SECTION F — MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING

F01 MACHINES OR ENGINES IN GENERAL; ENGINE PLANTS IN GENERAL; STEAM ENGINES

F01K STEAM ENGINE PLANTS; STEAM ACCUMULATORS; ENGINE PLANTS NOT OTHERWISE PROVIDED FOR; ENGINES USING SPECIAL WORKING FLUIDS OR CYCLES (gas-turbine or jet-propulsion plants F02; steam generation F22; nuclear power plants, engine arrangements therein G21D)

Note(s)

Attention is drawn to the Notes preceding class F01, especially as regards the definitions of "steam" and "special vapour".

Subclass index

1/00 **Steam accumulators** (use of accumulators in steam engine plants F01K 3/00) **[1, 2006.01]**

1/02 • for storing steam otherwise than in a liquid **[1, 2006.01]**

1/04 • for storing steam in a liquid, e.g. Ruth type (in alkali to increase steam pressure F22B 1/20) **[1, 2006.01]**

1/06 • • Internal fittings facilitating steam distribution, steam formation, or circulation (acting during charging or discharging F01K 1/08; fittings facilitating circulation through multiple accumulators F01K 1/14) **[1, 2006.01]**

1/08 • Charging or discharging of accumulators with steam (peculiar to multiple accumulators F01K 1/12) **[1, 2006.01]**

1/10 • specially adapted for superheated steam **[1, 2006.01]**

1/12 • Multiple accumulators; Charging, discharging or control specially adapted therefor **[1, 2006.01]**

1/14 • • Circulation **[1, 2006.01]**

1/16 • Other safety or control means **[1, 2006.01]**

1/18 • • for steam pressure **[1, 2006.01]**

1/20 • Other steam-accumulator parts, details, or accessories **[1, 2006.01]**

Steam engine plants

3/00 **Plants characterised by the use of steam or heat accumulators, or intermediate steam heaters, therein** (regenerating exhaust steam F01K 19/00) **[1, 2006.01]**

3/02 • Use of accumulators and specific engine types; Control thereof **[1, 2006.01]**

3/04 • • the engine being of multiple-inlet-pressure type **[1, 2006.01]**

3/06 • • the engine being of extraction or non-condensing type **[1, 2006.01]**

3/08 • Use of accumulators, the plant being specially adapted for a specific use **[1, 2006.01]**

3/10 • • for vehicle drive, e.g. for accumulator locomotives **[1, 2006.01]**

3/12 • having two or more accumulators **[1, 2006.01]**

3/14 • having both steam accumulator and heater, e.g. superheating accumulator (steam superheaters per se F22G) **[1, 2006.01]**

3/16 • • Mutual arrangement of accumulator and heater **[1, 2006.01]**

3/18 • having heaters (having both steam accumulator and heater F01K 3/14; steam heaters per se F22) **[1, 2006.01]**

3/20 • • with heating by combustion gases of main boiler **[1, 2006.01]**

3/22 • • • Controlling, e.g. starting, stopping **[1, 2006.01]**

3/24 • • with heating by separately-fired heaters **[1, 2006.01]**

3/26 • • with heating by steam **[1, 2006.01]**

5/00 Plants characterised by use of means for storing steam in an alkali to increase steam pressure, e.g. of Honigmann or Koenemann type [1, 2006.01]

5/02 • used in regenerative installation **[1, 2006.01]**

7/00 Steam engine plants characterised by the use of specific types of engine (F01K 3/02 takes precedence)**; Plants or engines characterised by their use of special steam systems, cycles or processes** (reciprocating-piston engines using uniflow principle F01B 17/04)**; Control means specially adapted for such systems, cycles or processes; Use of withdrawn or exhaust steam for feed-water heating [1, 2006.01]**

7/02 • the engines being of multiple-expansion type (the engines being only of turbine type F01K 7/16; the engines using steam of critical or over-critical pressure F01K 7/32; the engines being of extraction or non-condensing type F01K 7/34) **[1, 2006.01]**

7/04 • • Control means specially adapted therefor **[1, 2006.01]**

7/06 • the engines being of multiple-inlet-pressure type (F01K 7/02 takes precedence; the engines being only of turbine type F01K 7/16; the engines using steam of critical or over-critical pressure F01K 7/32; the engines being of extraction or non-condensing type F01K 7/34) **[1, 2006.01]**

7/08 • • Control means specially adapted therefor **[1, 2006.01]**

7/10 • characterised by the engine exhaust pressure (the engines being only of turbine type F01K 7/16; the engines using steam of critical or over-critical pressure F01K 7/32; the engines being of extraction or non-condensing type F01K 7/34) **[1, 2006.01]**

7/12 • • of condensing type **[1, 2006.01]**

7/14 • • • Control means specially adapted therefor **[1, 2006.01]**

7/16 • the engines being only of turbine type (the engines using steam of critical or over-critical pressure F01K 7/32; the engines being of extraction or non-condensing type F01K 7/34) **[1, 2006.01]**

7/18 • • the turbine being of multiple-inlet-pressure type **[1, 2006.01]**

7/20 • • • Control means specially adapted therefor **[1, 2006.01]**

7/22 • • the turbines having inter-stage steam heating **[1, 2006.01]**

7/24 • • • Control or safety means specially adapted therefor **[1, 2006.01]**

7/26 • • the turbines having inter-stage steam accumulation **[1, 2006.01]**

7/28 • • • Control means specially adapted therefor **[1, 2006.01]**

7/30 • • the turbines using exhaust steam only **[1, 2006.01]**

7/32 • the engines using steam of critical or over-critical pressure **[1, 2006.01]**

