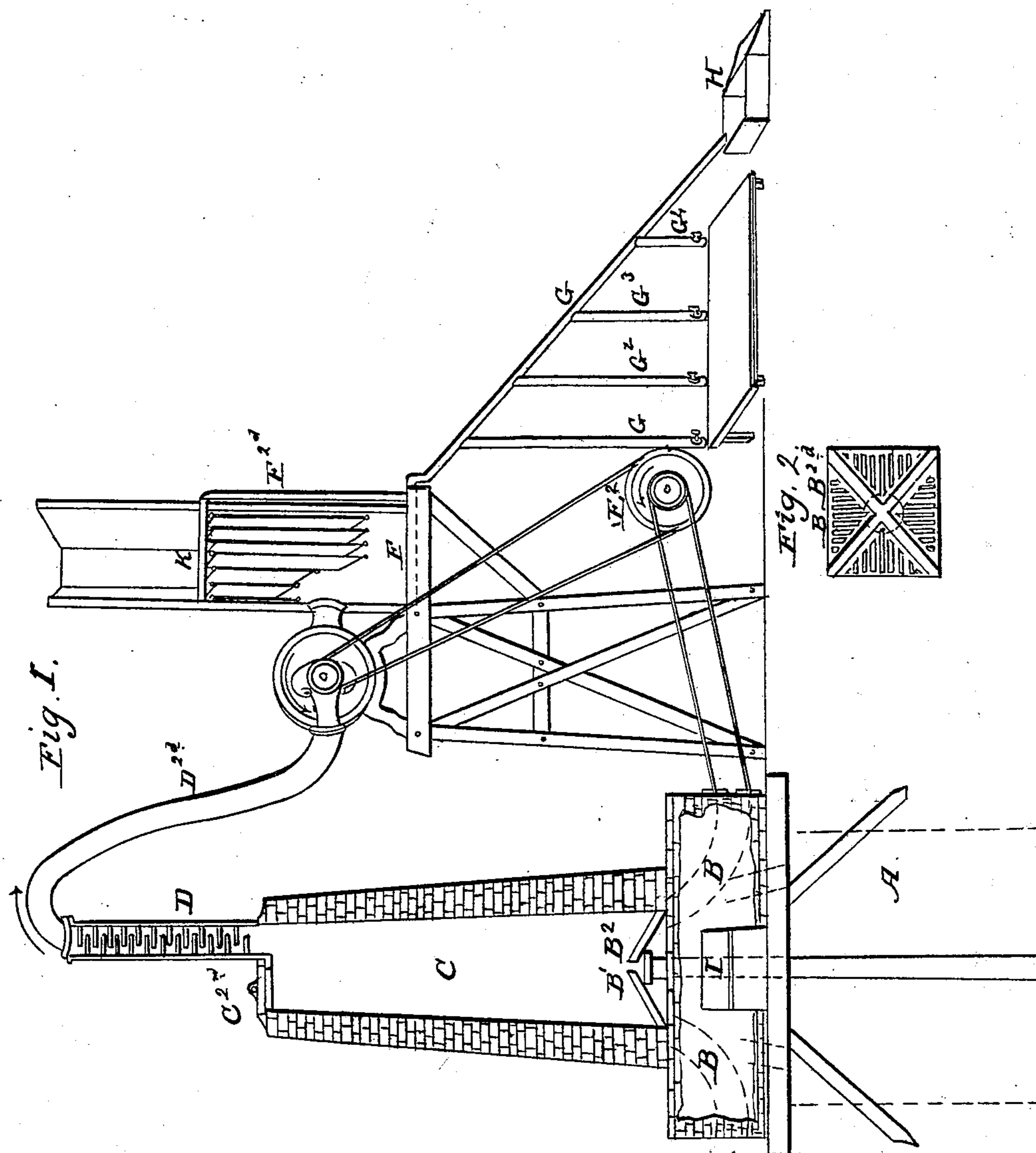


A. E. GRIFFITHS.

Furnace for Treating Auriferous Ores.

No. 53,440.

Patented March 27, 1866.



Witnesses:
M. J. H. H. H.
D. P. H. H. H.

Inventor
A. E. Griffiths

UNITED STATES PATENT OFFICE.

AMOS E. GRIFFITHS, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVED FURNACE FOR TREATING AURIFEROUS ORES.

Specification forming part of Letters Patent No. 53,440, dated March 27, 1866.

To all whom it may concern:

Be it known that I, AMOS E. GRIFFITHS, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for Treating Auriferous Quartz, Cinnabar, or other Minerals in the reduction of the same by heat; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawings, made part of this specification, in which—

Figure 1 is a side elevation with parts represented as broken away to show the interior structure. Fig. 2 is a plan of the drop-doors of the same.

C is a cupola for receiving and heating the quartz as it is quarried. C² is an opening through which the cupola is charged. The quartz is heated by hot air introduced through the tuyere B B. The lower end of this cupola is closed by the hinged doors B' B², which open downward, being sustained by an adjustable prop, A², below, which being knocked away through the opening I, left in the base of the cupola for this purpose, the doors fall, and the heated quartz is precipitated into the cistern A, immediately below it, and filled with cold water. By this immersion the heated stone, suddenly cooled by the water, will become disintegrated and prepared for working in the mill, and the sulphurets of gold or other metal be oxidized.

It is known that by all the processes hitherto employed for the reduction of gold-bearing quartz a large percentage of the gold actually contained is lost, passing off in imperceptible particles. It is for the arrest of these that my improvements are intended.

On the cupola I erect a pipe, D, one side of which is removable and in the drawings represented as removed. This pipe is filled with shelf-formed partitions projecting alternately from each side, but not extending across the pipe. Around the ends of these shelves the fumes from the cupola must pass, and in the corner, at each end of a shelf, an eddy will be formed in the current, in which the solid particles carried over with the fumes will be deposited. The length of the pipe will be determined by the complete performance of this

duty. From the top of this pipe the reversed tube D² leads through the chamber of the suction-fan E into the bottom of the chimney F. In this chimney I hang, suspended from perforated tubes of iron and kept taut by bars attached to their lower ends, blankets or strips of heavy woolen cloth, wire-gauze, asbestos, or other porous substances, kept saturated thoroughly with water constantly flowing over them from the orifices in the tubes, which are filled from the pipe K, passing across the chimney over them. The bottom of this chimney is lined with copper or other material to retain the water flowing over the porous strips suspended in the chimney, to which will adhere the imponderable particles carried over in the fumes and not deposited in the pipe D. The water containing the particles washed from the blankets is carried through the pipe G from the bottom of the chimney. From this pipe depend the branches G' G² G³, closed below by stop-cocks and arranged to discharge the solid particles collecting in them upon the table L, holding amalgamating-plates of copper, or into a sluice-box containing riffles charged with quicksilver. The lower end of the pipe discharges the water into such a sluice-box. One side of the chimney F is removable.

What I claim as my invention is—

1. The arrangement of a cupola immediately over a water-cistern for the treatment of metal-bearing minerals, substantially as set forth.

2. In combination with a cupola, C, and chimney F, the reversed pipe D² and suction-fan E, substantially as set forth.

3. Passing the fumes from heated metallic ores or mineral-bearing metals over wet blankets or other porous substances for the purpose of condensing such fumes and depositing the metals suspended in them.

4. The arrangement of the chimney F, pipe G, and branch pipes G' G² G³ G⁴, with the sluice-boxes L and H, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

AMOS E. GRIFFITHS.

Witnesses:

R. MASON,

D. P. HOLLOWAY.