2 Sheets—Sheet 1.

W. H. HAWS.

BESSEMER CONVERTER-BOTTOMS.

No. 193,949. Patented Aug. 7, 1877.

Fig. 1.

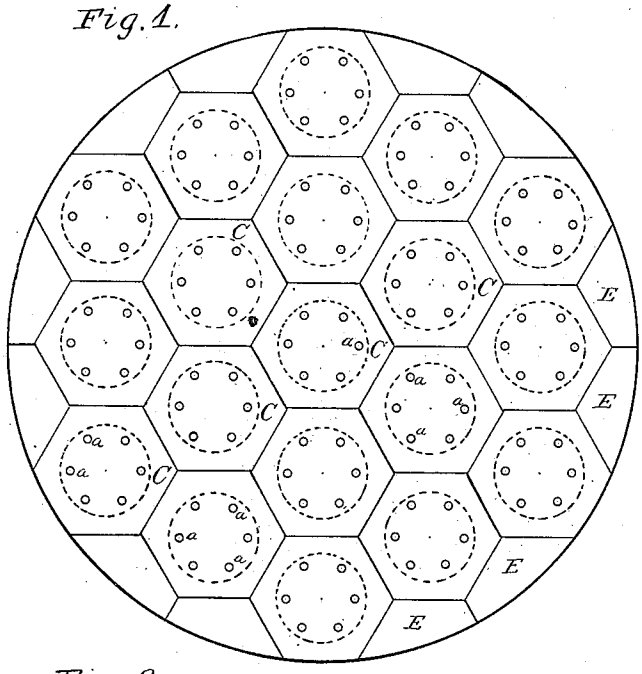


Fig. 2.

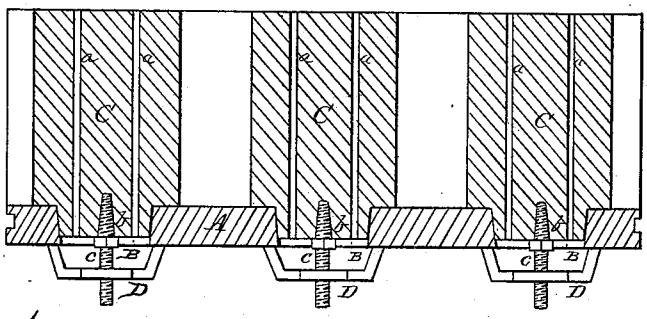


Fig. 4.

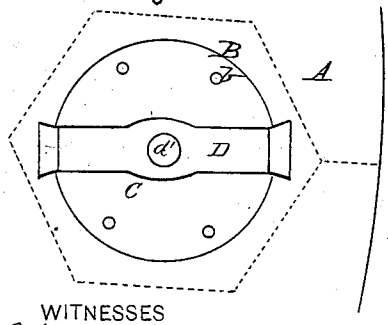
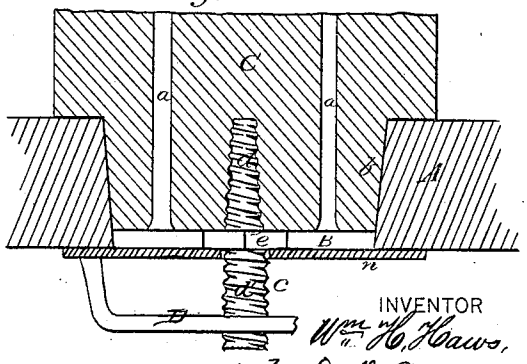


Fig. 3.



WITNESSES

Villette Anderson

W. E. Clasi

INVENTOR

Wm. H. Haws,

by E. W. Anderson,

ATTORNEY

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

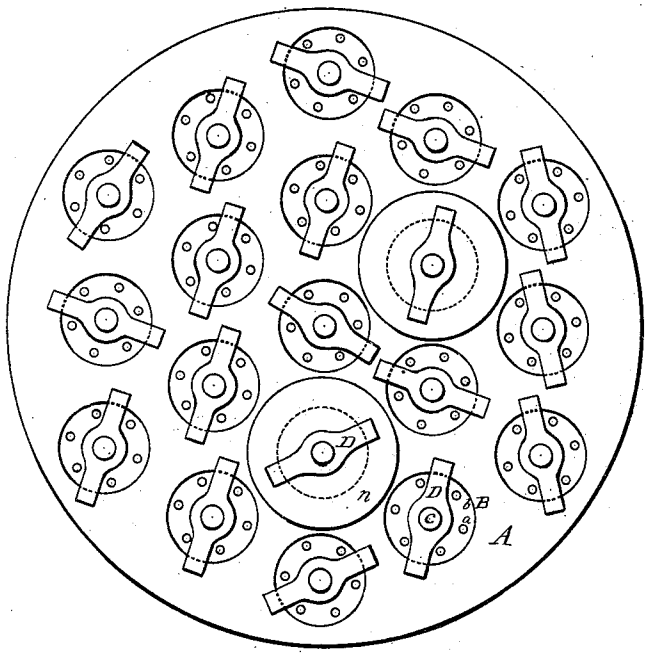
2 Sheets—Sheet 2.

