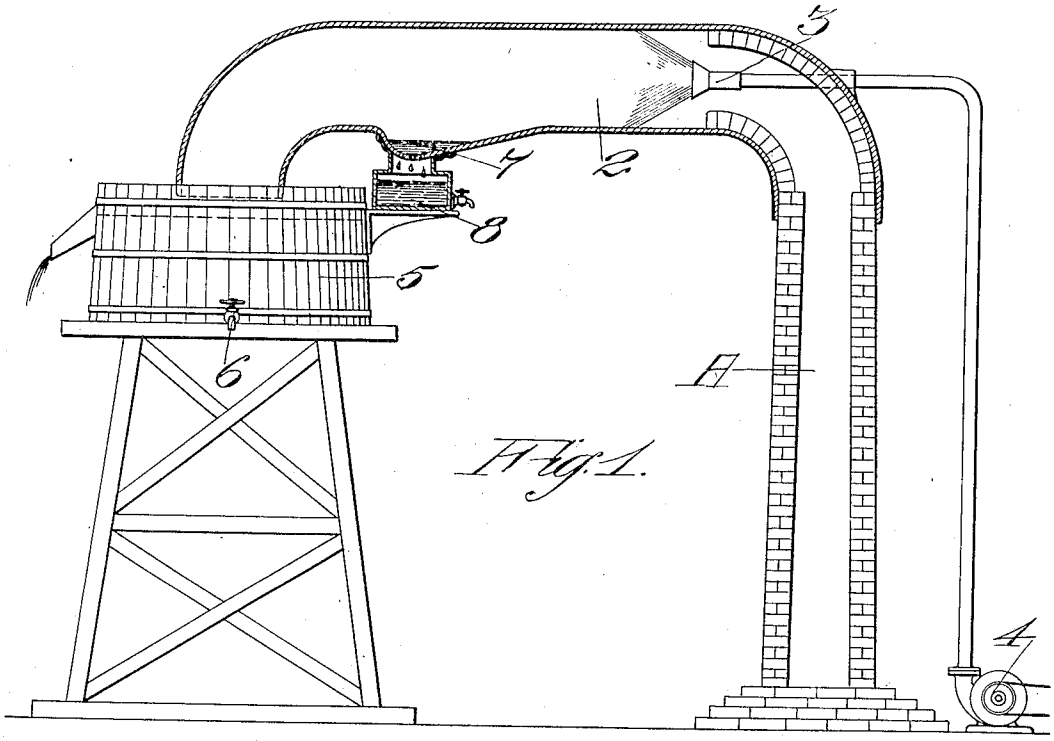
No. 888,119. PATENTED MAY 19, 1908.

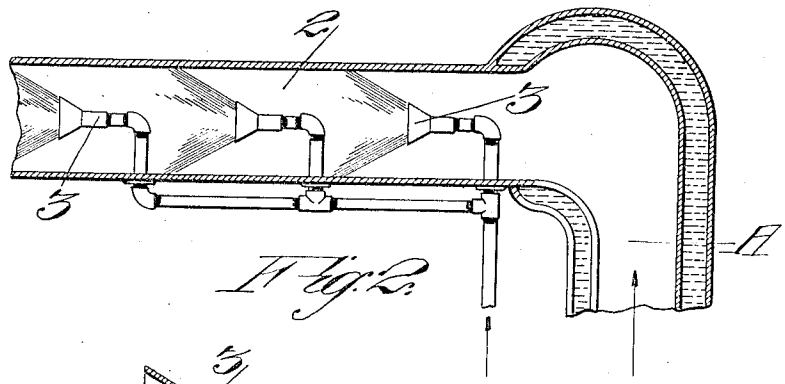
G. C. RICHARDS.

APPARATUS FOR CONDENSING FUMES AND GASES.

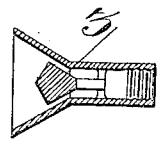
APPLICATION FILED JUNE 5, 1907. RENEWED MAR. 31, 1908.



A fig. 1.



A fig. 2.



A fig. 3.

WITNESSES

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UNITED STATES PATENT OFFICE.

GEORGE C. RICHARDS, OF BERKELEY, CALIFORNIA, ASSIGNOR TO RICHARDS GAS AND FUME CONDENSER COMPANY, OF OAKLAND, CALIFORNIA, A CORPORATION OF CALIFORNIA.

APPARATUS FOR CONDENSING FUMES AND GASES.

No. 888,119. Specification of Letters Patent. Patented May 19, 1908.

