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(54) **X-RAY IMAGING APPARATUS AND CONTROL METHOD FOR THE SAME**

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A61B 6/00	(2006.01)

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CPC ***A61B 6/482*** (2013.01); ***A61B 6/484*** (2013.01); *A61B 6/502* (2013.01); *A61B 6/5211* (2013.01); *A61B 6/583* (2013.01); *G01N 23/20075* (2013.01); *G01N 2223/6126* (2013.01)

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USPC 378/53, 62

See application file for complete search history.

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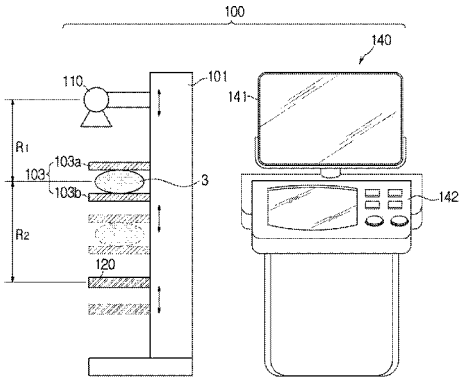
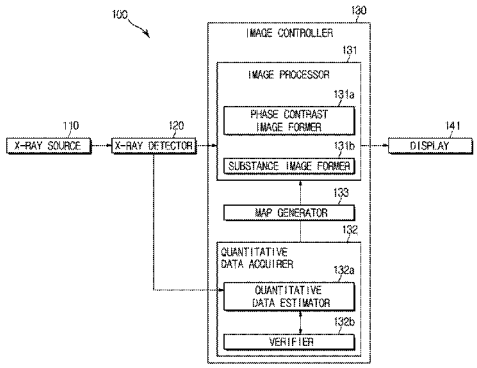
(57) **ABSTRACT**

The X-ray imaging apparatus to form a phase contrast image includes an X-ray source that generates X-rays to emit the X-rays to an object; an X-ray detector configured to detect X-rays having passed through the object to acquire phase contrast image signals on a per energy band basis; and a quantitative data acquirer configured to calculate approximate quantitative data of two or more constituent substances of the object using a relation between the phase contrast image signals on the per energy band basis and quantitative data of the constituent substances, and estimate quantitative data of the constituent substances by iteratively applying a regularization function to the approximate quantitative data.

19 Claims, 24 Drawing Sheets