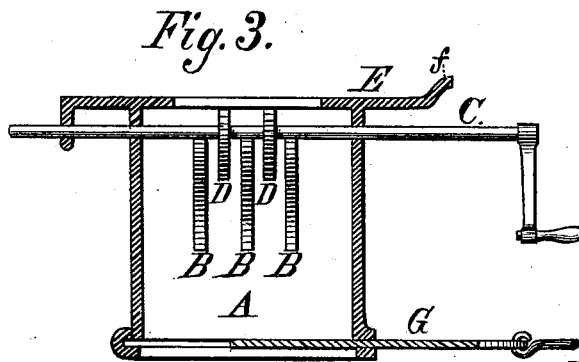
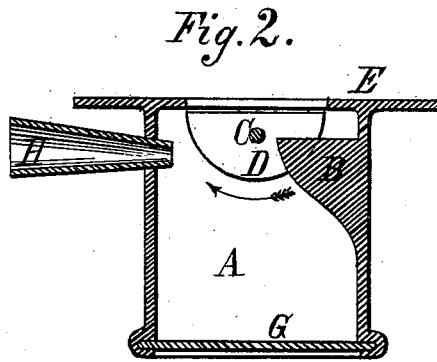
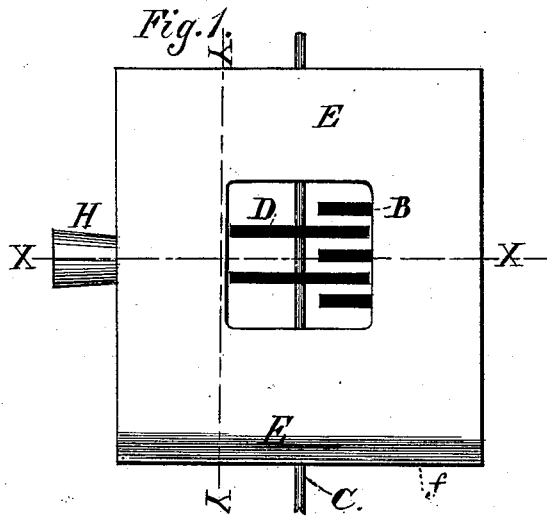


J. F. MAGUIRE.  
Tuyere.

No. 202,280.

Patented April 9, 1878.



Attest:  
C. C. Brown.  
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# UNITED STATES PATENT OFFICE.

JAMES F. MAGUIRE, OF NEW YORK, N. Y.

## IMPROVEMENT IN TUYERES.

Specification forming part of Letters Patent No. **202,280**, dated April 9, 1878; application filed July 12, 1877.

*To all whom it may concern:*

Be it known that I, JAMES F. MAGUIRE, of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Tuyeres; and that the following is a full, clear, and exact description thereof, sufficient to enable those skilled in the art to which the invention appertains to make and use the same.

My invention is particularly applicable to tuyeres used in forges; and it relates to a means for clearing and removing slag, clinkers, dead cinders, &c., from under the fire.

The invention consists in a novel construction of portions of the tuyere, and the combination therewith of a clearing device of novel construction, whereby the cinders and other refuse are crushed and cleared away from the fire, so as to allow free access thereto of the blast from the blow-pipe.

The accompanying drawing illustrates the manner of carrying out my invention.

Figure 1 is a top view of a tuyere embodying my improvements. Fig. 2 is a vertical section taken in the line *xx* of Fig. 1. Fig. 3 is a vertical section taken in the line *yy* of Fig. 1.

The tuyere A is made of cast-iron, and is preferably of cubic or approximate form, with a top plate, E, extending beyond the sides of the tuyere in flange-like form, for supporting it in place in the forge. On one side of the tuyere a series of fins or brackets, B, are provided, for the purpose hereinafter mentioned.

The fins are preferably cast in one piece with the tuyere, and are here shown as of triangular outline, the upper edge being horizontal and parallel with the top plate of the tuyere, and the remaining portion being inclined downward and toward the right-hand side, as shown in Fig. 2 of the drawing.

A shaft, C, passes through the tuyere in a direction transverse to the edges of the fins B. This shaft carries a series of bars or plates, D, which may be of any suitable shape, but are here shown as of approximately semi-circular outline. The bars or plates D are preferably made of cast-iron, and may be keyed to the shaft C or attached in any suitable manner. They are arranged in positions

between or on either side of the fins or brackets B. There may be any suitable number of both the fins or brackets and the bars or plates. The drawing represents three of the fins B and two of the bars or plates D, arranged in such positions with relation to each other that one of the bars or plates works between two fins or brackets, and the intermediate bracket lies between two of the bars or plates. Immediately above the fins or brackets and the bars or plates is the opening in the tuyere through which the blast from the blower reaches the fire in the forge. Said bars or plates, arranged as described, serve the double purpose of supporting the fire and clearing it of refuse, and constitute a revolving or oscillating grate, and also a clearing device, while the upper edges of the fins serve to support a portion of the fire, cinders, &c.

When the fire becomes clogged or choked with cinders, clinkers, or other refuse, and it becomes necessary to clear out the same, the shaft C is rotated or oscillated, so as to cause the bars or plates D to work between the fins or brackets B, and to cut, crush, loosen, or unpack said refuse, and allow it to drop to the bottom of the tuyere, from whence it may be removed, when desired, by opening the sliding door G. If the bars or plates D were of rectangular shape, it might be impossible at times to move them in both directions, owing to the packing of the ashes and cinders; but by making one edge of each plate with an inclined, angular, or curved outline, as shown, it is possible on all ordinary occasions to rotate them in the direction indicated by the arrow in Fig. 2, and when so rotated they operate in connection with the brackets B after the manner of a pair of shears, and cut or crush the cinders and force them down into the tuyere. In such case the horizontal upper edge of the stationary fin or bracket acts as the lower jaw or blade of the shears, and the plate D as the upper jaw or blade.

When, however, the refuse is packed so closely as to prevent the plates from moving in the direction of the arrow, they may easily be moved in the reverse direction, so as to unpack and loosen the refuse and thoroughly clear it away.

The nozzle or blow-pipe H is intended to enter the tuyere near the top plate thereof, as shown in Fig. 2.

The top plate E of the tuyere has its front edge formed with a flange or overlap, *f*, extending upward and outward, for the purpose of overlapping a metal plate resting on the upper portion of the forge.

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

1. In combination with the tuyere A, constructed as described, the shaft C and the plates D, of semicircular or approximate form, constituting a rotating or oscillating grate,

and also a clearing device, substantially as set forth.

2. In a tuyere, the combination of the fins or brackets B, situated below the top plate, and the plates D, constructed substantially as described, and operating, in connection with each other, after the manner of a pair of shears, for cutting, crushing, and clearing away the refuse, substantially as set forth.

JAMES F. MAGUIRE.

Witnesses:

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EDWARD COLLINS.