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Smith et al.

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(54) **MICRO-OPTICAL POSITION INDICATOR**

6,173,650 B1 * 1/2001 Garvick et al. 102/202.5

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(57) **ABSTRACT**

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An optical position indicator includes a stationary base; a member having a longitudinal axis, the member being displaceable with respect to the stationary base along the longitudinal axis between a first position and a second position, the member including a reflective notch having two sides, the two sides defining respective planes that intersect the longitudinal axis at 45 degree angles; a light source; a first optical fiber mounted on the stationary base, the first optical fiber having a receiving end for receiving light from the light source and an illuminating end for illuminating the notch with a conical beam of light, the conical beam of light having a central axis and being completely intersected by one of the two sides of the notch, the central axis of the conical beam of light being perpendicular to the longitudinal axis of the member; a second optical fiber mounted on the stationary base, the second optical fiber having a receiving end for receiving light reflected from the notch when the member is in the first position, the receiving end of the second optical fiber being parallel to the illuminating end of the first optical fiber, the second optical fiber having an indicator end; a third optical fiber mounted on the stationary base, the third optical fiber having a receiving end for receiving light reflected from the notch when the member is in the second position, the receiving end of the third optical fiber being parallel to the illuminating end of the first optical fiber, the third optical fiber having an indicator end; and an indicator for receiving light from the indicator ends of the second and third optical fibers and for indicating a position of the member.

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(58) Field of Search 356/614, 620, 356/615, 624; 250/559.29, 227.11, 227.21, 227.23, 227.29, 237 G, 226; 385/12; 102/202.5, 202.4, 202.6, 254

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13 Claims, 3 Drawing Sheets

