Patents   US patent 3778614 $\mathbb{Q}$

Method and apparatus for measuring x- or {65 -radiation absorption or transmission at plura the data

Abstract

In apparatus for examining a body by means of X or Y radiation, a two-dimensional matrix of elements of the body is exposed to radiation from a number of directions and the transmission of the radiation by a plurality of paths of small cross-sectional area through the body is measured, the directions and numbers of the paths being such that each element of the matrix is intersected by a group of paths which intersect different groups of elements. From these measurements, the absorptions or transmissions in of the individual elements of the matrix are calculated and used to produce a cathode ray tube display and/or a photograph.

Images (5)

US3778614A

United States

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Inventor: Hounsfield G Ne

Current Assignee : THORI

Worldwide applications

1968 ~~GB~~ 1969 ~~DE NL~~
~~CA~~ 1976 JP JP JP JP .

Application events ⓘ

1968-08-23	Priority to (
1971-12-27	Application
1973-12-11	Application
1973-12-11	Publication
1989-11-20	Assigned t
1990-12-11	Anticipated
2020-01-29	Application

Classifications

🔘 **G01N23/083** Investigating or analysing materials by the use of wave or particle radiation not covered by groups G01N3/00 – G01N17/00, G01N21/00 or G01N22/00 by transmitting the radiation through the material and measuring the absorption the radiation being X-rays

View 6 more classifications

Info: Patent citations (9), documents, Priority and R

External links: USPTO, US Dossier, Discuss

Claims (28)

1. A method of examining at least part of the interior of a body using penetrating radiation such as X or gamma rays, comprising the steps external source through the body in a plurality of rays traversing a plurality of respective paths to establish a first set of rays in a planar slic dimensions of each ray being small in relation to the dimensions of the body; b. transmitting radiation from said external source in further rays; c. one of said sets being disposed in said planar slice at an initial angle or initial mean angle and the others of said sets of rays being angles or mean angles different from each other and from said initial angle or initial mean angle; d. the sets of rays being such that every e elements of the body in said planar slice is intersected by a group of said rays, the group of rays being different for the different elements c matrix having dimensions of the order of magnitude of the cross-sectional dimensions of said rays; e. deriving from each ray emerging fror representing the sum of the transmissions or absorptions of the elements of the body intersected by the ray, thereby to derive sets of discr the sets of rays indicative of the transmission or absorption of each element of said matrix; the number of output signals which are derived obtain by a process of successive approximations substantial discrimination between the transmission or absorption coefficients of neigh deriving from said output signals, by a process of successive approximations during which the approximation of the transmission or absor the matrix is adjusted a number of times, resultant signals representing the transmissions or absorptions of the elements of said matrix, th including the steps of: i. deriving an error signal responsive to a comparison of each discrete output signal and a reconstruction of said out approximations of the transmissions or absorptions of the elements of said matrix from which the said output signal was derived; and ii. a