

(No Model.)

H. W. HIXON.
APPARATUS FOR CONDENSING FLUE DUST.

No. 471,860.

Patented Mar. 29, 1892.

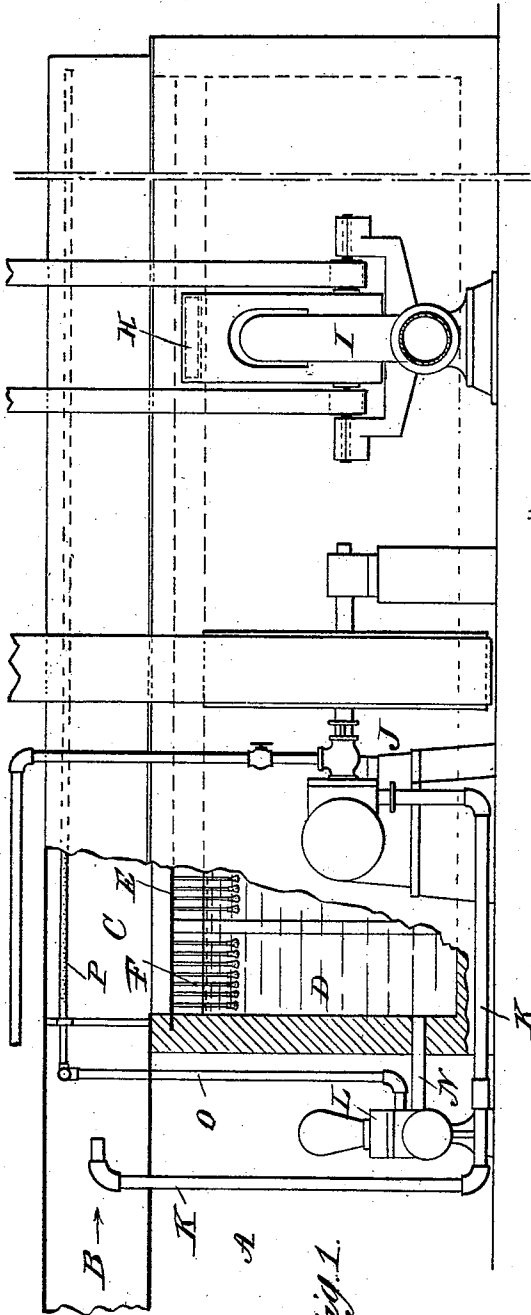


Fig. 1.

WITNESSES:

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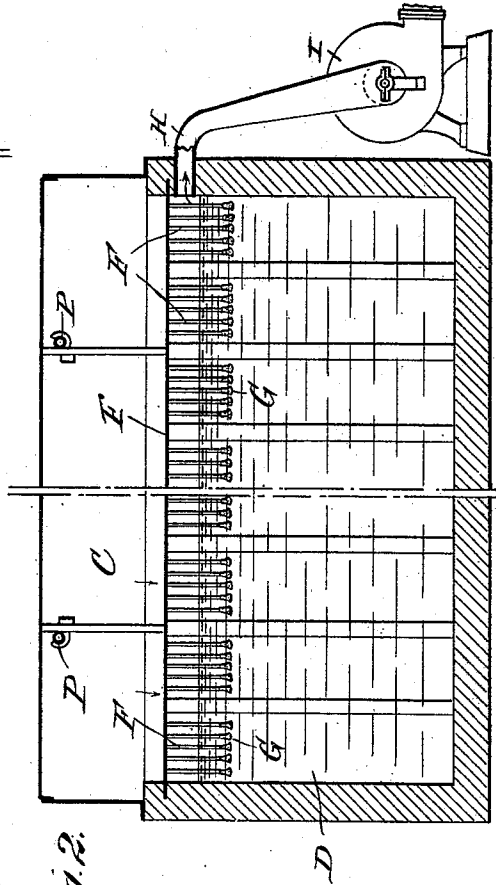


Fig. 2.

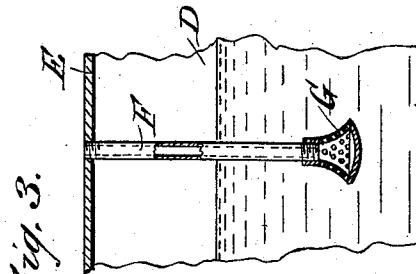


Fig. 3.

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HIRAM W. HIXON, OF EL PASO, TEXAS.

APPARATUS FOR CONDENSING FLUE-DUST.

SPECIFICATION forming part of Letters Patent No. 471,860, dated March 29, 1892.

