

(No Model.)

2 Sheets—Sheet 1.

J. P. WITHEROW.

CONVERTER.

No. 327,422.

Patented Sept. 29, 1885.

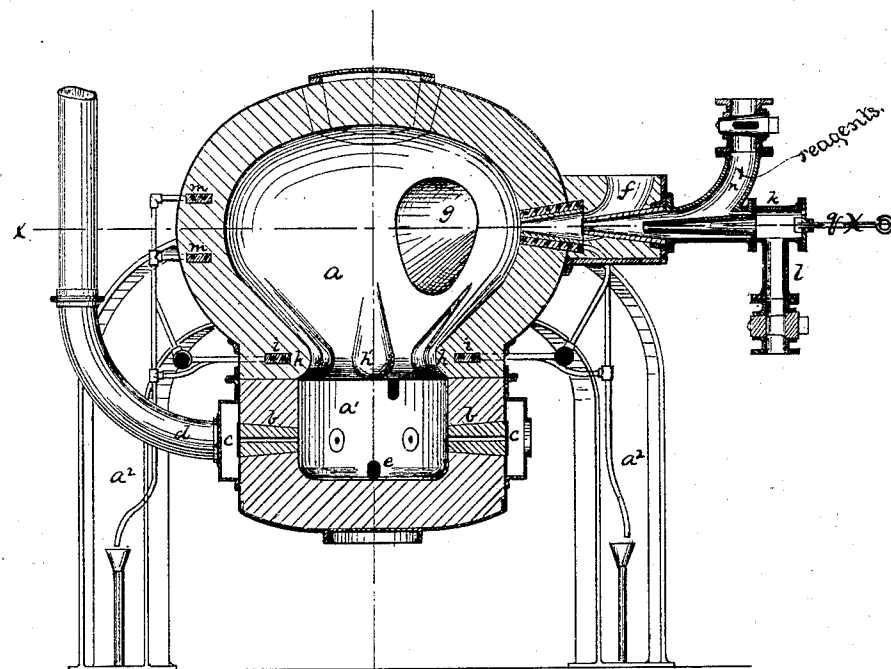


Fig. 1.

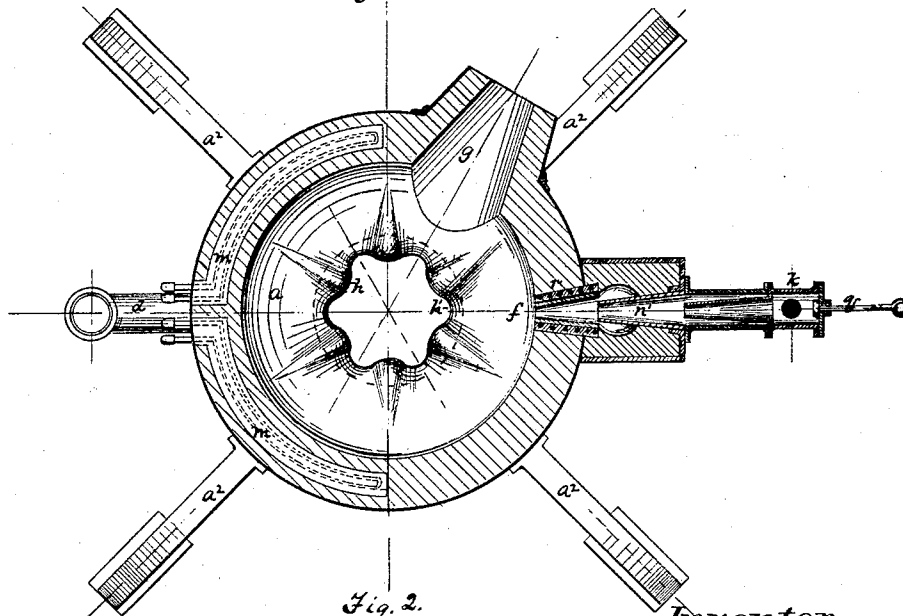


Fig. 2.

Witnesses

Harry L. Gill
W. A. Corwin

Inventor.

