

Title (en)
Starter for a combustion engine

Title (de)
Starter für eine Brennkraftmaschine

Title (fr)
Démarreur pour moteur à combustion interne

Publication
EP 2436913 A1 20120404 (DE)

Application
EP 11177615 A 20110816

Priority
DE 102010041727 A 20100930

Abstract (en)
The starter has a starter pinion (22) axially adjustable between inoperative position and advanced drive position. The starter pinion is axially displaceably-arranged against a drive component and axially supported over a spring assembly (302), which exhibits non-linear spring characteristic, progressive spring characteristic and linear spring characteristic. The spring assembly has two series-connected spring elements (303, 304) that are arranged axial directly adjacent to each other. One of the spring elements is designed as a spring ring e.g. annular shaft spring and disk spring.

Abstract (de)
Ein Starter für eine Brennkraftmaschine weist ein axial zwischen einer Außerfunktionsposition und einer vorgerückten Antriebsposition verstellbares Starterteritzel auf, das gegenüber einem antreibenden Bauteil axial verschieblich angeordnet und über eine Federanordnung axial abgestützt ist. Die Federanordnung weist eine nicht-lineare Federkennlinie auf.

IPC 8 full level
F02N 15/06 (2006.01)

CPC (source: EP)
F02N 15/063 (2013.01); **F02N 11/00** (2013.01); **F02N 11/0851** (2013.01); **F02N 15/065** (2013.01)

Citation (applicant)
• DE 317609 C
• DE 102007026078 A1 20081204 - BOSCH GMBH ROBERT [DE]
• DE 102008054965 A1 20100701 - BOSCH GMBH ROBERT [DE]

Citation (search report)
• [XAI] JP 2007120400 A 20070517 - DENSO CORP
• [XI] WO 03072936 A1 20030904 - VALEO EQUIP ELECTR MOTEUR [FR]
• [A] US 2002047269 A1 20020425 - MURATA MITUHIRO [JP], et al

Cited by
FR3042231A1; FR3004222A1; WO2017060614A1; WO2014167236A1; EP2702263B1

Designated contracting state (EPC)
AL 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 RS SE SI SK SM TR

Designated extension state (EPC)
BA ME

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DOCDB simple family (application)
EP 11177615 A 20110816; CN 201110323964 A 20110928; DE 102010041727 A 20100930; HU E11177615 A 20110816