

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of: Mario Boisvert *et al.*

Serial No.: 12/360,942

Filing Date: January 28, 2009

Title: *COLLISION MONITORING SYSTEM*

Examiner: Prior Examiner Marlon T. Fletcher

Prior Art Unit: 2837

Docket No.: 14-733C2DI US CON1

Tarolli, Sundheim, Covell & Tummino, LLP
Suite 1700
1300 East Ninth Street
Cleveland, OH 44114

MAIL STOP PATENT APPLICATION

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

SECOND PRELIMINARY AMENDMENT

Prior to substantive examination, please enter the following amendment:

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February 10, 2009

Claim Status

I - 28 (cancelled)

29. (Previously Presented) Apparatus for controlling activation of a motor coupled to a motor vehicle window or panel for moving said window or panel along a travel path and de-activating the motor if an obstacle is encountered by the window or panel, said apparatus comprising:

a) a sensor for sensing movement of the window or panel and providing a sensor output signal related to a speed of movement of the window or panel;

b) a switch for controllably actuating the motor by providing an energization signal; and

c) a controller having an interface coupled to the sensor and the switch for controllably energizing the motor; said controller sensing a collision with an obstruction when power is applied to the controller by:

i) monitoring movement of the window or panel by monitoring a signal from the sensor related to the movement of the window or panel;

ii) adjusting an obstacle detection threshold in real time based on immediate past measurements of the signal sensed by the sensor to adapt to varying conditions encountered during operation of the window or panel;

iii) identifying a collision of the window or panel with an obstacle due to a change in the signal from the sensor that is related to a change in movement of the window or panel by comparing a value based on a most recent signal from the sensor with the obstacle detection threshold; and

iv) outputting a control signal to said switch to deactivate said motor in response to a sensing of a collision between an obstacle and said window or panel.

30. (Previously Presented) The apparatus of claim 29 wherein the controller comprises a programmable controller including a processing unit for executing a control program and

including a memory for storing multiple window or panel speed values corresponding to a signal received from the sensor.

31. (Previously Presented) The apparatus of claim 29 additionally comprising one or more limit switches for use by the controller to determine window or panel position for use in identifying a collision.

32. (Previously Presented) The apparatus of claim 29 wherein the controller maintains a position of a leading edge of the window or panel and further wherein the controller reverse energizes the motor to move the window or panel away from a closure position prior to activating the motor to close the window or panel.

33. (Previously Presented) The apparatus of claim 32 wherein the controller reverse energizes the motor in response to a sensing of an obstacle and the reverse energizing and attempt to move the window or panel to a closed position is performed to confirm sensing of the obstacle.

34. (Previously Presented) The apparatus of claim 29 wherein the immediate past measurements of said signal are sensed within a forty millisecond interval prior to the most recent signal from the sensor.

35. (Currently Amended) Apparatus for controlling activation of a motor coupled to a motor vehicle window or panel for moving said window or panel along a travel path and de-activating the motor when movement of the window or panel is stopped prior to reaching ~~within an acceptable range of~~ a predetermined position, said apparatus comprising:

- a) a sensor for sensing movement of the window or panel and providing a sensor output signal related to a position of the window or panel;
 - b) a switch for controllably actuating the motor by providing an energization signal;
- and

c) a controller having an interface coupled to the sensor and the switch for controllably energizing the motor; said controller programmed with multiple position limits that define an acceptable travel range and further programmed for controlling movement ~~determining the position~~ of the window or panel when power is applied to the controller by:

i) monitoring the sensor output signal from the sensor related to the position of the window or panel;

ii) identifying the position of the window or panel based on the sensor output signal from the sensor; and

iii) outputting a control signal to said switch to deactivate said motor in response to a sensing of said window or panel has stopped moving prior to reaching a position limit ~~within the acceptable range~~.

36. (Previously Presented) The apparatus of claim 35 wherein the controller comprises a programmable controller including a processing unit for executing a control program and including a memory for storing multiple window or panel position values corresponding to a signal received from the sensor.

37. (Currently Amended) The apparatus of claim 35 additionally comprising one or more position limits programmed for use by the controller to determine window or panel position for use in identifying whether the window or panel is closed or open. ~~for use by the controller to determine whether the window or multiple position limits that define the acceptable range programmed panel is closed or open.~~

38. (Previously Presented) The apparatus of claim 35 wherein the controller maintains a position of a leading edge of the window or panel and further wherein the controller reverse energizes the motor to move the window or panel away from a closure position prior to activating the motor to close the window or panel.

39. (Previously Presented) The apparatus of claim 35 wherein the controller includes an interface for monitoring user actuation of control inputs for controlling movement of the motor vehicle window or panel and wherein the controller maintain a position indication which is updated in response to movement of the window or panel and further wherein the controller reverse actuates the motor near an end point in the travel path of the window or panel to avoid false obstacle detection in a region of closure of the window or panel.

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