

(No Model.)

T. J. BELL & N. A. GRIFFITH.

FURNACE FOR DESULPHURIZING AND CHLORIDIZING ORES.

No. 245,991.

Patented Aug. 23, 1881.

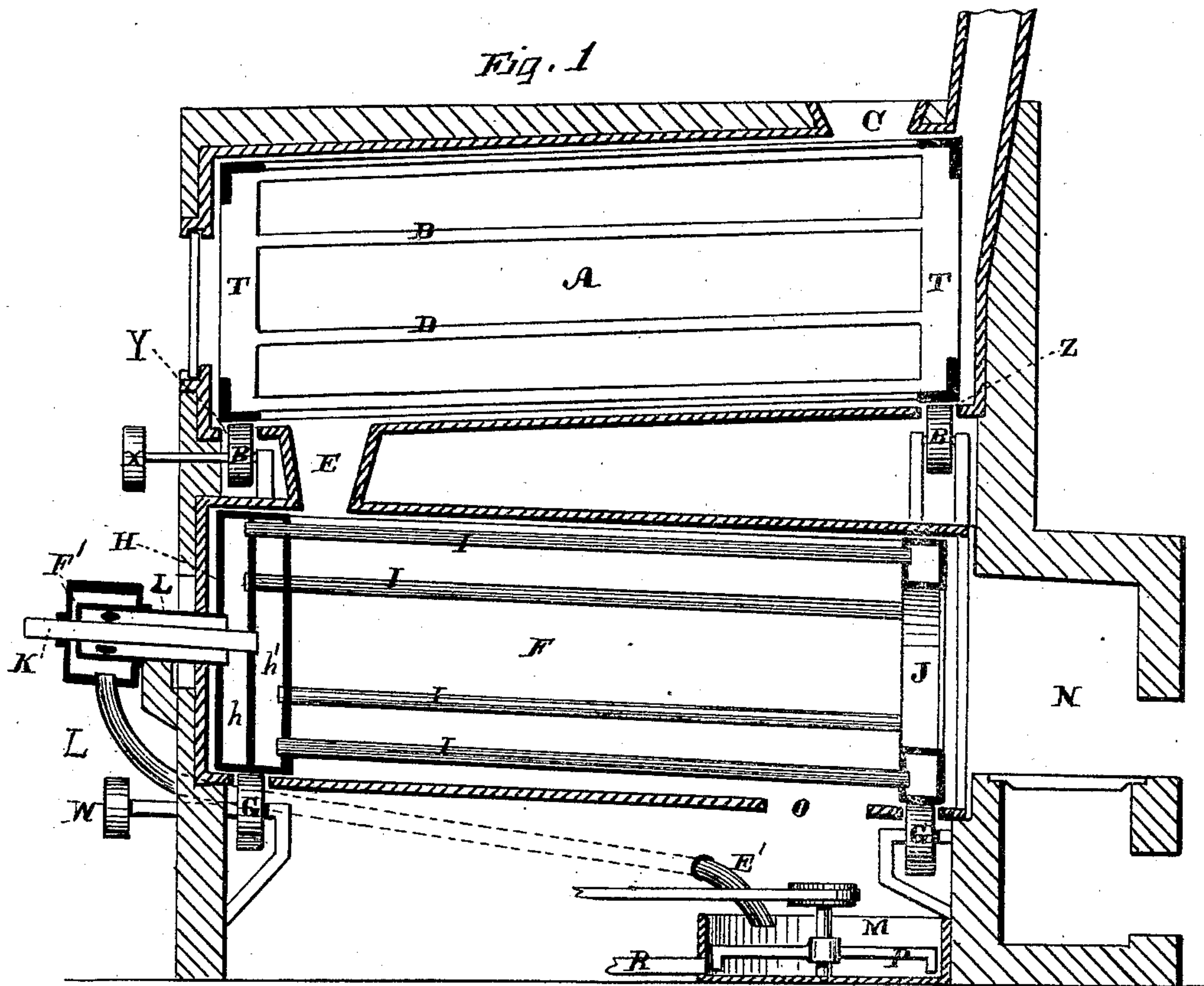


Fig. 2.

