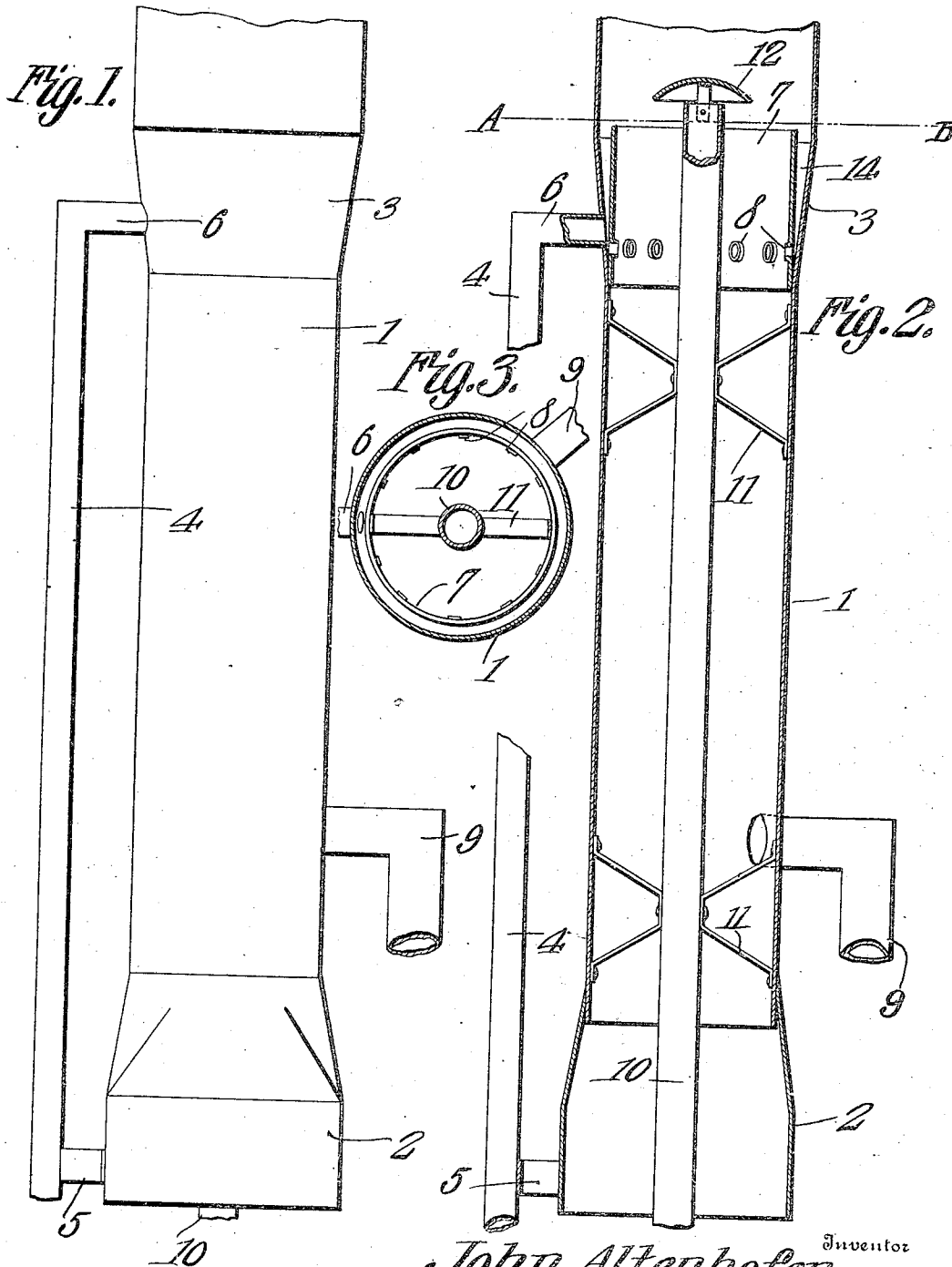


J. ALTENHOFEN.
SMOKE WASHER.
APPLICATION FILED MAR. 12, 1909.

942,430.

Patented Dec. 7, 1909.



Witnesses

E. J. Stewart
Mason B. Lawton

John Altenhofen. Inventor

By *C. A. Snow & Co.*
Attorneys

UNITED STATES PATENT OFFICE.

JOHN ALTENHOFEN, OF RICHLAND, IOWA.

SMOKE-WASHER.

942,430.

Specification of Letters Patent.

Patented Dec. 7, 1909.

Application filed March 12, 1909. Serial No. 482,988.

To all whom it may concern:

Be it known that I, JOHN ALTENHOFEN, a citizen of the United States, residing at Richland, in the county of Keokuk and State of Iowa, have invented a new and useful Smoke-Washer, of which the following is a specification.

The objects of the invention are, generally, the provision, in a merchantable form, of a device of the class above mentioned, which shall be inexpensive to manufacture, facile in operation and devoid of complicated parts; specifically, the provision of a series of water-supply pipes adapted to be assembled with a smoke-stack whereby the contents of the said pipes may be distributed within the said stack, effectively to cleanse the smoke therein; and of novel means for effecting the distribution of the water within the stack as it flows from the supply pipes; other and further objects being made manifest hereinafter as the description of the invention progresses.

