

Title (en)

Blower speed control resistors for automotive or other service

Title (de)

Widerstände zum Steuern der Gebläsegeschwindigkeit für Autotechnik oder ähnliches

Title (fr)

Résistances de commande pour la vitesse d'un ventilateur pour usage automobile ou autre service

Publication

**EP 0877392 A1 19981111 (EN)**

Application

**EP 98303626 A 19980508**

Priority

- US 4690197 P 19970509
- US 94757497 A 19971009

Abstract (en)

A sandwich-like electrical resistor is disclosed, comprising a first thermally conductive sheet metal outer plate, a first thin flat outer electrical insulator stacked against the plate, a first thin flat electrically resistive sheet metal resistor element stacked against the first insulator, a first thin flat inner electrical insulator stacked against the first resistor element, an electrically and thermally conductive sheet metal midplate stacked against the inner insulator, a second thin flat inner electrical insulator stacked against the midplate, a second thin flat electrically resistive sheet metal resistor element stacked against the second inner insulator, a second thin flat outer electrical insulator stacked against the second resistor element, a second thermally conductive sheet metal outer plate stacked against the second outer insulator, and means connecting and compressing the previously mentioned components into a stacked unit. Each of the resistor elements is an electrically resistive sheet metal stamping having at least first and second terminals and ribbons interconnected in one piece to form a continuous electrically resistive path between the terminals. A thermal fuse or other circuit breaker is thermally engaged with a seat on one edge of the midplate and is initially conductive but becomes nonconductive if heated above a limiting temperature to prevent overheating of the resistor. Each resistor element comprises at least one structural tie bar extending in one piece between one ribbon and one terminal for initially imparting enhanced structural integrity to the resistor element. The tie bar is severable prior to assembly of the resistor element with the other resistor components. Each resistor element may also include at least one resistance adjusting bypass tie bar extending in one piece between two of the ribbons for bypassing portions thereof to reduce the electrical resistance thereof. Each bypass tie bar is severable to increase the resistance. Each terminal of the resistor elements comprises a tab which is initially flat but is folded twice upon itself to form a three-layer wire-like prong thereon. The midplate comprises sheet metal loops sheared from the midplate for receiving a terminal prong on one of the resistor elements and a terminal wire on the thermal fuse. The loops are clenched against the prong and the wire. The resistor is received and supported by channels extending from an electrically insulating terminal head having conductive terminals thereon with sheet metal loops formed thereon for receiving other prongs of the resistor elements, such loops also being clenched against the prongs. Some of the ribbons are connected together in a serpentine series array, while other ribbons are connected in a parallel array. The outer insulators are thicker than the inner insulators so that the thermal conductivity between the resistor elements and the midplate is greater than the thermal conductivity between the resistor elements and the outer plates. Thus, the midplate is heated more rapidly than the outer plates during a fault condition caused by a locked rotor in the blower motor. The thermal fuse is in contact with the midplate and is also heated more rapidly. Consequently, the fuse is heated to its circuit-opening temperature before the outer plates are heated to an unacceptably high temperature.

IPC 1-7

**H01C 1/084**

IPC 8 full level

**H01C 1/084** (2006.01)

CPC (source: EP)

**H01C 1/084** (2013.01)

Citation (search report)

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Designated contracting state (EPC)

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