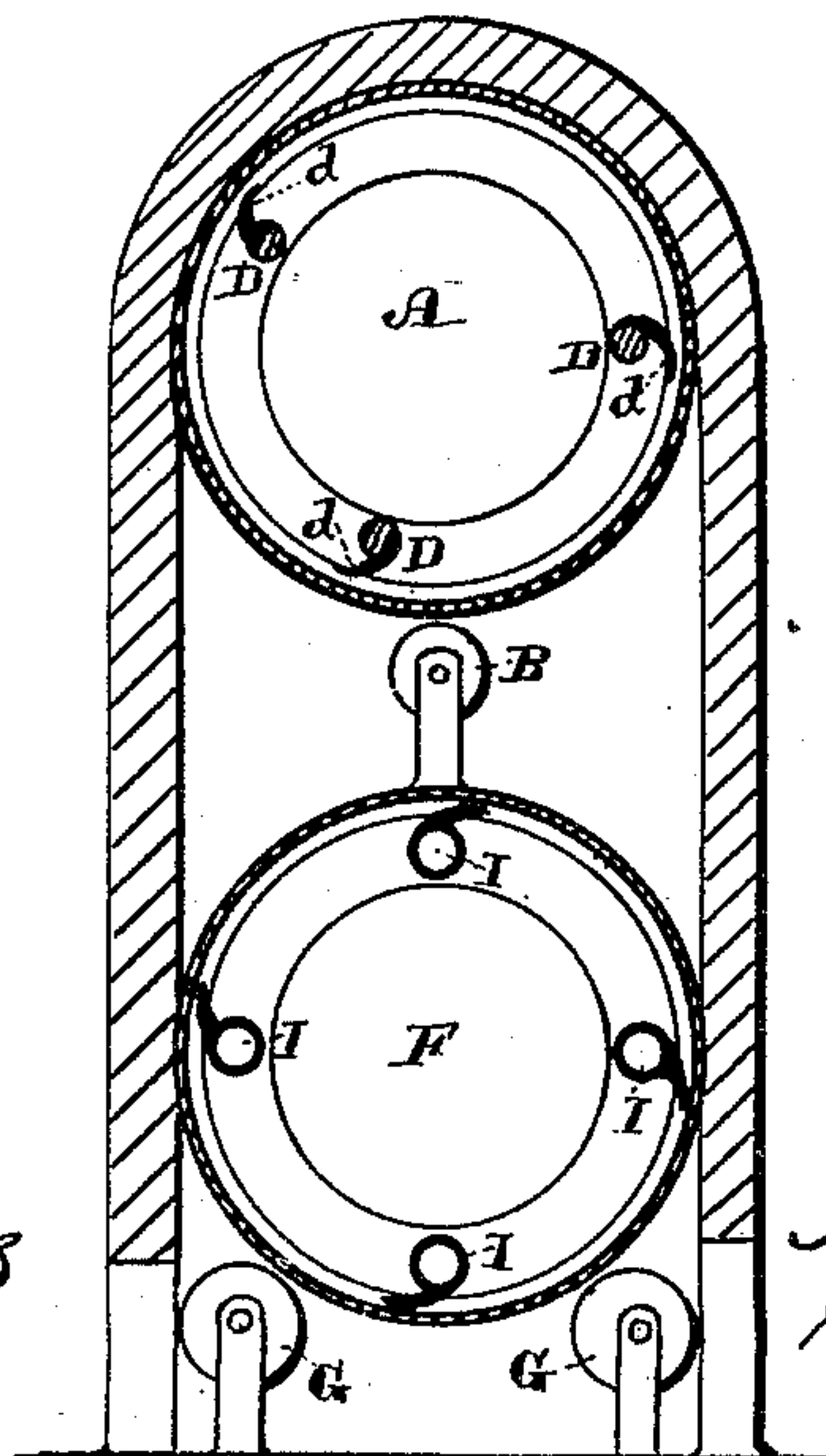
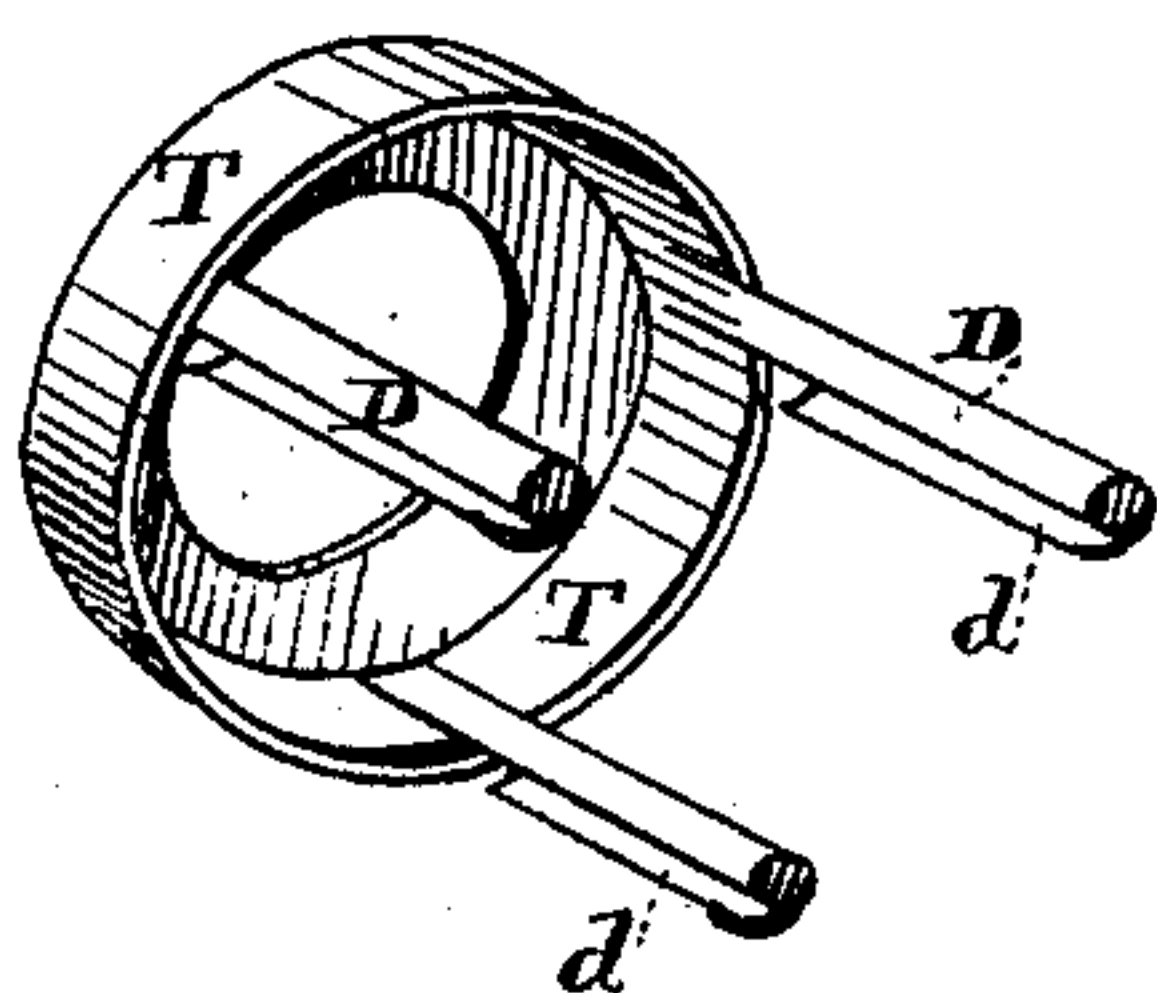
