

G. B. Field,
Ore Roaster.
No. 68058. *Patented Aug. 27. 1867.*

Fig. 1.

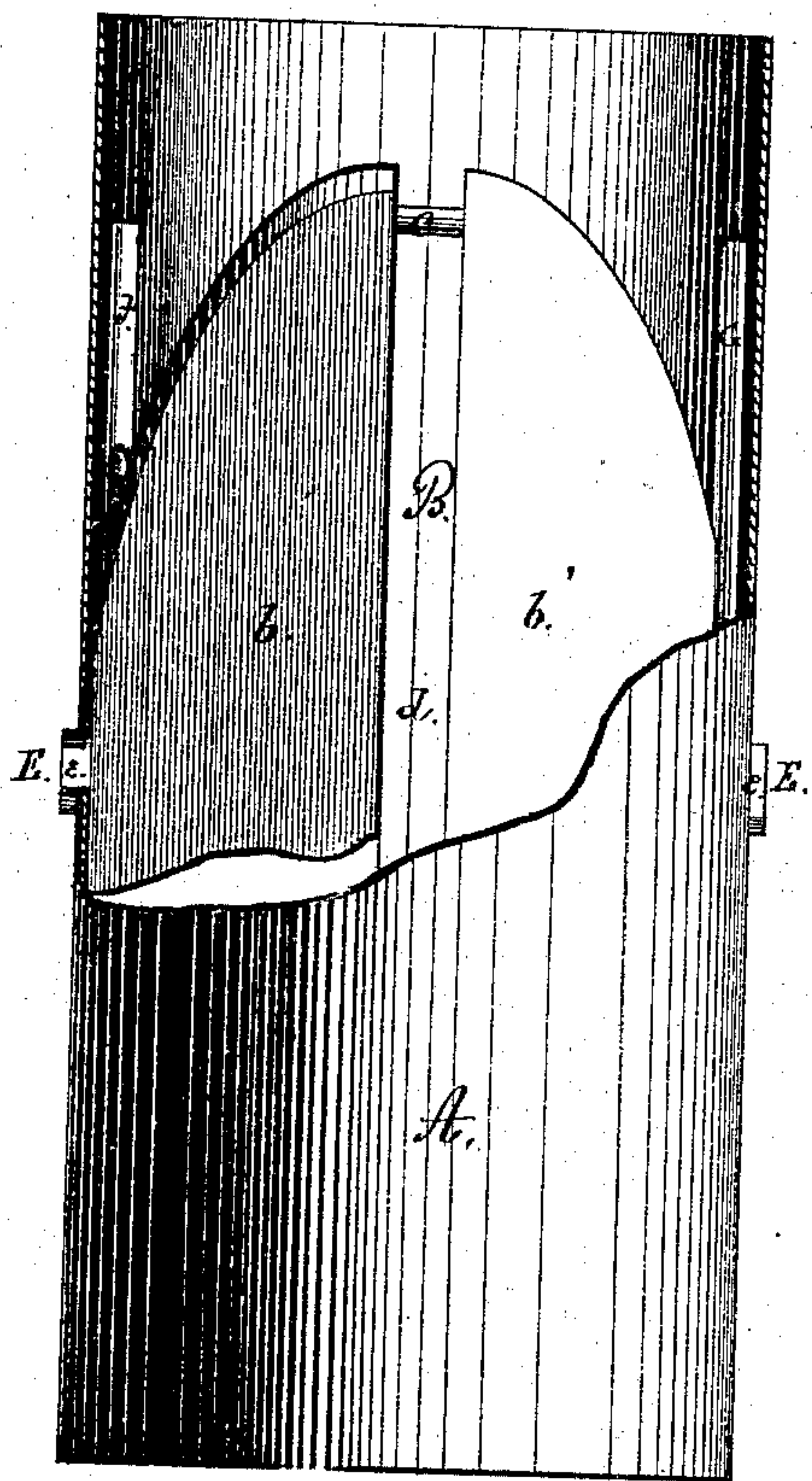
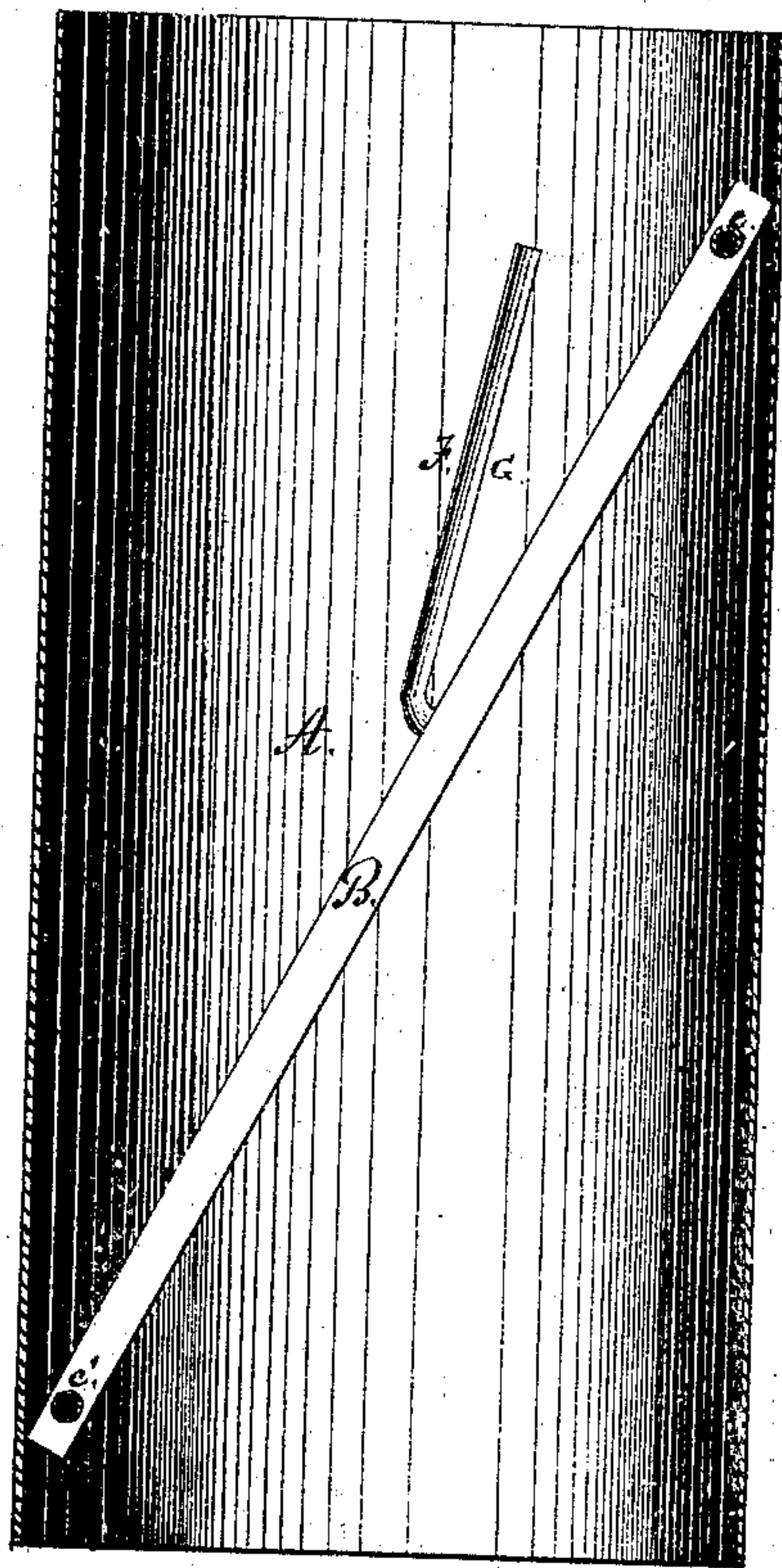


