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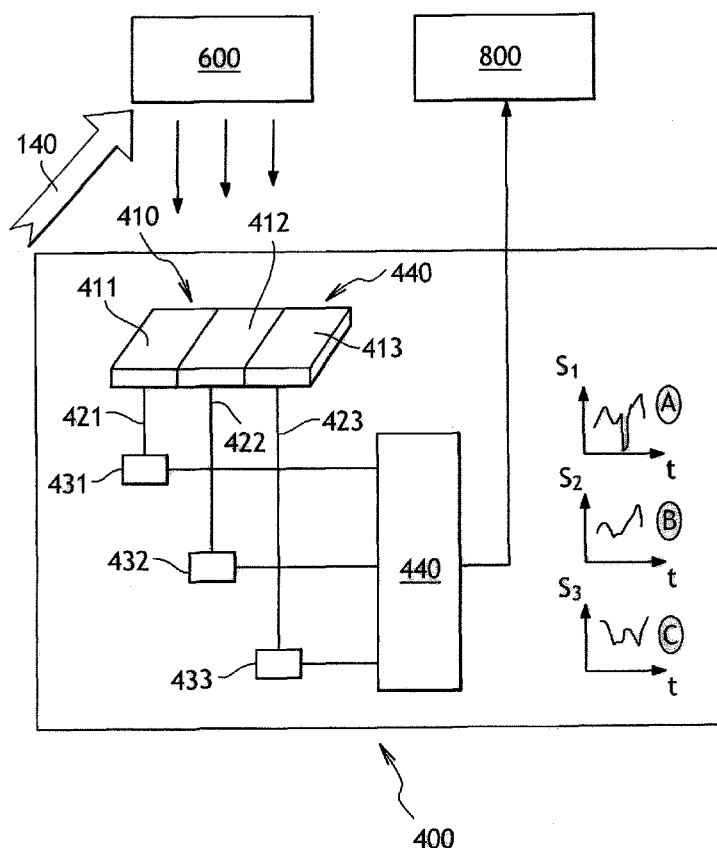
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[Continued on next page]

(54) Title: A DETECTION SYSTEM AND A DETECTION METHOD BASED ON PULSED ENERGETIC PARTICLES.



(57) Abstract: A detection system, comprises - a particle source (500) for generating a pulsed flux of energetic particles including both neutrons and gamma photons and for directing said flux (140) towards an item (600) to be analyzed, said particles being intended to react with nuclei of material(s) in said item, - a detection unit (400) comprising at least three detector assemblies responsive to neutrons and gamma photons in respective energy ranges coming from said item and impinging thereon in response to said flux of energetic particles and capable of delivering corresponding time signals, and - a data processing unit (800) connected to the outputs of said detectors, capable of generating a signature from said signals following the application of said pulsed flux to said item, including time-related signal features, and for comparing said signature with stored reference signatures. The present invention also provides a corresponding detection method. Application in particular to airport luggage security clearance, landmine detection, etc.



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