(No Model.)

J. L. GIROUX.

ORE ROASTING FURNACE.

No. 453,769. Patented June 9, 1891.

Fig. 1.

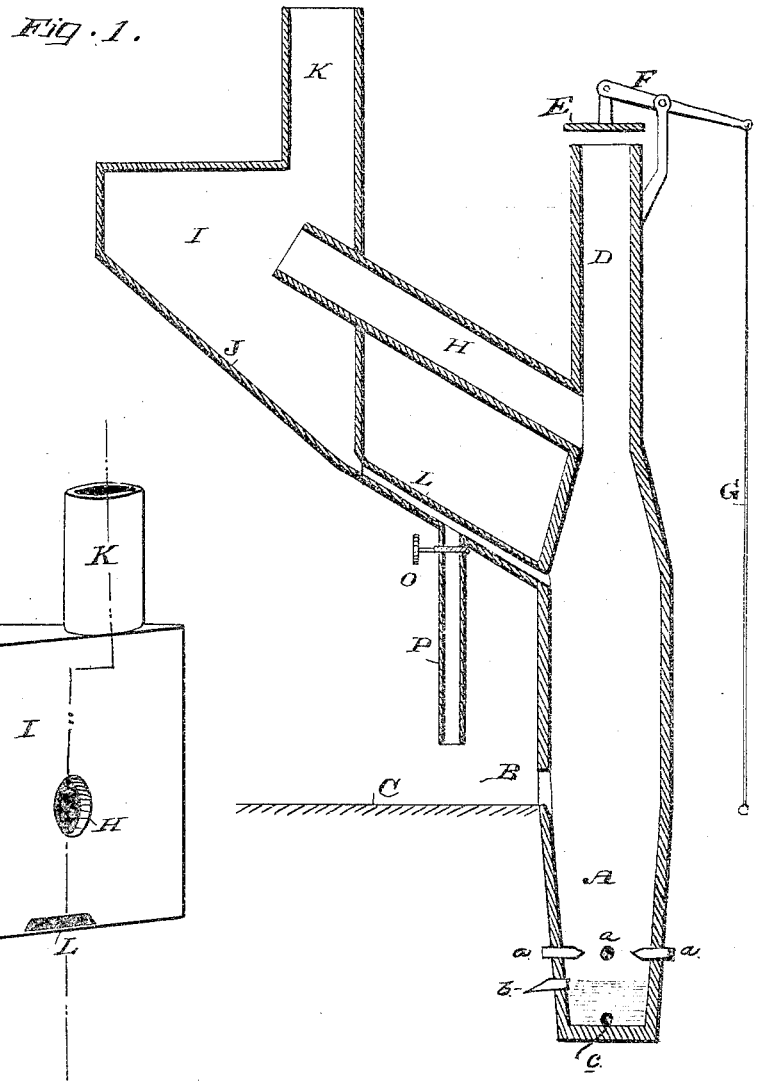
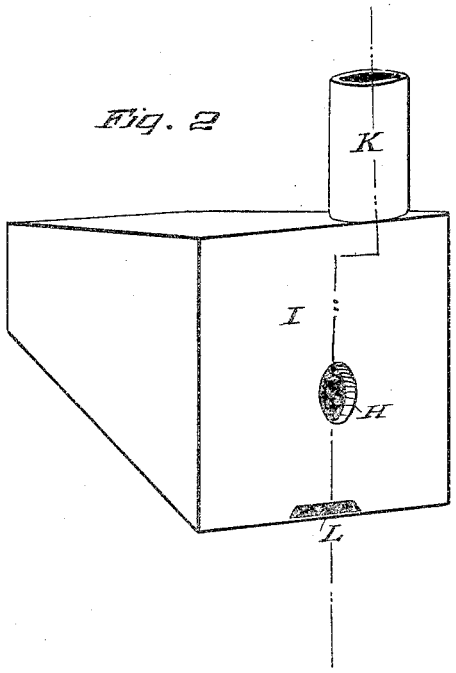


Fig. 2



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ORE-ROASTING FURNACE.

SPECIFICATION forming part of Letters Patent No. 453,769, dated June 9, 1891.

Application filed April 9, 1890. Serial No. 347,243. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH L. GIROUX, a citizen of the United States, residing at Jerome, Yavapai county, Territory of Arizona, have invented an Improvement in Ore-Roasting Furnaces; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an improvement in ore-roasting furnaces; and its object is to precipitate and automatically return the lighter dust particles into the furnace and prevent their being carried away and lost by the draft through the stack.

