

# 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](#))

#### 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>Steam superheating characterised by heating method</b> (exothermal chemical reactions not involving a supply of free oxygen gas, apparatus or devices for using the heat therefrom <a href="#">F24V 30/00</a> ) | 3/006       | . {Steam superheaters with heating tubes ( <a href="#">F22G 3/005</a> takes precedence)}  |
| 1/005       | . {the heat being supplied by steam}   | 3/007       | . {Headers; Collectors, e.g. for mixing}  |
| 1/02        | . with heat supply by hot flue gases from the furnace of the steam boiler  | 3/008       | . {Protection of superheater elements, e.g. cooling superheater tubes during starting-up periods, water tube screens}   |
| 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                    | 3/009       | . {Connecting or sealing of superheater or reheater tubes with collectors or distributors}  |
| 1/06        | . with heat supply predominantly by radiation  | <b>5/00</b> | <b>Controlling superheat temperature</b> (control systems for steam boilers <a href="#">F22B</a> ; regulating or controlling in general <a href="#">G05</a> ) |
| 1/08        | . . from heated brickwork or the like  | 5/02        | . Applications of combustion-control devices, e.g. tangential-firing burners, tilting burners   |
| 1/10        | . with provision for superheating by throttling  | 5/04        | . by regulating flue gas flow, e.g. by proportioning or diverting   |
| 1/12        | . by mixing steam with furnace gases or other combustion products  | 5/06        | . by recirculating flue gases   |
| 1/14        | . using heat generated by chemical reactions   | 5/08        | . . preventing furnace gas backflow through recirculating fan   |
| 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   | 5/10        | . by displacing superheater sections  |
| 1/165       | . . {by electricity (steam generation in boilers heated electrically, in general, <a href="#">F22B 1/28</a> )}   | 5/12        | . by temperating the superheated steam, e.g. by injected water sprays (spray mixers <a href="#">B01F 5/18</a> )   |
| <b>3/00</b> | <b>Steam superheaters characterised by constructional features; Details of component parts thereof</b> (general aspects of enclosed heat-exchangers <a href="#">F28D</a> )   | 5/123       | . . {Water injection apparatus}   |
| 3/001       | . {Steam tube arrangements not dependent of location (characterised by location <a href="#">F22G 7/00</a> )}   | 5/126       | . . . {in combination with steam-pressure reducing valves}  |
| 3/002       | . . {with helical steam tubes}   | 5/14        | . . by live steam   |
| 3/003       | . {Superheater drain arrangements}   | 5/16        | . by indirectly cooling or heating the superheated steam in auxiliary enclosed heat-exchanger   |
| 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)}   | 5/18        | . by by-passing steam around superheater sections   |
| 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}  | 5/20        | . by combined controlling procedures  |
|             |  | <b>7/00</b> | <b>Steam superheaters characterised by location, arrangement, or disposition</b>  |
|             |  | 7/005       | . {for locomotive boilers ( <a href="#">F22G 7/065</a> , <a href="#">F22G 7/105</a> take precedence)}   |
|             |  | 7/02        | . in fire tubes   |
|             |  | 7/04        | . in jackets around fire tubes  |
|             |  | 7/06        | . in furnace tubes  |

## F22G

- 7/065 . . {for locomotive boilers}
- 7/08 . in fire-boxes
- 7/10 . in smoke-boxes
- 7/105 . . {for locomotive boilers}
- 7/12 . in flues
- 7/14 . in water-tube boilers, e.g. between banks of water tubes
- 7/145 . . {of inclined type, i.e. the water-tube sets being inclined with respect to the horizontal plane}