**Discharge Control Device**

Title of Invention: Discharge Control Device  
Inventor: Ryutaro MINESAWA  

**ABSTRACT**

A discharge control device controls a discharge bypass circuit for discharging a charge in a capacitor provided in a drive device for a motor that rotates wheels of a vehicle at time of a collision of the vehicle. The discharge control device includes a control circuit that makes the discharge bypass circuit start discharge if an induced voltage by the motor surpasses a predetermined threshold.

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**Power Conversion Apparatus**

Title of Invention: Power Conversion Apparatus  
Inventors: Kazuya NAGASAWA, Hiroaki IIDA, Morifumi SHIGEMASA, Yasuhiro MAEDA, Masami OGURA, Hitoshi NISHIO  

**ABSTRACT**

A power conversion apparatus has a configuration in which plate-like bus-bars are laminated via an insulating material to define a pair of bus-bars. A laminated bus-bar, in which the pair of bus-bars is disposed vertically so that a width direction thereof is in a vertical direction, includes a pair of voltage measuring terminals that is correspondingly branched from a part of the pair of bus-bars to extend toward a circuit board. The pair of voltage measuring terminals is arranged symmetrically with respect to the pair of bus-bars to extend upward toward the circuit board, while extending in an intersecting direction intersecting with the pair of bus-bars, to be electrically connected to the circuit board.
### Battery Voltage Detection Device

**Title of Invention:** Battery Voltage Detection Device  
**Inventors:** Shingo TSUCHIYA, Seiji KAMATA  
**Pub. No.:** JP2016-194245 (2016/10/17)

**ABSTRACT**

A battery voltage detection device includes a battery; a voltage detection circuit; and a low-pass filter provided between the battery and the voltage detection circuit. The low-pass filter includes a capacitor of which one end is connected to a terminal of the battery and the other end is connected to a voltage source outputting a voltage higher than a terminal voltage of the battery.

### Control Device for Fuel Injection Valve

**Title of Invention:** Control Device for Fuel Injection Valve  
**Inventors:** Masateru MORIYA, Gaku SATO, Junichi MIYASHITA, Kousaku YOTORIYAMA  
**Pub. No.:** JP2016-180345 (2016/10/13)

**ABSTRACT**

A control device includes a difference calculating unit configured to generate a difference waveform composed of the difference between a normal operation waveform, which is a voltage waveform of the fuel injection valve at a time that the fuel injection valve is operating, and a non-operation waveform, which is a voltage waveform of the fuel injection valve at a time that the fuel injection valve is not operating, a derivative calculating unit configured to generate a differentiated waveform obtained by differentiating the difference waveform, and an operating state determining unit configured to determine the operating state of the fuel injection valve based on the differentiated waveform.
Vibration Insulating Structure of Fuel Injection Valve

Title of Invention: Vibration Insulating Structure of Fuel Injection Valve in Internal Combustion Engine
Inventors: Junichi MIYASHITA, Kousaku YOTORIYAMA, Takahiro YASUDA, Yasuhiro NABESHIMA, Motoki SANADA
Appl. No.: JP2015-217660 (2015/11/5)

ABSTRACT
In a vibration insulating structure of a fuel injection valve in an internal combustion engine, a vibration insulating device installed between an annular step portion of a valve installation hole provided in a cylinder head and an outer peripheral step portion of the valve fitted in the hole is formed from a ring laminated body including an upper ring engaged with the outer peripheral step portion, and at least two vibration insulating rings clamped between the upper ring and the annular step portion and superposed on each other. Multiple dents and projections each having a fine and uneven shape are formed on at least an abutment surface of each of the vibration insulating rings which abuts against an opposed one of the vibration insulating rings. Accordingly, such device can be easily obtained from a simple structure and inhibit vibration of the valve effectively, reducing vibration noise and manufacturing cost.

Fuel Supply Apparatus

Title of Invention: Fuel Supply Apparatus
Inventors: Shinji TAMURA, Takuro SUZUKI

ABSTRACT
The invention provides a fuel supply apparatus by which the maximum liquid surface of fuel that when gas is sucked in a fuel pump from a vapor discharge channel when pores in a sucking filter are blocked can be adjusted without change on design of a filter apparatus. A surround wall, which encloses the periphery of the filter apparatus from overlook view, is formed on the upper part of the vapor discharge channel. An opening part is formed on the upper end or the side surface of the surround wall and is opened at the positioning higher than a lower end of the filter so as to communicate the internal spaces of the surround wall and the fuel pump. When the liquid level of fuel in the fuel tank is lower than the lower end of the opening part, gas in the fuel tank is sucked into the fuel pump from the vapor discharge channel to cause adverse, thereby measuring pore blocking of the sucking filter in the fuel pump. The maximum liquid surface of fuel that when gas is sucked in a fuel pump from a vapor discharge channel when pores in a sucking filter are blocked can be adjusted just by simple change on design of height of the lower end of the opening part (the height of the upper end of the surround wall), so that the structure, compared with design change of filter apparatus, is reduced in cost.