The invention consists in the novel construction and arrangement of parts herein-after described, delineated in the accompanying drawings and particularly pointed out in that portion of this instrument wherein patentable novelty is claimed for certain distinctive features of the device, it being understood that, within the scope of what hereinafter thus is claimed, divers changes in the form, proportion, size and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

Similar numerals of reference are employed to denote corresponding parts throughout the several figures of the drawings.

In the accompanying drawings:—Figure 1 shows my invention in side elevation; Fig. 2 is a vertical transverse section, parts being shown in elevation; Fig. 3 is a transverse section upon the line A—B of Fig. 2.

In carrying out my invention, I provide, primarily, a stack 1, which may be of any form. In the present instance it is shown as circular in transverse section and flared at its lower extremity to form a pit 2. The upper extremity of the stack 1 is flared as denoted by the numeral 3, and above this flared portion the stack may terminate in any suitable manner not inconsistent with the removal of the sleeve 7, hereinafter de-

scribed, from the top of the stack. Above the pit 2 a pipe 9 pierces the wall of the stack 1 to provide a suitable inlet, whereby smoke may pass into the said stack.

Disposed upon the exterior of the stack 1 is a water supply pipe 4, which may be attached to the pit 2 by means of a bracket 5. The upper extremity of the pipe 4 is laterally bent as denoted by the numeral 6 and passes through the wall of the stack 1 in the flaring portion 3 thereof. Mounted in the interior of the stack 1 at the upper end thereof is a sleeve 7. This sleeve 7 is of slightly larger diameter exteriorly, than the interior diameter of the stack 1, so that when the sleeve is pushed downward in the flaring portion 3 of the stack, an annular trough 14 will be formed between the sleeve 7 and the wall of the flaring portion 3 of the stack. The sleeve 7 is provided with a series of apertures 8 extending entirely around its periphery. I further provide, in carrying out my invention, an inner water supply pipe 10, designed to be mounted, preferably axially, in the stack 1. The pipe 10 is retained in place by means of radially extending brackets 11, which form braces between the walls of the pipe 10 and the walls of the stack 1. The upper end of the inner supply pipe 10 is provided with a baffle-plate 12. This baffle-plate 12 may be of any form. In the form shown in the drawings the baffle-plate is dished or upwardly convexed. The water supply pipes 4 and 10 may be connected with a hydraulic main, and the device operated by means of an urban water supply system, or, if desired, pumps of any approved type may be provided for the flushing of the device.

In practical operation, supposing that the device is assembled as shown in Fig. 2, the water which passes upward through the pipe 4 will enter the annular trough 14 which is formed by the sleeve 7 and the portion 3 of the stack, and, passing inward through the apertures 8 in the sleeve, will trickle down the inner wall of the stack 1, and also be projected in a plurality of separate streams toward the center of the stack 1. The water which passes upward through the pipe 10, passing out of the said pipe 10 at its upper extremity, will impinge against the baffle-plate 12, which, owing to its peculiar form, will deflect outward and downward the major portion of the liquid which passes out

of the pipe 10. A portion however of the contents of the pipe 10 will trickle down its exterior surface.

It will be seen that with the foregoing device, the smoke which passes into the stack through the pipe 9 will pass upward between two concentric cylindrical walls, each of which is covered with a coating of falling water, and that the space between these two walls will be saturated with falling spray. The smoke when it finally leaves the stack at its upper end will be thoroughly cleansed from particles of carbon and other deleterious matter, and, when a boiler is equipped with a stack constructed in accordance with my invention soft coal may be burned, even in the most densely populated localities.

If desired, the pipe 10 and the baffle-plate 12 may be used alone, or in connection with the supply pipe 4, the baffle-plate being removed. Likewise, the supply pipe 4 and the sleeve 7 may be employed to saturate the air in the interior of the stack without turning on the water flow in the supply pipe 10. However, the device as shown in Fig. 2 works to best advantage when both of the supply pipes 4 and 10 are filled with running water.

Any foreign matter which may be carried upward through the pipe and find lodgment within the trough 14 between the apertures 8 may readily be removed therefrom by raising the sleeve 7 in the stack 1, allowing such foreign matter to drop downward into the pit. When desired, the foreign matter washed from the smoke may be

shoveled from the pit in a compact and viscous form.

It will be seen that the foregoing device, although simple in construction and easily manufactured by any skilled ironworker, furnishes a means whereby smoke may readily be cleansed before it leaves the stack.

Having thus described my invention, what I claim as new, and desire to protect, by Letters Patent, is:—

In a device of the class described, a straight stack having a flaring top; a tubular sleeve arranged to be inserted within the stack through the upper end of the stack, the upper end of the stack being so constructed that the sleeve may be lifted out of the stack at will, the sleeve being perforated circumferentially and arranged to engage the lower end of the flaring portion of the stack in wedging relation to form a trough between the sleeve and the flaring portion of the stack; a pipe axially mounted in the stack; and a baffle-plate assembled with the upper extremity of the pipe and arranged to deflect the contents of the pipe downwardly to contact with the jets proceeding from the perforations in the sleeve; and means for simultaneously supplying a liquid to the trough and to the pipe.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JOHN ALTENHOFEN.

Witnesses:

MIKE WALLERICH, Jr.,
J. M. STARR.