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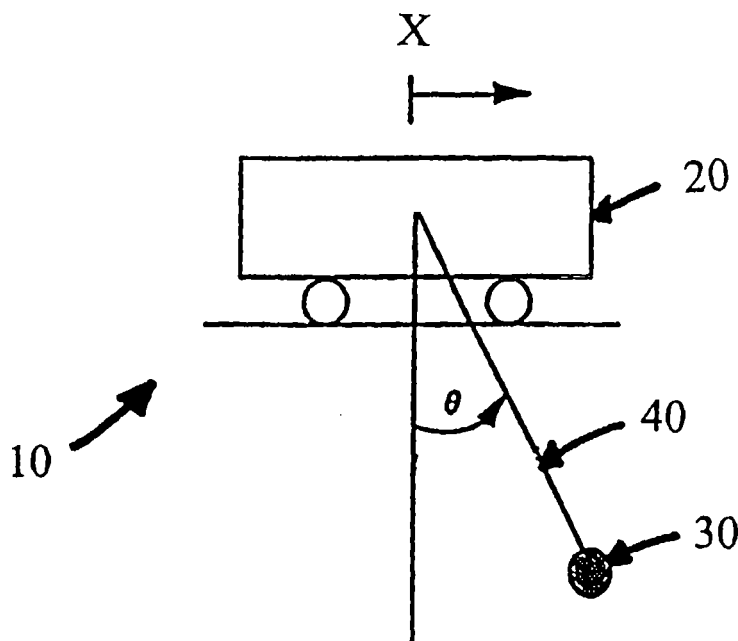
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- (71) Applicant (for all designated States except US): **NATIONAL UNIVERSITY OF SINGAPORE** [SG/SG]; 10 Kent Ridge Crescent, Singapore 119260 (SG).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **ONG, Chong, JIN** [SG/SG]; 18 Woollerton Park, Singapore 257524 (SG). **GILBERT, Elmer, G.** [US/US]; 2659 Heather Way, Ann Arbor, Michigan, MI 48104 (US).
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(54) Title: ANTI-SWAY CONTROL OF A CRANE UNDER OPERATOR'S COMMAND



(57) Abstract: A system (10) is disclosed for eliminating sway of a load (30) in a crane or crane-like system subject to operator's command. The load is suspended by a cable (40) from a horizontally movable trolley (20) and can be hoisted vertically. The system uses the principle of cancellation to eliminate sway even when the crane has simultaneous trolley and hoisting motions. The system takes into account the full dynamical effect in computing cancellation signals. The use of a family of ordinary differential equations for the computation of the cancellation controls is a key component of the invention. In computing these controls, the differential equations are solved in real time using sensory measurement of the cable length and its time derivative. The cancellation controls handle the sway induced by the operator's command. Sway can also be induced by other factors, like wind load and external disturbances. This system also includes a feedback mechanism for eliminating sway due to such factors. The

system ensures saturation limits, corresponding to the velocity and acceleration limits of the drive system of the trolley are not exceeded for proper functioning of the system.

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