

**CPC****COOPERATIVE PATENT CLASSIFICATION****F22G****SUPERHEATING OF STEAM** ( [steam separating arrangements in boilers F22B 37/26](#) )**F22G 1/00****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 F24J](#) )

## F22G 1/005

- . { [the heat being supplied by steam](#) }

## F22G 1/02

- . with heat supply by hot flue gases from the furnace of the steam boiler

## F22G 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

## F22G 1/06

- . with heat supply predominantly by radiation

## F22G 1/08

- . . from heated brickwork or the like

## F22G 1/10

- . with provision for superheating by throttling

## F22G 1/12

- . by mixing steam with furnace gases or other combustion products

## F22G 1/14

- . using heat generated by chemical reactions

## F22G 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

## F22G 1/165

- . . { [by electricity](#) ( [steam generation in boilers heated electrically, in general, F22B 1/28](#) ) }

**F22G 3/00****Steam superheaters characterised by constructional features; Details of component parts thereof** ( [general aspects of enclosed heat-exchangers F28D](#) )

## F22G 3/001

- . { [Steam tube arrangements not dependent of location](#) ( [characterised by location F22G 7/00](#) ) }

## F22G 3/002

- . . { [with helical steam tubes](#) }

## F22G 3/003

- . { [Superheater drain arrangements](#) }

## F22G 3/004

- . { [Steam tubes with steam flowing in opposite directions in one pipe, e.g. Field tubes](#) ( [F22G 3/005 takes precedence](#) ) }

## F22G 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](#) }

## F22G 3/006

- . { [Steam superheaters with heating tubes](#) ( [F22G 3/005 takes precedence](#) ) }

## F22G 3/007

- . { [Headers; Collectors, e.g. for mixing](#) }

## F22G 3/008

- . { [Protection of superheater elements, e.g. cooling superheater tubes during starting-up](#) }

periods, water tube screens }

F22G 3/009

- . { Connecting or sealing of superheater or reheater tubes with collectors or distributors }

## **F22G 5/00**

**Controlling superheat temperature** ( control systems for steam boilers [F22B](#); regulating or controlling in general [G05](#) )

F22G 5/02

- . Applications of combustion-control devices, e.g. tangential-firing burners, tilting burners

F22G 5/04

- . by regulating flue gas flow, e.g. by proportioning or diverting

F22G 5/06

- . by recirculating flue gases

F22G 5/08

- . . preventing furnace gas backflow through recirculating fan

F22G 5/10

- . by displacing superheater sections

F22G 5/12

- . by attemperating the superheated steam, e.g. by injected water sprays ( spray mixers [B01F 5/18](#) )

F22G 5/123

- . . { Water injection apparatus }

F22G 5/126

- . . . { in combination with steam-pressure reducing valves }

F22G 5/14

- . . by live steam

F22G 5/16

- . by indirectly cooling or heating the superheated steam in auxiliary enclosed heat-exchanger

F22G 5/18

- . by by-passing steam around superheater sections

F22G 5/20

- . by combined controlling procedures

## **F22G 7/00**

**Steam superheaters characterised by location, arrangement, or disposition**

F22G 7/005

- . { for locomotive boilers ( [F22G 7/065](#), [F22G 7/105](#) take precedence ) }

F22G 7/02

- . in fire tubes

F22G 7/04

- . in jackets around fire tubes

F22G 7/06

- . in furnace tubes

F22G 7/065

- . . { for locomotive boilers }

F22G 7/08

- . in fire-boxes

F22G 7/10

- . in smoke-boxes

F22G 7/105

- . . { for locomotive boilers }

F22G 7/12

- . in flues

F22G 7/14

- . in water-tube boilers, e.g. between banks of water tubes

F22G 7/145

- . . { of inclined type, i.e. the water-tube sets being inclined with respect to the horizontal plane }