

## F23J

### REMOVAL OR TREATMENT OF COMBUSTION PRODUCTS OR COMBUSTION RESIDUES; FLUES (combustion apparatus for consuming smoke or fumes, e.g. exhaust gases, [F23G 7/06](#))

#### Definition statement

*This place covers:*

- All details of devices for removing or treating products or fumes originating from a combustion apparatus, including all relevant accessories and peripheral devices such as for example exhaust gas pipes, cooling arrangements, ash removal systems, arrangements for supplying chemicals to fumes, independently from the type of solid fuel which is burned;
- Arrangements for supplying chemicals to fires;
- Cleaning of surface tubes, flame tubes or surfaces which are contaminated by combustion products or residues.

#### References

##### Limiting references

*This place does not cover:*

Combustion apparatus for burning smoke or fumes, e.g. exhaust gases	<a href="#">F23G 7/06</a>
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##### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Separating dispersed particles from gases in general	<a href="#">B01D</a>
Separating particles or dust from gases	<a href="#">B01D 46/00</a>
Chemical or biological purification of waste gases, e.g. engine exhaust gases, smoke, fumes, flue gases	<a href="#">B01D 53/00</a>
Cleaning pipes in general	<a href="#">B08B 9/02</a>
Removing fumes other than combustion fumes from the area where they are produced, in general	<a href="#">B08B 15/00</a>
Composition of fuels	<a href="#">C10</a>
Protection against fire for buildings	<a href="#">E04B 1/94</a>
Chimneys as part of a building	<a href="#">E04F 17/02</a>
Industrial chimney-stacks, i.e. free-standing chimneys	<a href="#">E04H 12/28</a>
Removal or treatment of exhaust gas from internal combustion engines	<a href="#">F01N</a>
Removing cooking fumes from domestic stoves or ranges	<a href="#">F24C 15/20</a>
Fume conduits of furnaces, kilns, ovens, or retorts	<a href="#">F27D 17/302</a>
Cleaning of surfaces of boiler, heat exchangers or heat transfer conduit contaminated by other than combustion products or residues	<a href="#">F28G</a>

#### Special rules of classification

When classifying in this subclass, add codes [F23J 2211/00-F23J 2219/80](#) and [F23J 2900/01001-F23J 2900/15081](#).

Codes [F23J 2700/001](#)-[F23J 2700/003](#) are not used.

## Glossary of terms

*In this place, the following terms or expressions are used with the meaning indicated:*

Air	a mixture of gases containing free oxygen and able to promote or support combustion
Primary air	air supplied to the burning fuel in order to liberate combustible gases
Secondary air	air supplied to the combustible gases liberated by the primary air in order to complete their combustion. The term "secondary air" covers "tertiary air" etc.
Ash	means any solid combustion residues, for example remaining in the fuel bed or suspended in the flue gases
Burner	a device by which fluid fuel or solid fuel suspended in air is passed to a combustion space where it burns to produce a self-supporting flame
Combustion	means the direct combination of oxygen gas, e.g. in air, and a burnable substance
Combustion chamber	a chamber in which fuel is burned to establish a self-supporting fire or flame and which surrounds that fire or flame
Combustion zone	the part of the apparatus where the reaction takes place between air and fuel
Flue gases	any gaseous products of combustion
Grate	a perforated surface, e.g. a grid, which supports or delimits a bed of burning fuel and serves to supply primary air

## Synonyms and Keywords

*In patent documents, the following words/expressions are often used with the meaning indicated:*

"boiler"	"combustion apparatus".
"burner"	"combustion apparatus".

## F23J 1/00

**Removing ash, clinker, or slag from combustion chambers (removing flyash from flue gas [F23J 15/022](#);) devices for removal of material from the bed of fluidised bed combustion apparatus [F23C 10/24](#))**

## References

### Limiting references

*This place does not cover:*

Removing solid particulate material, e.g. fly ash, from flue gases	<a href="#">F23J 15/022</a>
Devices for removal of material from the bed of fluidised bed combustion apparatus	<a href="#">F23C 10/24</a>

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

Arrangements for collecting bottom ash and fly ash	<a href="#">F23J 3/06</a>
Cleaning devices which form part of the combustion grate	<a href="#">F23H 15/00</a>

**F23J 3/00**

Removing solid residues from passages or chambers beyond the fire, e.g. from flues by soot blowers

**References****Informative references**

Attention is drawn to the following places, which may be of interest for search:

Soot blowers per se	<a href="#">F28G 1/16</a>
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**F23J 3/02**

