

March 30, 1937.

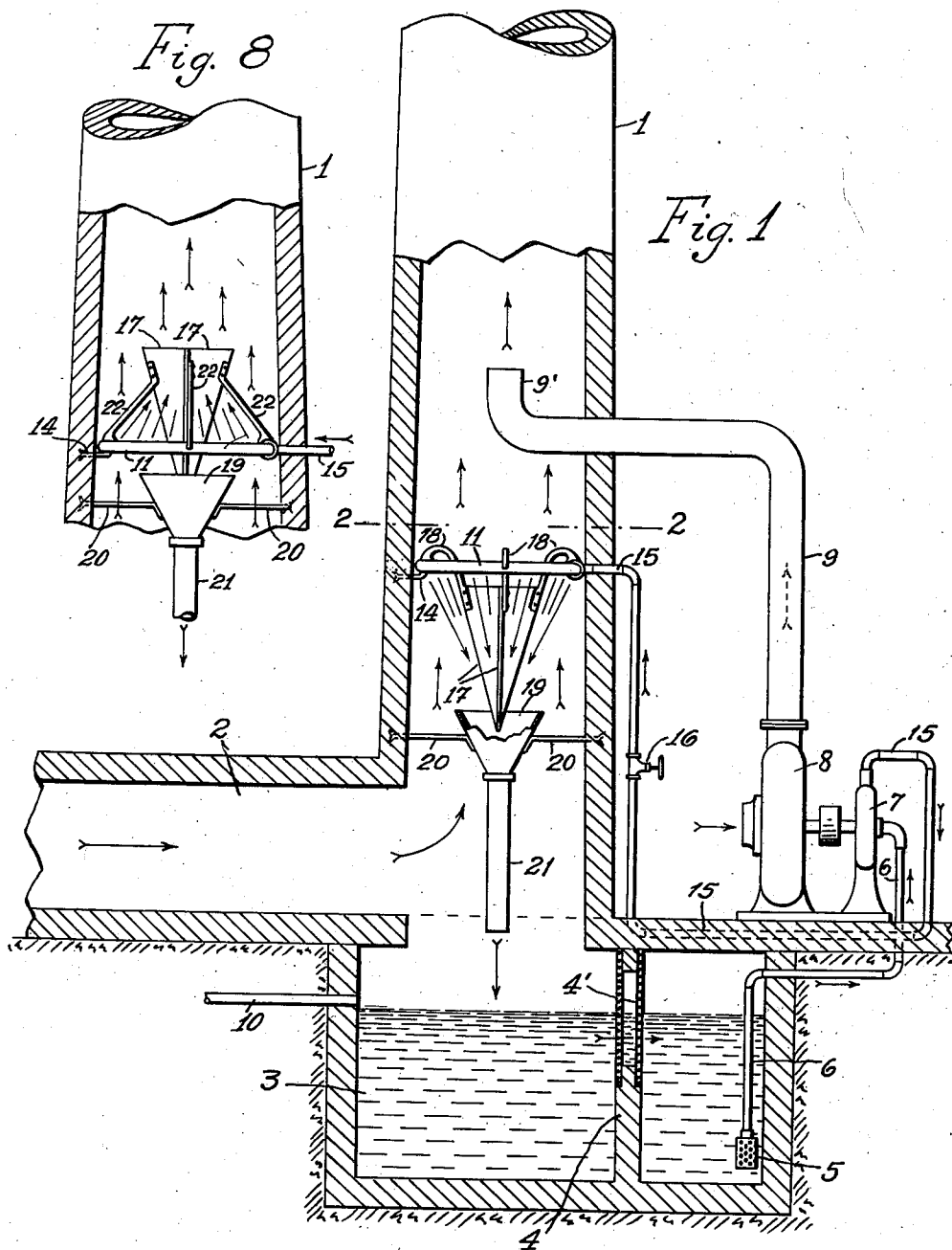
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2,075,221

