J. S. MILLER.

Tuyere.

No. 205,666. Patented July 2, 1878

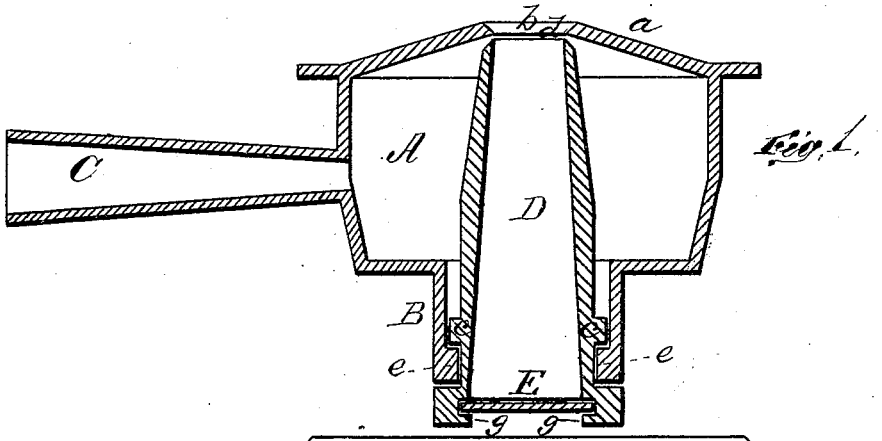

Fig. 1.

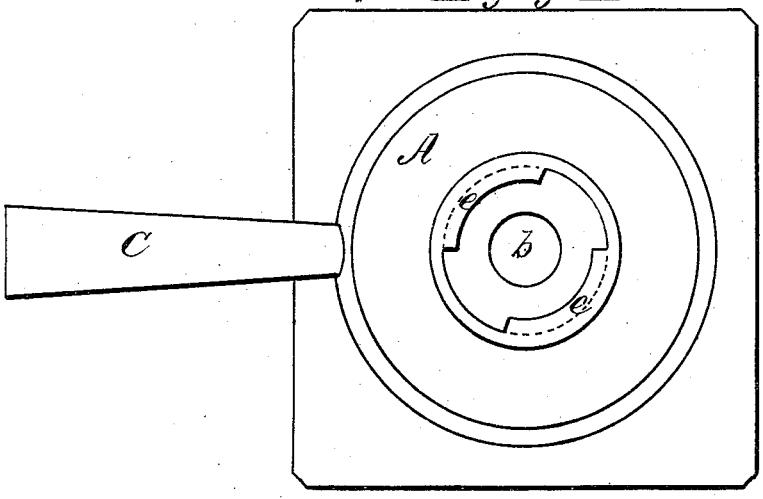

Fig. 2.

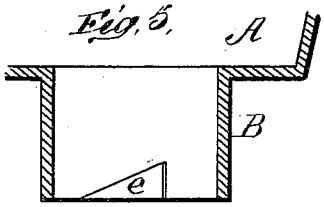

Fig. 5.

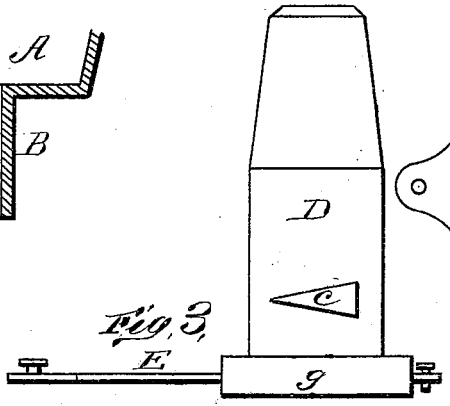

Fig. 3.

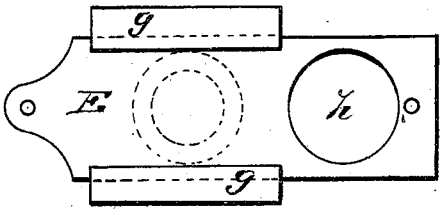

Fig. 4.

WITNESSES

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JOHN S. MILLER, OF MIDDLETOWN, CONNECTICUT.

