

(No Model.)

I. B. HAMMOND.

FEEDING DEVICE FOR ORE ROASTING FURNACES.

No. 423,924.

Patented Mar. 25, 1890.

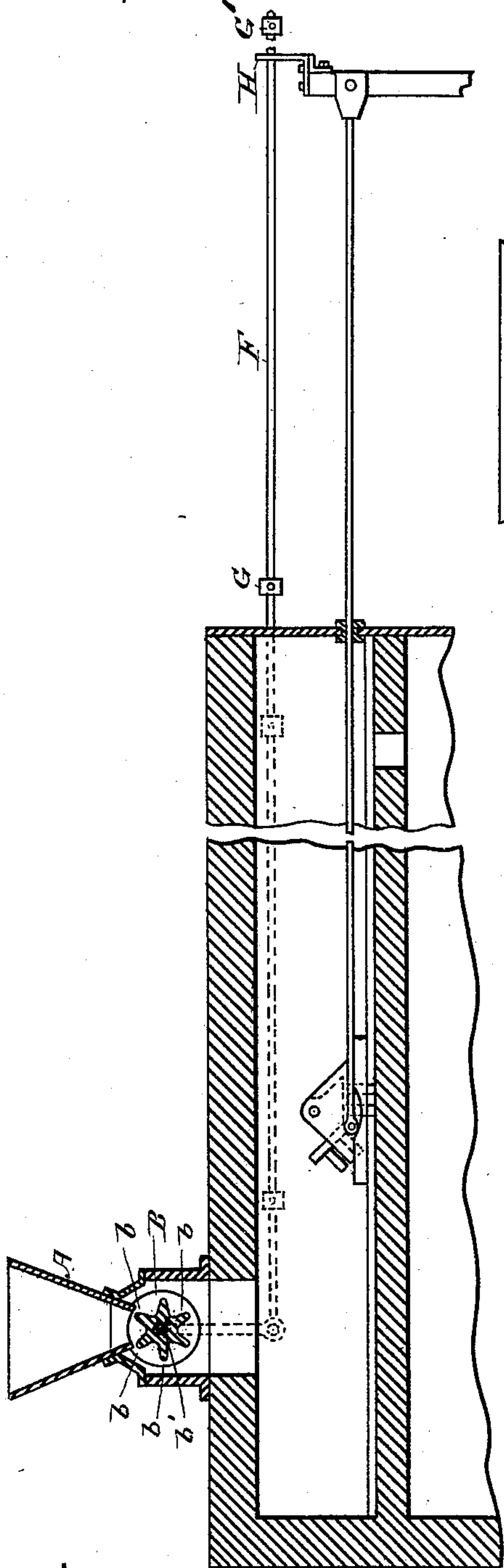


FIG. 1.

