

# CPC COOPERATIVE PATENT CLASSIFICATION

## F MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING (NOTE omitted)

### ENGINES OR PUMPS

#### F04 POSITIVE - DISPLACEMENT MACHINES FOR LIQUIDS; PUMPS FOR LIQUIDS OR ELASTIC FLUIDS (NOTE omitted)

#### 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 or 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.

##### WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

1/00	<b>Pumps using positively or negatively pressurised fluid medium acting directly on the liquid to be pumped (using only negative pressure <a href="#">F04F 3/00</a>; jet pumps <a href="#">F04F 5/00</a>; siphons <a href="#">F04F 10/00</a>)</b>	5/08	. . . the elastic fluid being entrained in a free falling column of liquid
1/02	. using both positively and negatively pressurised fluid medium, e.g. alternating	5/10	. . displacing liquids, e.g. containing solids, or liquids and elastic fluids
1/04	. . generated by vaporising and condensing	5/12	. . . of multi-stage type
1/06	. the fluid medium acting on the surface of the liquid to be pumped ( <a href="#">F04F 1/02</a> takes precedence)	5/14	. the inducing fluid being elastic fluid
1/08	. . specially adapted for raising liquids from great depths, e.g. in wells	5/16	. . displacing elastic fluids
1/10	. . of multiple type, e.g. with two or more units in parallel ( <a href="#">F04F 1/08</a> takes precedence)	5/18	. . . for compressing
1/12	. . . in series	5/20	. . . for evacuating
1/14	. . adapted to pump specific liquids, e.g. corrosive or hot liquids	5/22	. . . . of multi-stage type
1/16	. . characterised by the fluid medium being suddenly pressurised, e.g. by explosion	5/24	. . displacing liquids, e.g. containing solids, or liquids and elastic fluids
1/18	. the fluid medium being mixed with, or generated from the liquid to be pumped	5/26	. . . of multi-stage type ( <a href="#">F04F 5/28</a> takes precedence)
1/20	. . specially adapted for raising liquids from great depths, e.g. in wells	5/28	. . . Restarting of inducing action
3/00	<b>Pumps using negative pressure acting directly on the liquid to be pumped (siphons <a href="#">F04F 10/00</a>)</b>	5/30	. . . . with axially-slidable combining nozzle
5/00	<b>Jet pumps, i.e. devices in which flow is induced by pressure drop caused by velocity of another fluid flow (diffusion pumps <a href="#">F04F 9/00</a>; combination of jet pumps with pumps of other than jet type <a href="#">F04B</a>; use of jet pumps for priming or boosting non-positive-displacement pumps <a href="#">F04D</a>)</b>	5/32	. . . . with hinged flap in combining nozzle
5/02	. the inducing fluid being liquid	5/34	. . characterised by means for changing inducing fluid source
5/04	. . displacing elastic fluids	5/36	. . characterised by using specific inducing fluid
5/06	. . . of rotary type	5/38	. . . the inducing fluid being mercury vapour
		5/40	. . . the inducing fluid being oil vapour
		5/42	. characterised by the input flow of inducing fluid medium being radial or tangential to output flow ( <a href="#">cyclones B04C</a> )
		5/44	. Component parts, details, or accessories not provided for in, or of interest apart from, groups <a href="#">F04F 5/02</a> - <a href="#">F04F 5/42</a>
		5/46	. . Arrangements of nozzles
		5/461	. . . {Adjustable nozzles}
		5/462	. . . {with provisions for cooling the fluid}
		5/463	. . . {with provisions for mixing}
		5/464	. . . {with inversion of the direction of flow}
		5/465	. . . {with supersonic flow (mixing of supersonic fluids <a href="#">B01F 25/20</a> )}

- 5/466 . . . {with a plurality of nozzles arranged in parallel}
- 5/467 . . . {with a plurality of nozzles arranged in series}
- 5/468 . . . {with provisions for priming}
- 5/469 . . . {for steam engines}
- 5/48 . . Control
- 5/50 . . . of compressing pumps
- 5/52 . . . of evacuating pumps
- 5/54 . Installations characterised by use of jet pumps, e.g. combinations of two or more jet pumps of different type
  
- 7/00 Pumps displacing fluids by using inertia thereof, e.g. by generating vibrations therein**
- 7/02 . Hydraulic rams
  
- 9/00 Diffusion pumps**
- 9/02 . of multi-stage type
- 9/04 . in combination with fore pumps, e.g. use of isolating valves
- 9/06 . Arrangement of vapour traps
- 9/08 . Control
  
- 10/00 Siphons**
- 10/02 . Gravity-actuated siphons
  
- 13/00 Pressure exchangers**
  
- 99/00 Subject matter not provided for in other groups of this subclass**