

Title (en)
Starter having delay circuit

Title (de)
Anlasser mit Verzögerungsschaltung

Title (fr)
Démarreur doté d'un circuit de retard

Publication
EP 2128426 A3 20120307 (EN)

Application
EP 09007110 A 20090527

Priority
JP 2008140580 A 20080529

Abstract (en)
[origin: EP2128426A2] A starter includes an electromagnetic switch that opens and closes a main contact point provided on a motor circuit, a current suppressing resistor that is connected to the motor circuit in series with the main contact point, a short-circuit relay that is provided to allow short-circuiting of the current suppressing resistor, a timer circuit that delays operation of the short-circuit relay, and the like. The timer circuit sets a delay time from when the electromagnetic switch is energized until the short-circuit relay is energized. The delay time is set such that a maximum value of the current flowing to the motor when the short-circuit relay is energized is equal to or less than a maximum current value of current flowing to the motor when the electromagnetic switch is energized.

IPC 8 full level
F02N 11/08 (2006.01); **G05B 19/042** (2006.01); **H02P 1/20** (2006.01)

CPC (source: EP)
F02N 11/087 (2013.01); **F02D 2041/2048** (2013.01); **F02D 2400/18** (2013.01); **F02N 11/0814** (2013.01); **F02N 11/0851** (2013.01); **F02N 15/067** (2013.01); **F02N 2200/023** (2013.01); **F02N 2200/045** (2013.01); **F02N 2200/122** (2013.01); **F02N 2250/02** (2013.01); **F02N 2300/106** (2013.01); **F02N 2300/2011** (2013.01)

Citation (search report)

- [X] EP 1041277 A1 20001004 - VALEO EQUIP ELECTR MOTEUR [FR]
- [I] EP 1883154 A1 20080130 - RENAULT SAS [FR]
- [A] EP 0744761 A2 19961127 - NIPPON DENSO CO [JP]

Cited by
CN104847559A; FR2957386A1; CN102192068A; CN103069154A; CN103348123A; CN104812656A; EP2918478A4; CN107479488A; CN102828878A; CN102640251A; EP2472546A4; CN104319185A; WO2013132173A1; US8487573B2; WO2012076777A1; US8513825B2; WO2013014356A2; WO2012076302A2; WO2012104169A3; WO2011064013A3; WO2015001246A2; US10132285B2; WO2013014352A1; EP2579282A1; DE102015213218B4; WO2012025298A1; WO2012076302A3; EP2578869A1; US9562508B2; US9657704B2

Designated contracting state (EPC)
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK TR

Designated extension state (EPC)
AL BA RS

DOCDB simple family (publication)
EP 2128426 A2 20091202; **EP 2128426 A3 20120307**; **EP 2128426 B1 20150513**; **EP 2128426 B8 20150708**; JP 2009287459 A 20091210; JP 5136214 B2 20130206

DOCDB simple family (application)
EP 09007110 A 20090527; JP 2008140580 A 20080529