

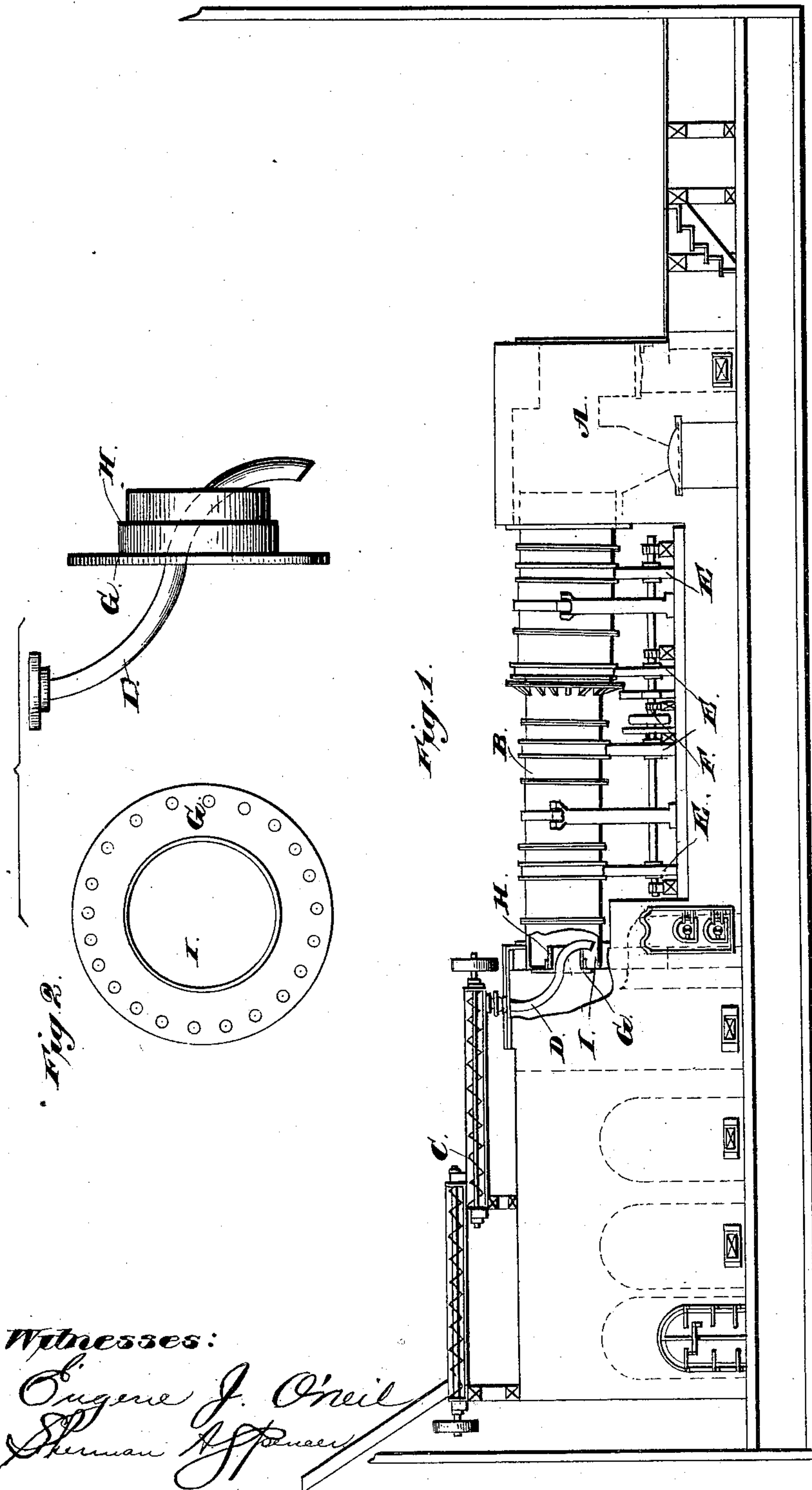
(No Model.)

L. M. RUMSEY.

FURNACE FOR ROASTING AND CHLORIDIZING ORES.

No. 343,731.

Patented June 15, 1886.



Witnesses:

Eugene J. O'Neil  
Sherman H. Spencer

Inventor:

Lewis M. Rumsey

# UNITED STATES PATENT OFFICE.

LEWIS M. RUMSEY, OF ST. LOUIS, MISSOURI.

## FURNACE FOR ROASTING AND CHLORIDIZING ORES.

SPECIFICATION forming part of Letters Patent No. 343,731, dated June 15, 1886.

Application filed February 10, 1886. Serial No. 191,466. (No model.)

*To all whom it may concern:*

Be it known that I, LEWIS M. RUMSEY, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Furnaces for Roasting and Chloridizing Ores, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a well-known form of furnace with my improvements attached thereto, parts being broken away to more fully illustrate my invention. Fig. 2 is a view in detail of my improvements.

