Office de la Propriété Intellectuelle du Canada
Un organisme d'Industrie Canada

Canadian Intellectual Property Office
An agency of Industry Canada

CA 2479497 A1 2006/02/28

(21) 2 479 497

(12) DEMANDE DE BREVET CANADIEN
CANADIAN PATENT APPLICATION

(13) A1

(22) Date de dépôt/Filing Date: 2004/08/30

(41) Mise à la disp. pub./Open to Public Insp.: 2006/02/28

(51) Cl.Int./Int.Cl. *G01B 11/00* (2006.01), *G01M 11/08* (2006.01), *G01L 1/00* (2006.01), *G01G 19/07* (2006.01), *G01B 11/16* (2006.01), *B64C 25/00* (2006.01)

(71) Demandeurs/Applicants:
SCHMIDT, ROBERT KYLE, CA;
EL-SAMID, NADER ABU, CA

(72) Inventeurs/Inventors:
SCHMIDT, ROBERT KYLE, CA;
EL-SAMID, NADER ABU, CA

(74) Agent: WILBUR, JAMES T.

(54) Titre : CAPTEUR DE DEVIATION D'AXE OPTIQUE A DEUX GAMMES
(54) Title: DUAL RANGE OPTICAL AXLE DEFLECTION SENSOR

Messier-Dowty
snecma group

Invention Disclosure

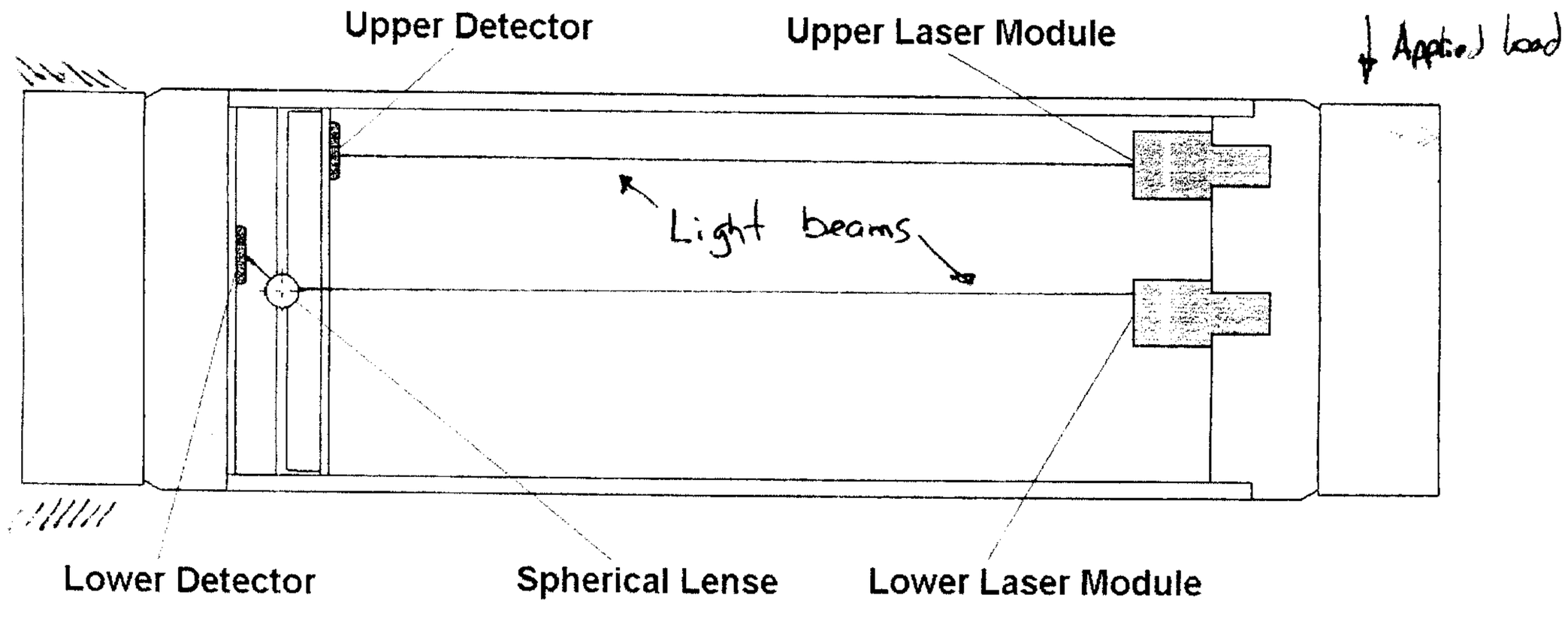
Title: Dual Range Optical Axle Deflection Sensor **Project Number:**

