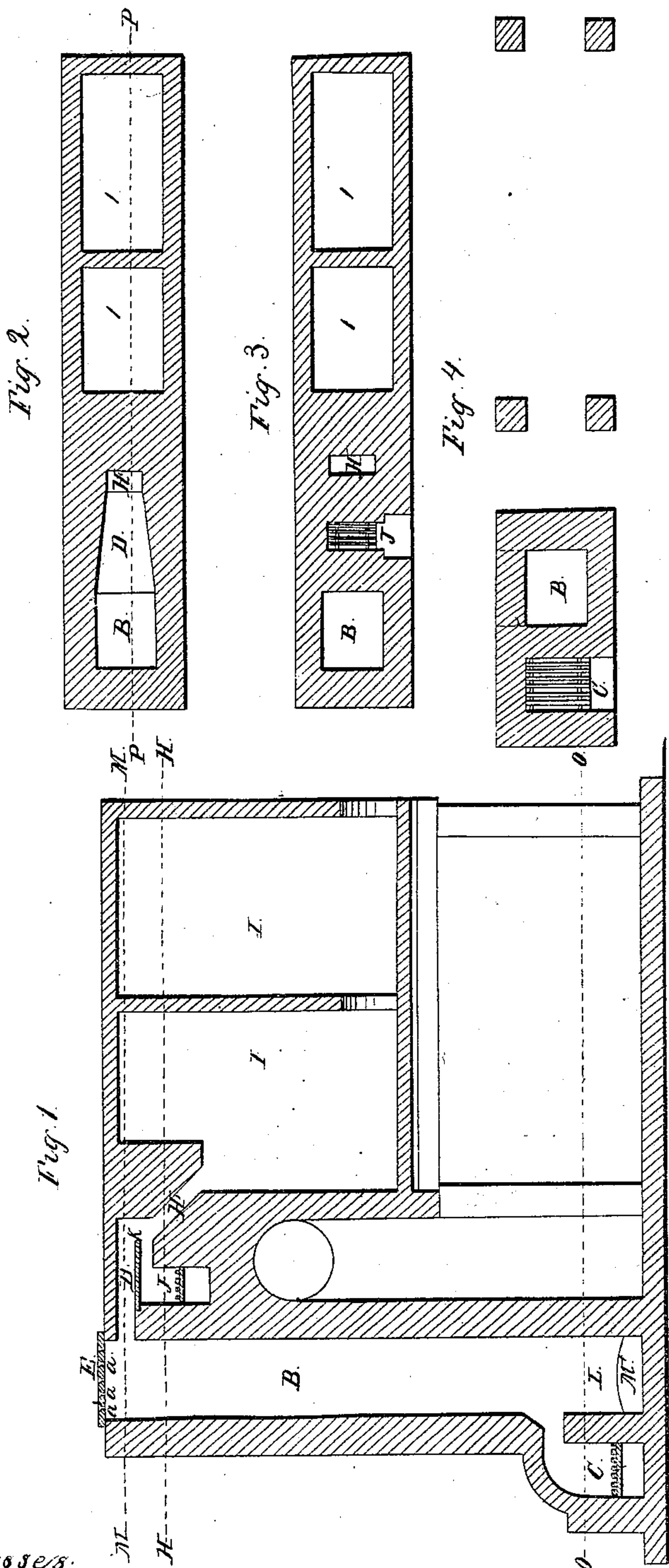


C. A. Stetefeldt.

Shaft Furnace.

No 72,931.

Patented Dec. 31, 1867.



Witnesses:
C. M. Smith
Geo. H. Strong

Inventor:
Chas. Stetefeldt
By his Atty's
Dewey & Co.

UNITED STATES PATENT OFFICE.

CHARLES STETEFELDT, OF AUSTIN, NEVADA.

IMPROVEMENT IN FURNACES FOR ROASTING AND TREATING ORES.

Specification forming part of Letters Patent No. 72,931, dated December 31, 1867.