James P. Witherow
by his attys
Bakewell Kerr

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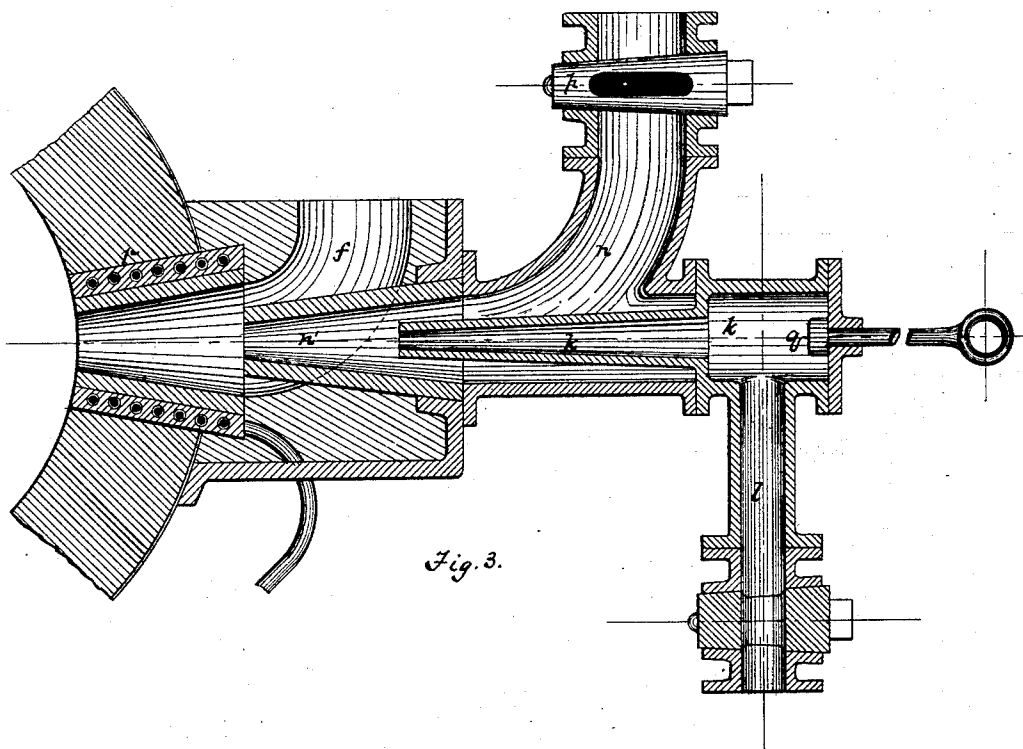


Fig. 3.

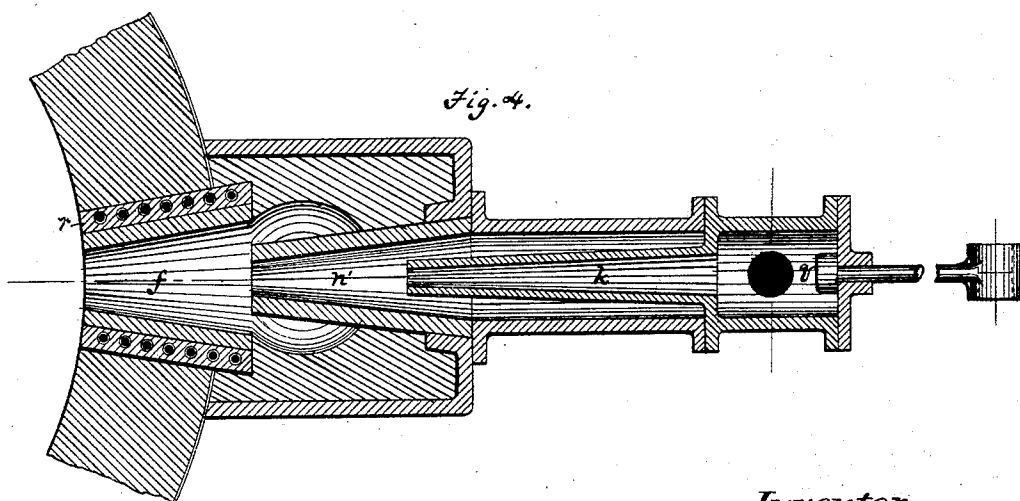


Fig. 4.

Witnesses.