Application filed July 3, 1889. Renewed February 4, 1892. Serial No. 420,256. (No model.)

To all whom it may concern:

Be it known that I, HIRAM W. HIXON, of El Paso, in the county of El Paso and State of Texas, have invented a new and Improved Means for Condensing Flue-Dust in Lead-Smelting Furnaces, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved means for condensing and saving the flue-dust passing with the waste gases through the chimney of lead-smelting furnaces.

The invention consists of an apparatus of special construction, hereinafter more fully described, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the apparatus with parts in section. Fig. 2 is a transverse section of the same, and Fig. 3 is an enlarged sectional elevation of part of the apparatus.

The apparatus A is provided with a pipe B, connected at one end with the upper end of the flue or chimney of a lead-smelting furnace and through which pass the escaping gases carrying the flue-dust. The other end of the pipe B opens into a vessel C, set on top of a tank D, filled partly with water and provided on top with an air-tight cover E, which forms the bottom of the vessel C. The level of the water in the tank D is a suitable distance below the cover E, as is plainly shown in Figs. 1 and 2. In the cover E are secured a series of downwardly-extending pipes F, opening at their upper ends into the vessel C and carrying at their lower ends nozzles G, extending into the water contained in the tank D. A pipe H leads from the tank D above the water-level and connects with a suction-fan I of any approved construction and operated from a suitable steam-engine J, both being located outside of the tank D. The exhaust-steam of the engine J passes into the exhaust-pipe K, which leads into the pipe B and discharges the exhaust-steam into the vessel C. From the lower end of the tank D leads a pipe N, connected with a circulating-pump L of any approved construction, the discharge-pipe O of which extends upward and into the pipe B, as is plainly shown in

Fig. 1. From the discharge-pipe O leads a series of perforated pipes P, extending through the vessel C and supported on suitable brackets held in the said vessel.

The operation is as follows: When the suction-fan I is set in motion, the air above the water-level in the tank is exhausted, so that a partial vacuum is produced, whereby the gases in the chimney of the lead-smelting furnace are drawn into the pipe B, from the latter into the vessel C, and from said vessel through the pipes F into and through the water contained in the tank D, part of the gases finally rising above the water-level, to be drawn off through the pipe H by the action of the suction-fan I. The flue-dust carried by the waste gases into the chimney of the lead-smelting furnace thus passes through the water contained in the tank D, so that said flue-dust is condensed and separated from the gases and finally settles on the bottom of the tank D, the remaining gases being drawn out through the suction-fan I, as previously described. In order to aid the condensation of the flue-dust, the circulating-pump L, when set in motion, sprays water by means of the perforated pipes P into the vessel C, so that the flue-dust in the gases in the said vessel C is partly condensed and passes onto the cover E and through the pipes F to the nozzles G and into the water to settle in the tank D. The condensation of the flue-dust is further aided by the exhaust-steam passing through the pipe K into the vessel C in a manner similar to that in which the spray of water passes through the pipes P and acts on the waste gases.

Thus it will be seen that by this very simple device the flue-dust of lead-smelting furnaces is saved, it being understood that the flue-dust carries a considerable quantity of silver and lead which would otherwise be lost.

It is further to be understood that the flue-dust condensed in the vessel C is readily washed into the settling-tank D by the water and steam from the pipes P and K.

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

1. The combination, with the water-tank D, having an exhaust-pipe above its water-line, of the closed vessel C, adapted to be connected

with the flue of a lead-smelting furnace and having a series of depending pipes in its bottom extending into the said tank below its water-line, and a steam-pipe discharging into
5 said vessel C, substantially as set forth.

2. In an apparatus for condensing flue-dust, the combination, with a closed vessel adapted to be connected with the flue of the lead-smelting furnace, of pipes held in the bottom
10 of the said vessel, a tank containing water into which extend the lower ends of the said pipes, an exhaust-fan connected with the said tank above the water-level, a circulating-pump connected with the water in the said
15 tank, and perforated pipes held in the said closed vessel and connected with the said circulating-pump, substantially as shown and described.

3. In an apparatus for condensing flue-dust, the combination, with a closed vessel adapted
20 to be connected with the flue of the lead-smelting furnace, of pipes held in the bottom of the said vessel, a tank containing water into which extend the lower ends of the said
25 pipes, an exhaust-fan connected with the said tank above the water-level, a circulating-pump connected with the water in the said tank, perforated pipes held in the said closed
vessel and connected with the said circulating-pump, and a steam-pipe discharging into
30 the said closed vessel, substantially as shown and described.

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Witnesses:

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