

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



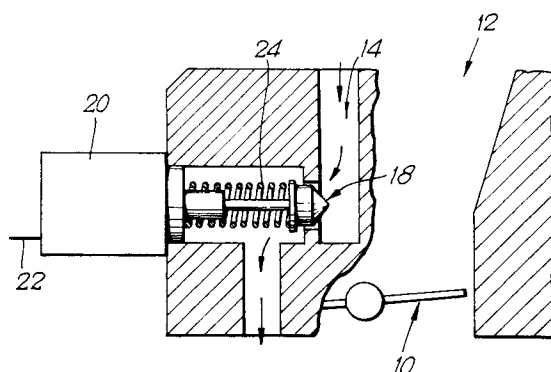
(11) Publication number:

0 590 704 A3

(12)

EUROPEAN PATENT APPLICATION(21) Application number: **93202474.8**(51) Int. Cl.⁵: **F02D 31/00, F02D 41/08**(22) Date of filing: **23.08.93**(30) Priority: **30.09.92 GB 9220582**(43) Date of publication of application:
06.04.94 Bulletin 94/14(84) Designated Contracting States:
BE DE FR PT SE(88) Date of deferred publication of the search report:
17.11.94 Bulletin 94/46(71) Applicant: **DELCO ELECTRONICS CORPORATION**
700 East Firmin Street
Kokomo Indiana 46902 (US)(72) Inventor: **Clement, Yves**
Rue du Gazometre 72
B-6700 Arlon (BE)
Inventor: **Maehling, Peter Hull**
20 Rue de l'Indépendance
L-8327 Olm (LU)
Inventor: **Van Duynhoven, Henk**
100 Bd. Baden Powell
L-1211 Luxembourg (LU)(74) Representative: **Jehan, Robert et al**
Patent Section,
1st Floor,
Gideon House,
28 Chapel Street
Luton, Bedfordshire LU1 2SE (GB)(54) **Method and apparatus for controlling an air bypass passage.**

(57) Control of the movement of a pintle in an engine, which engine includes a throttle (10) controlling air flow to the engine, a bypass channel (14) bypassing the throttle (10), a pintle (18) controlling the flow of air through the bypass channel (14) and control means (20) controlling the movement of the pintle (18), is effected by determining the position of the throttle (10), determining the position of the pintle (18), determining a desired idling speed on the basis of engine operating conditions, measuring the actual engine speed; when it is determined that the throttle (10) has moved from an open position to a substantially closed position, controlling the movement of the pintle (18) to a predetermined position at a rate determined by the difference between the actual engine speed and the desired idling speed. Closed loop control of the engine idling speed is enabled after the pintle (18) has reached the predetermined position and engine operating conditions are stable.

**EP 0 590 704 A3**



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 93 20 2474

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	GB-A-2 136 165 (HONDA) * the whole document * ---	1,6	F02D31/00 F02D41/08
A	US-A-4 418 666 (YAAMUCHI ET AL.) * the whole document * ---	1,6	
A	PATENT ABSTRACTS OF JAPAN vol. 9, no. 223 (M-411) 10 September 1985 & JP-A-60 081 442 (TOYOTA JIDOSHA) 9 May 1985 * abstract * * figure * ---	1,6	
A	PATENT ABSTRACTS OF JAPAN vol. 11, no. 67 (M-566) 28 February 1987 & JP-A-61 223 246 (FUJITSU TEN) 3 October 1986 * abstract * * figure * ---	1,6	
A	PATENT ABSTRACTS OF JAPAN vol. 11, no. 330 (M-636) 28 October 1987 & JP-A-62 111 140 (MITSUBISHI MOTORS) 22 May 1987 * abstract * * figure * -----	1,6	TECHNICAL FIELDS SEARCHED (Int.Cl.5) F02D F02M
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 12 September 1994	Examiner Kooijman, F
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application I : document cited for other reasons & : member of the same patent family, corresponding document			