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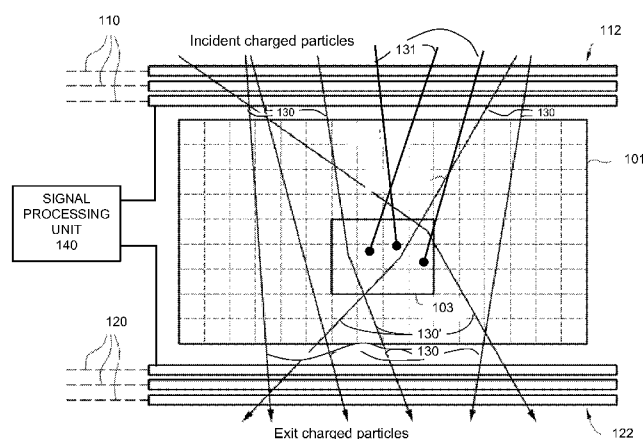
— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))

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[Continued on next page]

(54) Title: DISCRIMINATION OF LOW-ATOMIC WEIGHT MATERIALS USING SCATTERING AND STOPPING OF COSMIC-RAY ELECTRONS AND MUONS

**FIG. 1**

(57) Abstract: Techniques, systems, and devices are disclosed for constructing a scattering and stopping relationship of cosmic-ray charged particles (including cosmic-ray electrons and/or cosmic-ray muons) over a range of low-atomic-mass materials, and to detect and identify content of a volume of interest (VOI) exposed to cosmic-ray charged particles based on the constructed scattering and stopping relationship. In one aspect, a process for constructing a scattering-stopping relationship for a range of low-density materials exposed to cosmic-ray charged particles is disclosed. This technique first determines a scattering parameter and a stopping parameter for each material within the range of low-density materials exposed to charged particles from cosmic ray. The technique then establishes a scattering-stopping relationship of cosmic ray charged particles for the range of low-density materials based on the determined pairs of scattering and stopping parameters associated with the range of low-density materials.



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C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X — A	US 8,536,527 B2 (MORRIS et al.) 17 September 2013 (17.09.2013), Fig 2, abstract, col 3, ln 43-52, col 8, ln 54-55, col 9, ln 66-col 10, ln 49, col 13, ln 18-21, col 13, ln 44-col 14, ln 25	27, 28, 30-32 ----- 1-26, 29
A	US 7,945,105 B1 (JAENISCH) 17 May 2011 (17.05.2011), abstract, col 1, ln 6-25	1-32
A	US 8,575,546 B2 (NAGAMINE) 05 November 2013 (15.11.2013), abstract	1-32
A	MORRIS et al., "Obtaining material identification with cosmic ray radiography." arXiv:1210.6102 [physics.ins-det] 23 October 2012 (23.10.2012), abstract [online] [retrieved on 2015-10-10] <URL: http://arxiv.org/abs/1210.6102 >	1-32
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