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(54) **MULTI-PORT ILLUMINATING AND VIEWING UNIT**

(75) Inventors: **Gary Walck**, Niagara Falls; **Richard Marinelli**, Tonawanda, both of NY (US)

(73) Assignee: **J.M. Canty Inc**, Lockport, NY (US)

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Primary Examiner—Y. My Quach-Lee
(74) *Attorney, Agent, or Firm*—James Ralabate

(57) **ABSTRACT**

An illuminating and viewing unit for illuminating the interior of a vessel with source radiation and observing the vessel interior comprises a housing including a front wall facing the vessel interior. The front wall is of a material that does not transmit the source radiation, and includes one or more illumination ports individually fused into the front wall that transmit the source radiation to the vessel interior. A detection port is also individually fused into the front wall for transmitting detectable radiation along a detection path from the vessel interior to a radiation detector mounted in the housing. The optical isolation of the illumination and detection ports in the front wall prevents unwanted internal reflection of source radiation into the detection path, and allows for independent selection of port materials and configurations, while maintaining a hermetic seal between the housing and the internal contents of the vessel.

9 Claims, 3 Drawing Sheets