

Title (en)

Method and apparatus for plastic working of hollow rack bar and hollow rack bar

Title (de)

Verfahren und Vorrichtung für die plastische Verarbeitung einer hohlen Zahnstange und hohle Zahnstange

Title (fr)

Procédé et appareil pour la formation plastique d'une crémaillère creuse, et crémaillère creuse

Publication

**EP 1839772 A1 20071003 (EN)**

Application

**EP 07005750 A 20070321**

Priority

JP 2006093190 A 20060330

Abstract (en)

A preparatory working device by which a work piece (10) to be fed to a rack bar forging device is obtained. The device is provided with a die sets (22,37,48) for obtaining a diameter reduction at a location of a blank pipe, which becomes a toothed part of a rack bar, while the wall thickness being substantially unchanged or slightly increased. The device is further provided with a die set (32,44) for reducing a wall thickness at a location of the blank pipe, which becomes a connection part of the rack bar. The wall thickness reduction is one half of the initial thickness, which causes the length of the work piece (10) to be elongated. Then a rack bar forging by a die set (12,14) is done.

IPC 8 full level

**B21K 1/76** (2006.01)

CPC (source: EP US)

**B21K 1/767** (2013.01 - EP US); **B21K 1/768** (2013.01 - EP US)

Citation (search report)

- [XY] EP 0099311 A1 19840125 - VALLOUREC [FR]
- [YD] JP 2002066685 A 20020305 - KOSHIN GIKEN KK
- [A] DE 10049548 A1 20010426 - HONDA MOTOR CO LTD [JP]
- [A] JP H115138 A 19990112 - TUBE FORMING CO LTD
- [A] US 5241848 A 19930907 - SIMON JOSEPH A [US]
- [AD] JP 2001300677 A 20011030 - KOSHIN GIKEN KK
- [AD] JP 2002086243 A 20020326 - KOSHIN GIKEN KK
- [AD] JP 2006026703 A 20060202 - MATSUOKA MINAKO, et al

Cited by

EP2929954A1; CN106660092A; US9630451B2; US9400009B2; US9670951B2; US10543717B2; DE102021201652A1

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