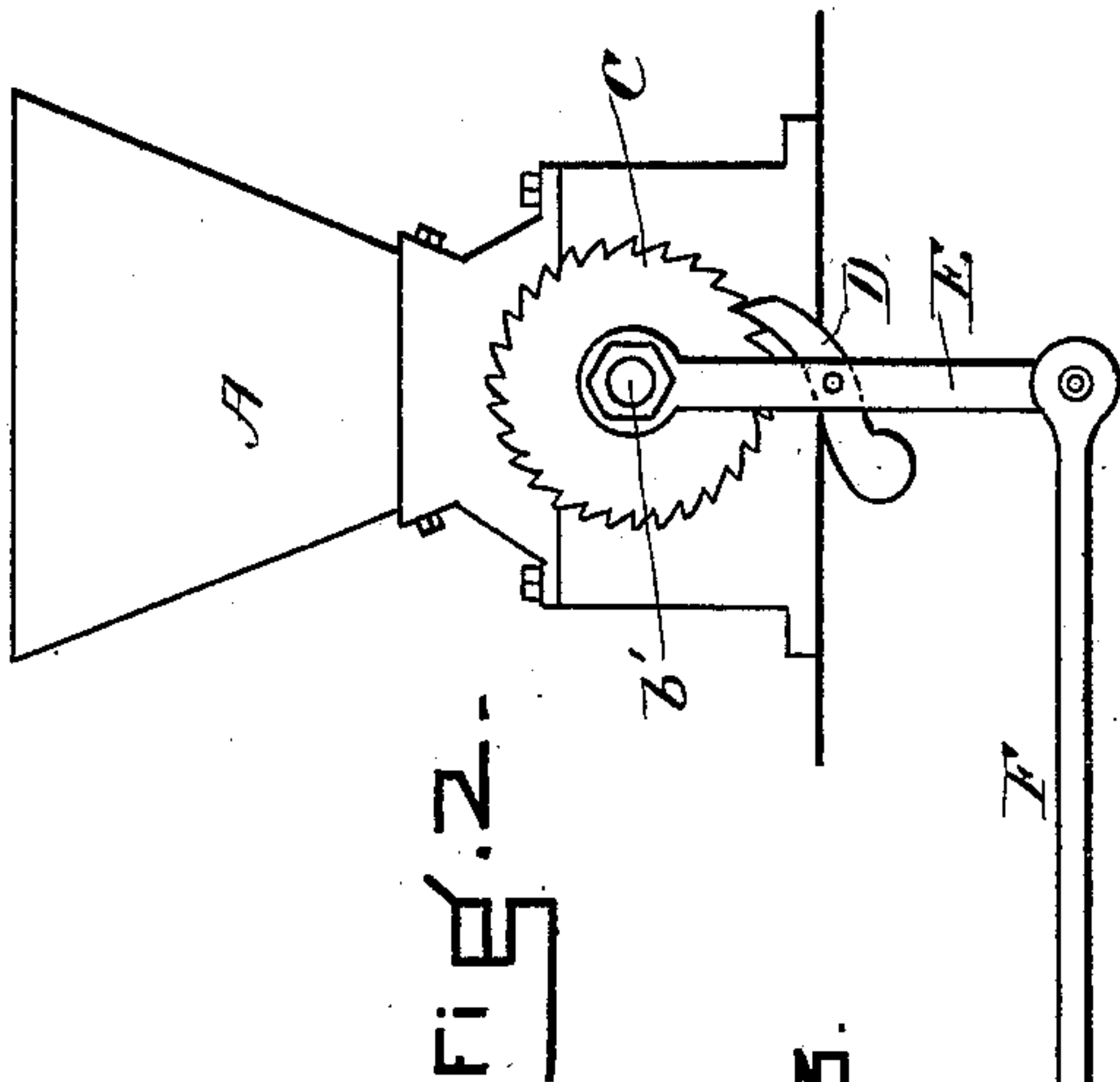


FIG. 2.