To all whom it may concern:

Be it known that I, CHARLES STETEFELDT, of Austin, county of Lander, State of Nevada, have invented certain new and useful Improvements in Furnaces for Chloridizing Silver Ores; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention or improvements without further invention or experiment.

My invention is intended to provide an improved furnace for chloridizing silver ores preparatory to amalgamation.

This furnace is constructed with a shaft, the fall of the ore through which is retarded by the upward motion of the heated air and chloridizing-gases, combined with a fire-place opening into a canal below the flue. The flame or heated air passing up the shaft heats the particles of the falling ore, retarding their fall, and effecting their perfect desulphurization and chlorination, which latter is, to a great extent, achieved by the chlorine, hydrochloric acid, and volatile chlorides which continue to emanate from the roasted ore accumulated in the bottom of the shaft. A flue at the top of the shaft allows the gases to pass into a series of dust-chambers connected with a chimney.

As the ore has to be pulverized very fine preparatory to amalgamation or other processes of extraction, a part of the charge will necessarily be carried by the draft directly through the flue into the dust-chambers, and is, consequently, either entirely raw or at least imperfectly chloridized.

To effect a perfect chlorination of this part of the ore, a small fire-place built at the upper end of the shaft is connected with the flue, and as the ore is so very fine and in an atmosphere of chloridizing-gases, its chlorination is completed in a moment in passing the flame in the flue.

To more fully illustrate and describe my furnace, reference is had to the accompanying drawings and letters marked thereon, of which—

Figure 1 is a section taken through P P; Fig. 2, a section through M M; Fig. 3, a section through H H; Fig. 4, a section through O O.

B represents the perpendicular shaft of the furnace, covered at the top with the iron plate E, through the slits *a a a* in which the pulp or pulverized ore and salt is continuously fed by rollers. C is the fire-place near the lower end of the shaft, from which the flame and gases pass up the shaft B, and through the flue D and canal H' into the dust-chambers I I. J is the small fire-place at the upper part of the shaft, opening below the flue D into the canal H', which may be constructed inclined or level, where the ore is chloridized which is too fine and light to fall down the shaft B. In order to heat already the gases in the flue D, the arch of the fire-place J is formed by an iron plate, K.

In the lower part L of the shaft B the roasted ore accumulates, and is discharged through the door M'.

The operation of my furnace is as follows, to wit: Fire is made in the fire-places C and J, and as soon as the inner walls of the shaft are red-hot the rollers are put in motion, and the ore is fed in continuous streams through the slits *a a a* in the iron plate E. To accomplish an intimate mixture of the ore and salt, it is best to crush them together in a dry crushing-battery. The only attention which the furnace requires is the keeping up of a regular roasting heat. The roasted ore is allowed to accumulate in the bottom of the shaft nearly up to the fire-bridge of the fire-place C. This is very important, as a great amount of chlorine, hydrochloric acid, and volatile chlorides emanates from the charge, and acts upon the falling ore in the shaft. If the ore accumulates too much, a part is discharged through the door M', but so as to allow no cold air to enter the shaft. The ore which is roasted in the canal H' by the heat from the fire-place J, and deposited in the dust-chambers I I, is taken out from there occasionally.

A furnace with a shaft twenty-five feet high and three feet square will roast, in twenty-four hours, from eight to twelve tons of ore, and burn from two to two and one-half cords of wood.

The expense of roasting will be reduced by this new process more than one-half of the present rates in reverberatory furnaces.

I do not claim treating ore by letting it fall in fine powder through a shaft with the

products of combustion, so as to roast and desulphurize the same, as described in the patent of Whelpley and Storer, dated January 12, 1864; but

What I do claim, and desire to secure by Letters Patent, is—

A furnace constructed with a shaft, B, the fall of the ore through which is retarded by the upward motion of the heated air and chloridizing-gases, combined with a fire-place, J,

opening into the canal H' and below the flue D, substantially as described, and for the purposes set forth.

In witness whereof I have hereunto set my hand and affixed my seal.

CHARLES STETEFELDT. [L. S.]

Witnesses:

GEORGE T. STODDER,
A. M. BERRY.