

# CPC COOPERATIVE PATENT CLASSIFICATION

## F MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING (NOTE omitted)

### LIGHTING; HEATING

## F28 HEAT EXCHANGE IN GENERAL (NOTES omitted)

## 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](#))

### 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.

<b>1/00</b>	<b>Non-rotary, e.g. reciprocated, appliances</b> ( <a href="#">F28G 3/00</a> takes precedence)	<b>5/00</b>	<b>Cleaning by distortion (by vibration <a href="#">F28G 7/00</a>)</b>
1/02	• having brushes ({ <a href="#">F28G 1/12</a> takes precedence;} brushes <a href="#">A46B</a> )	<b>7/00</b>	<b>Cleaning by vibration {or pressure waves}</b>
1/04	• having articulated tools, e.g. assembled in chain manner	7/005	• {by explosions or detonations; by pressure waves generated by combustion processes}
1/06	• having coiled wire tools, i.e. basket type	<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>
1/08	• having scrapers, hammers, or cutters, e.g. rigidly mounted	9/005	• {of regenerative heat exchanger}
1/10	• . resiliently mounted	<b>11/00</b>	<b>Cleaning by combustion, e.g. using squibs, using travelling burners ({<a href="#">F28G 7/005</a> takes precedence})</b>
1/12	• Fluid-propelled scrapers, bullets, or like solid bodies	<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>
1/125	• . {forced back and forth by means of flow reversal}	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)}
1/14	• Pull-through rods	<b>15/00</b>	<b>Details (measuring thickness of deposit <a href="#">G01B</a>)</b>
1/16	• using jets of fluid for removing debris ( <a href="#">F28G 1/12</a> takes precedence)	15/003	• {Control arrangements}
1/163	• . {from internal surfaces of heat exchange conduits}	2015/006	• {Arrangements for processing a cleaning fluid after use, e.g. filtering and recycling}
1/166	• . {from external surfaces of heat exchange conduits}	15/02	• Supports for cleaning appliances, e.g. frames
<b>3/00</b>	<b>Rotary appliances</b>	15/04	• Feeding and driving arrangements, e.g. power operation
3/02	• having abrasive tools	15/06	• . Automatic reversing devices
3/04	• having brushes (brushes <a href="#">A46B</a> )	15/08	• Locating position of cleaning appliances within conduits
3/06	• having articulated tools, e.g. assembled in chain manner	15/10	• Masks for delimiting area to be cleaned
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}		