

**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](#) }

**NOTE**

Attention is drawn to the notes preceding class [F01](#) .

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**