Cleaning furnace tubes; Cleaning flues or chimneys

**References****Informative references**

Attention is drawn to the following places, which may be of interest for search:

Cleaning pipes or tubes in general	<a href="#">B08B</a>
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**F23J 7/00**

Arrangement of devices for supplying chemicals to fire

**References****Informative references**

Attention is drawn to the following places, which may be of interest for search:

Arrangement of devices for treating smoke or fumes for supplying chemicals to fumes	<a href="#">F23J 15/003</a>
Use of additives for fuels or fires	<a href="#">C10L 9/00</a> , <a href="#">C10L 10/00</a>

## F23J 11/00

Devices for conducting smoke or fumes, e.g. flues (chimney stacks [E04H 12/28](#); removing cooking fumes from domestic stoves or ranges [F24C 15/20](#) {; fume conduits of furnaces, kilns, ovens, or retorts [F27D 17/302](#)})

### References

#### Limiting references

*This place does not cover:*

Chimneys	<a href="#">E04H 12/28</a>
Removing cooking fumes from domestic stoves or ranges	<a href="#">F24C 15/20</a>
Fume conduits of furnaces, kilns, ovens, or retorts	<a href="#">F27D 17/302</a>

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Removing fumes other than combustion fumes from the area where they are produced, in general	<a href="#">B08B 15/00</a>
Protecting buildings against heat	<a href="#">E04B 1/74</a>
Protecting buildings against fire	<a href="#">E04B 1/94</a>
Insulation for protection against fire	<a href="#">E04B 1/94</a>
Heat insulation in general	<a href="#">F16L 59/00</a>

## F23J 13/00

Fittings for chimneys or flues (side-supporting means for chimney stacks [E04H 12/20](#); ladders permanently attached to chimneys [E06C 9/00](#); draught-inducing apparatus associated with chimneys or flues [F23L 17/00](#); tops for chimneys, terminals for flues [F23L 17/02](#))

### References

#### Limiting references

*This place does not cover:*

Side-supporting means for chimney stacks	<a href="#">E04H 12/20</a>
Ladders permanently attached to chimneys	<a href="#">E06C 9/00</a>
Draught-inducing apparatus associated with chimneys or flues	<a href="#">F23L 17/00</a>
Tops for chimneys, terminals for flues	<a href="#">F23L 17/02</a>

**F23J 13/025**

{composed of concentric elements, e.g. double walled (terminals for balanced flue arrangements [F23L 17/04](#))}

**References****Informative references**

Attention is drawn to the following places, which may be of interest for search:

Pipes in general	<a href="#">F16L</a>
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**F23J 13/04****Joints; Connections****References****Informative references**

Attention is drawn to the following places, which may be of interest for search:

Pipe joints in general	<a href="#">F16L</a>
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**F23J 13/08****Doors or covers specially adapted for smoke-boxes, flues, or chimneys****References****Informative references**

Attention is drawn to the following places, which may be of interest for search:

Doors or covers in general	<a href="#">E06B</a>
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**F23J 15/00****Arrangements of devices for treating smoke or fumes****Relationships with other classification places**

Devices or methods per se for treating smoke or fumes are classified in the relevant places for the treatment. For example, chemical or biological purification of waste gases per se is classified in group [B01D 53/00](#).

**References****Informative references**

Attention is drawn to the following places, which may be of interest for search:

Traps for solid deposits	<a href="#">F23J 3/04</a>
Supplying chemicals to fire	<a href="#">F23J 7/00</a>
Chemical or biological purification of waste gases, e.g. engine exhaust gases, smoke, fumes, flue gases	<a href="#">B01D 53/00</a>

**F23J 15/003****{for supplying chemicals to fumes, e.g. using injection devices}****References*****Informative references****Attention is drawn to the following places, which may be of interest for search:*

Arrangement of devices for supplying chemicals to fire	<a href="#">F23J 7/00</a>
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**F23J 15/04****using washing fluids {(scrubbers for removing solids only [F23J 15/022](#))}****References*****Limiting references****This place does not cover:*

Scrubbers for removing solids only	<a href="#">F23J 15/022</a>
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**F23J 2215/00****Preventing emissions****References*****Informative references****Attention is drawn to the following places, which may be of interest for search:*

Intercepting solids	<a href="#">F23J 2217/00</a>
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**F23J 2900/01002****Cooling of ashes from the combustion chamber by indirect heat exchangers****References*****Informative references****Attention is drawn to the following places, which may be of interest for search:*

Preheating combustion air by recuperating heat from ashes	<a href="#">F23L 2900/15041</a>
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