Aug. 16, 1927. 1,639,179

P. HAMEL

SMOKE CLEANER

Filed May 3, 1926

FIG. 1

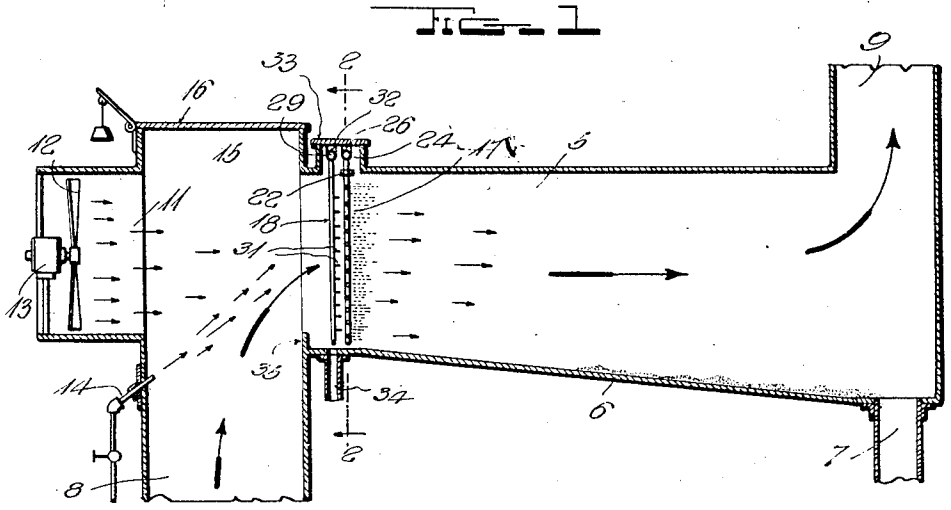


FIG. 2

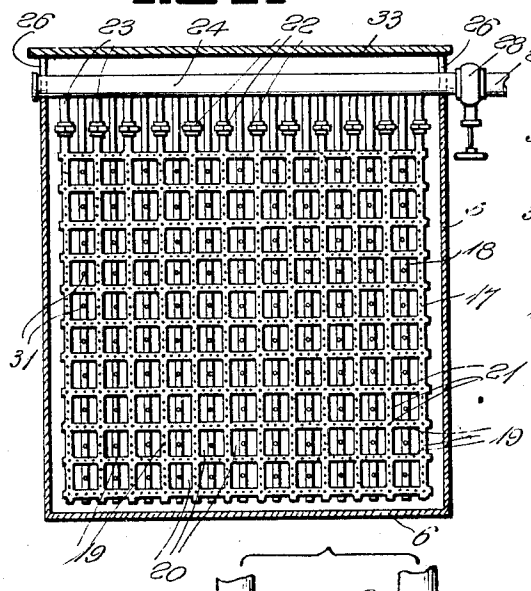


FIG. 3

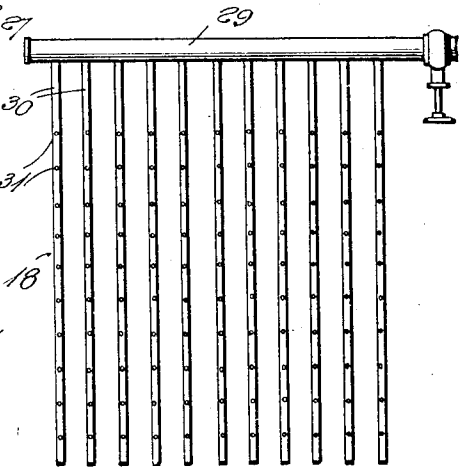
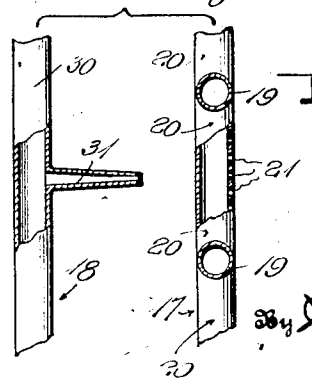


FIG. 4



Witness

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UNITED STATES PATENT OFFICE.

PETER HAMEL, OF BERLIN, NEW HAMPSHIRE.

SMOKE CLEANER.

Application filed May 3, 1926. Serial No. 106,466.

The object of the present invention is to provide rather simple and inexpensive, yet efficient and desirable means for cleaning smoke of all cinders and soot, before it is discharged to the atmosphere.

With the foregoing in view, the invention resides in the novel subject matter hereinafter described and claimed, the description being supplemented by the accompanying drawing.

Fig. 1 is a vertical sectional view through the invention.

Fig. 2 is a vertical transverse section on line 2—2 of Fig. 1.

Fig. 3 is a side elevation of an air discharge grating which is used in connection with a liquid spraying grating.

Fig. 4 is an enlarged detail section partly in elevation, showing more clearly the relation of the two gratings.

In the drawing above briefly described, the preferred form of construction has been shown and while this construction will be hereinafter rather specifically described, it is to be understood that within the scope of the invention as claimed, numerous variations may be made.

