

A. L. ROTHMAN.

Improvement in Bessemer Converter Bottoms.
No. 131,120. Patented Sep. 3, 1872.

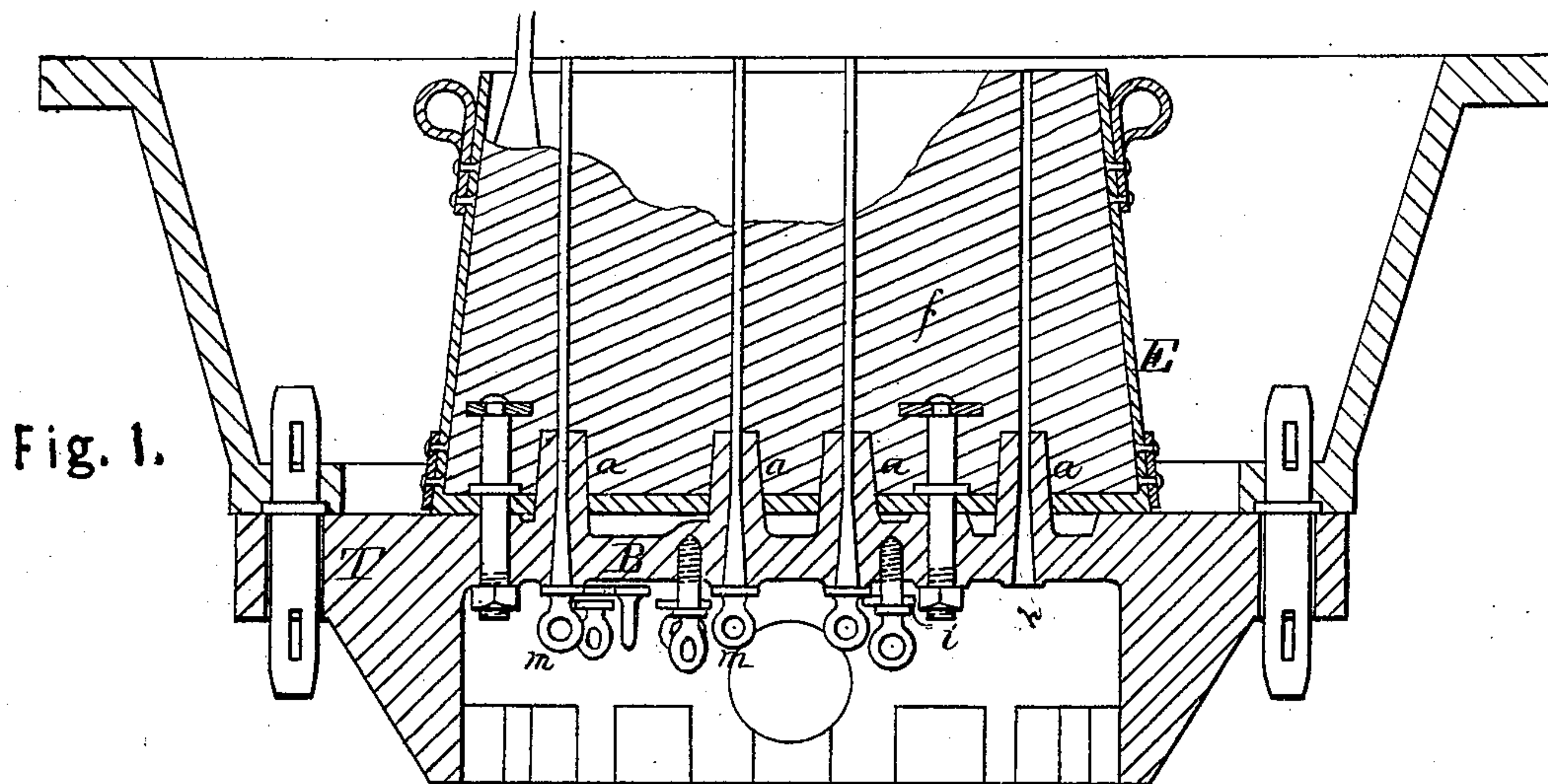
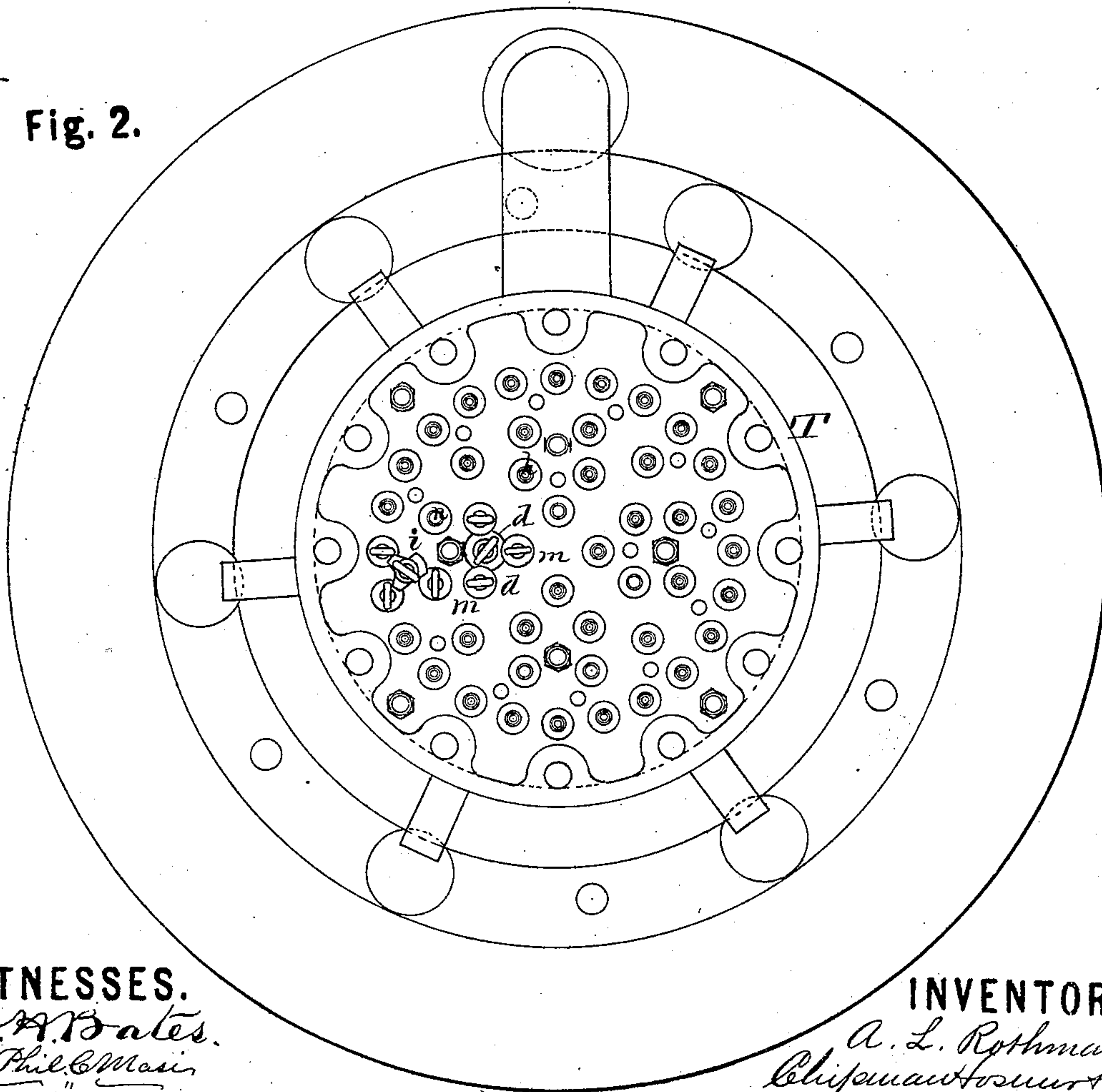