Description and Sketches:

Load Sensor Operation

Laser diode modules at the one end of the load sensor shine beams of light onto detectors at the opposite end of the sensor tube. The upper module sends a beam on a direct path to a detector. The lower module's beam passes through a lense and then onto another detector. With the laser end of the load sensor fixed in place at the axle support location and the opposite end free to deflect with the axle, the two detectors can make measurements by recording travel of the laser beam relative to a preset origin.

When the landing gear axle undergoes large deflection, as is the case when a plane comes in for a landing, the detector taking the direct measurements is used. Axle deflection values in this case range from 1 to 2 mm – an easily detectable distance range for the detector being used. When the landing gear axle undergoes small deflection, as is the case when a plane is stationary on the ground, the detector taking measurements from the beam passing through the lense is used. With the small deflection, the incident beam coming from the lower diode module moves only a small amount relative to the lense. However, The refracted beam exiting the lense moves a much larger distance against the detector's surface. For example, a 5 micrometer movement in the Y direction of the incident beam translates into a 500 micrometer movement along the detector's surface. By using the lense to amplify the observed deflection, very small deflections of the axle can be measured.



Additional pages? ; # of pages ___

Inventors:

R K Schmidt
Signature

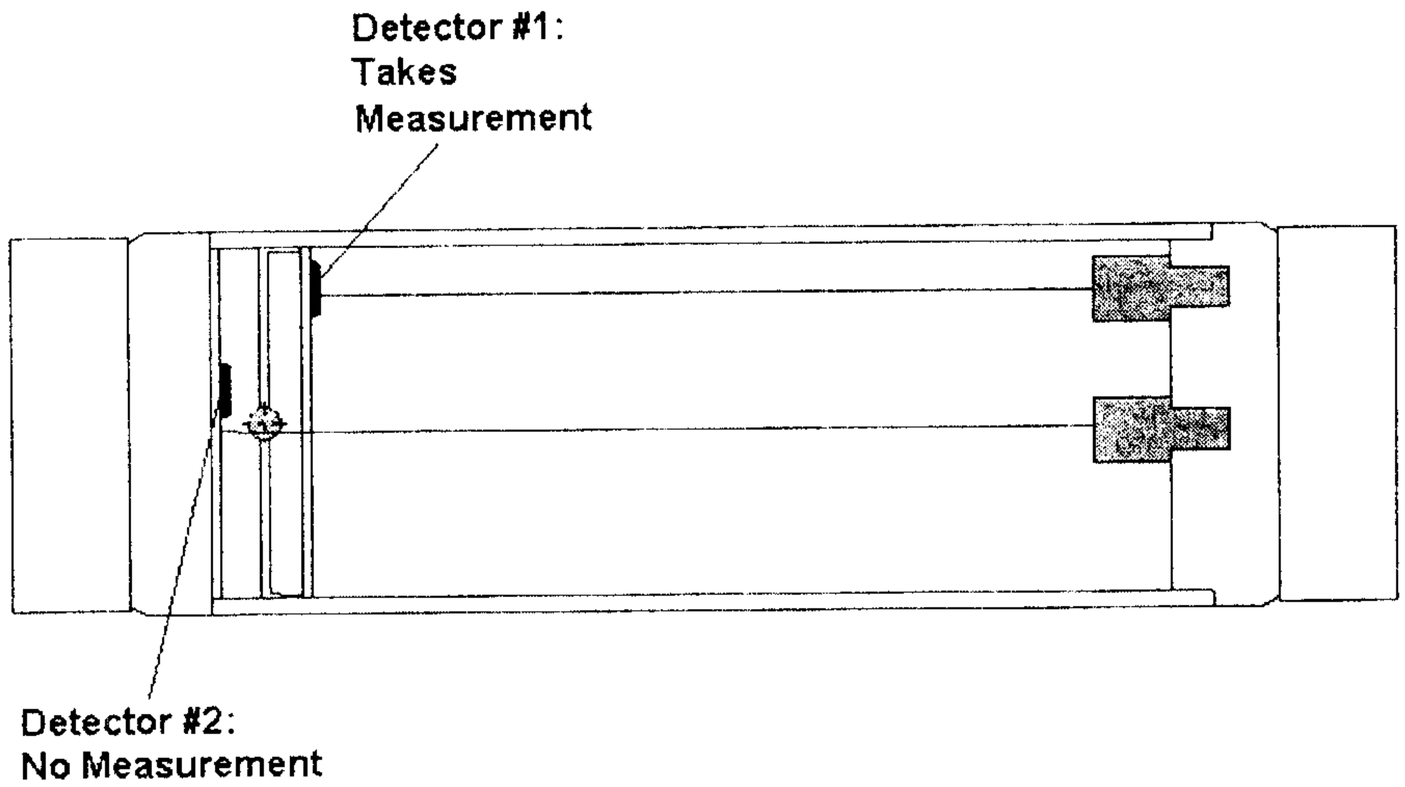
27 August 2004
Date

Explained to and understood by:

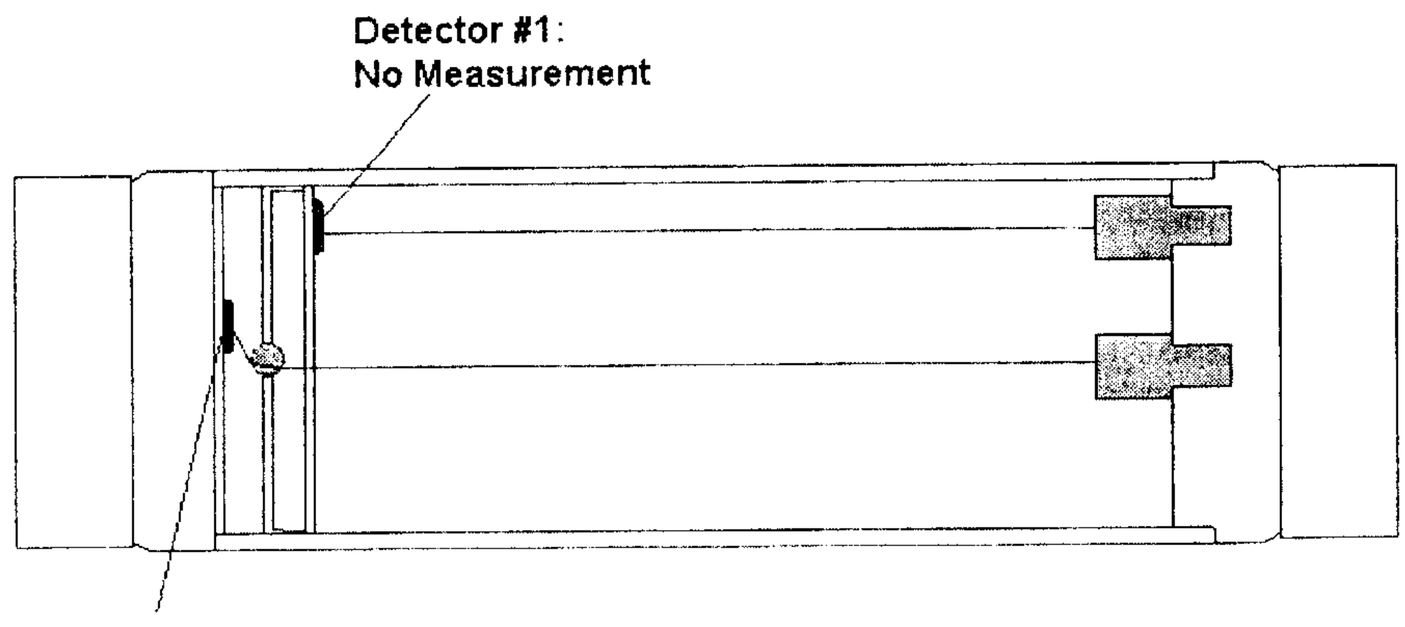
Printed Name and Signature

Date

Scenario#1: Large Axle Deflection



Scenario#2: Small Axle Deflection



Scenario#3: Medium Axle Deflection

