



US006782184B2

(12) **United States Patent**  
**Canty et al.**

(10) **Patent No.:** **US 6,782,184 B2**  
(45) **Date of Patent:** **Aug. 24, 2004**

(54) **MODULAR INSERTION DEVICE FOR  
PROCESS ILLUMINATION AND VIEWING**

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(\*) Notice: Subject to any disclaimer, the term of this  
patent is extended or adjusted under 35  
U.S.C. 154(b) by 232 days.

(21) Appl. No.: **10/011,848**

(22) Filed: **Dec. 4, 2001**

(65) **Prior Publication Data**

US 2003/0103756 A1 Jun. 5, 2003

(51) **Int. Cl.**<sup>7</sup> ..... **G02B 6/00**

(52) **U.S. Cl.** ..... **385/138; 362/574**

(58) **Field of Search** ..... 385/138, 147;  
362/562, 572, 574, 581

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(57) **ABSTRACT**

An illumination module comprises a ring-shaped mounting member having an axially extending viewing passage and an L-shaped radiation guide including a radiation entry end for communication with an external radiation source and a radiation exit end provided with a fused glass window for insertion within a process vessel or pipeline. The radiation guide extends through a radial guide hole in the mounting member and bends to run axially along the passage of the mounting member in close proximity to the wall of the passage so as to minimize blockage of available viewing area through the passage. The illumination module can be clamped between a sight glass or camera viewing unit and the flange of a nozzle port, or between segments of a pipeline near a viewing window of the pipeline, to form an illumination and viewing assembly. A coarse flow duct system in the mounting member, and a fine flow duct system in the mounting member and radiation guide, enable delivery of cleaning fluid to a sight glass or camera unit, and to the fused glass window of the radiation guide, respectively.

**26 Claims, 4 Drawing Sheets**

