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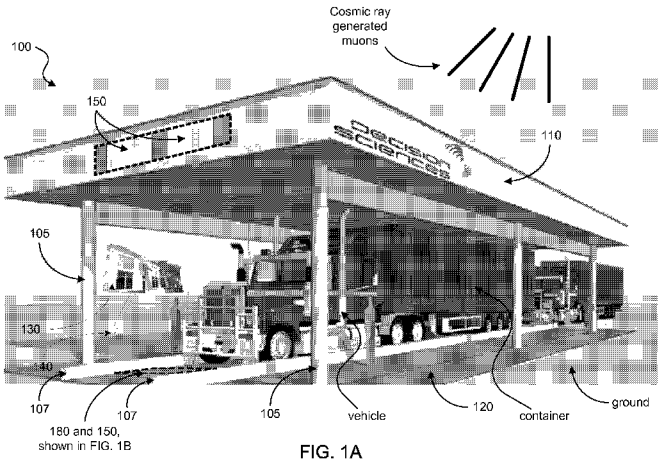


FIG. 1A

(57) Abstract: Methods, systems, and devices are disclosed for inspecting materials in a vehicle or object. In one aspect, a system for muon tomography detection includes a first and second housing structure each including a first array and second array of muon detection sensors, respectively, the first housing structure positioned opposite the second at a fixed height to form a detection region to contain a target object, in which the muon detection sensors measure positions and directions of muons passing through the first array to the detection region and passing from the detection region through the second array; support structures to position the first housing structure at the fixed height; and a processing unit to receive data from the muon detection sensors and analyze scattering behaviors of the muons in materials of the target object to obtain a tomographic profile or spatial distribution of scattering centers within the detection region.

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