

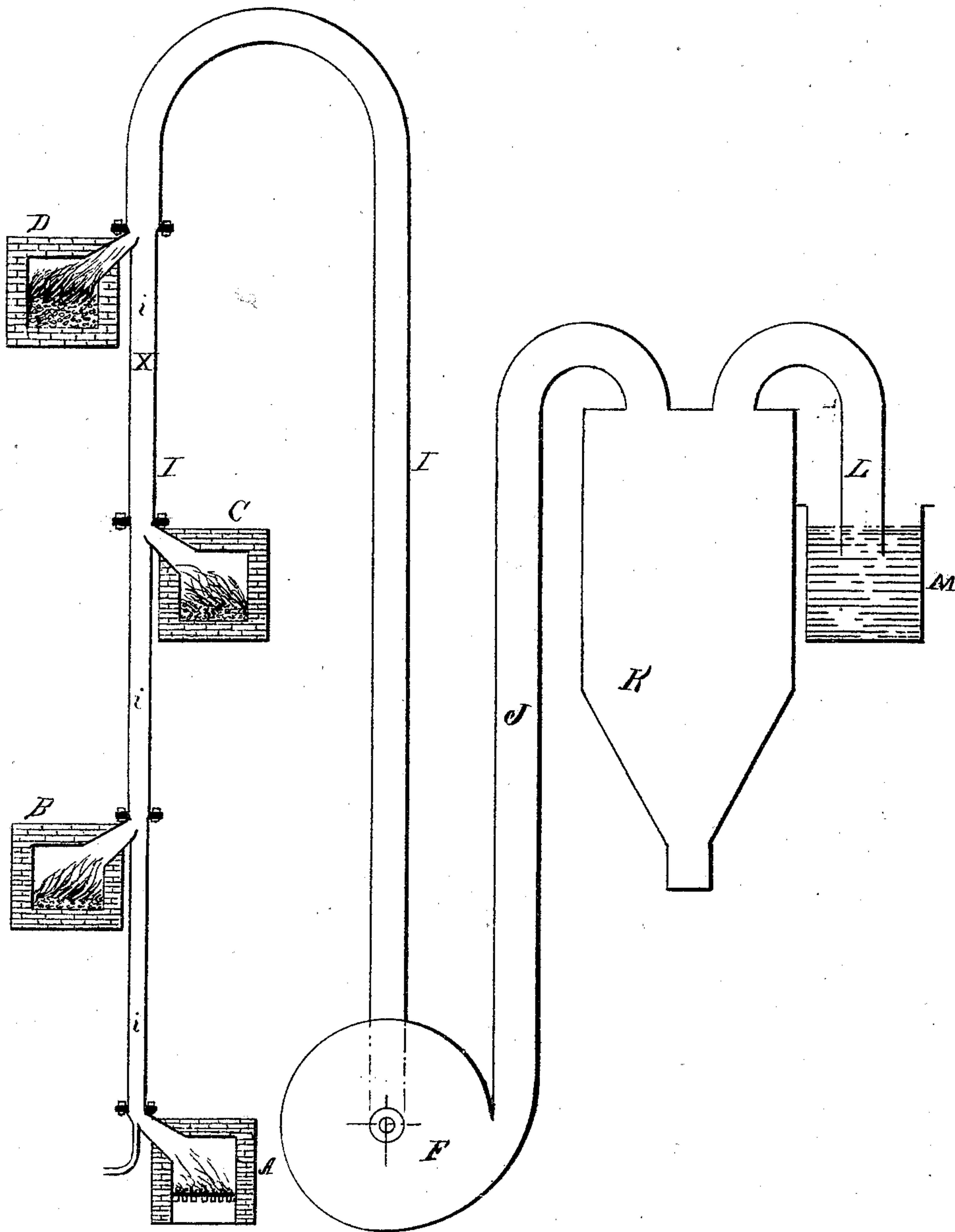
— J. W. BAILEY —

2 Sheets--Sheet 1.

— MACHINERY FOR ROASTING ORES .—

No. 120,696.

