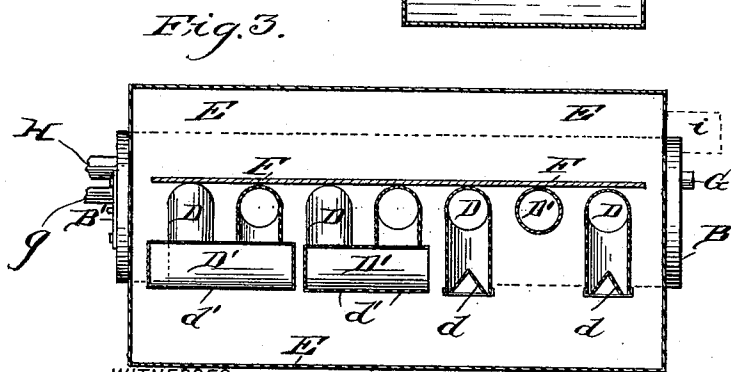
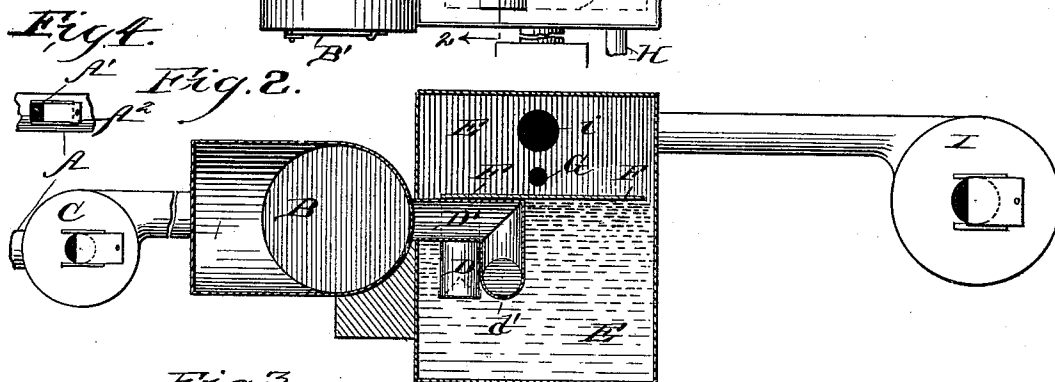
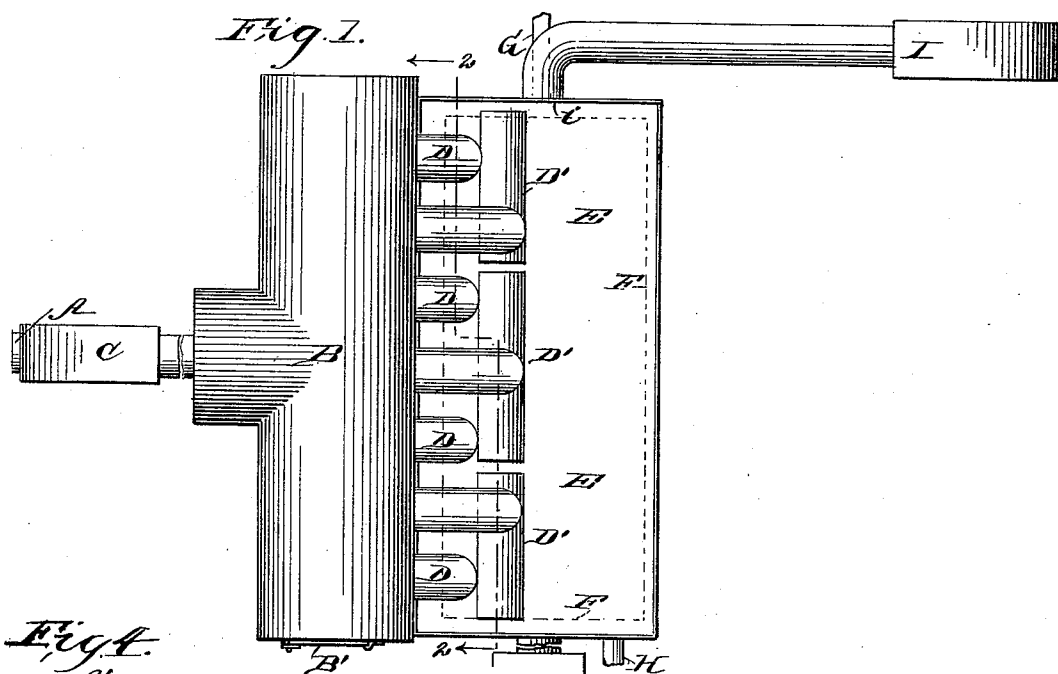


(No Model.)

W. P. SHANK.
SMOKE ARRESTER.

No. 521,054.

Patented June 5, 1894.



