I. S. VAN WINKLE.

TUYERES.

No. 181,381. Patented Aug. 22, 1876.

Fig. 1.

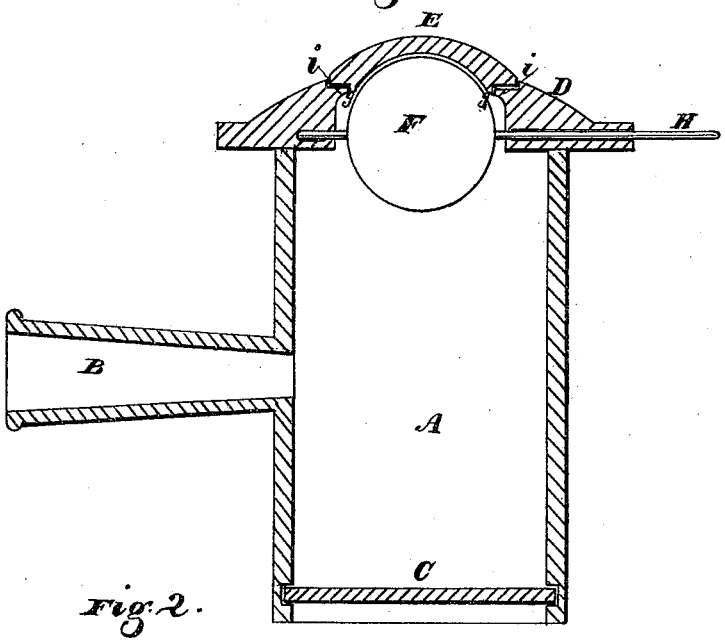


Fig. 2.

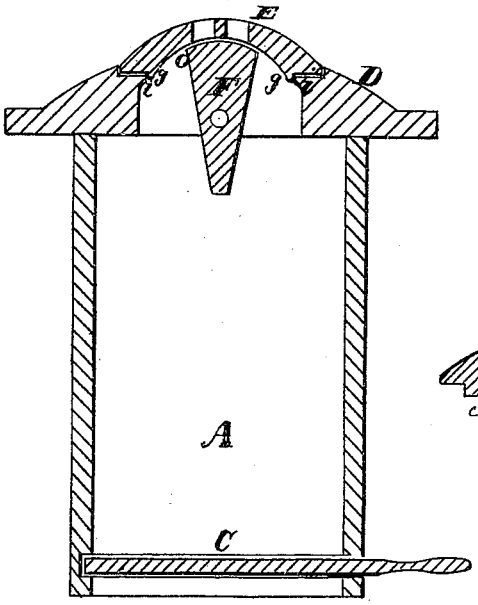
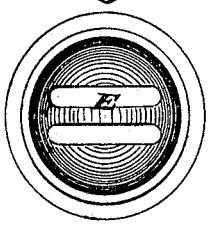
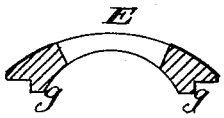
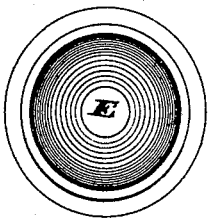


Fig. 3.







Witnesses
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UNITED STATES PATENT OFFICE.

ISAAC S. VAN WINKLE, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN TUYERES.

Specification forming part of Letters Patent No. **181,381**, dated August 22, 1876; application filed January 17, 1876.

To all whom it may concern:

Be it known that I, ISAAC S. VAN WINKLE, of San Francisco city and county, State of California, have invented a Cut-Off Blast-Tuyere Iron; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention without further invention or experiment.

The object of my invention is to provide certain improvements in that class of tuyeres which are employed for forges; and it consists in so constructing the tuyere that it will have a tendency to convey away from the grates all flux and other substances which will clog them.

The grates themselves are so flanged as to present an additional protection, and also to prevent leakage of air around them, and I combine with them a valve, which is capable of being adjusted so as to regulate the blast or cut it off altogether.

Referring to the accompanying drawing for a more complete explanation of my invention, Figure 1 is a sectional elevation taken through the line of the blast-nozzle. Fig. 2 is a sectional elevation cutting the valve transversely. Fig. 3 shows different views of the grates.

A is the lower part or box of my tuyere, which receives the air-blast through the nozzle or pipe B, and is provided with a slide, C, at the bottom, which may be withdrawn to allow any dirt to be removed. The top or cap D may either be cast solid with the lower part A, or it may be made separate and secured to it as shown in the present case.

This cap is made quite convex, and the grates E are also made convex for the purpose of giving such a surface that the melted flux or sulphur which is found in blacksmiths' forges will run off to either side and not settle into the openings, and thus clog them, besides gumming up the iron to such a degree that it prevents its being welded, and necessitates cleaning out the fire, and building a new one.

The grates E, which may be either cast solid with the lower part or made removable, are made with one, two, or three openings or slots, according to the size of the fire desired; or if one hole is used it may be made round, square, oval, or in any desired shape.

These grates, as now made, when removable, have their edges slightly beveled, and are fitted into openings in the top D of similar shape; but they are not tight, and by reason of the leakage of air around their edges it has been impossible to keep a small fire, and prevent a useless waste of coal.

As the tops have heretofore also been made flat or concave they served to convey to, or to retain the flux at, the center, so that it would run down either through the spaces at the edges or through the grates, or gum the iron so that it will not weld or work properly.

This I obviate by the convex form, as before described, and also prevent the leakage of air by making a seat, *i*, below the level of the top, and the grates are formed with a flange, *g*, which fits inside the seat, upon which the rim of the grate rests, and thus makes a tight joint, preventing the leakage of air, or the ingress of dirt.

With the grates as heretofore constructed, having flat bottoms, it has been impossible to close them tightly, and the solid triangular valve which was rotated upon a shaft below the grate would only serve to partially obstruct the passage of the air.

In my improved tuyere the lower surface of the grate is made concave, and the valve F has one side, O, shaped like the segment of sphere, so that when this side is brought into the concave below the grates it will fit so closely as to cut off the supply of air. This valve is mounted upon a shaft, H, which extends out to the side of the forge, and is provided with a handle by which it can be rotated. The opposite side of the valve is beveled off or cut away, so that when that side is turned uppermost it will present little or no obstruction to the passage of the air, thus giving a full blast.

By means of this valve the full opening of one, two, or three grates can be permitted, or by turning it one or all of them may be shut off, and I can thus regulate the size of my fire

for large or small work and greatly economize fuel.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

In combination with the grate E, having its lower surface made concave, as shown, the valve F, having the convex side O, and mounted upon a shaft, so as to be rotated to open or close the air-passage, substantially as herein described.

ISAAC S. VAN WINKLE.

Witnesses:
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