

A. J. HAWS & J. A. VAUGHAN.
Apparatus for Making Tuyeres for Bessemer
Converters.

No. 134,885.

Patented Jan. 14, 1873.

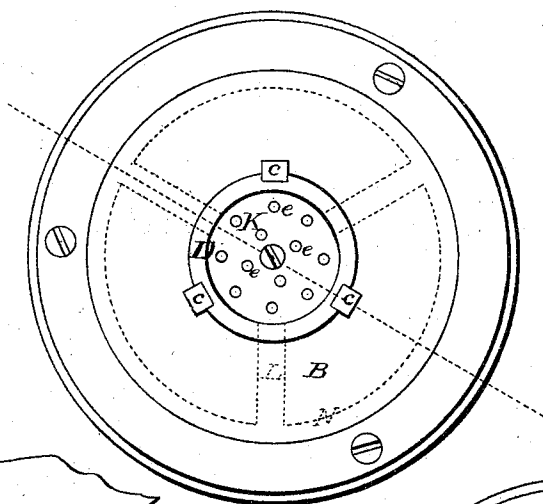


Fig. 1.

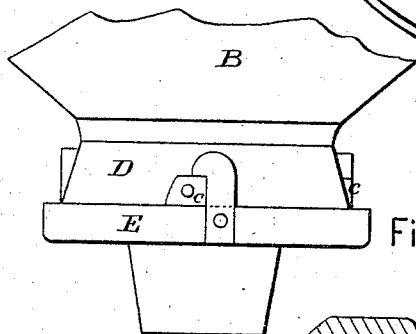


Fig. 3.

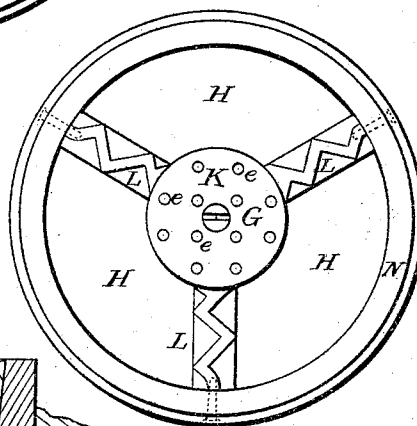


Fig. 2.

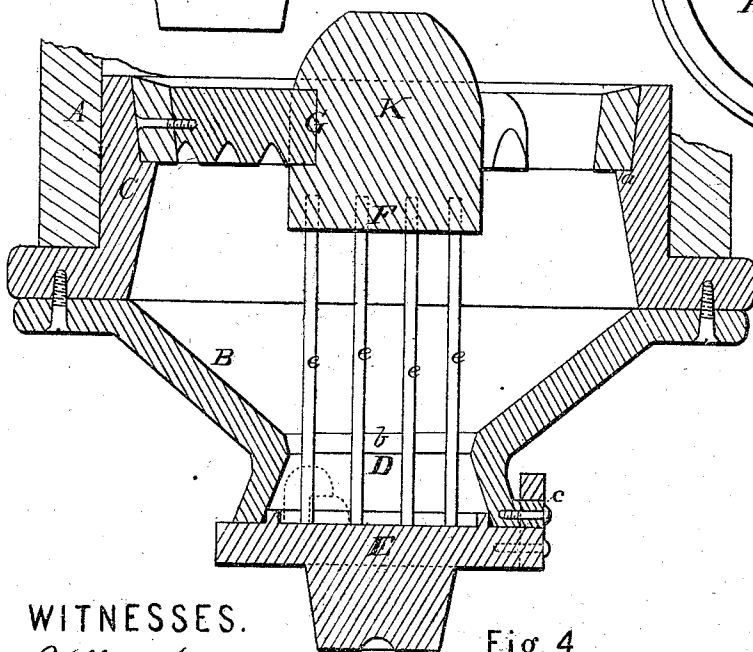


Fig. 4.

WITNESSES.