The numeral 5 designates a horizontal smoke passage provided with a bottom 6 which declines to a drain 7, the end of the passage remote from the drain being provided with a smoke inlet 8, while the other end of said passage is provided with a smoke outlet 9. An air inlet neck 11 is also preferably provided at the end of the passage 5, adjacent the smoke inlet 8, and in this neck, I locate a fan 12 driven by a suitable motor 13, so that the air blast from the fan hastens the passage of smoke through the passage 5. Below this neck 11, the inlet 8 may be provided with an air nozzle 14 or with a plurality of such nozzles directed obliquely toward the outlet 9, to still further expedite the passage of the smoke through the device. Smoke cleaning means are located in the passage 5 between the inlet 8 and the outlet 9, and in case it is necessary to clean or make repairs on said means, I provide an auxiliary smoke outlet 15 in line with the inlet 8 and normally closed by a suitable door 16, to permit direct escape of smoke.

The smoke cleaning means comprises a hollow, liquid-spraying grating 17 and a hollow air-discharge grating 18, both of said gratings extending transversely across the passage 5, near the smoke inlet 8, but between the latter and the outlet 9.

The grating 17 is composed of a plurality of connected vertical and horizontal pipes 19 which are spaced apart to form said grating with openings 20, and around these openings, the pipes are formed with liquid discharge perforations 21 which are directed toward the outlet 9. The upper ends of the vertical pipes are preferably connected by couplings 22 and short vertical nipples 23 with a liquid header 24 which passes transversely across the passage 5 and is received removably in notches 26 in the upper edges of the side walls of said passage. Any desired liquid, such as water, may be supplied under pressure to the header 24 and the supply pipe 27 may be provided with an appropriate control or cutoff valve 28.

The air-discharge grating 18 preferably consists of a header 29, vertical pipes 30 extending downwardly from said header, and nipples or nozzles 31 projecting from these pipes toward the grating 17 and the outlet 9. These nipples are in line with the openings 20 and the air discharged from them, mixes with the smoke passing through these openings, and this mixture of air and smoke comes in contact with the liquid sprayed from the perforations 21, the result being that the smoke is cleaned of all soot and cinders. This solid matter falls onto the declined bottom 6 and by the liquid is washed from this bottom through the drain 7, whereas the smoke discharges in its cleaned condition through the outlet 9.

The header 29 extends transversely across the passage 5 and has its ends received removably in notches 32, adjacent the notches 26. The portion of the passage directly over these notches, is normally closed by a removable cover 33 and when this cover is removed, either or both of the gratings 17—18, may be upwardly removed for cleaning or repairing.

Preferably, an auxiliary drain 34 is provided at the bottom of the passage 5, substantially under the two gratings 17—18, and a barrier wall 35 may extend across said passage between this drain and the inlet 8, so that there is no possibility of any water running out of this inlet, down the stack and to the fire.

Excellent results are obtainable from the general construction shown and described, and it is therefore preferably followed. However, within the scope of the invention as claimed, variations may be made.

I claim:—

1. A smoke cleaner comprising a passage extending in a substantially horizontal direction, said passage having an air inlet neck at one end, said neck being in line with and substantially a continuation of said passage, a smoke inlet communicating with said passage at the junction of said air inlet neck and said passage, a smoke outlet at the opposite end of said passage, a blower mounted in said air inlet neck for directing a blast of air longitudinally through said passage to facilitate the passage of the smoke through the latter, liquid spraying means extending across the area of said passage adjacent to said air and smoke inlets, air discharging means extending across the area of said passage between said air and smoke inlets and said liquid spraying means, said air discharging means having a multiplicity of outlets directed toward said liquid spraying means.

2. A smoke cleaner comprising a passage directed in a substantially horizontal direction and having a bottom declined to a drain, said passage having a smoke inlet at one end and a smoke outlet at its other end, a hollow liquid-spraying grating extending transversely across said passage, said grating having a multiplicity of liquid spraying outlets in the walls intermediate of the openings of said grating and directed toward said smoke outlet, and a hollow air-discharge grating extending transversely across the passage at the side of the liquid-spraying grating toward the smoke inlet, said air discharge grating having air-discharge nozzles directed toward and disposed in alinement with the openings of said liquid-spraying grating for directing air therethrough.

3. A smoke cleaner comprising a passage directed in substantially a horizontal direction, said passage having an air inlet and a smoke inlet at one end and a smoke outlet at its other end, a blower mounted in said air inlet for directing a blast of air longitudinally through the passage, a liquid discharge grating extending across said passage, between the smoke inlet and outlet, an air discharge grating extending across said passage between said liquid-spraying grating and said smoke inlet, and a drain from said passage, the bottom of the latter being declined to said drain.

4. In a smoke cleaning device, a smoke passage having a restricted opening in its top and notches in its side walls within the confines of said opening, a fluid-discharge grating and an air discharge grating extending across the passage said gratings having headers resting in said notches, said gratings being drawn upwardly from the passage through said opening, and a cover normally closing said opening.

In testimony whereof I have hereunto affixed my signature.

PETER HAMEL.