

Title (en)

Improved tip structures for an ultra light engine valve

Title (de)

Verbesserte Spitzengestaltung in einem ultraleichten Brennkraftmaschinenventil

Title (fr)

Embout à structure améliorée pour soupape de moteur ultra - légère

Publication

**EP 0911493 A2 19990428 (EN)**

Application

**EP 98308461 A 19981015**

Priority

US 95518897 A 19971021

Abstract (en)

An ultra light poppet valve (11) having increased stiffness at its tip end. The valve includes a stem (13) which is formed as a thin-walled, elongated cup member having a closed tip portion (19) and a flared open end (17). To which a disk-like cap member (15) is fixed. The stiffness of the tip is increased by various means including members (43;61) added to the tip portion (19), members (47;49) inserted within the tip portion, hard surfaces (53;53a) deposited on the tip portion, and members (43b;73) inserted within openings (71) in the end of the tip portion. <IMAGE>

IPC 1-7

**F01L 3/02**; **F01L 3/14**; **F01L 3/20**

IPC 8 full level

**F01L 3/02** (2006.01); **F01L 3/14** (2006.01); **F01L 3/20** (2006.01); **F01L 3/24** (2006.01)

CPC (source: EP)

**F01L 3/02** (2013.01); **F01L 3/14** (2013.01); **F01L 3/20** (2013.01)

Citation (applicant)

US 5413073 A 19950509 - LARSON JAY M [US], et al

Citation (third parties)

Third party :

US 4173035 A 19791030 - HOYT STEVEN D [US]

Cited by

DE102013223571A1; US2012304464A1; DE10354074A1; DE10354074B4; US2012246934A1; US8713793B2; US2012255175A1; EP1950384A4; US8881391B2; DE102007051374A1; US2013019474A1; US8561297B2; EP2803827A1; US9255559B2; WO2007057946A1; WO2006081951A1; US11536167B2; US9957854B2; US11300018B2

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