

Title (en)  
Valve assembly.

Title (de)  
Ventilzusammenbau.

Title (fr)  
Assemblage de soupape.

Publication  
**EP 0574093 A1 19931215 (EN)**

Application  
**EP 93202270 A 19910618**

Priority  
US 55031390 A 19900712

Abstract (en)  
A valve assembly (10) for regulating air flow to an internal combustion engine comprises a valve body (12) having a valve bore (14) forming an induction passage, and a shaft (16) extending across the valve bore. A valve member (18) is secured to the shaft for rotation between a non-actuating position and a maximum actuating position. A ball bearing arrangement (36,38) rotatably secures one end of the shaft in a shaft socket (30) which opens into the valve bore.

IPC 1-7  
**F02D 9/10**; **F16K 1/22**

IPC 8 full level  
**F02D 9/10** (2006.01); **F02M 9/08** (2006.01); **F02M 9/12** (2006.01); **F16K 1/22** (2006.01)

CPC (source: EP)  
**F02D 9/1015** (2013.01); **F02D 9/106** (2013.01); **F02D 9/1065** (2013.01)

Citation (search report)  
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• [AD] US 4860706 A 19890829 - SUZUKI TAKIO [JP], et al  
• [A] GB 2067719 A 19810730 - NISSAN MOTOR  
• [A] DE 837785 C 19520502 - BAYERISCHE MOTOREN WERKE AG  
• [Y] PATENT ABSTRACTS OF JAPAN vol. 11, no. 348 (M-642)14 November 1987 & JP-A-62 129 538 ( TOYOTA MOTOR CORP. ) 11 June 1987  
• [Y] PATENT ABSTRACTS OF JAPAN vol. 13, no. 299 (M-847)11 July 1989 & JP-A-01 087 838 ( HITACHI LTD ) 31 March 1989

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Designated contracting state (EPC)  
DE FR GB

DOCDB simple family (publication)  
**EP 0574093 A1 19931215**; CA 2044213 A1 19920113; EP 0466227 A1 19920115; JP H04249678 A 19920904

DOCDB simple family (application)  
**EP 93202270 A 19910618**; CA 2044213 A 19910610; EP 91201535 A 19910618; JP 17135091 A 19910711