P. Sweeny.

Tuyere.

No. 91,882. Patented Jun. 29, 1869.

Fig. 1

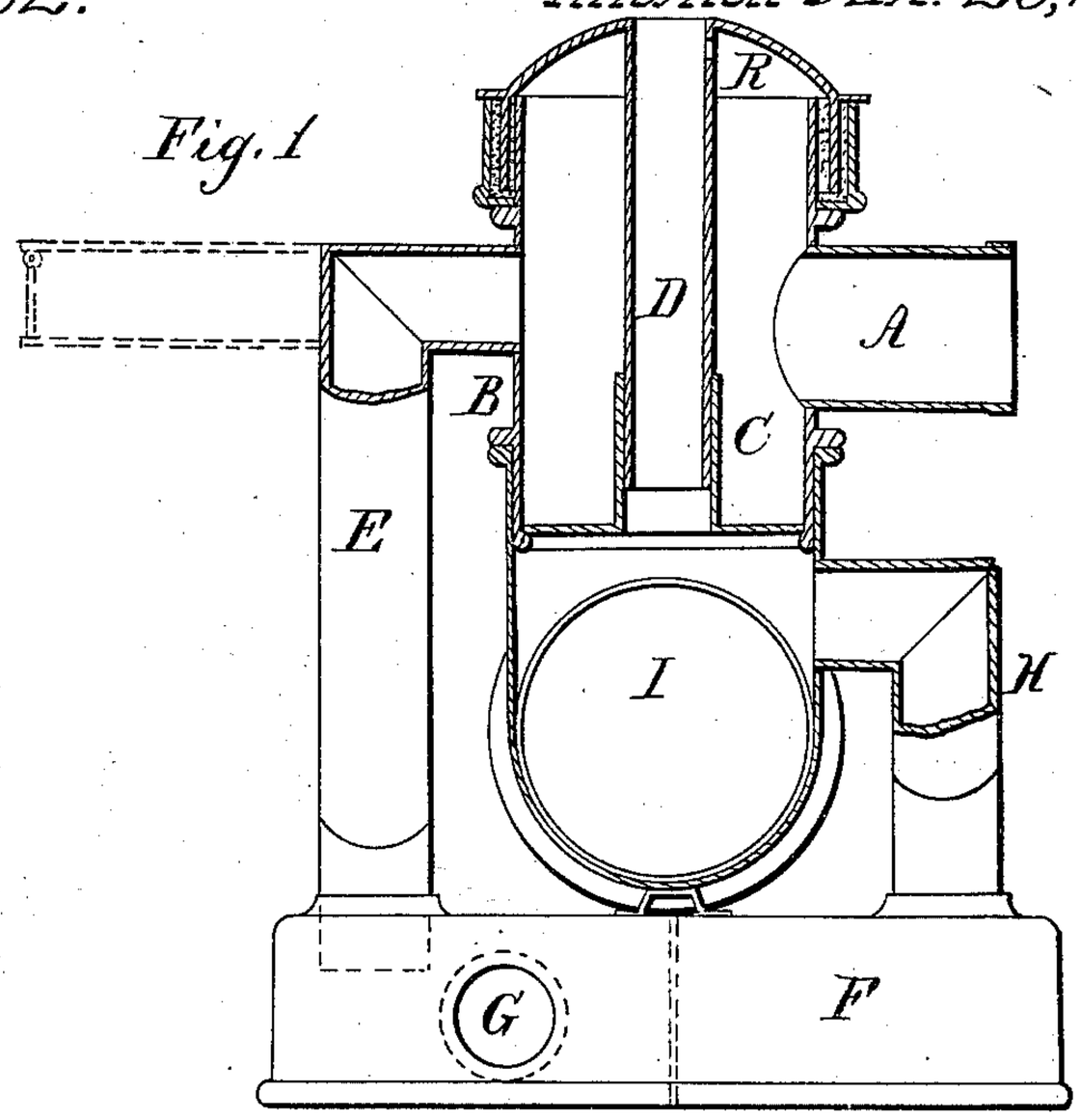

Fig. 2

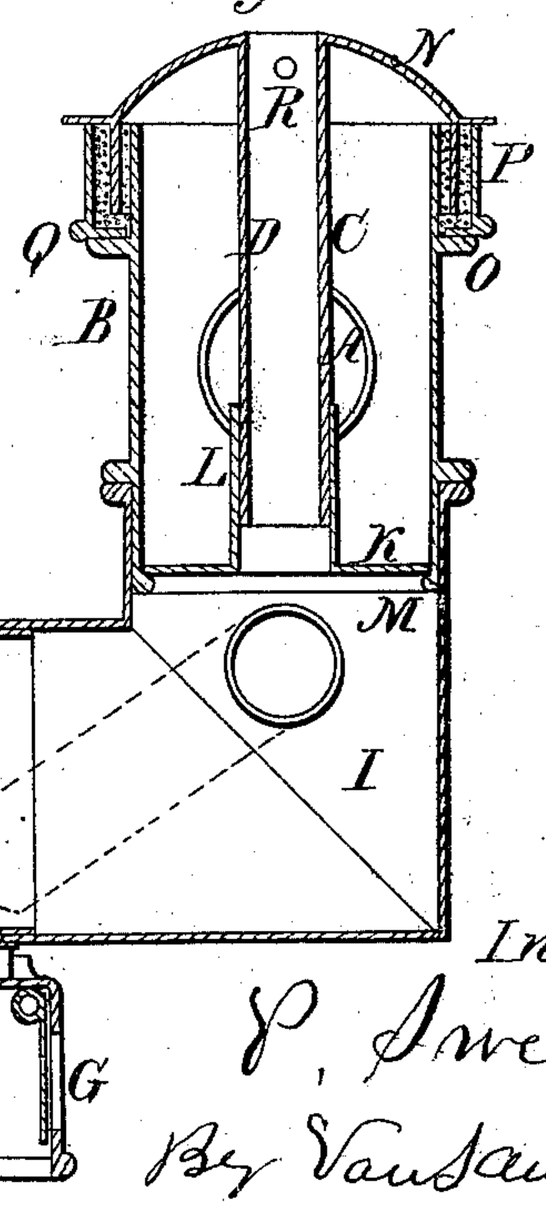

Fig. 3

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PETER SWEENY, OF NEW YORK, N. Y.