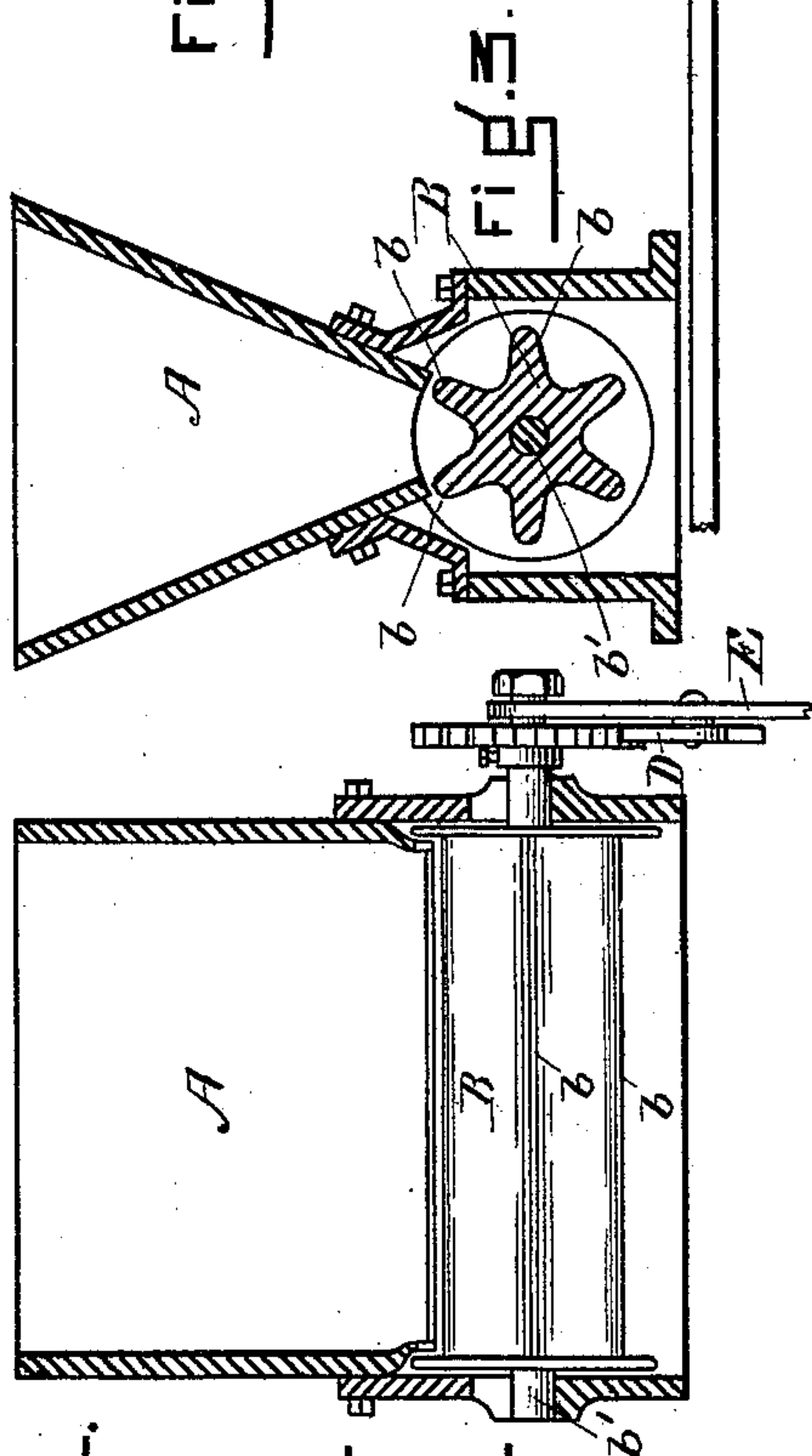


FIG. 3.

