

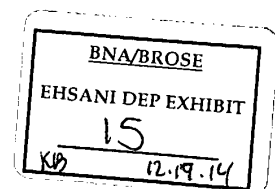
'802 Patent, Claim 14, limitations (c)(i)-(iv)

Claim language:

c) a controller coupled to the switch for controllably energizing the motor and having an interface coupling the controller to the sensor and to the switch;

said controller comprising decision making logic for:

- i) monitoring a signal from the sensor;
- ii) calculating a real time obstacle detect threshold based on the signal that is detected during at least one prior period of motor operation during movement along a present or current run through a path of travel of said window or panel
- iii) comparing a value based on a currently sensed motor parameter with the obstacle detect threshold; and
- iv) stopping movement of the window or panel by controlling an output to said switch that controls motor energization if the comparison based on a currently sensed motor parameter indicates the window or panel has contacted an obstacle.



Ehsani's construction:

c) a controller coupled to the switch for controllably energizing the motor and having an interface coupling the controller to the sensor and to the switch;

said controller comprising a general-purpose processor and memory and an analog-to-digital converter (ADC), or equivalent structure, for:

i) converting analog current value signals into digital values, and counting the number of microcontroller clock cycles between adjacent pulse signals adjacent pulse signals to determine pulse period values, and storing the digital current amplitude values and the pulse period value

ii) determining an average of the digital current amplitude values, and determining an average of the pulse period values, and combining the current amplitude average and the pulse period average to produce the obstacle detect threshold

OR, alternatively for ii)

determining an average of the pulse period values, and determining a minimum value of the digital current amplitude values, and determining a maximum value of the digital current amplitude values, and combining the pulse period average, the minimum value, and the maximum value to produce the obstacle detect threshold

iii) determining a value based on a currently sensed motor parameter by calculating a running average of current values readings, and comparing the running average to the obstacle detect threshold

iv) determining that an obstacle has been encountered when the value based on a currently sensed motor parameter is greater than the obstacle detect threshold, and stopping the motor in response to encountering an obstacle

Claim language	Ehsani construction
a controller . . . said controller comprising decision making logic	a controller . . . said controller comprising a general-purpose processor and memory and an analog-to-digital converter (ADC), or equivalent structure,
i) monitoring a signal from the sensor;	i) converting analog current value signals into digital values, and counting the number of microcontroller clock cycles between adjacent pulse signals to determine pulse period values, and storing the digital current amplitude values and the pulse period value
ii) calculating a real time <u>obstacle detect threshold</u> based on the signal that is detected during at least one prior period of motor operation during movement along a present or current run through a path of travel of said window or panel	ii) determining an average of the digital current amplitude values, and determining an average of the pulse period values, and combining the current amplitude average and the pulse period average to produce the <u>obstacle detect threshold</u> or ii) determining and average of the pulse period values, and determining a minimum value of the digital current amplitude values, and determining a maximum value of the digital current amplitude values, and combining the pulse period average, the minimum value, and the maximum value to produce the <u>obstacle detect threshold</u>
iii) <u>comparing a value based on a currently sensed motor parameter with the obstacle detect threshold</u> ; and	iii) determining <u>a value based on a currently sensed motor parameter</u> by calculating a running average of current values readings, and <u>comparing the running average to the obstacle detect threshold</u>

iv) stopping movement of the window or panel by controlling an output to said switch that controls motor energization if the comparison based on a currently sensed motor parameter indicates the window or panel has contacted an obstacle.

iv) determining that an obstacle has been encountered when the value based on a currently sensed motor parameter is greater than the obstacle detect threshold, and stopping the motor in response to encountering an obstacle