Letters Patent No. 91,882, *dated June* 29, 1869.

IMPROVED TUYERE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, PETER SWEENY, of the city, county, and State of New York, have invented a new and useful Improvement in Tuyeres; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which drawing—

Figure 1 represents my improved tuyere, partly in vertical section, the inner side of the foot-box being shown undivided.

Figure 2 is a transverse vertical section.

Similar letters indicate corresponding parts.

My invention relates to that class of tuyeres in which the discharging-nozzle is arranged in the hearth itself, instead of being arranged in the back of the forge.

The view given in fig. 1 is supposed to be taken from the opposite side of the hearth to that where the workman stands. The tuyere is represented as detached from a forge, and in practice it will be in great part covered by the hearth of the forge.

The letter A designates the inlet-air pipe, which will extend out through the back of the forge, and which enters the side of the tube B, in which is formed an annular air-chamber, C, that surrounds the vertical discharge-pipe D, which will be hereinafter again referred to and described.

The fresh air from the inlet-pipe A passes through the annular chamber C and into a descending pipe, E, which is conducted downward and sideways to the hollow box F, which is made and arranged so as to form a suitable stand for the feet of the workman, being made level, or nearly level with the floor of the shop. This box has one or more partial partitions across it, so as to form a more or less circuitous path for the inlet air to traverse in going through it.

One of the sides of the box is provided with an inlet-valve, as is shown at G, in fig. 1, the purpose of which will be hereafter described; or such valve may be placed in the pipes E, as shown in red outlines.

The air, after traversing the foot-box F, leaves it by the pipe H, at the opposite end of the box from the place of entrance, and is by that pipe discharged into the vertical part of a right-angled tube, I, whose vertical part fits over the lower end of the tube B, while its horizontal part extends toward and out of that side of the hearth where the workman's station is, its protruding end being closed by a removable cover, J, the object of making the cover removable being to allow the workman to clean out the tube I of sand, dust, or other matters that may be collected in it.

The interior of tube I is separated from the annular air-chamber in the tube B, by a valve-plate, K, which has a central opening, from which rises a short tube, L, that connects with the discharge-pipe D, before referred to.

This valve-plate rests loosely on the circular ledge M, which is formed around the inside of the tube B, near its bottom, and can be removed with facility, after the discharging-pipe D is removed.

The said pipe D rises up to, or nearly up to the level of the bottom of the hearth, and goes through a convex cover, N, whose rim fits in a sand-packing arranged in or around the upper end of tube B, as will be next described.

Around the upper part of tube B, I form a horizontal flange, O, on which rests the bottom of a ring, P, that is set over and around the top of tube B, the ring being larger than the tube, so as to leave an annular space between itself and the tube, in which space I place sand-packing, as shown in the drawing.

The bottom of the ring P has a horizontal inner flange, Q, which comes close to the exterior of the tube B, so as to make a good joint, said flange Q resting on the flange O of the tube. Into this sand-packing the rim of the cover N is forced down, so as to prevent air from leaking out of this part of the tuyere.

It will be observed, that by means of the construction and arrangement herein shown, I can readily remove, replace, and renew those parts of the tuyere which are most liable to be burned out, such, for example, as the cover N, the ring P, and pipe D.

The tuyere, as above described, is arranged for winter-use, and in order to heat the air that is to be admitted to the fire, it is accomplished by compelling the fresh air to pass through the chamber C, pipe E, foot-box F, and tubes H D, all of which are placed in the body of the hearth and below the fire, so that the air which passes through them will become warmed before it is delivered into the fire, and will, by passing through the foot-box, also serve to warm it, thereby providing a warm standing-place for the workman.

The constant presence of air in the pipe D, and in the annular chamber C, while the tuyere is in active operation, serves to preserve the upper exposed parts of the tuyere from being burned out, and when it is not in active operation, the same result, that is to say, preserving the exposed parts, is obtained by means of the orifice R, in pipe D, which orifice admits a constant current of air from chamber C into the pipe D, the supply of air being kept up by means of the inlet-air valve G, when the bellows, or blast is idle.

When the tuyere is to be arranged for summer-use, I place a plug, S, in the upper end of the pipe E, and remove the valve-plate K, so as to allow the air from pipe A to go directly into the pipe D.

The plug S has a perforation in it, which allows a constant circulation of a small current of air through it, in order to keep it cool.

The ring P encloses the top of the tube B in such a manner as to protect and prevent said tube from being burned out by the fire of the forge, and I make said ring loose and removable, so that it can easily be renewed when it becomes burned out.

Having thus described my invention,

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

1. The combination and arrangement of the annular receiving-chamber C, the circulating-pipes E H, and foot-box F, the valve-plate K, tube I, and discharging-pipe D, substantially as described.

2. The removable packing-ring, or case, P, fitted to the top of the tube B, and combined with the hearth, substantially as described.

3. The arrangement of the tubes B D I and removable diaphragm K, substantially as described.

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Witnesses:

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