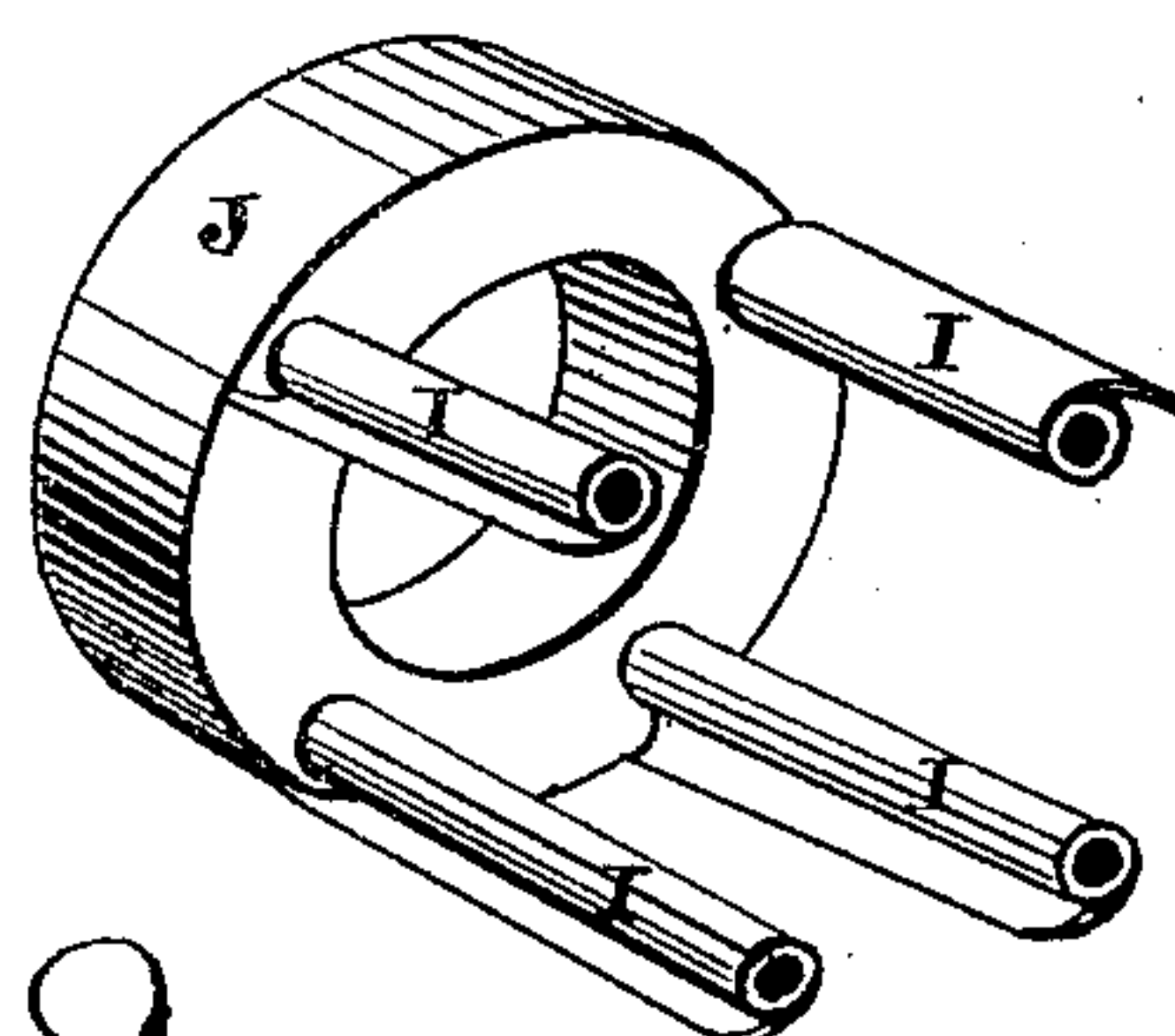


