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Canty et al.

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(54) **GRANULAR PRODUCT INSPECTION DEVICE**

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(51) **Int. Cl.**
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(52) **U.S. Cl.** **356/335**; 356/445

(58) **Field of Classification Search** 356/335–343, 356/237.1, 445–448; 382/110, 141; 250/573, 250/574

See application file for complete search history.

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(57) **ABSTRACT**

A particle inspection device includes a feeder configured to drop a particle through an image area. The feeder includes a tray surface having a flat portion and an edge portion disposed above the image area. The inspection device also includes a vibration device configured to vibrate the feeder induce movement of the particle from the flat portion to the edge portion and an image capturing device configured to capture an image of the particle in the image area. The edge portion may be a downwardly curved edge section and configured to maintain the orientation and reduce tumbling motion as the particle slides off the tray and falls through the image area. Alternately or additionally, a landing element is provided having a landing surface disposed in the image area and angled with respect to the flat portion of the tray surface and configured to receive the particle. The image capturing device is configured to capture an image of the particle on the landing surface.

13 Claims, 6 Drawing Sheets