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(12) **United States Patent**  
**Jaffray et al.**

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- (54) **CONE BEAM COMPUTED TOMOGRAPHY WITH A FLAT PANEL IMAGER**
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- (73) Assignee: **Dilliam Beaumont Hospital**, Royal Oak, MI (US)

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(51) **Int. Cl.**<sup>7</sup> ..... **A61N 5/10; H05G 1/60**

(52) **U.S. Cl.** ..... **378/65; 378/9; 378/19; 378/196; 378/197; 378/198**

(58) **Field of Search** ..... **378/4, 8, 9, 11, 378/19, 20, 64, 65, 195, 196, 197, 198**

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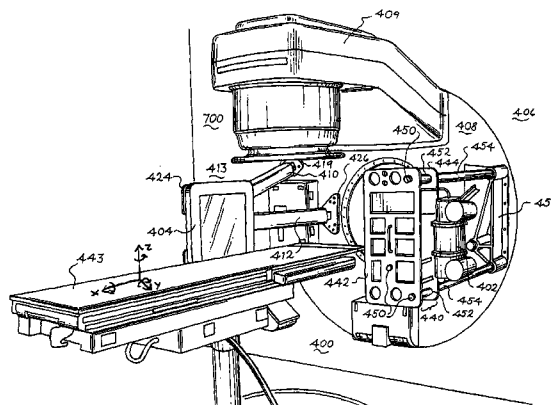
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(57) **ABSTRACT**

A radiation therapy system that includes a radiation source that moves about a path and directs a beam of radiation towards an object and a cone-beam computer tomography system. The cone-beam computer tomography system includes an x-ray source that emits an x-ray beam in a cone-beam form towards an object to be imaged and an amorphous silicon flat-panel imager receiving x-rays after they pass through the object, the imager providing an image of the object. A computer is connected to the radiation source and the cone beam computerized tomography system, wherein the computer receives the image of the object and based on the image sends a signal to the radiation source that controls the path of the radiation source.

**76 Claims, 26 Drawing Sheets**



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Fig. 1(c)

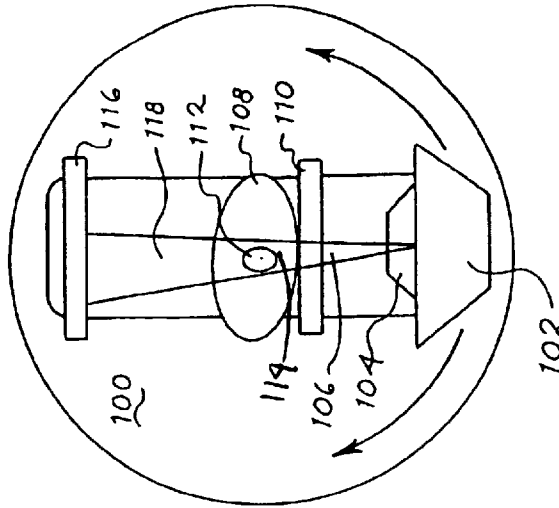


Fig. 1(b)

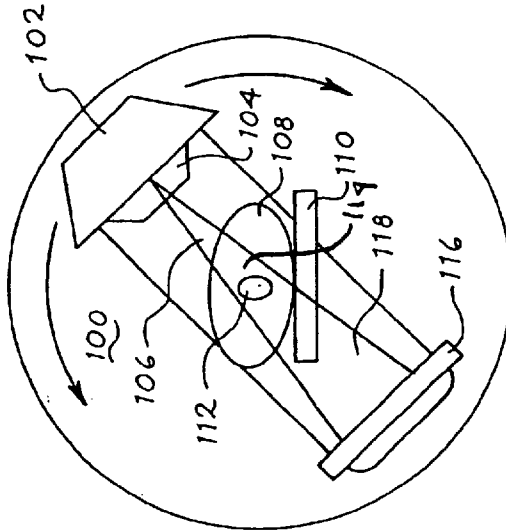
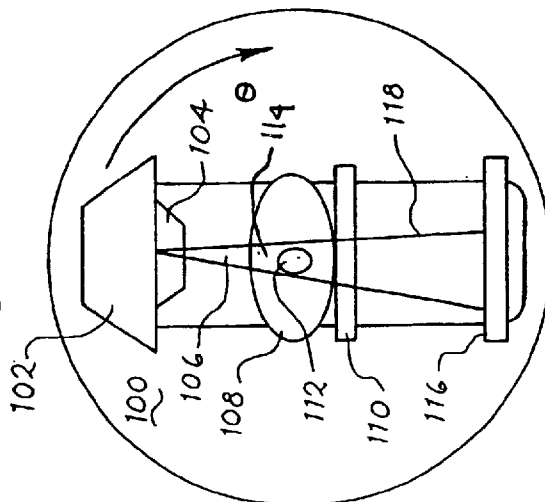


Fig. 1(a)