Fig. 3.



Witnesses
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Fig. 4.



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UNITED STATES PATENT OFFICE.

THOMAS J. BELL AND NATHANIEL A. GRIFFITH, OF GRANTVILLE, NEV.

FURNACE FOR DESULPHURIZING AND CHLORIDIZING ORES.

SPECIFICATION forming part of Letters Patent No. 245,991, dated August 23, 1881.

Application filed November 8, 1880. (No model.)

To all whom it may concern:

Be it known that we, THOMAS J. BELL and NATHANIEL A. GRIFFITH, of Grantville, county of Nye, and State of Nevada, have invented
5 a Desulphurizing and Chloridizing Furnace and Pulp-Vat; and we hereby declare the following to be a full, clear, and exact description thereof.

Our invention relates to a furnace for desulphurizing and chloridizing ores; and in connection therewith it further relates to a peculiarly-constructed pulp-vat.

The object of our invention is to provide a furnace in which the ore will be gradually
15 roasted, being made to travel toward the heat.

Referring to the accompanying drawings, Figure 1 shows a sectional view of our device. Fig. 2 shows end view of side. Figs. 3 and 4 show details of construction.

20 Masonry will cover the whole furnace.

A is the upper furnace, cylindrical in shape, and provided with apertures in its bottom Z and Y at each end, through which project the rollers B. Within the furnace A are the longitudinal ribs D, terminating at their ends in
25 broad rings or bands T, which rest upon the rollers B, and revolve thereon within the furnace A by means of the pulley X, as shown, said pulley being connected with any driving-
30 power. The opening C near the smoke-stack receives the ore. The furnace A is inclined downwardly toward the rear. The arms or longitudinal ribs D are made with flanges *d*, to better stir and pick up the ores.

