

**CPC****COOPERATIVE PATENT CLASSIFICATION****F28C**

**HEAT-EXCHANGE APPARATUS, NOT PROVIDED FOR IN ANOTHER SUBCLASS, IN WHICH THE HEAT-EXCHANGE MEDIA COME INTO DIRECT CONTACT WITHOUT CHEMICAL INTERACTION** ([safety devices in general F16P](#) ; fluid heaters having heat generating means [F24H](#) ; with an intermediate heat-transfer medium coming into direct contact with heat-exchange media [F28D 15/00](#) to [F28D 19/00](#); details of heat-exchange apparatus of general application [F28F](#) )

**Guidance heading:****F28C 1/00**

**Direct-contact trickle coolers, e.g. cooling towers** ([building construction E04H 5/12](#); enclosed spaces cooled by trickle [F25](#) ; components parts of trickle coolers [F28F 25/00](#); { indirect-contact cooling towers [F28B 1/06](#) } )

## F28C 1/003

- . {comprising outlet ducts for exhaust gases }

## F28C 1/02

- . with counter-current only

## F28C 1/04

- . with cross-current only

## F28C 1/06

- . with both counter-current and cross-current

## F28C 1/08

- . Arrangements for recovering heat from exhaust steam

## F28C 1/10

- . Arrangements for suppressing noise

## F28C 1/12

- . Arrangements for preventing clogging by frost

## F28C 1/14

- . comprising also a non-direct contact heat exchange

## F28C 1/16

- . Arrangements for preventing condensation, precipitation or mist formation, outside the cooler ([F28C 1/14](#) takes precedence)

**F28C 3/00**

**Other direct-contact heat-exchange apparatus**

## F28C 3/005

- . {one heat-exchange medium being a solid ([F28C 3/10](#) takes precedence) }

## F28C 3/02

- . the heat-exchange media both being gases or vapours

## F28C 3/04

- . the heat-exchange media both being liquids

## F28C 3/06

- . the heat-exchange media being a liquid and a gas or vapour ([temperators for cooling steam F22](#) )

## F28C 3/08

- . . with change of state, e.g. absorption, evaporation, condensation ([generating steam under pressure F22](#) )

## F28C 3/10

- . one heat-exchange medium at least being a fluent solid, e.g. a particulate material

- F28C 3/12 . . the heat-exchange medium being a particulate material and a gas, vapour, or liquid
- F28C 3/14 . . . the particulate material moving by gravity, e.g. down a tube
- F28C 3/16 . . . the particulate material forming a bed, e.g. fluidised, on vibratory sieves
- F28C 3/18 . . . the particulate material being contained in rotating drums

**Guidance heading:**

- F28C 2001/00 **Direct-contact trickle coolers, e.g. cooling towers** (building construction [E04H 5/12](#); enclosed spaces cooled by trickle [F25](#) ; components parts of trickle coolers [F28F 25/00](#); { indirect-contact cooling towers [F28B 1/06](#) }
- F28C 2001/006 . Systems comprising cooling towers, e.g. for recooling a cooling medium (for condensers [F28B 9/06](#))
- F28C 2001/14 . comprising also a non-direct contact heat exchange
- F28C 2001/145 . . with arrangements of adjacent wet and dry passages