Fig. 2.



Witnesses:

Chas A. Pettit
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GEORGE B. FIELD, OF NEW YORK, N. Y.

Letters Patent No. 68,058, dated August 27, 1867.

IMPROVED ORE-ROASTING FURNACE.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, GEORGE B. FIELD, of the city, county, and State of New York, have invented a new and improved Ore-Roasting Furnace; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, and in which—

Figure 1 is a top view of my invention, a portion of the cylinder A being removed to show the shelf within.

Figure 2 is a horizontal section of my invention, cutting the shelf through its smaller diameter.

Similar letters of reference indicate corresponding parts in the two figures.

This invention consists in the use of a peculiar-shaped ledge or shelf in the furnace, made hollow for the introduction of steam or water, and the construction of an aperture or port, through which the cavity of the shelf may be cleaned from the outside of the revolving cylinder.

The patent for which this application is made will, if granted, be in a measure supplementary to that applied for by your petitioner June 6, 1867, upon ore-roasting furnaces.

In all ore-roasting furnaces one great desideratum is to obtain a perfectly equal distribution of the heat to the ore, and a thorough agitation of the contents of the cylinder in which the ores are roasted. To accomplish these two purposes various devices have hitherto been resorted to, such as the use of a worm or revolving screw, agitating-rakes, &c. All these devices are objectionable for various reasons, among which may be mentioned the following: they do not thoroughly effect the object sought to be accomplished; they necessitate the introduction of additional machinery to operate them, and thus render the whole apparatus complicated and expensive; subjected as they are to an intense heat, and operating against heavy masses of mineral, they soon get out of repair; they fill up the space inside of the cylinder. All these imperfections in the ore-roasting furnaces, as heretofore constructed, I propose to obviate, simply by the form and position of a ledge or shelf inside of the cylinder, the ledge or shelf being made hollow, for the admission of water or steam to cool it and prevent its rapid destruction by heat.

In order that others skilled in the art to which my invention appertains may be enabled to make and use the same, I will proceed to describe it in detail.

In the drawings A represents the outside shell of the cylinder of a revolving ore-roasting and desulphurizing furnace. The apparatus by which it is caused to revolve is not necessary to be here shown. Inside of the cylinder A is a hollow ledge or shelf, B, composed of two parts *b b'*, united by pipes *c c'*, through which communication is had between the parts *b* and *b'*. The form of the whole shelf thus constructed is that of an ellipse, having a longitudinal slot, *d*, through its centre, across which run the pipes *c c'*. The shelf thus made is placed in the cavity of the cylinder in a diagonal position, as shown in the drawings, a space being left between its extremities and the ends of the cylinder, and is bolted firmly in this position. At *E E* apertures are provided sufficiently large and of the proper shape for the introduction of a rake or scraper, by which to scrape and clean the interior of the shelf B, when, by reason of the impurities of the water, it may have become foul. Valves or plugs *e e* are provided for closing these apertures, when the process of cleaning the shelf is not going on. *F* is the pipe, through which the water or steam is introduced to the interior of the shelf, and *G* is the exhaust or outlet. To secure the circulation of the water in the shelf one of these pipes must communicate with the plate *b*, and the other with *b'* at the opposite end of the shelf.

In a furnace thus constructed the ores are placed in the cylinder A, and the latter is caused to revolve. The heat is received at first at one end of the cylinder, though, after a while, the heat caused by the combustion of the liberated sulphur of the ores may be sufficient, and the furnace may be disconnected from the cylinder. When the cylinder reaches a certain point in its revolution the shelf B becomes an inclined plane, upon which the ore slides to the lower end and falls through the space between it and the end of the cylinder, lodging upon the bottom of the cylinder. When the cylinder has revolved half round, this end of the shelf becomes elevated and the opposite end depressed, and the ore slides back upon the plate and falls through the space at its end to its former position. Another half revolution repeats the process, and so on indefinitely. Some of the ore will fall through the central slot of the shelf. As the cylinder revolves and the shelf is inverted this will be caught and carried with the rest of the ore to the lower end of the shelf.

By this means the ore is thoroughly pulverized, while at the same time its position in the furnace is constantly changing, so as to subject every part of it to the heat alike.

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

1. The plate or shelf *B*, made hollow for the admission of water or steam, and composed of two parts, *b* and *b'*, connected by the pipes *c c'*, when constructed and used substantially as and for the purpose specified.
2. The orifices *E E* in hollow shelves, used in the inside of revolving ore-roasting furnaces for the purpose of cleaning the internal chambers of the shelves, substantially as described.

GEO. B. FIELD.

Witnesses:

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