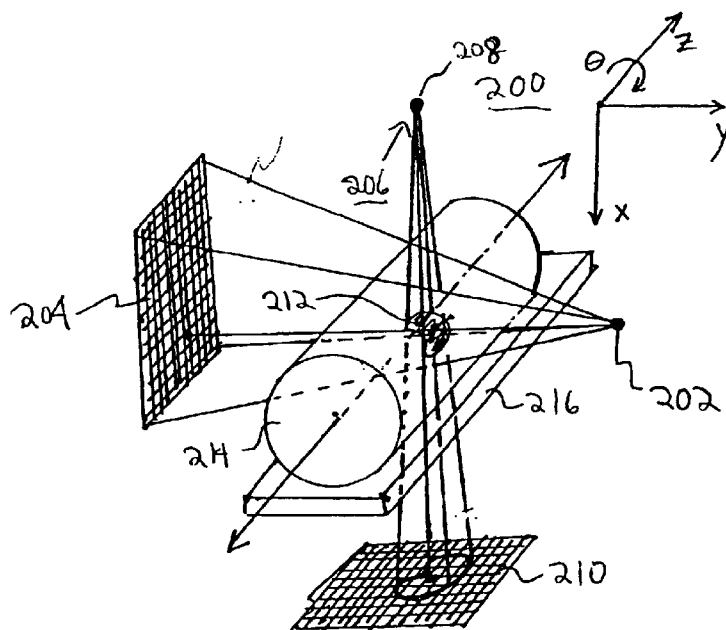
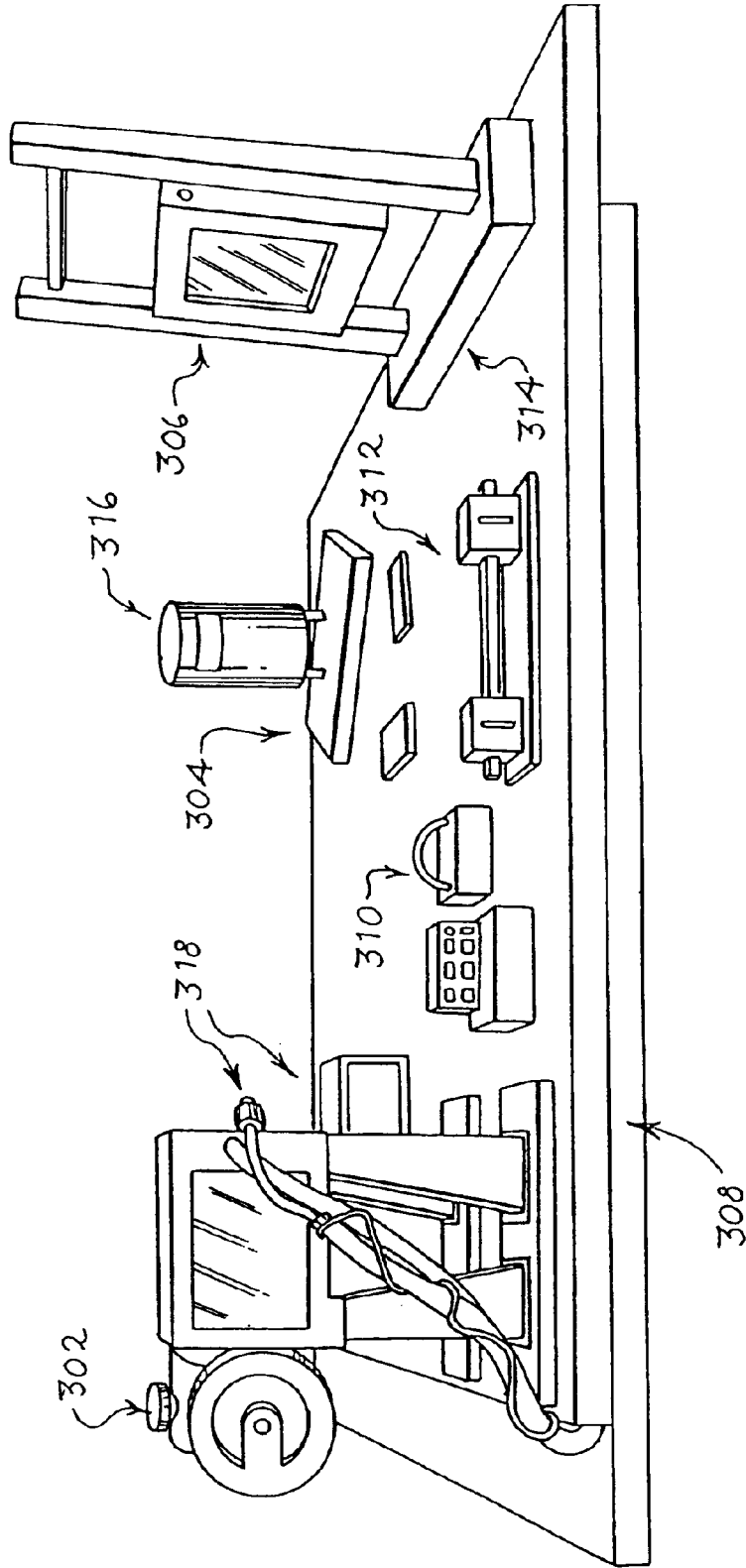


FIG. 2

*Fig. 3*



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