

CPC**COOPERATIVE PATENT CLASSIFICATION****F04F**

PUMPING OF FLUID BY DIRECT CONTACT OF ANOTHER FLUID OR BY USING INERTIA OF FLUID TO BE PUMPED {(evacuating by sorption [F04B](#))}; **SIPHONS** {(Conveying materials in bulk by flows of gas, liquid of foam [B65G 53/00](#))}

NOTES

1. Attention is drawn to the notes preceding class [F01](#).
2. Combinations of pumps belonging to this subclass with other pumps are only classified in this subclass if such other pumps are fore pumps of diffusion pumps.

F04F 1/00

Pumps using positively or negatively pressurised fluid medium acting directly on the liquid to be pumped (using only negative pressure [F04F 3/00](#); jet pumps [F04F 5/00](#); siphons [F04F 10/00](#))

- [F04F 1/02](#)
 - using both positively and negatively pressurised fluid medium, e.g. alternating
- [F04F 1/04](#)
 - . generated by vaporising and condensing
- [F04F 1/06](#)
 - the fluid medium acting on the surface of the liquid to be pumped ([F04F 1/02](#) takes precedence)
- [F04F 1/08](#)
 - . specially adapted for raising liquids from great depth, e.g. in wells
- [F04F 1/10](#)
 - . of multiple type, e.g. with two or more units in parallel ([F04F 1/08](#) takes precedence)
- [F04F 1/12](#)
 - . . in series
- [F04F 1/14](#)
 - . adapted to pump specific liquids, e.g. corrosive or hot liquids
- [F04F 1/16](#)
 - . characterised by the fluid medium being suddenly pressurised, e.g. by explosion
- [F04F 1/18](#)
 - the fluid medium being mixed with, or generated from the liquid to be pumped
- [F04F 1/20](#)
 - . specially adapted for raising liquids from great depths, e.g. in wells

F04F 3/00

Pumps using negative pressure acting directly on the liquid to be pumped (siphons [F04F 10/00](#))

F04F 5/00

Jet pumps, i.e. devices in which flow is induced by pressure drop caused by velocity of another fluid flow (diffusion pumps [F04F 9/00](#); combination of jet pumps with pumps of other than jet type [F04B](#); use of jet pumps for priming or boosting non-positive-displacement pumps [F04D](#))

- [F04F 5/02](#)
 - the including fluid being liquid
- [F04F 5/04](#)
 - . displacing elastic fluids
- [F04F 5/06](#)
 - . . of rotary type
- [F04F 5/08](#)
 - . . the elastic fluid being entrained in a free falling column of liquid
- [F04F 5/10](#)
 - . displacing liquids, e.g. containing solids, or liquids and elastic fluids
- [F04F 5/12](#)
 - . . of multi-stage type
- [F04F 5/14](#)
 - the inducing fluid being elastic fluid
- [F04F 5/16](#)
 - . displacing elastic fluids

F04F 5/18	. . . for compressing
F04F 5/20	. . . for evacuating
F04F 5/22 of multi-stage type
F04F 5/24	. . displacing liquids, e.g. containing solids, or liquid and elastic fluids
F04F 5/26	. . . of multi-stage type (F04F 5/28 takes precedence)
F04F 5/28	. . . Restarting of inducing action
F04F 5/30 with axially-slidable combining nozzle
F04F 5/32 with hinged flap in combining nozzle
F04F 5/34	. . characterised by means for changing inducing fluid source
F04F 5/36	. . characterised by using specific inducing fluid
F04F 5/38	. . . the inducing fluid being mercury vapour
F04F 5/40	. . . the inducing fluid being oil vapour
F04F 5/42	. characterised by the input flow of inducing fluid medium being radial or tangential to output flow (cyclones B04C)
F04F 5/44	. Component parts, details, or accessories not provided for in, or of interest apart from, groups F04F 5/02 to F04F 5/42
F04F 5/46	. . Arrangements of nozzles
F04F 5/461	. . . {Adjustable nozzles}
F04F 5/462	. . . {with provisions for cooling the fluid}
F04F 5/463	. . . {with provisions for mixing}
F04F 5/464	. . . {with inversion of the direction of flow}
F04F 5/465	. . . {with supersonic flow (mixing of supersonic fluids B01F 5/04)}
F04F 5/466	. . . {with a plurality of nozzles arranged in parallel}
F04F 5/467	. . . {with a plurality of nozzles arranged in series}
F04F 5/468	. . . {with provisions for priming}
F04F 5/469	. . . {for steam engines}
F04F 5/48	. . Control
F04F 5/50	. . . of compressing pumps
F04F 5/52	. . . of evacuating pumps
F04F 5/54	. Installations characterised by use of jet pumps, e.g. combinations of two or more jet pumps of different type
F04F 7/00	Pumps displacing fluids by using inertia thereof, e.g. by generating vibration therein
F04F 7/02	. Hydraulic rams
F04F 9/00	Diffusion pumps
F04F 9/02	. of multi-stage type
F04F 9/04	. in combination with fore pumps, e.g. use of isolating valves
F04F 9/06	. Arrangement of vapour traps
F04F 9/08	. Control

F04F 10/00

Siphons

F04F 10/02

. Gravity-actuated siphons

F04F 13/00

Pressure exchangers

F04F 99/00

Subject matter not provided for in other groups of this subclass