

Title (en)  
SUBMERSIBLE MOTOR PUMP

Publication  
**EP 0355781 A3 19900530 (DE)**

Application  
**EP 89115430 A 19890822**

Priority  
DE 3828512 A 19880823

Abstract (en)  
[origin: JPH0275794A] PURPOSE: To efficiently disperse heat from a waste heat source all the time by forming a hollow and closable shaft, partially filling liquid in the hollow shaft and forming a heat pipe system. CONSTITUTION: A shaft 7 is formed as a hollow and closable shaft by a closure member 18, and a liquid 17 is partially filled into the hollow shaft. Before a pump device is put into work, the closure member 18 is taken off and the liquid 17 is filled into the hollow shaft 7. After that, while removing the remainder air from the hollow shaft, the hollow part inside the shaft is air sealed and liquid sealed by the closure member 18. Therefore, the shaft thus produced, with the liquid 17 in the hollow part together, forms a heat pipe system for dispersal of loss heat from a rotor chamber 13 of the motor 2.

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**F04D 29/58**; F04D 29/04; F04D 13/10

IPC 8 full level  
**F04D 13/08** (2006.01); **F04D 13/10** (2006.01); **F04D 29/04** (2006.01); **F04D 29/043** (2006.01); **F04D 29/58** (2006.01)

CPC (source: EP US)  
**F04D 13/10** (2013.01 - EP US); **F04D 29/043** (2013.01 - EP US); **F04D 29/5893** (2013.01 - EP US)

Citation (search report)  
• [Y] US 2743384 A 19560424 - TURNER EDGAR P  
• [Y] FR 2436896 A1 19800418 - BORG WARNER [US]  
• [A] PATENT ABSTRACTS OF JAPAN, Band 12, Nr. 454 (M-769)[3301], 29. November 1988; & JP-A-63 183 382 (ISHIKAWAJIMA HARIMA HEAVY IND. CO. LTD) 28-07-1988  
• [A] PATENT ABSTRACTS OF JAPAN, Band 12, Nr. 454 (M-769)[3301], 29. November 1988; & JP-A-63 183 383 (ISHIKAWAJIMA HARIMA HEAVY IND. CO. LTD) 28-07-1988

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**EP 0355781 A2 19900228**; **EP 0355781 A3 19900530**; DE 3828512 A1 19900308; DE 3828512 C2 19900607; JP H0275794 A 19900315; US 4930996 A 19900605

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**EP 89115430 A 19890822**; DE 3828512 A 19880823; JP 21427389 A 19890822; US 39570489 A 19890817