Patented Nov. 7, 1871.



WITNESSES:—

E. S. Greenaway

W. B. Raymond

INVENTOR:—

J. W. Bailey

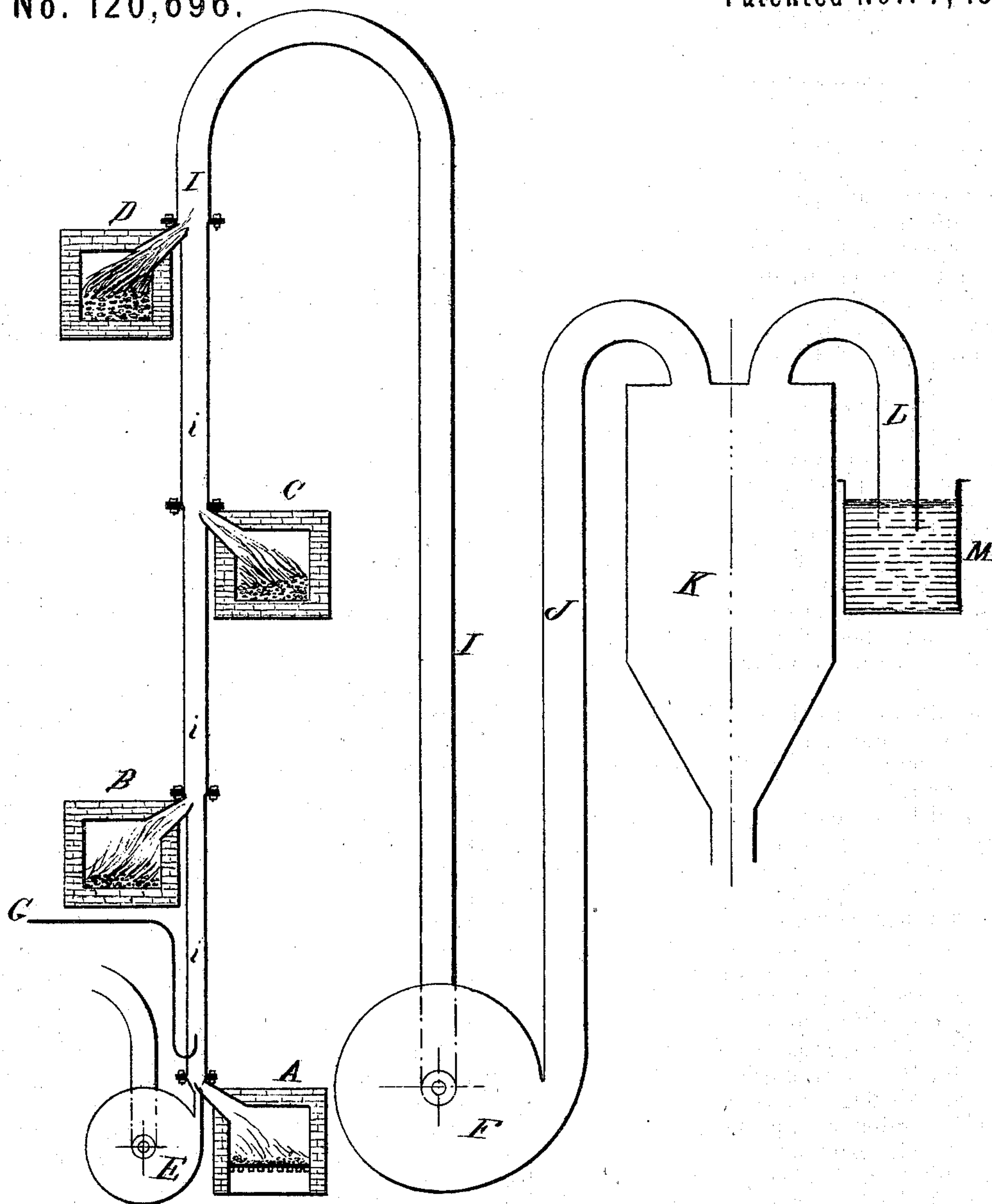
H. W. Beadle atty

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INVENTOR:-

*J. W. Bailey*

*A. W. Beadle, atty*



# UNITED STATES PATENT OFFICE.

JOHN W. BAILEY, OF SAN FRANCISCO, CALIFORNIA.

