(54) Title: HIGH Z MATERIAL DETECTION SYSTEM AND METHOD

(57) Abstract: A method and system for high Z substance revealing using muon detection technique is presented. Natural muon coordinate and incidence angle are measured above and below the interrogated volume. The data on muons trajectory change caused by the presence of high Z material and the muons time of flight between the upper and lower muon detectors are used for the decision making on the presence of a nuclear substance inside the volume. The system is adapted for performing measurements on moving objects such as moving trucks.
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
   IPC(8)- H01J 37/00 (2008.04)
   USPC - 250/358.1
   According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
   Minimum documentation searched (classification system followed by classification symbols)
   IPC H01J 37/00 (2008.04)
   USPC 250/358.1

   Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
   USPC 250/336.358.1.397; Backward/forward citation searches, Text Search

   Electronic data base consulted during the international search (name of database and, where practicable, search terms used)
   WEST (PGIB, USPT, USOCR EPAB, JPA); Terms: muon (with (detect$3 measur$3 sans$3); Google ("high density scattering cosmic ray muons")

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category*</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>US 4,504,438 A (Levy et al.) 12 Mar 1985 (12.03.1985) figs. 1-3 and col 7, In 30 - col 9, In 60</td>
<td>15, 16, and 18</td>
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