J. HOWELL.

REVOLVING ORE-ROASTERS.

No. 190,217. Patented May 1, 1877.

Fig. 1.

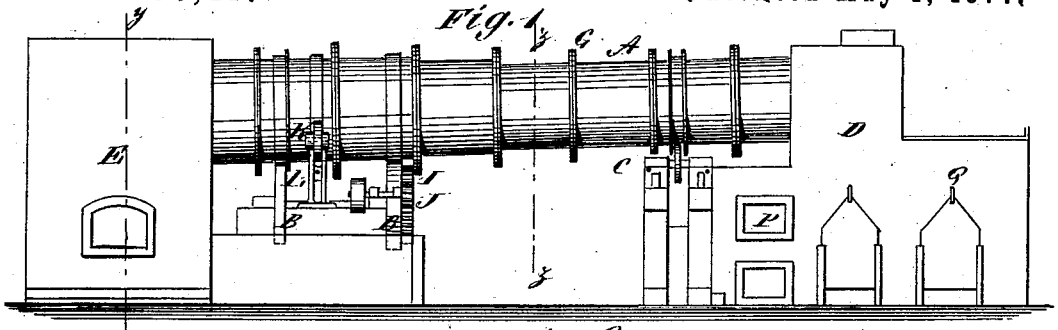


Fig. 2.

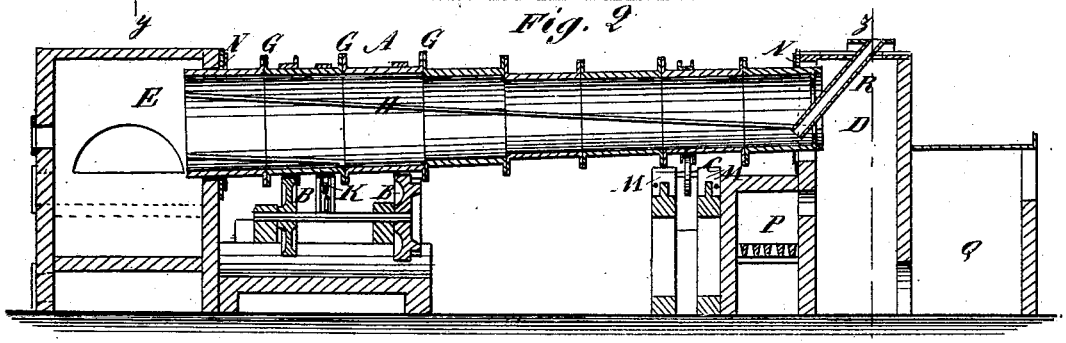


Fig. 3.

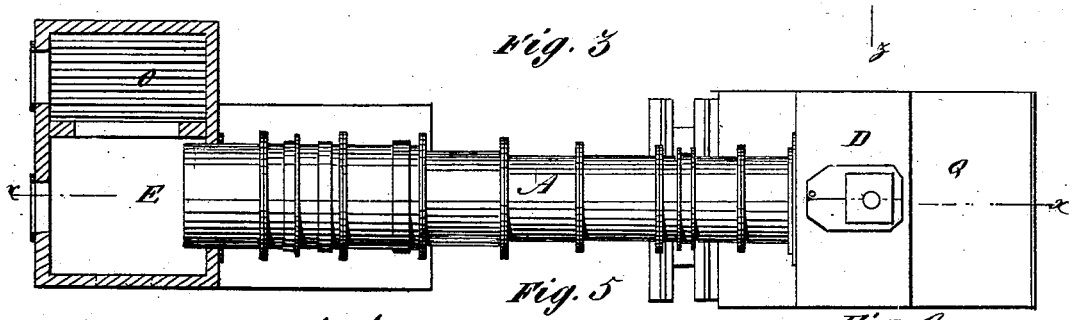


Fig. 5.

Fig. 4.