SMOKE WASHER

Filed June 1, 1934

2 Sheets-Sheet 1



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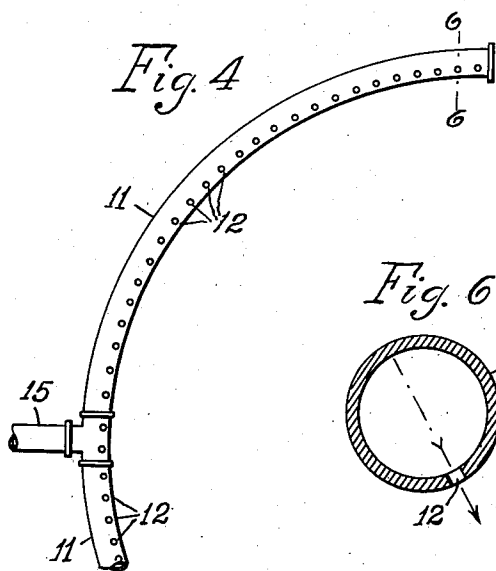
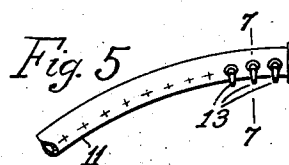
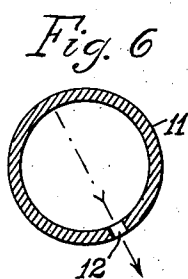
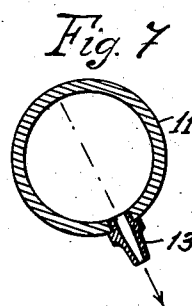
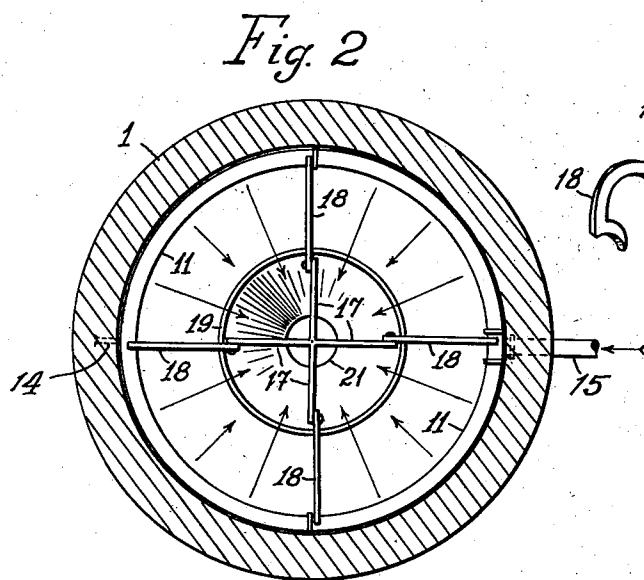
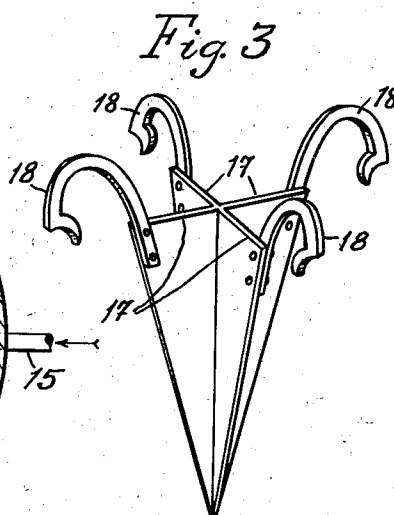
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SMOKE WASHER

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,075,221

SMOKE WASHER

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Application June 1, 1934, Serial No. 728,619

6 Claims. (Cl. 261-117)

This invention refers to smoke washers for chimneys and its main purpose is to provide an improvement in same consisting of a hydraulic device which prevents the residues of the combustion mixed with the smoke being conveyed out of the chimney, preventing trouble and dirtiness, and sometimes fire should the particles be expelled in ignition.

In the drawings:

Figure 1 is a side fragmentary, sectional view of a chimney equipped with the improvement subject of this invention.

Figure 2 is a detail cross section, in enlarged scale, according to line 2-2 of Figure 1.

Figure 3 is a perspective view in detail of one of the features of the invention.

Figure 4 is a lower plan view, in detail of the sprayer.

Figure 5 is a perspective, partial view in detail of a modified construction of the sprayer.

Figure 6 is a sectional view, in detail, in enlarged scale as per line 6-6 of Figure 4.

Figure 7 is a sectional view, in detail, in enlarged scale according to line 7-7 of Figure 5; and

Figure 8 is a sectional view, in detail, of a modified embodiment of the invention.

In the drawings, 1 refers to a chimney and 2 is the smoke chute of same, both of well known construction. 3 designates a water reservoir divided in two compartments, one larger than the other, through a partition 4 having a screen portion 4'. 5 is a sucker head attached to a pipe 6 which is connected to a suction pump 7. The power used to operate this pump is also used to operate a force-pump 8 to which a pipe 9 is connected. The upper portion 9' of the pipe 9 passes through an opening in the wall of the chimney 1, as is shown in Figure 1.

The reservoir 3 is connected to an overflow pipe 10.

Within the chimney 1, toward the lower part of same, is placed a sprayer device consisting of a ring-shaped pipe 11, which as is shown in Figures 4 and 6 has a plurality of spaced openings 12, arranged to eject the jets of water downwardly and converging to the axial line of the chimney, forming a hydraulic cone. Nozzles 13 may be connected, as illustrated in Figures 5 and 7 to the openings 12 providing to make the result better than with the arrangement previously referred to.

The sprayer device is horizontally held by the clamps 14 and it is secured to a supply pipe 15

provided with a cock 16; said pipe 15 is connected to the pump 7.

