

JENKINS & WEISSENBORN.

Roasting Ores.

No. 36,954.

Patented Nov. 18, 1862.

Fig 1,

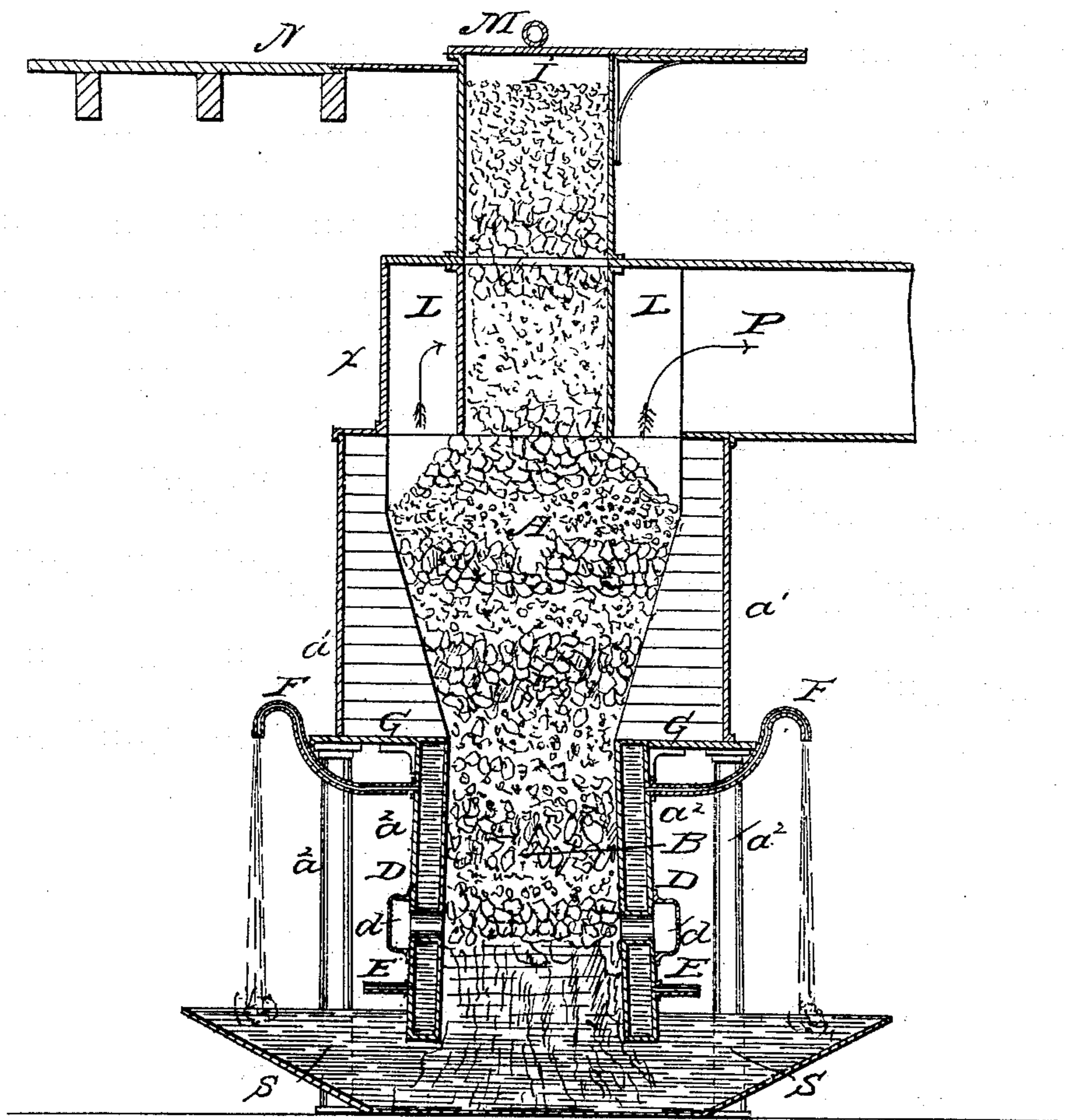
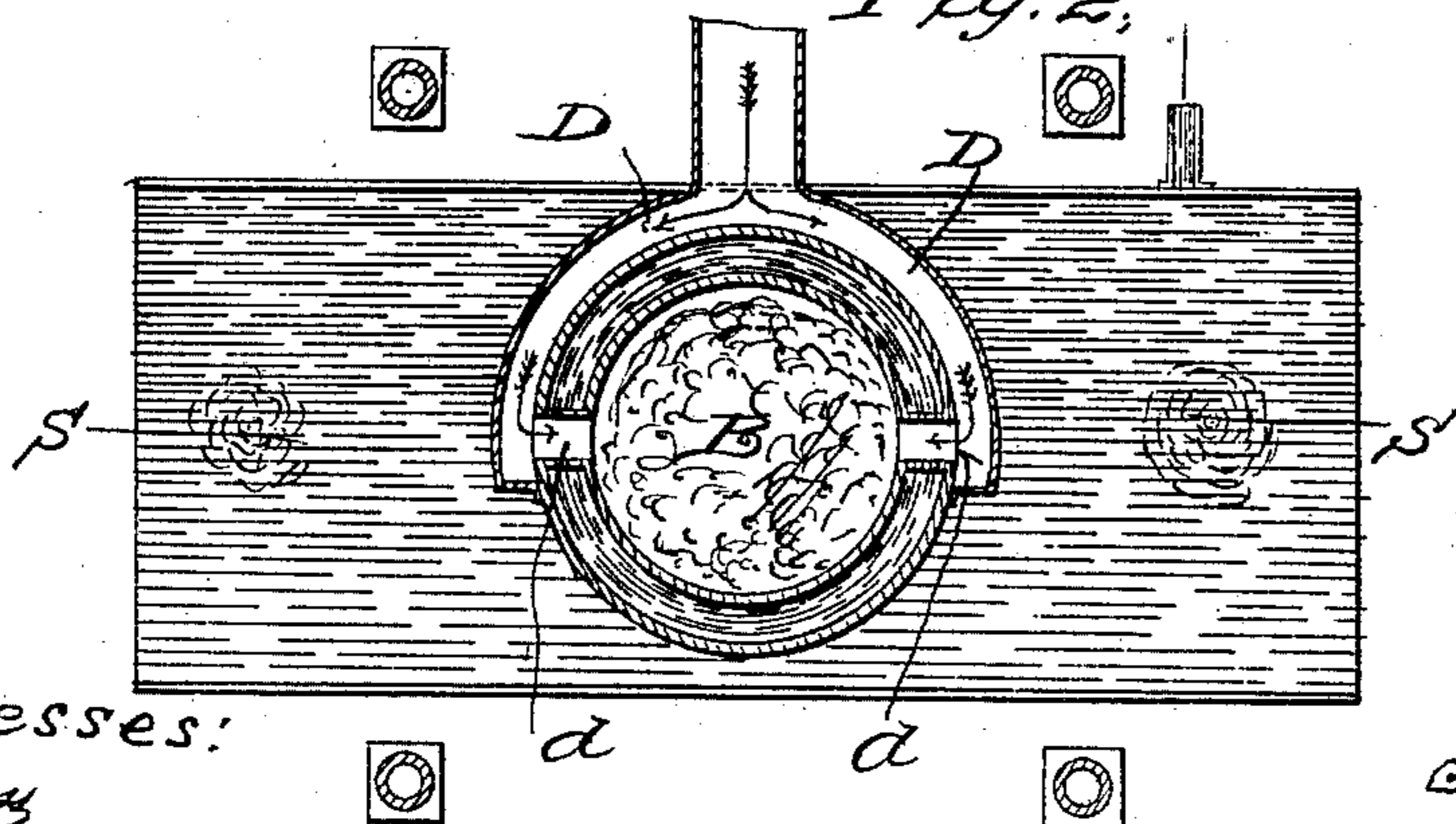


