(No Model.)

E. M. ALDERMAN.

FUME CONDENSING ATTACHMENT FOR ORE FURNACES.

No. 291,462. Patented Jan. 1, 1884.

Fig. 1.

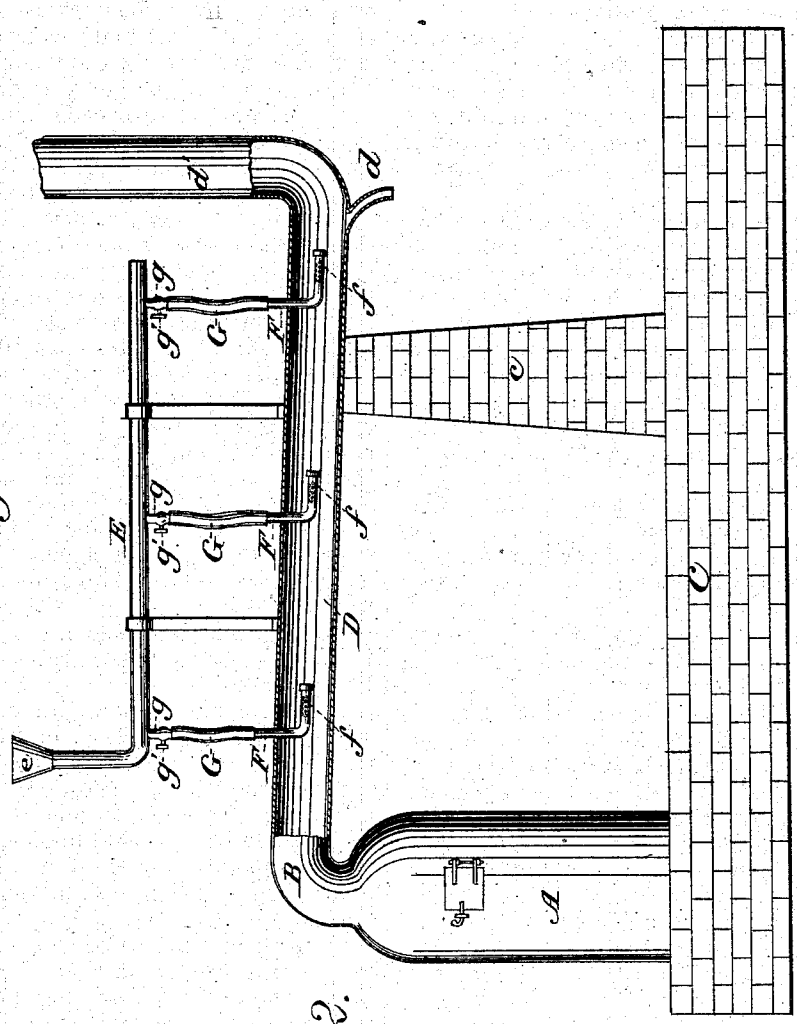
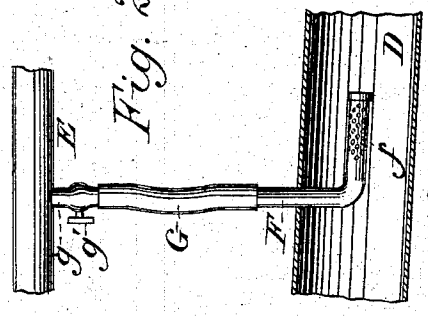


Fig. 2.



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UNITED STATES PATENT OFFICE.

ELI M. ALDERMAN, OF TUCSON, ARIZONA TERRITORY, ASSIGNOR OF TWO-THIRDS TO E. J. BENEDICT AND PAUL MARONEY, SR., OF SAME PLACE.

FUME-CONDENSING ATTACHMENT FOR ORE-FURNACES.

SPECIFICATION forming part of Letters Patent No. 291,462, dated January 1, 1884.

Application filed June 26, 1883. (No model.)

To all whom it may concern:

Be it known that I, ELI M. ALDERMAN, of Tucson, county of Pima, and Territory of Arizona, have invented an Improvement in Fume-Condensing Attachments for Ore Furnaces and Smelters; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to a new and useful attachment for ore furnaces and smelters for saving the vapors or fumes by condensation, whereby much precious material which is ordinarily carried off through the stack is saved.

My invention consists in novel means for introducing water in the form of a fine spray among the vapors or fumes as they pass along to the exit, all as will be hereinafter fully described, and set forth in the claims hereto annexed.

Referring to the accompanying drawings, Figure 1 is a side elevation of a furnace, showing the application of my invention, the pipe D being in longitudinal section. Fig. 2 is an enlarged detail view.

A is a furnace or smelter for working ores, and B is its stack. C is a foundation having a pillar, *c*. Into the end of stack B is let a pipe, D, which rests upon the pillar *c*, and is inclined slightly below a horizontal. At one end it has a discharge, *d*, and a continuation, *d'*, vertically, to serve as the exit for the smoke. Supported above pipe D is a water-distributing pipe, E, supplied with water under pressure or head, as the elevated hopper *e*, herein shown, sufficiently indicates. Let into the pipe D at suitable intervals are small pipes F, having an elbow shape, their horizontal arms, which occupy a position about the center of the circumference of pipe D, being finely perforated at *f*. The end of the arm is plugged. The upper ends of pipes F are connected with couplings *g* on the distributing-pipe E by means of hose G, whereby they may be removed readily when repairing or cleaning is necessary. Stop-cocks or valves *g'* regulate the supply of water. The water under pressure is forced out through the finely-perforated ends of pipes F in minute streams, almost spray of themselves, and coming in contact with much force with the sides of the pipe D the water breaks into spray. Through this spray the fumes and vapors from the furnace have to pass. None can get by without becoming thoroughly saturated with moisture and condensed. The spray being applied only at intervals, clear space is left between each pipe F, and the spray which is carried forward by the current has time to be thoroughly absorbed by the fumes before they pass through the next spray.

The pipe D being practically horizontal, there is no necessity for various retarding and obstructing devices, as are used in certain kinds of smoke-condensers where the pipe is vertical and showers of water are allowed to fall therein. I am thus enabled to keep the pipe D free for the draft to advance the fumes from one spray-cloud to another, leaving clear space and time to effect complete absorption and condensation. The pipe D being slightly inclined below a horizontal causes the condensations to go down to the discharge *d*.

I am aware that the employment of water-sprays as a condensing agent in smoke-stacks has been heretofore known, and I do not claim such, broadly.

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

1. The smoke-stack of an ore furnace or smelter and the pipe D, connected therewith, in combination with the elbow-pipes F, having perforated arms within pipe D, the water-distributing pipe E, adapted to receive water under pressure, the couplings *g*, stop-cock *g'*, and hose-connection G, all arranged and operating substantially as and for the purpose herein described.

2. In combination with the smoke-stack of an ore furnace or smelter, the pipe D, connected therewith and having the discharge *d*, continuation *d'*, and an inclination slightly below a horizontal to its discharge *d*, the spray-pipes F, the water-distributer E, and connections between said spray-pipes and water-distributer, substantially as and for the purpose herein described.

In witness whereof I have hereunto set my hand.

ELI M. ALDERMAN.

Witnesses:

M. S. SNYDER,

DRED MALCOM.