

# CPC COOPERATIVE PATENT CLASSIFICATION

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

### LIGHTING; HEATING

#### F22 STEAM GENERATION (chemical or physical apparatus for generating gases [B01J](#); chemical generation of gas, e.g. under pressure, Section [C](#); removal of combustion products or residues, e.g. cleaning of the combustion contaminated surfaces of tubes of boilers, [F23J](#); generating combustion products of high pressure or high velocity [F23R](#); water heaters not for steam generation [F24H](#), [F28](#); cleaning of internal or external surfaces of heat-transfer conduits, e.g. water tubes of boilers, [F28G](#))

(NOTE omitted)

#### F22G SUPERHEATING OF STEAM (steam separating arrangements in boilers [F22B 37/26](#))

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| <p><b>1/00</b> Steam superheating characterised by heating method (exothermal chemical reactions not involving a supply of free oxygen gas, apparatus or devices for using the heat therefrom <a href="#">F24J</a>)</p> <p>1/005 . {the heat being supplied by steam}</p> <p>1/02 . with heat supply by hot flue gases from the furnace of the steam boiler</p> <p>1/04 . . by diverting flow or hot flue gases to separate superheaters operating in reheating cycle, e.g. for reheating steam between a high-pressure turbine stage and an intermediate turbine stage</p> <p>1/06 . with heat supply predominantly by radiation</p> <p>1/08 . . from heated brickwork or the like</p> <p>1/10 . with provision for superheating by throttling</p> <p>1/12 . by mixing steam with furnace gases or other combustion products</p> <p>1/14 . using heat generated by chemical reactions</p> <p>1/16 . by using a separate heat source independent from heat supply of the steam boiler, e.g. by electricity, by auxiliary combustion of fuel oil</p> <p>1/165 . . {by electricity (steam generation in boilers heated electrically, in general, <a href="#">F22B 1/28</a>)}</p> <p><b>3/00</b> Steam superheaters characterised by constructional features; Details of component parts thereof (general aspects of enclosed heat-exchangers <a href="#">F28D</a>)</p> <p>3/001 . {Steam tube arrangements not dependent of location (characterised by location <a href="#">F22G 7/00</a>)}</p> <p>3/002 . . {with helical steam tubes}</p> <p>3/003 . {Superheater drain arrangements}</p> <p>3/004 . {Steam tubes with steam flowing in opposite directions in one pipe, e.g. Field tubes (<a href="#">F22G 3/005</a> takes precedence)}</p> <p>3/005 . {Annular steam tubes, i.e. the steam being heated between concentric tubes with the heating fluid flowing in inner and around outer tube}</p> <p>3/006 . {Steam superheaters with heating tubes (<a href="#">F22G 3/005</a> takes precedence)}</p> <p>3/007 . {Headers; Collectors, e.g. for mixing}</p> | <p>3/008 . {Protection of superheater elements, e.g. cooling superheater tubes during starting-up periods, water tube screens}</p> <p>3/009 . {Connecting or sealing of superheater or reheater tubes with collectors or distributors}</p> <p><b>5/00</b> Controlling superheat temperature (control systems for steam boilers <a href="#">F22B</a>; regulating or controlling in general <a href="#">G05</a>)</p> <p>5/02 . Applications of combustion-control devices, e.g. tangential-firing burners, tilting burners</p> <p>5/04 . by regulating flue gas flow, e.g. by proportioning or diverting</p> <p>5/06 . by recirculating flue gases</p> <p>5/08 . . preventing furnace gas backflow through recirculating fan</p> <p>5/10 . by displacing superheater sections</p> <p>5/12 . by attemperating the superheated steam, e.g. by injected water sprays (spray mixers <a href="#">B01F 5/18</a>)</p> <p>5/123 . . {Water injection apparatus}</p> <p>5/126 . . . {in combination with steam-pressure reducing valves}</p> <p>5/14 . . by live steam</p> <p>5/16 . by indirectly cooling or heating the superheated steam in auxiliary enclosed heat-exchanger</p> <p>5/18 . by by-passing steam around superheater sections</p> <p>5/20 . by combined controlling procedures</p> <p><b>7/00</b> Steam superheaters characterised by location, arrangement, or disposition</p> <p>7/005 . {for locomotive boilers (<a href="#">F22G 7/065</a>, <a href="#">F22G 7/105</a> take precedence)}</p> <p>7/02 . in fire tubes</p> <p>7/04 . in jackets around fire tubes</p> <p>7/06 . in furnace tubes</p> <p>7/065 . . {for locomotive boilers}</p> <p>7/08 . in fire-boxes</p> <p>7/10 . in smoke-boxes</p> <p>7/105 . . {for locomotive boilers}</p> <p>7/12 . in flues</p> <p>7/14 . in water-tube boilers, e.g. between banks of water tubes</p> |
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- 7/145 . . {of inclined type, i.e. the water-tube sets being inclined with respect to the horizontal plane}