

**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**