

(No Model.)

J. P. WITHEROW.

CONVERTER.

No. 327,423.

Patented Sept. 29, 1885.

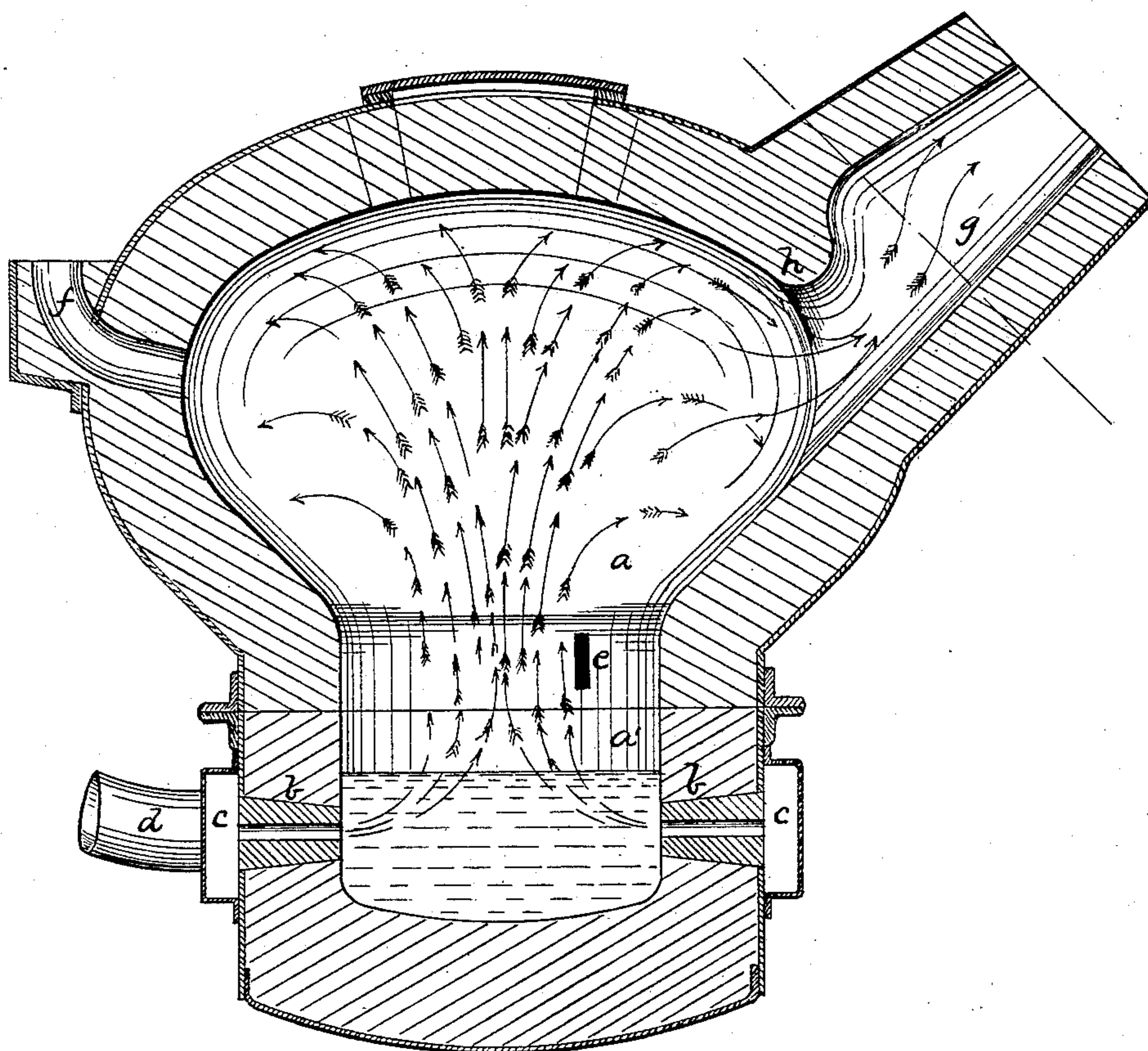


Fig. 1.

