

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.

Guidance heading:**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**