

H. G. LIVERMORE.

ORE-FURNACE.

No. 172,329.

Patented Jan. 18, 1876.

Fig. 1

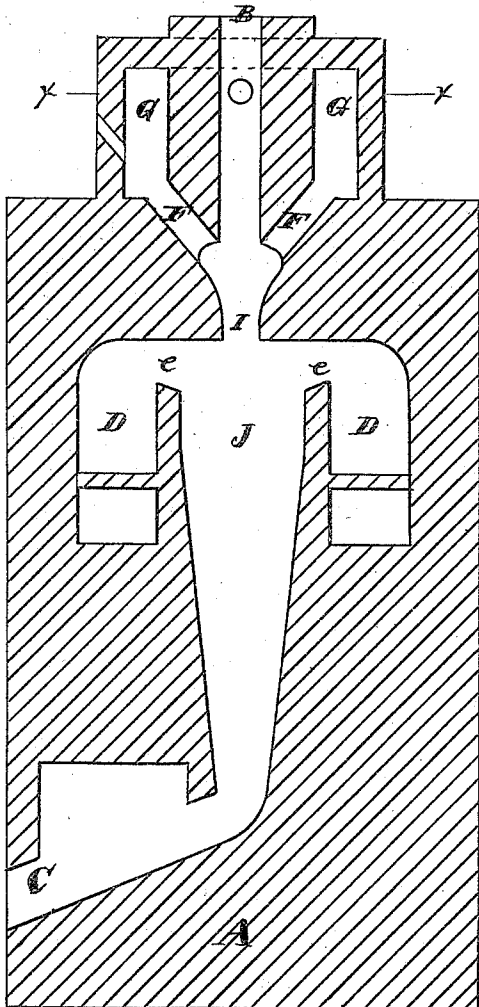


Fig. 2.

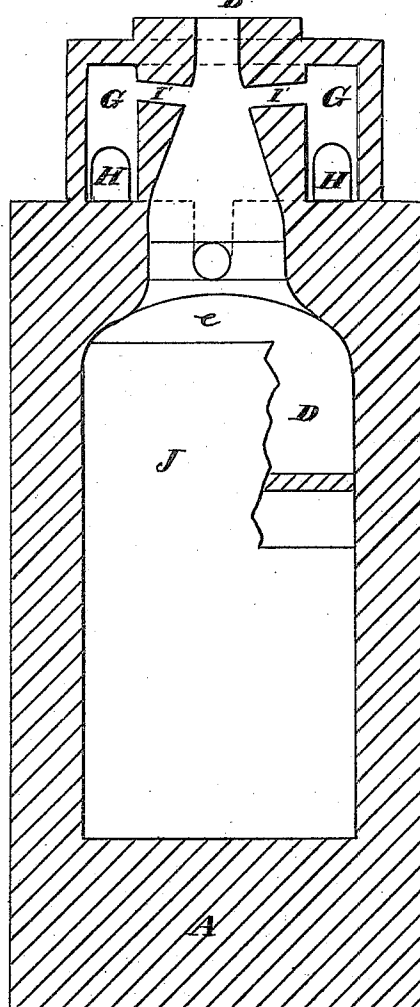
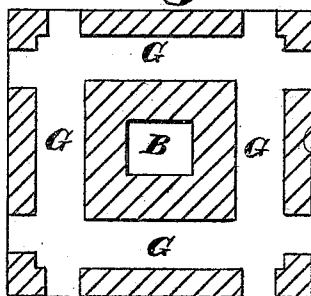


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN ORE-FURNACES.

Specification forming part of Letters Patent No. **172,329**, dated January 18, 1876; application filed October 23, 1875.

To all whom it may concern:

Be it known that I, HORATIO G. LIVERMORE, of San Francisco city and county, State of California, have invented an Improved Ore-Furnace; 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 improvement without further invention or experiment.

My invention relates to certain improvements in ore-furnaces, and is more particularly applicable to furnaces for roasting quick-silver ores. It consists in the employment of two or more fire-places upon the sides of the ore-chamber, so placed that the heat will have its fullest effect upon the ore, while at the same time the ore will be prevented from passing into or clogging the fire-flues, without the necessity of arches or fenders of any kind.

Above the fire-places are passages which branch out from the ore stack or chimney, and open into a chamber which extends entirely around the ore-chamber, and collects the vapors from it in readiness to deliver them to the condensers.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a longitudinal vertical section. Fig. 2 is a cross-vertical section. Fig. 3 is a horizontal section through *xx*.

A is the body of my furnace, having the ore stack or chimney B, which is fed with ore at the top, and the refuse is drawn at the bottom in the usual manner through the opening C. D D are fire-places, which are placed at a considerable height, and opposite the upper and widest part of the ore-chamber J. Openings *e e* serve to admit the heat and fire to the ore-chamber, which is suddenly contracted at a point, I, just above the openings *e*, so that the upper part of the ore-chamber is of comparatively small dimensions.

By this difference in size, I am enabled to place the opening *e* so that while the flame and heat are freely admitted to the ore-chamber, the ore itself will never be able to fill the passages or clog them.

The heat from the fire-places rises up into the narrow part of the ore-chamber until it reaches the passages or flues F, which lead

out, as shown, to the chamber G, surrounding the ore stack or flue, and the vapor and products of combustion are driven out through the flues into this chamber as fast as produced. From this chamber a passage opens into the condenser, and the vapors are drawn out by suction-fans in the ordinary way.

As the chamber G surrounds the ore-stack, it will be manifest that the heat of the vapors and products of combustion within will pass through the walls of the stack, and thus heat the body of ore from its first entrance, so that as it gradually passes down as the waste is removed from the bottom, it will be subjected to a more intense heat, until it is thoroughly roasted by the direct heat of the furnaces.

In the upper part of the stack, and above the passages F, I make supplemental passages I, which open into the chamber G, and the draft of the suction-fans will thus remove any vapors which may be formed above the openings F.

Suitable openings H are made at various points in the chamber G, and through these openings the chamber may be cleaned out from time to time, and the ore may be stirred at any time through small passages which open in a line with the escape-flues F.

By this construction I am enabled to provide a continuously-working furnace in which the greatest heat passes through the ore while it is contained in a narrow place. The heat-passages are not clogged, and a free escape is provided for the fumes.

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

1. The ore-chamber J, constructed as described, in combination with the fire-places D D, provided with the exit-passages *e*, ore-flue I, and vapor-chamber G, having the connecting-passages F F I', substantially as and for the purpose set forth.

2. In combination with the ore-flue I, having the exit-passages F F near the bottom, the vapor-chamber G, and the exit-passages I', substantially as and for the purpose described.

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Witnesses:

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