In the class of rotary ore-roasting furnaces to which my invention relates there is a revolving cylinder, into the upper end of which the stamped or pulverized ore, mixed with common salt, is fed by suitable feed mechanism, and the lower end, to which the ore falls by gravity, is in communication with or forms a continuation of the furnace proper. This cylinder is revolved generally on friction-wheels, and as it rotates it carries the ore with it, and the heat and products of combustion pass from the grate or furnace proper through it, and are discharged through the proper flues and a smoke-stack.

In the operation just described much of the fine dust of the ore is carried by the draft and flame through the upper open end of the cylinder through the flues and is lost. A second furnace or fire-box has also been necessary at the upper end of the cylinder; otherwise the finer portions of the ore remaining at that end have not been properly chloridized, or, as before stated, have been carried out through the flues. Attempts have been made to overcome these objections, but only with partial success.

In the well-known Oxland furnace an annular piece has been secured on the outside upper end of the cylinder and provided with a short tubular piece or pipe secured to the annular piece and projecting outwardly or away from the cylinder. A crescent-shaped plate or a plate of the form of a segment of a circle has also been secured to the feed-pipe at the upper end of the cylinder on the lower side. In both of these instances the fine dust of the ore is not chloridized before it reaches the draft-line in the rotary cylinder, and much of it is

carried out through the dust-chambers unroasted, and is lost.

To obviate these difficulties, as well as to dispense with the fire at the upper end of the cylinder, is the object of my invention; and it consists in securing to the upper end of the cylinder an annular piece having attached thereto at its smaller diameter a tube or pipe, which projects inwardly or toward the lower end of the cylinder, thus forming an annular internal chamber at the upper end of the cylinder, which receives and retains the dust out of the draft-line until it is roasted or chloridized, thus making it heavier, when it falls by gravity toward the lower end of the cylinder, instead of being carried as dust out through the flues.

Referring to the drawings, in which like letters of reference indicate corresponding parts, my improvement is shown as applied to the well-known Bruckner or Howell furnace.

A is the fire-chamber, B the rotary cylinder, and C the mechanism for feeding the pulverized ore.

D is a tube or pipe with a funnel-shaped mouth for conveying the ore into the upper end of the cylinder. The cylinder is rotated by friction-wheels E and the driving shaft and gearing F, or in any other suitable or known manner. The structure just referred to is well known and need not be further described in detail.

To the upper end of the cylinder I secure a flanged annular piece, G, which is constructed of metal of the proper thickness, and is bolted, riveted, or otherwise secured to the end of the cylinder. This ring-like piece G has an inwardly-projecting annular flange or tubular portion, H, thus forming on the inside upper end of the cylinder an annular chamber, I, which, being out of the draft-line of the cylinder, receives and holds the fine dust of the ore until it is roasted or chloridized, when, as before stated, it falls by gravity to the bottom, and is discharged with the heavier portions of the ore into the pulp bin or receiver.

It will be seen that the feed-pipe is placed diagonally across the opening in the annular piece G, and that it delivers the pulverized ore or pulp at the bottom of the cylinder. I prefer to construct this feed-pipe as shown in the drawings—viz., somewhat curved, and



with its lower end partly cut away, or with a section removed therefrom, as at A, on the side next the chamber I. The object of this construction is to deliver the pulverized or stamped ore, or the bulk of it at least, into the chamber I, instead of into the body of the cylinder, so that it will not fall to the lower end and pass out until it is thoroughly roasted.

The feed-pipe may be round, square, or of any desired form. I prefer to have the inwardly-projecting flange portion H about twelve inches in length in a sixty-inch cylinder, but I do not restrict myself to these proportions. The flange is preferably so located that it forms a chamber about one-half of the area of the cylinder.

It will be seen by my improvement I am able to deliver and hold the lighter and finer particles of the dust of the ore into the cylinder and out of the draft-line thereof until they are roasted or chloridized.

My invention also does away wholly with the use of an auxiliary fire at the small end of the furnace, and also decreases largely the amount of fuel used in the principal furnace at the lower end of the cylinder.

Having thus fully described my improve-

ment, what I claim as new, and desire to secure by Letters Patent, is—

1. A rotary furnace for roasting or chloridizing ores, provided at its upper or receiving end with closed internal annular chamber, to receive and retain the dust particles of the ore until they are chloridized, substantially as described.

2. A rotary furnace for roasting or chloridizing ore, provided at the upper end of the rotary cylinder with the annular part G, having inwardly-projecting annular flange H, forming the closed internal dust-chamber, I, substantially as set forth.

3. A rotary furnace for roasting or chloridizing ores, provided with a feed-pipe extending through the upper end of the cylinder, said pipe having a portion of its lower end, on its side toward the end of the cylinder, partly open or cut away, substantially as set forth.

In testimony whereof I have hereunto affixed my hand in the presence of two witnesses.

LEWIS M. RUMSEY.

In presence of—

EUGENE J. O'NEIL,

SHERMAN A. SPENCER.