

Title (en)

# A STARTER FOR INTERNAL COMBUSTION ENGINES

Publication

**EP 0440632 B1 19920506 (DE)**

Application

**EP 89906035 A 19890530**

Priority

DE 3821023 A 19880622

Abstract (en)

[origin: WO8912742A1] In a starter for internal combustion engines with an electric starter motor (10) having a drive shaft (16), a starter pinion (12) engaging in a starter ring gear (13) of an internal combustion engine and with a transmission gear (11) forming the operative connection between the drive shaft (16) and the starter pinion (12), the risk of breakage in the drive train transmitting the torque of the starter motor (10) to the starter pinion (12) as a result of the compression and depression shocks arising from the internal combustion engine to be started is reduced by securing the starter pinion (12) directly or indirectly so as to turn with the gear shaft (24), which is connected via a flexible coupling (34) to an annular gear (21) with internal teeth (20) with which the outer teeth of the drive shaft (16) engage.

IPC 1-7

**F02N 15/04**

IPC 8 full level

**F02N 15/02** (2006.01); **F02N 11/00** (2006.01); **F02N 15/04** (2006.01)

CPC (source: EP US)

**F02N 15/043** (2013.01 - EP US); **Y10S 475/902** (2013.01 - EP US); **Y10T 74/13** (2015.01 - EP US); **Y10T 74/137** (2015.01 - EP US); **Y10T 74/19633** (2015.01 - EP US)

Designated contracting state (EPC)

DE FR GB IT SE

DOCDB simple family (publication)

**WO 8912742 A1 19891228**; BR 8907513 A 19910611; DE 3821023 A1 19891228; DE 58901354 D1 19920611; EP 0440632 A1 19910814; EP 0440632 B1 19920506; ES 2013938 A6 19900601; JP H03505359 A 19911121; US 5127279 A 19920707

DOCDB simple family (application)

**DE 8900339 W 19890530**; BR 8907513 A 19890530; DE 3821023 A 19880622; DE 58901354 T 19890530; EP 89906035 A 19890530; ES 8902193 A 19890622; JP 50538589 A 19890530; US 60377090 A 19901026