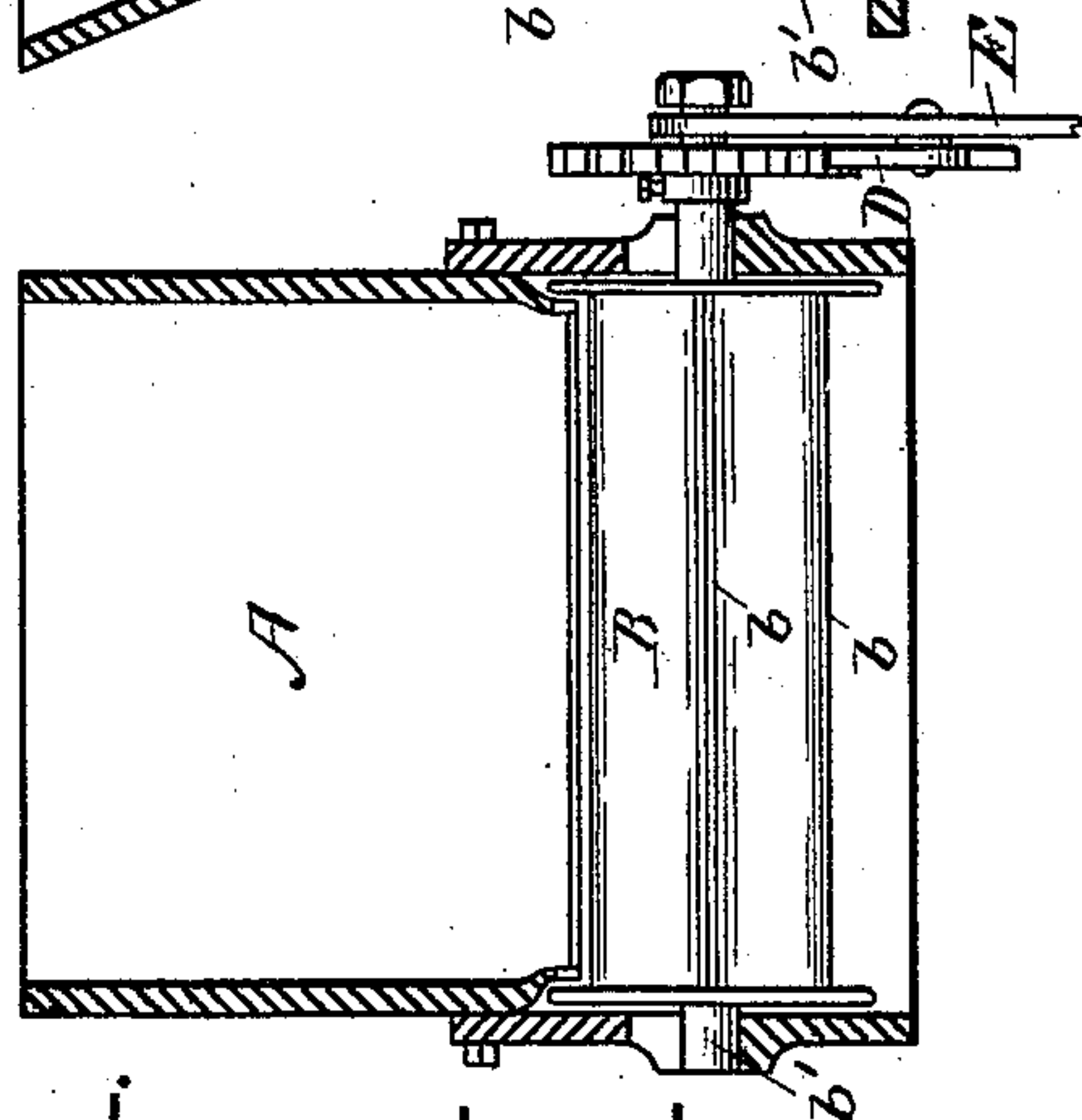


FIG. 4.

WITNESSES

Ellen B. Tomlinson.

John H. Taylor.

INVENTOR.

I. B. Hammond

by Alex. P. Browne,
attorney.

UNITED STATES PATENT OFFICE.

ISAAC B. HAMMOND, OF CHICAGO, ILLINOIS.

FEEDING DEVICE FOR ORE-ROASTING FURNACES.

SPECIFICATION forming part of Letters Patent No. 423,924, dated March 25, 1890.

Application filed November 1, 1889. Serial No. 328,884. (No model.)

To all whom it may concern:

Be it known that I, ISAAC B. HAMMOND, of Chicago, in the county of Cook and State of Illinois, a citizen of the United States, have
5 invented certain new and useful Improvements in Feeding Devices for Ore-Roasting Furnaces, of which the following is a specification.

My present invention relates to that class
10 of furnaces particularly adapted for desulphurizing and chloridizing pyrite ores, and particularly to the mechanism by which the pulverized ore is fed into the furnace for treatment therein.

15 The object of my invention is to improve the feeding devices heretofore employed for this purpose.

Furnaces of the above-described class are illustrated in United States Letters Patent
20 No. 248,521 to Peter Spence, and in English Letters Patent No. 64 of 1868 to the same inventor. In these furnaces the ore to be treated is fed upon the furnace-floor in regulated quantities, and is there spread and gradually
25 carried along by rakes to a point of discharge either to a second floor or outside.