## IMPROVEMENT IN FURNACES FOR ROASTING ORES.

Specification forming part of Letters Patent No. 120,696, dated November 7, 1871.

*To all whom it may concern:*

Be it known that I, JOHN W. BAILEY, of San Francisco, in the county of San Francisco and State of California, have invented a new and Improved Process and also Machinery for Roasting Ores; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon.

This invention consists, first, in an improved process for roasting ores; and second, in the machinery for carrying the process into effect.

The manner of employing the process and the details of construction of the machinery will be fully described hereinafter.

In the drawing, Sheet 1 represents a side elevation of a series of furnaces, the connecting-tubes, a suction-fan, receiving-chamber, and water-tank; and Sheet 2 represents a similar view to Sheet 1 with the addition of a feeding-fan, E.

To enable others skilled in the art to use my process and the machinery for carrying it into effect, I will now proceed to describe fully my invention in detail.

A, B, C, and D represent a series of furnaces, which may be located in any convenient manner, and be successively attached in any proper way to the tube or pipe I. The pipe I is constructed of distinct sections *i i i*, which successively increase in diameter, as is clearly indicated in the drawing. F represents a fan attached to the pipe I at any proper point beyond the last furnace, which fan is adapted to draw the materials to be treated from the entrance opening of the tube I through the tube I, and discharge them through the tube J to the chamber K. The chamber K is provided with a pipe or tube, L, which terminates below the water line in the tank M, as is clearly indicated in the drawing. If desired, a small auxiliary fan, E, as shown in Sheet 2, may be employed for feeding the ore to the tube I; but this, although desirable ordinarily, is not absolutely essential in all cases. G represents a pipe, through which steam may be admitted, if desired.

The operation is as follows: The ores to be treated are ordinarily delivered to the pipe I by means of the fan E, as shown in Sheet 2; but, if desired, they may be drawn by the fan F from any suitable receptacle, as indicated in Sheet 1. In either case, however, the ores are drawn by means of the fan F, which should be relatively

of large size, and revolve with great speed through the pipe I, and are discharged through the pipe J to the chamber K. As the ores are drawn by each furnace in the series they are, of course, exposed to the action of its heat, and its products of combustion uniting with them the combined elements are conveyed along together to the receiving-chamber. In this chamber the greater portion of the pulp is deposited, the waste gases, however, passing off through the pipe L and depositing all particles they may convey with them in the tank M.

The furnaces are provided with fires of gradually-increasing temperature, by which means the ores are exposed first to a gentle heat, and then are gradually heated as they pass along to a high temperature.

The process and the machinery described are specially adapted for base Galena ores rich in silver, which, if first exposed to an intense heat, will melt readily and fall in the form of shot. By exposing them, however, first to a gentle heat, and by then gradually heating the same, this objection is avoided and they may be successfully treated without difficulty.

By locating the fan F beyond the furnaces important results are obtained. When the fan is located before the furnaces and the blast of air is forced or driven through the furnaces, the resistance encountered is so great that the air is forced into the furnaces and the fires are smothered unless relief is afforded in some way. By locating the fan beyond the furnaces, however, and by drawing the air through them, the difficulty is entirely obviated.

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

1. The combination of two or more furnaces, of varying temperature, with a suction-fan, as described.

2. The combination of the series of furnaces with the fans E F and pipe I.

3. The pipe I, composed of sections, successively increasing in diameter, as described.

4. The combination of the fans E F, furnaces A B C D, pipes I J, chamber K, and tank M, as described.

This specification signed and witnessed this 29th day of May, 1871.

JOHN W. BAILEY.

Witnesses:

JOHN B. WELLER, Jr.,

EDWARD F. HEAD.

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