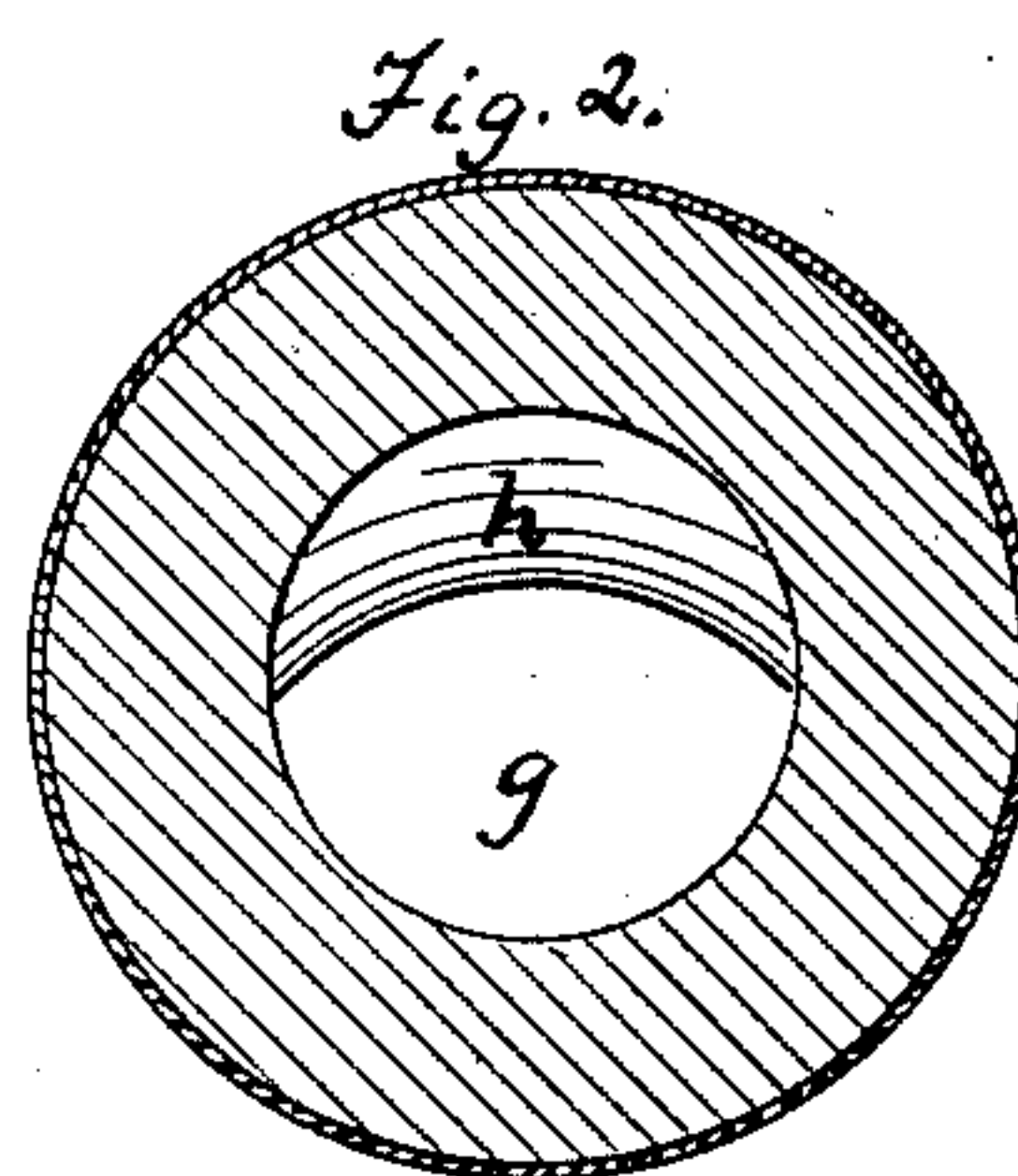


Fig. 2.

Witnesses.

N. L. Gill  
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# UNITED STATES PATENT OFFICE.

JAMES P. WITHEROW, OF ALLEGHENY CITY, PENNSYLVANIA.

## CONVERTER.

SPECIFICATION forming part of Letters Patent No. 327,423, 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  
5 new and useful Improvement in Converters; and I do hereby declare the following to be a full, clear, and exact description thereof.

My improvement in converters is designed to effect the more thorough treatment of the  
10 charge by bringing the body of the metal into closer proximity to the tuyeres, and all parts of it more intimately into contact with the slag, so that the impurities will be more perfectly removed.

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

Figure 1 is a vertical section of my converter, and Fig. 2 is a section on the line  $x x$  of Fig. 1.

The converter has an upper section,  $a$ , and a lower detachable section,  $a'$ . The former is provided with slagging-hole  $e$ , charging-hole  
25  $f$ , and mouth  $g$ , and the latter with the side tuyeres,  $b$ , bustle-pipe  $c$ , and blast-pipe  $d$ . The section  $a'$  is comparatively much narrower than the section  $a$ , and the whole charge which is contained therein is brought into  
30 closer proximity to the tuyeres thereby. The upper section,  $a$ , swells out or is greatly enlarged in diameter above its lower end, so as to form a globular or dome-shaped chamber, having sides merging into the same, with the  
35 mouth  $g$  leading out of the side. The blast acting on the charge, when confined within the comparatively narrow limits of the part  $a'$ , causes the charge to be forced upward into the chamber  $a$ , in which it expands or swells.  
40 The heavier portions of the charge thus raised flow back down the inclined or merging sides into the lower part,  $a'$ , when they again meet the direct pressure or force of the blast and are again thrown upward, while the lighter  
45 parts pass on upward to the mouth  $g$ . The upward ebullition of the charge is thus aided by the form of the vessel, and the bath is thoroughly washed by the slag. In order to prevent too much waste at the mouth of the

vessel, I have provided the same with a bridge, 50 arch, or projection,  $h$ , which serves to intercept and cast back into the vessel solid particles that may be driven toward the mouth by the blast.

My invention is particularly adapted to use 55 where a basic slag is provided for the removal of the metalloids contained in the charge, because every part of the same is brought most intimately into contact with the slag.

I am aware that converters have been devised having a belly or enlargement above the tuyere-level for containing the charge when the converter was tipped to turn the  
60 tuyeres up out of the metal; but such converters did not have narrow lower sections for holding the charge, which were removable from a sustained upper part which contained the enlargement, while in my improved converter the entire enlargement is 70 contained in a supported upper section, and the lower part, which holds the charge, is removable therefrom, and is relatively so narrow that the entire charge is brought into close propinquity to the side tuyeres, which 75 is also a feature not found in such former converters.

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

1. A converter having a removable narrow 80 lower section containing the tuyeres, in combination with an enlarged upper section the inclined sides of which merge down into those of the narrow lower section, substantially as and for the purposes described.

2. A converter having a removable bottom 85 and an enlarged dome shaped upper section, provided with charging and slagging holes and a bridge or arch spanning the mouth, substantially as and for the purposes de- 90 scribed.

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.