It consists of a vertical furnace and main stack adapted to receive the ore which is to be roasted, a means for closing said main stack, and a side stack, through which the products of combustion may then pass, a chamber into which said stack opens, having a supplemental stack leading from it for the discharge of the products of combustion, and a means for settling and depositing the dust and fine particles which may have been carried out by the draft upon the inclined bottom of this chamber, and delivering it thence automatically back into the furnace.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a vertical section on the line *x x* of Fig. 2, and showing in section the furnace with its stacks and dust-chamber. Fig. 2 is a perspective view of the dust-chamber, showing the relative position of the supplemental stacks leading into and from it.

A is a vertical roasting-furnace, of the usual or any suitable construction, having a feed-opening at B, whereby ore from the feed-floor C may be delivered into the furnace, as desired, the said furnace having the usual tuyeres *a*, slag-discharge *b*, and bullion-discharge *c*.

D is the main stack, which extends up vertically from the furnace to any suitable height, and it is provided with a cover or damper E, by which it may be closed whenever desired. This cover is shown in the present case as suspended from a lever-arm F, fulcrumed to the side of the stack and operated by cord G, extending down to a point within reach of the attendants.

When a fire is made in the furnace, and until the furnace is in condition for operation, the valve or cover E may be opened, so as to allow a free draft through the main stack D; but when the work is commenced the cover E is closed, so as to prevent any more draft through the stack D.

H is an inclined supplemental stack extending outward and upward from the side of the main stack D, and its mouth opens into a chamber I, situated at a suitable distance from the furnace and in such position that the stack H opens into it at or near the center. This chamber may be of any suitable size. I have here shown it as being about ten feet square on the top, having the front upward of eleven feet in height and the rear wall about four feet, the stack H leading through an opening into the front, as shown. The bottom of this chamber is inclined sharply enough by this construction, so that any material falling upon it will automatically slide down toward the front. At one corner of the chamber I is a stack K, which leads upwardly from the chamber in a vertical direction and serves for the discharge of the products of combustion after they have entered the chamber through the inclined supplemental stack H. At the bottom and front of the chamber is the flue-dust feed-opening leading into the spout L, the opposite end of which discharges into the furnace A. This feed-spout L may be about two and one-half feet wide by four inches deep where it opens out of the dust-chamber, and about two inches deep where it delivers into the furnace, so as to prevent any especial draft through this passage.

The operation will then be as follows: Ore is fed into the furnace in quantities and at times to suit, and the cover E being closed upon the main stack the products of combustion will pass through the inclined stack H into the large chamber I, where the draft through the stack H will be so deadened and reduced that any dust which may have been carried up through this stack will be deposited upon the inclined floor J of the chamber I, and this dust will, by gravitation, slide down the floor and through the dust-passage L, so as to be again delivered into the furnace to be properly roasted.

By placing the stack K at a point out of line with the inclined supplemental stack H the continuity of draft through these two is broken and the dust is delivered into a comparatively quiet atmosphere in the chamber I, which allows it to be deposited, as above described.

If for any cause it is desired to stop the feed, it may be done by opening a gate O in the passage P, which opens from the lower part of the passage L, and the dust will thus be delivered upon the feed-floor C.

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

1. The combination, with a vertical furnace having the vertical stack with a cover, and means whereby it may be operated to close the vertical stack, of a supplemental inclined stack leading from the side of the vertical stack, a chamber into which said supplemental stack discharges, said chamber having an inclined bottom, as shown, and a flue leading from the bottom into the furnace, and a second vertical stack opening upwardly from the top of the chamber, substantially as herein described.

2. An ore-roasting furnace consisting of the vertical stack, the vertical flue with a cover, and mechanism whereby said cover may be made to open or close the vertical stack, a supplemental inclined stack leading outwardly and upwardly from the side of the main stack, a chamber of larger size, into which said stack discharges near the center, and a vertical stack opening upwardly from the top of said chamber and out of line with the inclined stack, an inclined bottom within said chamber, and a correspondingly-inclined passage or chute extending from the lower part of said bottom into the furnace, said chute having its upper end of larger diameter than the discharge end, substantially as herein described.

3. In an ore-roasting furnace, the vertical stack with a controlling cover, an inclined stack leading out from the main stack, a chamber of larger size, into which said stack discharges, with a vertical stack opening upwardly from the top of said chamber, and a passage or chute leading from the bottom of the chamber to the furnace, in combination with the supplemental discharge P and gate O, substantially as herein described.

In witness whereof I have hereunto set my hand.

JOSEPH L. GIROUX.

Witnesses:
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