35 E is a chute at the rear bottom part of the furnace A.

F is the lower furnace, cylindrical in shape, having an opening, as shown, communicating with the chute E above. At its front end
40 are journaled the rollers G, and others may be placed at the rear end. Upon these rollers, and within the furnace F, revolve by means of the pulley W the hollow longitudinal ribs I, said ribs terminating at their rear ends in a
45 water-tight cylinder, H, and at their forward ends in the water-tight cylinder J, the spaces within said ribs and cylinders being in open relation with each other, as now explained. The cylinder J is properly a band or ring,
50 through the center of which the fire is admitted. The cylinder H is divided into two parts

or longitudinal sections, *h* and *h'*—the outer and inner parts, respectively. Half of the hollow ribs I open into the inner division, *h'*, and half into the outer division, *h*. All the ribs
55 open into the cylinder J. An induction-pipe, K, opens into the inner division, *h'*, of the cylinder H, and an exit-pipe, L, proceeds from the outer division, *h*, and around the entrance-pipe, being separated therefrom by water-tight
60 packing. This exit-pipe opens into a pipe, E', through an appropriate water-tight boxing, F'. The pipe E' is carried outside of the lower furnace, and finally within, where it opens into
65 the pulp-vat M. Cold water is intended to be forced through these hollow arms and pipes. The course of the water will be as follows: It enters the pipe K, which, being higher than the exit, will permit its flow. It proceeds through
70 the packed joint into the inner division, *h'*, of the cylinder H, and through two of the ribs I to the forward cylinder, J, from whence it flows back through the exit-pipe L into the pulp-vat M. The purpose of this water is to keep
75 the arms or ribs from warping, and at the same time it furnishes hot water for the pulp in the vat M.

N represents the fire-box in front of the forward open end of the lower furnace, F, the fire from which box N is directed within said furnace. The furnace F is slightly inclined forward toward the fire-box N, being in a direction opposite to the inclination of upper furnace, A. The ribs I are flanged similarly to the ribs D in the upper furnace, and for a like
85 purpose.

In the vat M are the revolving horizontal arms P, operated by the mechanism of pulleys shown. A discharge-pipe, R, carries the pulp
90 to the charge-pans.

The operation of the furnace will be as follows: The ore is fed to the upper furnace, A, through the opening C. As the ribs D revolve their flanges *d* stir it and take it up and drop it, and on account of the incline of the furnace
95 gradually works its way toward the rear end, where it drops through the chute E into the rear end of the furnace F. It is there caught by the revolving arms or ribs I and stirred, being all the time carried forward, because of
100 the stirring and the inclination of the furnace F. The fire from the fire-box N is directed into

the forward end of the furnace F and acts upon the pulp therein, the heat proceeding to its rear end and up through the chute E to the upper furnace, A, and forward out through the smoke-stack in a direction opposite to the progress of the pulp. In this way the ore in the upper furnace is gradually and slowly roasted, being subjected to greater heat as it approaches the fire. At the proper time and in the usual manner the chlorine will take effect to the best advantage upon the highly-heated ore.

O is an opening in the forward end of the lower furnace, F, through which the pulp drops into the vat M, in which it is stirred by the arms P and kept in constant agitation to prevent sand from settling.

We disclaim any novelty in the process of slowly roasting ore by causing it to pass through successive cylinders toward the fire. We disclaim, further, any novelty in the inclination of said cylinders operating to this end; also in the use of stirrers.

What we do claim as new, and desire to secure by Letters Patent, is—

1. In a desulphurizing and chloridizing furnace, the oppositely-inclined cylinders A and F, in open relation with each other, provided

with revolving longitudinal flanged ribs D and I, the latter of which is made hollow to provide for the circulation of fluid thereto, in the manner and for the purpose set forth.

2. In a desulphurizing and chloridizing furnace having a cylinder, F, the hollow flanged longitudinal ribs or arms I, with the hollow end cylinders, J and H, the latter of said cylinders being divided into two divisions, h and h' , having communicating therewith the induction-pipe K and the eduction-pipe L, when arranged and used substantially as and for the purpose herein described.

3. In a desulphurizing and chloridizing furnace having the inclined furnace-cylinders A and F and a fire-box, N, the combination therein of said cylinders A and F, the hollow revolving ribs I, pipes K, L, and E', and the pulp-vat M, having horizontal stirrers P, substantially as and for the purpose herein described.

In witness whereof we have hereunto set our hands.

THOMAS J. BELL.

NATHANIEL A. GRIFFITH.

Witnesses:

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E. A. HARVEY.