My invention relates to the mechanism for feeding the ore in regulated quantities into the furnace. In these furnaces as now ordi-
30 narily constructed a tier of floors is commonly employed, the ore being fed onto the upper and thence distributed and discharged over and upon the others successively, as shown in the American patent above cited.

35 My improvement is applicable alike to a furnace having a plurality of floors or to a furnace having a single floor.

In the drawings, Figure 1 shows in vertical section a portion of a furnace to which a feed-
40 ing apparatus embodying my present invention is applied. Fig. 2 is an enlarged side elevation of the feeding device, and Figs. 3 and 4 are enlarged vertical sections thereof.

My improved feeding device comprises a
45 hopper A, having an opening at its lower part, as shown. Below this hopper and within a suitable casing I place a revoluble roller or cylinder B, having transverse flutes or ribs b, the distance between adjacent ribs corre-
50 sponding substantially with the width of the aperture in the base of the hopper. The ribs upon the cylinder are of a suitable height to

receive the desired amount of ore from the hopper, and then to allow each trough or space between adjacent ribs, after it has received
55 its load, to be rotated toward the lower part of the feeding mechanism which is in communication with the furnace-floor below. In this way by rotating the cylinder with a step-by-step motion at the required intervals the de-
60 sired amount of ore is fed at each of such intervals onto the floor of the furnace where it is to be treated.

To revolve the cylinder, I provide a ratchet-wheel C, connected with the axis or shaft b'
65 of the cylinder, and a pawl D, engaging with this ratchet. To operate this pawl, I provide a lever E, by which the pawl is carried. This lever may be conveniently operated at regular intervals to move the pawl through the
70 required distance by means of a connecting-rod F, attached to the end of the lever and provided with two studs or projections G G', extending within the path of some part, as H, of the raking mechanism having a to-and-fro
75 reciprocating motion required for the operation of raking, so that as the part H travels to and fro it alternately strikes the projections G and G', and thereby imparts to the rod F a reciprocating motion. With such a
80 construction (represented in Fig. 1) it is apparent that the outward motion of the raking apparatus, causing the part H to strike against the part G, will carry the pawl over the ratchet
85 into a position to engage therewith to rotate it. On the other hand, the inward motion of the raking mechanism will force the pawl and ratchet around, thus producing the desired feed of ore.

I have not illustrated the raking mechanism in detail, because it does not form a part of my invention and is only connected with it incidentally. I have illustrated the rake and the rod connected therewith. The mechanism for operating the rake may be the same
95 as that shown in Patent No. 404,000 of May 28, 1889, or any other ordinary or suitable mechanism.

I claim—

1. As an appliance for an ore-furnace of the
100 character described, an ore-feeder consisting of a hopper to contain the ore to be roasted, a revoluble fluted cylinder located at the bottom of the hopper and above the furnace-floor

and adapted to discharge thereon regulated amounts of ore at regulated intervals, and pawl-and-ratchet mechanism for revolving the cylinder at regulated intervals to a regulated
5 extent, in combination with a reciprocating rake and a connection between said reciprocating rake and the pawl of the pawl-and-ratchet mechanism, whereby the cylinder is caused to revolve in the manner described,
10 substantially as set forth.

2. In an ore-furnace of the character described, the combination, with the reciprocating rake, of a feeding device consisting of a hopper A, revoluble fluted cylinder B, pawl-

and-ratchet device for revolving said cylinder, a lever E, for operating the pawl, a connecting-rod F, attached to the lever and provided with projections G G', and a projection H from the reciprocating rake and moving therewith and arranged to strike the projections G G', substantially as set forth. 15 20

In testimony whereof I have hereunto subscribed my name this 28th day of October, A. D. 1889.

ISAAC B. HAMMOND.

Witnesses:

ELLEN B. TOMLINSON,
JOHN H. TAYLOR.