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UNITED STATES PATENT OFFICE.

JAMES P. WITHEROW, OF ALLEGHENY CITY, PENNSYLVANIA.

CONVERTER.

SPECIFICATION forming part of Letters Patent No. 327,422, dated September 29, 1885.

Application filed July 3, 1885. (No model.)

To all whom it may concern:

Be it known that I, JAMES P. WITHEROW, of Allegheny City, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Converters; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates more particularly to the more perfect application of a process of oxidizing a portion of the metal during the earlier stages of the operation of the converter, described in an application of even date herewith, including, however, other features of construction.

To enable others skilled in the art to make and use my invention, I will now describe it by reference to the accompanying two sheets of drawings, in which—

Figure 1 is a vertical section of my improved converter. Fig. 2 is a horizontal section on the line xx of Fig. 1. Figs. 3 and 4 are enlarged vertical and horizontal sections of the charging-hole.

Like letters of reference indicate like parts in each.

The converter is made in upper and lower sections, a and a' , the upper one, a , being supported on posts a^2 , and having a mouth, g , and charging-spout f , and the lower one, a' , being detachable and having tuyeres b , bustle-pipe c , blast-pipe d , and slagging-hole e . The lower end of the section is contracted by means of an internal ridge or bulge, h , which is preferably provided with a water plate or coil, i , to protect it from the wasting action of the molten metal. The ridge h may also be provided with vertical grooves h' , arranged directly over the tuyeres, so that the molten metal flowing down over it will be divided into streams, or directed to fall mainly in front of the tuyeres, and thereby be more thoroughly and perfectly exposed to the action of the currents of air from the tuyeres. The contraction of the interior of the vessel by the inwardly-projecting ridge h causes the blast to be concentrated, and hence act more directly on the charge when it is boiling up in the converter, and when it breaks in the upper chamber, a , and falls back it flows down the inclined sides to and over the ridge h , whereby the charge is more thoroughly agitated and washed by the oxide. The ridge h

is of advantage when the metal is charged into the converter. When this is done the blast is first turned on, and then the metal is run into the converter. As it is poured in it falls over the ridge h and descends with a clear fall to the bottom. During its fall the blast impinges on its sides and produces a rapid oxidation, so that when the charge has risen to the tuyere-level a quantity of oxide of iron has been formed to answer as a base for union with the free silicic acid, which then begins to be eliminated rapidly.

The charging-spout f is provided with a tuyere, k , connected by a pipe, l , with bustle-pipe c , by which a blast of air can be blown into or through the spout for the purpose of dispersing and oxidizing the metal as it enters, and the opposite side of the converter is provided with water-plates or water-coils m , to protect the lining from being wasted by the spattering of the metal.

Running into the charging-spout f is a pipe, n , having a nozzle, n' , concentric with the tuyere k , and a plug, p , or other valve for supplying reagents or other additions to the converter, if desired.

The pipe n may be connected with a suitable agent chamber or receptacle containing the additions.

The tuyere k may be provided with a plug, stopper, or valve, q , if desired, and the charging-hole with a water-cooled jacket, r .

I do not herein claim, broadly, a converter having a charging-hole provided with a tuyere for blowing a jet of air into or through the same, nor having water-coils arranged in the lining at or near the bottom of the upper section, because such features are claimed in my application, Serial No. 170,566, filed herewith.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A converter composed of an upper and a lower section, the lower section constituting the crucible for containing the metal, and the upper section having a contraction or neck in its lower end and a charging-hole above the neck, substantially as described.

2. A converter having a contraction or neck between the charging-hole and the part which contains the charge, and grooves in the same, arranged directly over the tuyeres, substantially as and for the purposes described.

3. A converter having a charging spout or hole, with a tuyere provided with concentric nozzles having separate connections blowing into or through said charging-hole, substantially as and for the purposes described.

5 4. A converter having a charging spout or opening provided with a tuyere for blowing a jet of air into or through said charging-spout, and water-coils arranged in the side opposite

thereto, substantially as and for the purposes so described.

In testimony whereof I have hereunto set my hand this 29th day of June, A. D. 1885.

JAMES P. WITHEROW.

Witnesses:

W. B. CORWIN,
THOMAS B. KERR.