,842,502 B2 (Ex. 1201, “the ’502 Patent”). Paper 1 (“Pet.”). William Beaumont Hospital (“Patent Owner”) filed a Preliminary Response. Paper 11 (“Prelim. Resp.”).

On May 6, 2016, we instituted an *inter partes* review of claims 43–46, 48–55, 57, 59–66, and 68 based on the two grounds of unpatentability set forth in the Petition. Paper 14 (“Dec.”). After institution of trial, Patent Owner filed a Patent Owner Response (Paper 25, “PO Resp.”) and Petitioner filed a Reply (Paper 50, “Pet. Reply”).<sup>1</sup> Petitioner relies on the Declarations of James Balter, Ph.D. (Exs. 1202, 1500). Patent Owner relies on the Declaration of Ali Bani-Hashemi, Ph.D. (Ex. 2080). Patent Owner also filed a Motion to Exclude (Paper 59, “PO Mot.”), to which Petitioner filed an Opposition (Paper 65, “Pet. Opp.”) and Patent Owner filed a Reply (Paper 69, “PO Reply”).

An oral hearing was held on January 31, 2017. Paper 76 (“Tr.”).

After the oral hearing, we authorized additional briefing on the proper claim construction of the phrase “wherein said computer receives said image of said object and based on said image sends a signal to said radiation source that controls said path of said radiation source,” recited in claim 1. Paper 75.

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<sup>1</sup> Petitioner’s Motion to Seal (Paper 49) was granted in our Order of January 3, 2017 (Paper 56). Unless otherwise indicated, all references herein to the Reply will be to the public version (Paper 51).

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Patent Owner filed a Response (Paper 77) and Petitioner filed a Response (Paper 78).

The Board has jurisdiction under 35 U.S.C. § 6. In this Final Written Decision, issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73, we determine that Petitioner has not met its burden of showing, by a preponderance of the evidence, that any claim for which trial was instituted is unpatentable. Patent Owner's Motion to Exclude is *denied*.

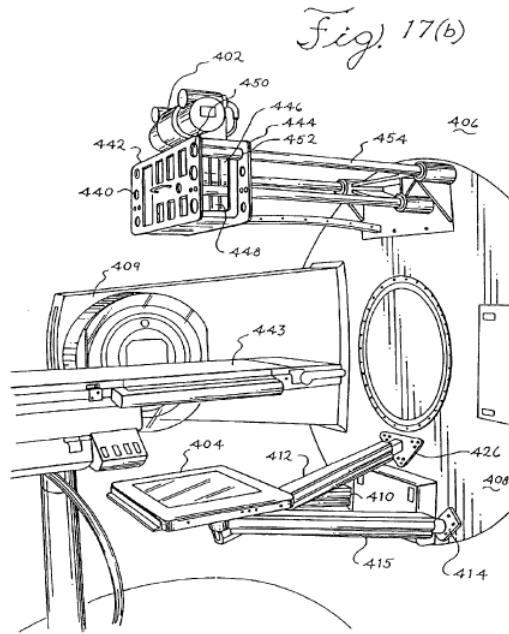
### *B. Related Proceedings*

Petitioner and Patent Owner identify the following district court proceedings concerning the '502 Patent: *Elekta Ltd. and William Beaumont Hosp. v. Varian Med. Sys.*, Case No. 2:15-cv-12169-AC-MKM (E.D. Mich.). Pet. 1; Paper 9, 1. Petitioner and Patent Owner identify further the following *inter partes* reviews also directed to the '502 Patent: IPR2016-00160, IPR2016-00162, and IPR2016-00166. Pet. 1; Paper 9, 2. Patent Owner identifies additionally the following *inter partes* reviews directed to U.S. Patent No. 7,471,765 B2, which claims priority to the '502 Patent: IPR2015-00169, IPR2016-00170, and IPR2016-00171. Paper 9, 2. Patent Owner identifies also the following *inter partes* review directed to U.S. Patent No. 7,826,592 B2, which claims priority to the '502 Patent: IPR2016-00187. Paper 9, 3.

### *C. The '502 Patent*

The '502 Patent discloses that it is directed to a cone-beam computed tomography ("CBCT") system that employs an amorphous silicon flat-panel imager ("FPI") for use in radiotherapy applications where images of a patient are acquired with the patient in a treatment position on a treatment table. Ex. 1201, 1:11–17. Figure 17(b) (below) depicts a diagrammatic

view of one orientation of an exemplary wall-mounted cone beam computerized tomography system employing a flat-panel imager. Ex. 1201, 6:53–56.



Specifically, Figure 17(b) depicts 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. 1201, 19:64–67. X-ray tube 402 generates beam of x-rays 407 in a form of a cone or pyramid. Ex. 1201, 19:67–20:2. Flat-panel imager 404 employs amorphous silicon detectors. Ex. 1201, 20:6–7.

#### *D. Illustrative Claims*

Petitioner challenges claims 43–46, 48–55, 57, 59–66, and 68 of the '502 Patent. Claims 43 and 60 are the only independent claims at issue, and are reproduced below:

43. A method of treating an object with radiation, comprising:
  - move a radiation source about a path;

direct a beam of radiation from said radiation source towards an object;

emitting an x-ray beam in a cone beam form towards an object;

detecting x-rays that pass through said object due to said emitting an x-ray beam with a flat-panel imager;

generating an image of said object from said detected x-rays,

wherein said generating comprises forming a computed tomography image of said object based on said detected x-rays,

wherein said image contains at least three dimensional information of said object based on one rotation of said x-ray source around said object; and

controlling said path of said radiation source based on said image.

60. A method of treating an object with radiation, comprising:

move a radiation source about a path;

direct a beam of radiation from said radiation source towards an object;

emitting an x-ray beam in a cone beam form towards an object;

detecting x-rays that pass through said object due to said emitting an x-ray beam with a flat-panel imager; generating an image of said object from said detected x-rays,

wherein said generating comprises forming a computed tomography image of said object based on said detected x-rays,

wherein said image contains at least three dimensional information of said object based on one rotation of said x-ray source around said object; and

controlling a radiation therapy treatment plan involving said radiation source based on said image.

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