Application filed June 5, 1907, Serial No. 377,312. Renewed March 31, 1908. Serial No. 424,306.

To all whom it may concern:

Be it known that I, GEORGE C. RICHARDS, citizen of United States, residing at Berkeley, in the county of Alameda and State of California, have invented new and useful Improvements in Apparatus for Condensing Fumes and Gases, of which the following is a specification.

My invention relates to an apparatus for condensing fumes from smelters, and from garbage or other crematories, furnaces and the like.

The object of the present invention is to devise an efficient means by which all the deadly fumes which are now emitted from smelters and the like, may be condensed before they leave the smoke stack, the values recovered and the animal and vegetable life of the surrounding community protected.

The invention comprehends essentially the disposition of a hydraulic jet in the smoke or vapor passage in such fashion that all the smoke and condensable gases and vapors are carried or forced through a confined column of water in agitation, or which moves swiftly in the direction of the current of smoke and fumes and creates a vacuum to induce a draft to carry the fumes and gases along with and through the water.

Figure 1 represents an apparatus suitable for practicing the invention. Fig. 2 represents a modification of the same. Fig. 3 is a section of the hydraulic nozzle.

As here shown A represents the smoke stack through which all the fumes and vapors from the furnaces or combustion chamber pass, and which smoke and fumes are ordinarily allowed to escape to the outer atmosphere and contaminate the air to the destruction of animal life and vegetation, and to the inconvenience of the inhabitants.

The top of the stack A has a horizontal continuation of suitable form and construction, as shown at 2, and entering this continuation is a hydraulic nozzle 3 adapted and arranged to discharge thereinto in the direction of travel of the smoke and vapors. This nozzle may be of any suitable description so as to discharge a conical jet and form a solid sheet of water through which the smoke and vapor must of necessity pass. When the jet strikes the sides of the pipe or extension 2 it is broken into a spray and fills the entire extension with a swirling mass of water-particles. There may be any number of nozzles arranged in the extension 2 as shown in Fig. 2, and any appropriate means, as for instance the centrifugal pump 4, may be employed to force a sufficient body of water under sufficient pressure through the nozzles.

The jet of water is designed to practically fill the extension 2, or such other suitable passage as the smoke and vapors may travel through, so that the action of the jet will induce a strong draft through the stack and will carry the smoke and vapors for some distance through the spray and water which is in continuous and violent agitation, thereby causing every particle of the smoke and vapors to be acted upon and the temperature thereof reduced to a condensable degree, the heat being absorbed by the water. It will thus be observed that the hydraulic jet has the double function of inducing a forced draft through the stack which is important in incinerating plants, and also in forcing the vapors and gases along with and through the body of water to condense or absorb them. If desired the extension 2 may terminate in a return bend entering a tank or box 5 having a valved outlet 6 near the bottom through which the water and residue may be drawn off.

In view of the great heat in the bend portion, caused in great part by the intense draft induced by the jet, it is necessary either to line the interior of the portion 2 with firebrick as shown in Fig. 1 or to provide it with a water-jacket as shown in Fig. 2. In certain cases as where the apparatus is to be used for condensing fumes like those of mercury, it may be desirable to place a trap as 7 at some suitable point in the length of the part 2 whereby the condensed fluids may pass through the perforations in the depressed bottom of the passage into a closed tank or receptacle 8.

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

1. An apparatus for condensing vapors said apparatus having in combination a smoke-stack, a pipe-extension of the stack said extension being arranged at an angle to the stack and having a bend at one portion connecting with the stack, and having a bend in its opposite portion, a tank fixed below said second bend said bend adapted to de-

liver into said tank, and a hydraulic jet arranged in the pipe extension and discharging in advance of the first-named bend of the extension and in the direction of travel of the fumes, said first bend being provided with heat-resisting means adapted to protect the bend from the intense heat induced by the jet.

2. An apparatus for condensing vapors said apparatus having in combination a vertical smoke-stack, a horizontal pipe extension of the stack, said extension having a bend connecting with the top of the stack and said bend having double walls for protecting the bend from intense heat, a hydraulic jet entering the extension and discharging at a point in advance of the bend, and a tank into which the opposite end of the extension discharges.

3. In an apparatus of the character described, the combination with a stack, of a substantially horizontal pipe extension of the upper end thereof, said extension having a perforated depression in the bottom near the outer end, and a tank below said depression and connecting therewith.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

GEORGE C. RICHARDS.

Witnesses:
S. H. NOURSE,
FREDERICK E. MAYNARD.