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ANDREW I. HAWS, OF JOHNSTOWN, PENNSYLVANIA, AND JAMES A. VAUGHAN, OF CUYAHOGA FALLS, OHIO; SAID VAUGHAN ASSIGNOR TO SAID HAWS.

IMPROVEMENT IN APPARATUS FOR MAKING TUYERES FOR BESSEMER CONVERTERS.

Specification forming part of Letters Patent No. 134,885, dated January 14, 1873.

To all whom it may concern:

Be it known that we, ANDREW I. HAWS, of Johnstown, in the county of Cambria and State of Pennsylvania, and JAMES A. VAUGHAN, of Cuyahoga Falls, in the county of Summit and State of Ohio, have invented a new and valuable Improvement in Clay Tongues for Tuyeres and Converters; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a top view of our improved former for clay tuyeres with cap removed. Fig. 2 is a detail of our perforating-frame. Fig. 3 is a detail of the forming-neck. Fig. 4 is a section of the tuyere-former.

This invention has relation to the manufacture of clay tuyeres for converters and other vessels of like character; and it consists in the construction and novel arrangement of the former, whereby the perforated tuyeres may be made of any desired length in a rapid and economical manner.

In the accompanying drawing, the letter A designates the clay cylinder, through which the clay is forced by a piston or other device. B designates the funnel of the former. This funnel forms the base of the cylinder A, to which it is secured by flanges and bolts, or other suitable means. Usually a vertical crown-flange, C, is formed upon the upper surface of this funnel, which is designed to be inserted within the lower end of the clay cylinder, and provided on its inner wall with a ledge, *a*, upon which is seated the ring of the perforator. Below the crown-flange C the funnel slopes conically to the forming-neck D, which expands somewhat in bell-form below the circular opening *b* at the junction of the forming-neck and funnel. On the exterior wall of this neck D are lugs *c* or other devices for attaching the check-plate E,

which is provided with hooks or other suitable fastening devices, whereby it may be attached to the neck D in such a manner as to be easily removed when necessary. The upper surface of the check-plate is made flush, or nearly so, with the lower edge of the forming-neck. Sometimes an annular bead is formed on this surface to fit within the mouth of the neck D. F indicates the perforator, which consists of a number of suitably-spaced rods, *e*, depending from a frame, G, seated above the funnel and provided with openings H for the passage of the clay from the cylinder.

The lower ends of the rods should be flush with the surface of the check-plate, or nearly so.

A frame may be constructed in many ways well known to those skilled in the art for the support of the rods *e*; but I usually employ the following method, which is simple and convenient: The rods *e* are secured into the base of a conoidal hub or block, K, which is connected by arms L with the ring N, which is designed to be seated upon the ledge *a* of the funnel. The upper surfaces of the ring and arms should be beveled to facilitate the passage of the clay, while the lower part of the arms may be corrugated to secure strength in small space.

The operation of the former is as follows: The clay, being pressed down through the cylinder into the funnel, passes into the bell-shaped forming-neck D, which is now closed at the bottom by the check-plate E. After this neck is filled with the clay the plate is removed and the pressure in the cylinder continued, when the clay tuyere will be forced through the forming-neck, and may be cut off at any length desired, the check-plate again applied, and a new one formed.

This operation may be repeated as long as the supply of clay in the cylinder is kept up, the tuyeres being forced in succession through the forming-neck.

It is evident that although the rods *e* are comparatively short the perforations made

by them will extend through the whole length of the tuyere, no matter how long it may be.

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

1. The perforating-rods *e* depending from an open frame above the forming-neck D, substantially as specified.

2. The tuyere-former, consisting of the basin or funnel, forming-neck, depending rods, and check-plate, substantially as specified.

In testimony that we claim the above we have hereunto subscribed our names in the presence of two witnesses.

ANDREW I. HAWS.
JAMES A. VAUGHAN.

Witnesses:

G. A. KNABLE,
W. M. BAKER.