Fig. 2,



Witnesses:

Chas. H. Ross
J. M. Walker

Inventors:

James Jenkins
Henry Weissenborn

UNITED STATES PATENT OFFICE.

JAMES JENKINS, OF ELIZABETH, AND HENRY WEISSENBORN, OF NEWARK,
NEW JERSEY.

IMPROVED FURNACE FOR ROASTING ORES AND FOR OTHER PURPOSES.

Specification forming part of Letters Patent No. 36,954, dated November 18, 1862.

To all whom it may concern.

Be it known that we, JAMES JENKINS, of the city of Elizabeth, in the county of Union and State of New Jersey, and HENRY WEISSENBORN, of the city of Newark, in the county of Essex and State of New Jersey, have invented a new and useful furnace for the roasting of ores for the reworking of residuum from lime and other furnaces and for generating combustible gases; and we do hereby declare that the following is a full and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a vertical section through the center of the furnace, and Fig. 2 is a horizontal section of the conical cylinder B through the line of the tuyeres *d d* and of the blast-conduit D D.

To enable others to make use of our invention, we fully describe the construction and operation of the same.

Figure 1 illustrates the vertical section through the center of the furnace, of which B is the furnace-tank, made of boiler-iron, cylindrical and conical, wider on the bottom. *a' a'* is the inner and *a² a²* is the outer casing of the same.

E E are two supply water-pipes near the bottom, and F F are two overflow or discharge pipes near the top of the tank.

D D is the blast-conduit partly surrounding the outer casing, *a² a²*.

d d are the tuyeres leading into the furnace.

The tank B is secured with wrought-iron knees or elbows to the cast-iron plate G, forming the bottom plate of that part of the furnace marked A. This part of the furnace is surrounded with a cast or wrought iron casing, *a'*, and rests with the bottom plate, G, on four columns, two of which are shown marked *a² a²*. The iron casing *a'* of that part of the furnace marked A is lined with fire-brick, forming the interior of this part of the furnace. The upper parts of the furnace consist of the feeder *l* and the surrounding gas-chamber L L. The feeder is made of wrought or cast iron in two parts, and bolted by the flanges to the upper part of the gas-chamber. M is the cover to the feeder. N is the platform. P is the outlet through which the products of combustion

are conducted, and *x* is an opening through which the gas-chamber can be cleaned. The lower part of the furnace, Fig. 1, (marked S S,) is a water tank or receiver made of wrought or cast iron, and which, when the furnace is in operation, has a constant supply of water, and acts as the base to support the stock with which the furnace is charged.

The object of this invention is to provide a furnace (in which ore can be roasted, the residuum from zinc and other furnaces reworked, and combustible gases for use in heating, puddling, welding, or other furnaces can be generated) which will be free from all practical difficulties in working. This is accomplished, first, by the tank S S, which, when the furnace is in operation, being filled with water, furnishes an air-tight bottom to the furnace, and, being the support for the stock with which the furnace is charged, can be readily worked, and the exhausted portions as they settle down by the working readily removed without interruption to the blast or the working of the furnace; second, the furnace-tank B, by receiving a constant supply of water, is kept cool, thus preventing the melting or burning stock from adhering to it, and by being wider on the bottom furnishes means for the stock to settle freely and uniformly; third, the space between the bottom of the furnace-tank B and the bottom of the water-tank S S is the point at which the workman attends to the working of the furnace, he partly removing from time to time (being governed in his operations by the appearance of the tuyeres) the exhausted stock at the base, thus allowing that in the furnace to settle down and insuring a regular and uniform working of the furnace.

The furnace, if operated for the production of combustible gases, must be filled with any combustible material, and if for the roasting of ores or the reworking of residuum, it must be charged alternately with the stock to be worked and the combustible material. In these respects the mode of working, or rather charging, the present form of cupola-furnaces does not differ from that necessary for this.

The ease, certainty, and regularity with which this furnace can be worked will enable it to be used for generating gas with which puddling and welding furnaces may be heated, thus

avoiding the many impurities (which as the heat is now obtained) unavoidably combining with the iron. The gas so generated will be conducted by the outlet-pipe P to the desired place; also, if used for working ores or residuums, the products of the combustion will be conducted by the outlet-pipe P to a suitable condensing apparatus.

The peculiar construction of this furnace admits of its being worked to any desired degree of heat, and is adapted to the uses designated, as well as for others, and by being under such perfect control produces results which neither a grated or a close bottom furnace is capable.

We do not claim the generating of and use of gas so generated for the purposes herein alluded to, as it has been previously known and used; nor do we claim as new the details

of this furnace shown at L L, the gas-chamber F, the outlet-pipe, and l the feeder, as the construction of these is covered by a patent issued to one of your petitioners, to wit: HENRY WEISSENBORN; nor do we claim the arrangement of the blast-conduit and tuyeres, as these are of the usual and well-known form; but

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

A furnace constructed substantially as herein specified, for the purposes herein named, or for any other where from its properties it may be used.

JAMES JENKINS.

HENRY WEISSENBORN.

Witnesses:

JONAS E. MARSH,

THOMAS O. SAYRE.