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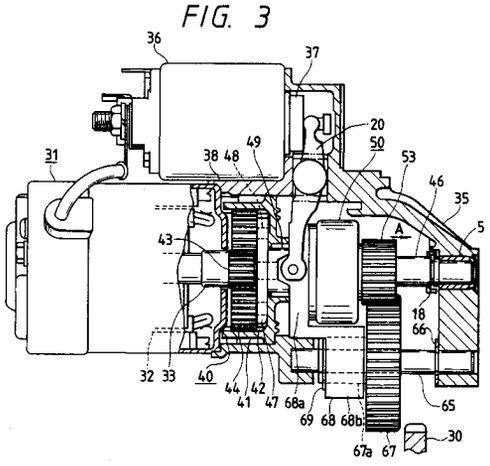
(54) Intermediate gear type starter motor.

(57) An intermediate gear type starter motor of the present invention comprises an electric motor (31) with an armature rotary shaft (33), an overrunning clutch (50) to which rotation of the rotary shaft (33) is transmitted directly or through a speed reducing mechanism (40), an intermediate gear (67) and a shift coupler (68). The overrunning clutch (50) rotating a pinion (53) in one way which is provided at the front end of the overrunning clutch (50) and is moved axially by a shift lever (20) which is operated by an electromagnetic switch (36). The intermediate gear (67) is rotatably and axially movably mounted on a supporting shaft (65) arranged in parallel with the axis of the rotary shaft (33). The intermediate gear (67) is in engagement with the pinion (53) and is moved forwardly to engage with the ring gear (30) of an internal combustion engine. The shift coupler (68) of the present invention includes an annular portion (68a) which is loosely mounted on the rear end portion of the clutch outer of the overrunning clutch (50) in such a manner that the axial movement thereof is limited, and an engaging portion (68b) extended radially of the annular portion (68a). The engaging portion (68b) is engaged with the boss of the intermediate gear (67) over at least a half of the outer periphery thereof and limited in axial movement.
When the swing of the shift lever (20) is transmitted axially to the annular portion (68a) or the boss of the intermediate gear (67), the overrunning clutch (50) and the intermediate gear (67) are moved axially being operated through the shift coupler (68). Therefore, the smooth axial movement of the intermeidate gear (67) can be achieved.

FIG. 3



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EUROPEAN SEARCH REPORT

Application Number

EP 91 10 9335

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	PATENT ABSTRACTS OF JAPAN vol. 4, no. 96 (M-20)(578) 11 July 1980 & JP-A-55 054 665 (HITACHI SEISAKUSHO) 22 April 1980 * abstract *	1	F02N15/06 F02N15/04
A	GB-A-140 751 (BENDIX) * page 2, line 43 - line 72; figure 1 *	1	
A	PATENT ABSTRACTS OF JAPAN vol. 13, no. 582 (M-911)21 December 1989 & JP-A-1 244 163 (MITSUBISHI ELECTRIC) 28 September 1989 * abstract *	1	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

F02N

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	01 APRIL 1992	MARTI ALMEDA R.

CATEGORY OF CITED DOCUMENTS

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