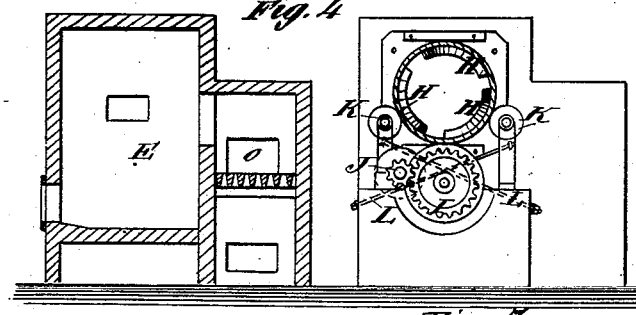


Fig. 6.

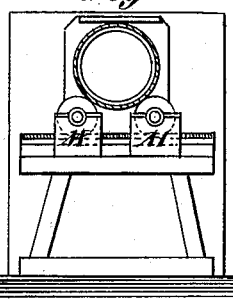
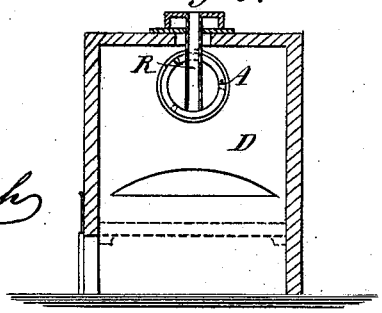


Fig. 7.



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JOHN HOWELL, OF BENTON, CALIFORNIA.

IMPROVEMENT IN REVOLVING ORE-ROASTERS.

Specification forming part of Letters Patent No. **190,217**, dated May 1, 1877; application filed January 19, 1877.

To all whom it may concern:

Be it known that I, JOHN HOWELL, of Benton, in the county of Mono and State of California, have invented a new and Improved Furnace for Treating Ores, of which the following is a specification:

My invention relates to an improved rotary tubular furnace for chloridizing silver ores and desulphurizing copper, gold, lead, tin, and zinc ores.

The invention will first be described in connection with the drawing, and then pointed out in the claim.

Figure 1 is a side elevation of my improved furnace. Fig. 2 is a sectional elevation taken on line *x x*, Fig. 3. Fig. 3 is a plan of the tube and upper furnace, and horizontal section of the lower or principal furnace. Fig. 4 is a transverse section of the principal furnace on line *y y*, Fig. 1. Fig. 5 is a transverse section on the line *z z*, Fig. 1. Fig. 6 is also a section on line *z z*, and Fig. 7 is a section on line *z z* of Fig. 2.

Similar letters of reference indicate corresponding parts.

A represents the revolving tube, which is arranged on carrying-wheels B and C, with one end opening into the upper furnace-chamber D, and the other one into the pit E of the lower furnace, into which the ore is discharged from the tube after treatment in it. The tube is made of eight (but may have more or less) sections, having flanges G, the upper sections being a little smaller than the lower one, and connected by middle sections of intermediate sizes. The tube is arranged to descend a little from the upper to the lower end, and contains three spiral flanges, H, to urge the ore along from the upper to the lower end.

One of the carrying-wheels, B, has a toothed rim, I, with which a pinion, J, on a drum-shaft, gears, to turn the tube. K represents a couple of guide-rollers, to keep the tube on the carrying-wheels. They are in bearings to which the guy-rods L are attached, to keep the rollers up to the tube. The carrying-wheels C, on which the upper end of the tube rests, are on bearings M, which are capable of sliding toward and from each other, to raise or lower the tube, to adjust its inclination, and the plates N, surrounding the tube at the openings into the furnace, are adjusted to allow the tube to be adjusted. O is the furnace for generating the heat for the lower end of the tube; P, a furnace at the upper end, for generating heat for chloridizing such fine particles of ore as are carried out of the furnace by the draft before being sufficiently chloridized, the heat from said furnace being discharged into chambers D for that purpose, along with the heat from the tube, and passing therefrom into another chamber, Q, for thoroughly doing the work before escaping into the air. R is the feed-spout by which the ore is supplied to the tube.

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

The combination, with the revolving tube, of the furnace at the receiving end, having the chambers D and Q, and the furnace at the lower end, having the pit E, substantially as specified.

JOHN HOWELL.

Witnesses:
M. CAREY,
J. F. STARRATT.