Fig. 2.



WITNESSES.
E. A. Bates.
Phil. C. Mason.

INVENTOR.
A. L. Rothman
Chipman & Son
Atty.

UNITED STATES PATENT OFFICE.

AXEL LENARD ROTHMAN, OF JOLIET, ILLINOIS.

IMPROVEMENT IN BESSEMER-CONVERTER BOTTOMS.

Specification forming part of Letters Patent No. 131,120, dated September 3, 1872.

To all whom it may concern:

Be it known that I, A. L. ROTHMAN, of Joliet, in the county of Will and State of Illinois, have invented a new and valuable Improvement in Apparatus for the Manufacture of Metals; and I 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 representation of a vertical transverse section of my invention. Fig. 2 is a plan view of my invention.

This invention has relation to the apparatus for the manufacture of "Bessemer" steel; and consists in the novel construction of the tuyere-boxes and the method of applying the refractory material thereto, substantially as hereinafter described.

Referring to the accompanying drawing, T designates an ordinary tuyere-box, or one constructed according to the so-called "Holley pattern." B represents the bottom of the tuyere-box. *a a* designate nipples cast with the bottom B and projecting upward—that is, toward the converter. Through the center of each nipple is drilled and reamed a hole, *h*. *m m* are mandrels fitted to the holes *h*. *i* is a thin washer having three notches. *d* is a lock-bolt tapped into the bottom of the tuyere-box. E designates a hollow truncated cone made of cast or wrought iron. *f* represents the refractory material rammed by hand or otherwise into the cone *e* and around the mandrels.

In preparing the tuyere for use the tuyere-box is placed in the position shown in the drawing, Fig. 1, with the nipples pointing upward. These nipples are long enough to enter the refractory material, and to thus prevent the blast from leaking. They also serve to steady the mandrels. The tuyere-box being in position, the washer *i* is turned so that

the notches will allow three mandrels to be inserted in the nipples. The washer is then turned around so as to catch on the collars of the three mandrels, whereupon the lock-bolt is turned, and three mandrels secured at a time. A sufficient number of washers and lock-bolts are provided, so that the entire number of mandrels may be secured in sets of three. The truncated cone is now put on the bottom of the tuyere-box, and layer after layer of refractory material rammed into it and around the mandrels. After this is done all the mandrels are withdrawn, when the tuyere-box, with what we may now call one single large tuyere, is put into an oven to bake. After being exposed to the heat for a sufficiently-long time, the tuyere-box with its rammed bottom is taken out to be glazed, after which it is again heated. When dry it is ready for use, and may be secured in the ordinary manner to the converter, which, in turn, is ready to receive the melted charge of pig-iron to be converted into Bessemer steel.

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

1. The improved tuyere-box for Bessemer-steel converters having the nippers *a*, substantially as specified.

2. The mandrels *m*, notched washers *i*, and lock-nuts *d*, in combination with the tuyere-box T, substantially as specified.

3. The tuyere, consisting of the box T with nipples *a* and the refractory packing or cone *f*, substantially as specified.

4. The process of arranging and securing the mandrels *m* and of forming the refractory cone *f*, substantially as specified.

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

AXEL LENARD ROTHMAN.

Witnesses:

A. L. HOLLEY,
WM. I. MANN.