7/34 • the engines being of extraction or non-condensing type; Use of steam for feed-water heating (feed-water heaters in general F22D) **[1, 2006.01]**

7/36 • • the engines being of positive-displacement type **[1, 2006.01]**

7/38 • • the engines being of turbine type **[1, 2006.01]**

7/40 • • Use of two or more feed-water heaters in series **[1, 2006.01]**

7/42 • • Use of desuperheaters for feed-water heating **[1, 2006.01]**

7/44 • • Use of steam for feed-water heating and another purpose **[1, 2006.01]**

9/00 Steam engine plants characterised by condensers arranged or modified to co-operate with the engines (by condensers structurally combined with engines F01K 11/00; steam condensers per se F28B) **[1, 2006.01]**

9/02 • Arrangements or modifications of condensate or air pumps **[1, 2006.01]**

9/04 • with dump valves to by-pass stages **[1, 2006.01]**

11/00 Steam engine plants characterised by the engines being structurally combined with boilers or condensers [1, 2006.01]

11/02 • the engines being turbines **[1, 2006.01]**

11/04 • the boilers or condensers being rotated in use **[1, 2006.01]**

13/00 General layout or general methods of operation, of complete steam engine plants [1, 2006.01]

13/02 • Controlling, e.g. stopping or starting **[1, 2006.01]**

15/00 Adaptations of steam engine plants for special use [1, 2006.01]

15/02 • for driving vehicles, e.g. locomotives **[1, 2006.01]**

15/04 • • the vehicles being waterborne vessels **[1, 2006.01]**

17/00 Use of steam or condensate extracted or exhausted from steam engine plant (for heating feed-water F01K 7/34; returning condensate to boiler F22D) **[1, 2006.01]**

17/02 • for heating purposes, e.g. industrial, domestic (F01K 17/06 takes precedence; domestic- or space-heating systems, e.g. central-heating systems, in general F24D 1/00, F24D 3/00, F24D 9/00) **[1, 3, 2006.01]**

17/04 • for specific purposes other than heating (F01K 17/06 takes precedence) **[1, 2006.01]**

17/06 • Returning energy of steam, in exchanged form, to process, e.g. use of exhaust steam for drying solid fuel of plant **[1, 2006.01]**

19/00 Regenerating or otherwise treating steam exhaust from steam engine plant (plants characterised by use of means for storing steam in an alkali to increase steam pressure F01K 5/00; returning condensate to boiler F22D) **[1, 2006.01]**

19/02 • Regenerating by compression **[1, 2006.01]**

19/04 • • in combination with cooling or heating **[1, 2006.01]**

19/06 • • in engine cylinder **[1, 2006.01]**

19/08 • • compression done by injection apparatus, jet blower, or the like **[1, 2006.01]**

19/10 • Cooling exhaust steam other than by condenser; Rendering exhaust steam invisible **[1, 2006.01]**

21/00 Steam engine plants not otherwise provided for [1, 2006.01]

21/02 • with steam generation in engine cylinders **[1, 2006.01]**

21/04 • using mixtures of steam and gas; Plants generating or heating steam by bringing water or steam into direct contact with hot gas (direct-contact steam generators in general F22B) **[1, 2006.01]**

21/06 • Treating live steam, other than thermodynamically, e.g. for fighting deposits in engine **[1, 2006.01]**

23/00 Plants characterised by more than one engine delivering power external to the plant, the engines being driven by different fluids [1, 2006.01]

23/02 • the engine cycles being thermally coupled **[1, 2006.01]**

23/04 • • condensation heat from one cycle heating the fluid in another cycle **[1, 2006.01]**

23/06 • • combustion heat from one cycle heating the fluid in another cycle **[1, 2006.01]**

23/08 • • • with working fluid of one cycle heating the fluid in another cycle **[1, 2006.01]**

23/10 • • • with exhaust fluid of one cycle heating the fluid in another cycle **[1, 2006.01]**

23/12 • the engines being mechanically coupled (F01K 23/02 takes precedence) **[1, 2006.01]**

23/14 • • including at least one combustion engine **[1, 2006.01]**

23/16 • • all the engines being turbines (F01K 23/14 takes precedence) **[1, 2006.01]**

23/18 • characterised by adaptation for specific use **[1, 2006.01]**

25/00 Plants or engines characterised by use of special working fluids, not otherwise provided for; Plants operating in closed cycles and not otherwise provided for [1, 2006.01]

25/02 • the fluid remaining in the liquid phase **[1, 2006.01]**

25/04 • the fluid being in different phases, e.g. foamed **[1, 2006.01]**

25/06 • using mixtures of different fluids (plants using mixtures of steam and gas F01K 21/04) **[1, 2006.01]**

25/08 • using special vapours **[1, 2006.01]**

25/10 • • the vapours being cold, e.g. ammonia, carbon dioxide, ether **[1, 2006.01]**

25/12 • • the vapours being metallic, e.g. mercury **[1, 2006.01]**

25/14 • • using industrial or other waste gases **[1, 2006.01]**

27/00 Plants for converting heat or fluid energy into mechanical energy, not otherwise provided for [1, 2006.01]

27/02 • Plants modified to use their waste heat, other than that of exhaust, e.g. engine-friction heat **[1, 2006.01]**