

# CPC COOPERATIVE PATENT CLASSIFICATION

**F28G CLEANING OF INTERNAL OR EXTERNAL SURFACES OF HEAT-EXCHANGE OR HEAT-TRANSFER CONDUITS, e.g. WATER TUBES OR BOILERS** (cleaning pipes or tubes in general [B08B 9/02](#); devices or arrangements for removing water, minerals, or sludge from boilers while the boiler is in operation, or which remain in position while the boiler is in operation, or are specifically adapted to boilers without any other utility [F22B 37/48](#); removal or treatment of combustion products or combustion residues [F23J](#); removing ice from heat-exchange apparatus [F28F 17/00](#))

|              |   |              |   |
|--------------|---|--------------|---|
| <b>1/00</b>  | <b>Non-rotary, e.g. reciprocated, appliances</b><br>( <a href="#">F28G 3/00</a> takes precedence)   | <b>13/00</b> | <b>Appliances or processes not covered by groups <a href="#">F28G 1/00</a> - <a href="#">F28G 11/00</a>; Combinations of appliances or processes covered by groups <a href="#">F28G 1/00</a> - <a href="#">F28G 11/00</a></b> |
| 1/02         | . having brushes ({ <a href="#">F28G 1/12</a> takes precedence;}<br>brushes <a href="#">A46B</a> )  |              |   |
| 1/04         | . having articulated tools, e.g. assembled in chain manner  | 13/005       | . {cleaning by increasing the temperature of heat exchange surfaces ( <a href="#">F28G 7/005</a> , <a href="#">F28G 11/00</a> take precedence)}   |
| 1/06         | . having coiled wire tools, i.e. basket type  |              |   |
| 1/08         | . having scrapers, hammers, or cutters, e.g. rigidly mounted  | <b>15/00</b> | <b>Details (measuring thickness of deposit <a href="#">G01B</a>)</b>  |
| 1/10         | . . resiliently mounted   | 15/003       | . {Control arrangements}  |
| 1/12         | . Fluid-propelled scrapers, bullets, or like solid bodies   | 2015/006     | . {Arrangements for processing a cleaning fluid after use, e.g. filtering and recycling}  |
| 1/125        | . . {forced back and forth by means of flow reversal}   | 15/02        | . Supports for cleaning appliances, e.g. frames   |
| 1/14         | . Pull-through rods   | 15/04        | . Feeding and driving arrangements, e.g. power operation  |
| 1/16         | . using jets of fluid for removing debris ( <a href="#">F28G 1/12</a> takes precedence)   | 15/06        | . . Automatic reversing devices   |
| 1/163        | . . {from internal surfaces of heat exchange conduits}  | 15/08        | . Locating position of cleaning appliances within conduits  |
| 1/166        | . . {from external surfaces of heat exchange conduits}  | 15/10        | . Masks for delimiting area to be cleaned   |
| <b>3/00</b>  | <b>Rotary appliances</b>  |              |   |
| 3/02         | . having abrasive tools   |              |   |
| 3/04         | . having brushes (brushes <a href="#">A46B</a> )  |              |   |
| 3/06         | . having articulated tools, e.g. assembled in chain manner  |              |   |
| 3/08         | . having coiled wire tools, i.e. basket type  |              |   |
| 3/10         | . having scrapers, hammers, or cutters, e.g. rigidly mounted  |              |   |
| 3/12         | . . resiliently mounted   |              |   |
| 3/14         | . . thrown into working position by centrifugal force   |              |   |
| 3/16         | . using jets of fluid for removing debris   |              |   |
| 3/163        | . . {from internal surfaces of heat exchange conduits}  |              |   |
| 3/166        | . . {from external surfaces of heat exchange conduits}  |              |   |
| <b>5/00</b>  | <b>Cleaning by distortion (by vibration <a href="#">F28G 7/00</a>)</b>  |              |   |
| <b>7/00</b>  | <b>Cleaning by vibration {or pressure waves}</b>  |              |   |
| 7/005        | . {by explosions or detonations; by pressure waves generated by combustion processes}   |              |   |
| <b>9/00</b>  | <b>Cleaning by flushing or washing, e.g. with chemical solvents (appliances using jets of fluid for removing debris <a href="#">F28G 1/16</a>, <a href="#">F28G 3/16</a>)</b> |              |   |
| 9/005        | . {of regenerative heat exchanger}  |              |   |
| <b>11/00</b> | <b>Cleaning by combustion, e.g. using squibs, using travelling burners ({<a href="#">F28G 7/005</a> takes precedence})</b>  |              |   |