IMPROVEMENT IN TUYERES.

Specification forming part of Letters Patent No. **205,666**, dated July 2, 1878; application filed March 16, 1878.

To all whom it may concern:

Be it known that I, JOHN S. MILLER, of Middletown, in the county of Middlesex and State of Connecticut, have invented a new and valuable Improvement in Tuyeres; 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 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 longitudinal vertical section of my improved tuyere. Fig. 2 is a bottom view of the wind-chest; and Figs. 3, 4, and 5 are detail views.

This invention has relation to tuyeres; and it consists, mainly, in the construction and novel arrangement of the wind-chest, the conical tube, axially arranged in the same, and having its upper end exteriorly tapered and beveled, and its aperture of the same diameter with that of the wind-chest, and gradually increasing in its bore downward, the inclined adjusting-lugs of the tube and wind-chest, all as hereinafter fully shown and described.

The object of this invention is to produce a blast of composite character, being centralized and yet diverging, and to provide a tuyere of simple construction to accomplish the end in view referred to, and at the same time to let down the slag freely and prevent clogging.

In the accompanying drawings, the letter A designates the wind-chest, a circular box having a convex top, *a*, in the center of which is the discharging-aperture *b*. This chest is provided with a neck, B, having inclined lugs or flanges E, extending partly around its wall on the inside. C indicates the nozzle of the tuyere, through which the air enters.

D represents the central tube, open at both ends, and extending up within the wind-chest through its neck. The bore of this tube is tapering, and its exterior at the discharging end is made in conical form, the extremity or lip being beveled from the aperture to direct the blast. At its discharging end the bore of this tube is about equal in diameter to the discharge-opening *b* of the wind-chest, and the extremity of the tube, being entirely within the wind-chest, is designed to be adjusted toward or from the opening *b*, so as to form an annular blast-fissure, *d*, of greater or less size, according to requirement. This adjustment is effected by turning the tube D upon its inclined lugs *c*, which rest on the inclined inside flanges *e* of the wind-chest, so that when the tube is turned in one direction, its discharging end approaches the opening *b* of the wind-chest, and when turned in the opposite direction, recedes from said opening. On each side of the mouth of the tube D is provided a flange or slideway, *g*, in which moves the edge of the register-plate E. This plate is provided with an opening, *h*, about equal in diameter to the mouth of the tube, near one end, and is designed to be adjustable in the slideways, so as to cut the wind off from the tube to any degree required, or altogether, if necessary; and, when desired, its opening *h* may be brought to coincide with the mouth of the wind-tube, thereby opening it to its fullest capacity. In consequence of this construction, the slag is let down readily and clogging is prevented.

As the blast enters through the nozzle, it impinges upon the inclined exterior surface of the tube D, which gives it a rotary motion, and at the same time an upward direction toward the discharge-opening of the wind-chest, which it reaches after passing through the annular cleft between the end of the wind-tube and said opening.

The character of the blast from the opening *b* is diverging, and yet central, or coming to a point within the proper distance of said opening.

It is thought that by the deflected or diverging character of the blast more of the oxygen of the air is utilized than if it were a steady direct jet, while at the same time it is directed by the inclined surface and lip of the tube in a sufficiently axial manner to prevent a cold center.

I am aware that it is not new to provide within a surrounding wind-chest an adjustable axial tube; also, that a tube within a wind-chest and having a converging exterior is common; hence I do not claim, broadly, such inventions.

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

1. A tuyere having a wind-chest, A, and

within the same an axial tube, D, having its exterior wall inclined toward the discharge-opening *b* of said wind-chest, and its bore of equal diameter with said opening at its upper end, and increasing in conical form to its lower end or mouth, substantially as specified.

2. In a tuyere, the combination, with the wind-chest having the axial blast-opening *b* and neck B, of the axial tube D, adjustable upon inclines in said neck, and having its upper exterior wall of conical form, converging toward said blast-opening, substantially as specified.

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

JOHN S. MILLER.

Witnesses:
ELWELL A. BISHOP,
CARRIE A. MILLER.