

Title (en)

Starter for a combustion engine

Title (de)

Starter für eine Brennkraftmaschine

Title (fr)

Démarreur pour moteur à combustion interne

Publication

EP 2436913 B1 20200617 (DE)

Application

EP 11177615 A 20110816

Priority

DE 102010041727 A 20100930

Abstract (en)

[origin: EP2436913A1] 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.

IPC 8 full level

F02N 15/06 (2006.01); **F02N 11/00** (2006.01); **F02N 11/08** (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)

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

DOCDB simple family (publication)

EP 2436913 A1 20120404; **EP 2436913 B1 20200617**; CN 102444523 A 20120509; CN 102444523 B 20150729;
DE 102010041727 A1 20120405; HU E050585 T2 20201228

DOCDB simple family (application)

EP 11177615 A 20110816; CN 201110323964 A 20110928; DE 102010041727 A 20100930; HU E11177615 A 20110816