

**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](#))

**F28G 1/00**

**Non-rotary, e.g. reciprocated, appliances** ([F28G 3/00](#) takes precedence)

- F28G 1/02 . having brushes ( { [F28G 1/12](#) takes precedence; } brushes [A46B](#) )
- F28G 1/04 . having articulated tools, e.g. assembled in chain manner
- F28G 1/06 . having coiled wire tools, i.e. basket type
- F28G 1/08 . having scrapers, hammers, or cutters, e.g. rigidly mounted
- F28G 1/10 . . resiliently mounted
- F28G 1/12 . Fluid-propelled scrapers, bullets, or like solid bodies
- F28G 1/125 . . {forced back and forth by means of flow reversal }
- F28G 1/14 . Pull-through rods
- F28G 1/16 . using jets of fluid for removing debris ([F28G 1/12](#) takes precedence)
- F28G 1/163 . . { from internal surfaces of heat exchange conduits }
- F28G 1/166 . . { from external surfaces of heat exchange conduits }

**F28G 3/00**

**Rotary appliances**

- F28G 3/02 . having abrasive tools
- F28G 3/04 . having brushes (brushes [A46B](#) )
- F28G 3/06 . having articulated tools, e.g. assembled in chain manner
- F28G 3/08 . having coiled wire tools, i.e. basket type
- F28G 3/10 . having scrapers, hammers, or cutters, e.g. rigidly mounted
- F28G 3/12 . . resiliently mounted
- F28G 3/14 . . thrown into working position by centrifugal force
- F28G 3/16 . using jets of fluid for removing debris
- F28G 3/163 . . { from internal surfaces of heat exchange conduits }

F28G 3/166	. . { from external surfaces of heat exchange conduits }
<b>F28G 5/00</b>	<b>Cleaning by distortion</b> (by vibration <a href="#">F28G 7/00</a> )
<b>F28G 7/00</b>	<b>Cleaning by vibration</b> { or pressure waves }
F28G 7/005	. { by explosions or detonations; by pressure waves generated by combustion processes }
<b>F28G 9/00</b>	<b>Cleaning by flushing or washing, e.g. with chemical solvents</b> (appliances using jets of fluid for removing debris <a href="#">F28G 1/16</a> , <a href="#">F28G 3/16</a> )
F28G 9/005	. {of regenerative heat exchanger }
<b>F28G 11/00</b>	<b>Cleaning by combustion, e.g. using squibs, using travelling burners</b> { ( <a href="#">F28G 7/005</a> takes precedence) }
<b>F28G 13/00</b>	<b>Appliances or processes not covered by groups <a href="#">F28G 1/00</a> to <a href="#">F28G 11/00</a>;</b> <b>Combinations of appliances or processes covered by groups <a href="#">F28G 1/00</a> to <a href="#">F28G 11/00</a></b>
F28G 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) }
<b>F28G 15/00</b>	<b>Details</b> (measuring thickness of deposit <a href="#">G01B</a> )
F28G 15/003	. { Control arrangements }
F28G 15/02	. Supports for cleaning appliances, e.g. frames
F28G 15/04	. Feeding and driving arrangements, e.g. power operation
F28G 15/06	. . Automatic reversing devices
F28G 15/08	. Locating position of cleaning appliances within conduits
F28G 15/10	. Masks for delimiting area to be cleaned
<b>F28G 2015/00</b>	<b>Details</b> (measuring thickness of deposit <a href="#">G01B</a> )
F28G 2015/006	. Arrangements for processing a cleaning fluid after use, e.g. filtering and recycling