W. H. HAWS.

BESSEMER CONVERTER-BOTTOMS.

No. 193,949. Patented Aug. 7, 1877

Fig. 5.



WITNESSES

Villette Anderson

Walter C. Masi

INVENTOR

Wm. H. Haws.

by E. W. Anderson.

ATTORNEY

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM H. HAWS, OF JOHNSTOWN, PENNSYLVANIA.

IMPROVEMENT IN BESSEMER-CONVERTER BOTTOMS.

Specification forming part of Letters Patent No. 193,919, dated August 7, 1877; application filed July 28, 1876.

To all whom it may concern:

Be it known that I, WILLIAM H. HAWS, of Johnstown, in the county of Cambria and State of Pennsylvania, have invented a new and valuable Improvement in the Bottoms of Converters; and I do hereby declare that the following is a full, clear, and exact decerription of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a top view of my invention. Fig. 2 is a central vertical section of the same. Fig. 3 is an enlarged sectional view. Fig. 4 is a detail view of a portion of the bottom from the under side. Fig. 5 is a bottom view of the converter-bottom.

This invention has relation to means for facilitating the handling and repairing of the bottoms of steel-converters, and for securing in such bottoms a more general and uniform distribution of the blast; and it consists in the construction and novel arrangement of the prismatic perforated brick tuyeres having shouldered necks to be inserted into suitable holes in the bottom plate, the double screws, and bridge-burrs, and the combination of these parts in a converter-bottom, as hereinafter shown and described.

In the accompanying drawings, the letter A designates the bottom-plate of the converter. B represents the openings in said plate, into which the necks of the tuyere-bricks, when the latter are thus provided, are received. These openings are slightly tapered, as indicated in the drawings. C indicates the prismatic tuyere-bricks, made of fire-clay or other refractory material, which are supported on the bottom-plate B. These are molded, preferably, in the hexagonal form in cross-section; but any prismatic forms may be used, whereof the sides will fit each other to form a compact surface without leaving intermediate spaces. These vertical bricks thus form the bottom, and they are perforated, as indicated at *a*, in a circumferential or other convenient manner for the distribution of the blast to all parts of the bottom. In order that these bricks may be secured to the plate A, I prefer to make them with offset tapering-necks *b*, which are introduced into the openings B of the bottom-plate, and wedged therein when drawn up by the screw and burr. Into the neck *b* of each brick, or into its lower end, a screw, *c*, is secured by means of a tapering threaded end, *d*, between which and the threaded end *d'*, upon which the burr works, is a wrench-seat collar, *e*. The tapering form will take in the fire-brick when the screw is turned by means of its collar. When the bricks are in place on the bottom-plate the bridge-burrs D are turned on the screw ends *d'*, and by their pressure against the bottom plate, on its under side, serve to draw the bricks downward and secure them to the plate, the shoulders above said necks being brought down thereto. These burrs are preferably somewhat bowed in form and must be sufficiently long to span the openings B, so that their feet are in contact with the bottom plate.

E indicates an irregular prism, which, when the hexagonal form is used for the bricks C, is designed to fill the peripheral spaces of the edge of the circular bottom. Or the peripheral tuyere-bricks may be extended to the edge by being molded in proper form, care being taken to use as few forms as possible for the sake of economy in molding, and in the time required for the manipulation of the bricks in building or repairing these bottoms. The forms illustrated in the drawings require but two molds, one for the brick C, the other for the brick E. These bricks fit solidly together, without angular interspaces. The narrow chinks between the adjacent walls of the bricks should be packed with fire-sand or other fine refractory material.

The bottom thus constructed is placed in the converter for use, and through the many blast-holes of the bricks the blast is generally and uniformly distributed throughout the surface of the bottom. When burned out, the bottom can be rebuilt and replaced in a few minutes.

Should the blast be too great, or for any reason require to be less generally distributed, the openings B of the bottom-plate leading to several of the perforated bricks may be readily closed by means of stop plates or disks *n*, which may be centrally perforated and passed over

the ends of the fastening-screws, and secured by the bridge-burrs, as indicated in the drawings.

It is not essential that the necks of the bricks should be tapering or wedge-form. These may be made with straight walls, and other details of the construction of the bricks and fastenings may be varied in ways which will readily occur to those skilled in the art without departing from my invention. I do not therefore desire to be confined to the precise construction herein shown.

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

1. A perforated prismatic brick for converter-bottoms, having an axial opening in its end for the reception of a fastening-screw, substantially as specified.

2. The combination, with the bottom-plate of the prismatic perforated bricks fitted solidly together, the fastening-screws, and the bridge-burrs, substantially as specified.

3. The combination, with the bottom-plate, the bricks, and fastenings, of the stop-plates, for regulating the blast, substantially as specified.

4. A Bessemer converter-bottom, composed of sectional prismatic tuyere-bricks, having offset lugs for seating them in the openings of the base-plate, and set-screws and bridge-burrs for securing them thereto, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

WM. H. HAWS.

Witnesses:
WALTER C. MASI,
VILLETTE ANDERSON.