A guide frame, detailed in Figure 3 consisting in four triangular shaped plates 17 squarely secured together, is fastened to the ring 11 through hook-shaped brackets 18 clasped to the upper part of each plate. The guide frame, which acts as a collector is mounted with its apex pointed downwardly and is positioned so as to intercept the cone-shaped spray, the water and entrained solid residues dripping from the apex of the collector into a funnel 19 secured to the walls of the chimney through the ties 20. A pipe 21 conveys the water from the funnel 20 and discharges the same into the reservoir 3.

The operation is explained as follows:

Suppose that the arrangement of parts should be as illustrated in Figure 1. The cock 16 being open and in operation the pump 7, the water contained in the reservoir 3 is pumped through the sucker 5 and pipe 15, being ejected under pressure through the openings 12 or the nozzles 13, as the case may be, and the jets will be ejected downwardly converging toward the axial line of chimney impinging upon the plates 17, as indicated by the direction arrows in the drawings, and forming a hydraulic cone intercepted toward its apex by the frame formed by the plates 17. The combustion gases which flow through the chute 2 toward the chimney stack 1 will be forced to pass through the hydraulic cone and the solid particles carried along with the smoke will impinge with the water layer and will fall down mixed with the water through the funnel 19 and pipe 21 into the reservoir 3. The screen portion 4' of the partition 4 will prevent that any particle may pass through to the compartment where the sucker 5 is placed.

At the same time the pump 8 will inject air into the chimney stack 1, forcing the draft of same.

Figure 8 shows a modified embodiment of the invention, consisting in having the guide frame illustrated in Figure 3, secured upon the sprayer 11 through ties 22. The sprayer 11 will be placed in a reversed position with regard to that described above, and consequently the hydraulic cone will be formed over the sprayer, as it is seen in the mentioned figure.

It is obvious that several sprayers may be used setting same at different levels together within the chimney stack.

I claim:—

1. In chimneys the arrangement of a sprayer set within a stack, said sprayer having a plurality of openings or nozzles spaced together and ar-

ranged in such a manner that the jets ejected from said openings or nozzles converge to a predetermined point, forming a hydraulic cone through which the combustion gases are forced to pass out, a collector member carried by said sprayer comprising a plurality of triangular plates secured together at substantially right angles and with the apex thereof pointing downwardly, said collector being positioned to intercept the spray forming said hydraulic cone.

2. In chimneys, the arrangement of a ring shape sprayer set within the stack, around the inner wall therein, said sprayer having a plurality of openings or nozzles spaced apart lengthwise arranged to force the jets ejected therefrom to converge to a point beneath the sprayer in the axial line of the stack forming a hydraulic cone, through which the gases of the combustion are forced to pass out; a guide frame formed by plates squarely secured together, removably attached to the sprayer in the path of the jets therefrom; a funnel arranged beneath the guide frame, and leading the dripping water from the guide frame to an outlet pipe; means to feed water to the sprayer; means to collect the water dripping from the outlet pipe; and means to drain the water and the residues mixed therein.

3. In chimneys the arrangement of a ring shape sprayer stationary set within the stack around the inner walls thereof, said sprayer having openings or nozzles spaced apart converging the jets ejected therefrom to a point beneath the sprayer forming a conical shape hydraulic spray sheet through which the combustion gases are forced to pass out; means to feed water under pressure to the sprayer; a guide frame formed by triangular shape plates, squarely secured together, with its narrower portion directed downwardly; brackets to removably secure the guide frame to the sprayer in the path of said spray sheet; a funnel

stationary beneath the narrower lower end of the guide frame; an outlet pipe connected to the funnel; a reservoir arranged beneath the outlet pipe, said reservoir having a partition with a screen portion, dividing the reservoir in two compartments of different size; an overflow pipe connected to the reservoir; and a piping pump to withdraw the water from the smaller compartment.

4. In chimneys, the arrangement of a ring shape sprayer set within the stack having openings or nozzles arranged to make the jets ejected therefrom to converge to a point over the sprayer; a guide frame formed by triangular shape plates squarely secured together, having its narrower portion directed downwardly, the guide frame being fastened over the sprayer in the path of said jets; means to feed water to the sprayer; and means to drain the water dripping from said frame.

5. A smoke washer for chimneys comprising a spray ring mounted in the chimney having a plurality of openings arranged to produce a conical spray sheet, a collector member mounted in the path of said spray sheet comprising a plurality of triangular plates secured together with their apexes pointed downwardly, and means to drain the water dripping from the apex of said collector member.

6. A smoke washer for chimneys comprising a spray ring disposed around the inner periphery of the chimney and having a plurality of openings arranged to produce a substantially conical spray sheet, a baffle element mounted at the center of the chimney in the path of said spray sheet for intercepting the spray before contact with the walls of the chimney, and means to drain the water from said baffle element.

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