WITNESSES:

Fred G. Dietrich
P. B. Turpin.

INVENTOR
W. P. Shank.
BY *Wm. L.*
ATTORNEYS.

UNITED STATES PATENT OFFICE

WILLIAM P. SHANK, OF CAIRO, ILLINOIS.

SMOKE-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 521,054, dated June 5, 1894.

Application filed June 21, 1893. Serial No. 478,314. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM P. SHANK, of Cairo, in the county of Alexander and State of Illinois, have invented a new and useful Improvement in Smoke-Arresters, of which the following is a specification.

My invention is an improved smoke arrester and has for an object to provide a simple construction by which the sparks, cinders, &c., may be stopped to avoid the emission of heavy products usually discharged in smoke and the invention consists in the novel constructions, combinations, and arrangement of parts as will be hereinafter described and pointed out in the claims.

In the drawings—Figure 1 is a top plan view of an apparatus embodying my invention. Fig. 2 is a cross section on about line 2—2 of Fig. 1. Fig. 3 is a section on about line 3—3 Figs. 1 and 2 at right angles to the line of Fig. 2, and Fig. 4 is a detail view.

In carrying out my invention I provide a pipe A leading from the smoke chimney or other smoke discharge of the furnace, a receiving chamber B into which the smoke is discharged, a blower C or the like being employed to create a draft or blast into said chamber B and discharge nozzles from said chamber. These nozzles are preferably made as shown in two sets one D having the conical contractors *d* and the other being in the nature of hollow tubes D' having small perforations *d'*. Manifestly however either construction of nozzle may be employed alone and the number of nozzles may be varied as desired. It will be noticed that both forms of nozzles serve to divide up the smoke discharged so that no great volume is discharged at one point. This is desirable to avoid the formation of large bubbles in the water of the tank. The tubes of the nozzles lead into the tank E which is covered and partly filled with water and the nozzle discharges open below the surface of said water so that the smoke is discharged below the said surface and directly into the water so that the latter will catch all soot, sparks and similar solid matter. A stop plate F is arranged in the tank above the nozzles and resting either upon or slightly below the surface of the water its function being to break any bubbles that may rise from the nozzles and so prevent the sparks, &c., rising

from the water by the bursting of said bubbles at the surface. The tank may be filled by a pipe G or in other suitable manner and I prefer to provide an outlet pipe *g* to preserve the level at the desired point. At one end of the tank is a soot outlet or discharge H while a fan or blower I is arranged to discharge its blast into the tank at *i* at the end opposite the discharge H, the inlet *i* and outlet H being arranged at about the water level so that the blast will tend to drive off the soot and similar accumulations upon the water.

In operation the fans may be driven by electricity or other power so that when the fire is started in the furnace the first smoke may be treated as well as that made after the fire has gotten well under way.

The receiving chamber B has at one end a door B', through which access may be had to the said chamber for the purpose of cleaning out the cinders, &c., which will accumulate therein. The nozzle tubes connect with the chamber about half way between its top and bottom, leaving a receptacle in the bottom of said chamber for such cinders as may accumulate therein.

In practice I prefer to employ at C a planing mill fan the smoke to go in the side of the fan. I also prefer to provide in the pipe A which leads from the chimney an opening A' and slide gate A² to regulate the draft in the furnace also to admit cold air to check the blaze.

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

1. In an apparatus substantially as described the combination of the water tank, the collecting chamber the nozzles leading from such chamber to the tank and blast devices discharging into said tank whereby to force the soot &c. therefrom, substantially as set forth.

2. An apparatus substantially as described comprising the water tank and the nozzles opening below the surface of the water and having contracted discharge openings substantially as set forth.

3. In an apparatus substantially as described, the combination of the tank and means whereby the smoke &c. is discharged thereinto, said tank having an outlet for the

soot &c., and blast devices discharging into the said tank such devices being arranged relative to said outlet substantially as described and adapted to force the soot &c. therefrom all substantially as set forth.

4. In an apparatus substantially as described, the combination with the tank having an outlet at or about its water level, and a blast inlet opposite said outlet, blast devices communicating with said inlet and devices conducting the smoke &c. to such tank all substantially as and for the purposes set forth.

5. In a smoke arrester the combination of the receiving chamber, having the nozzles, the water tank into which said nozzles discharge, said tank having a blast inlet and an outlet opposite the same, the tube or flue leading to

the receiving chamber and means for creating a blast therein substantially as set forth.

6. The improved smoke arrester consisting of the water tank having a blast inlet at one end and an outlet at the other end, the receiving chamber having its nozzles extending into and discharging below the water level in the tank, the stop plate or board arranged in the tank above the discharge of the nozzles, the flue leading to the receiving chamber and the blower by which to create the blast in said flue substantially as set forth.

WILLIAM P. SHANK.

Witnesses:

J. S. JENKINS,
SOL FARABAKER.