L. A. Dole,

Tuyere,

No. 58,077. Patented Sept. 18, 1866.

Fig. 1.

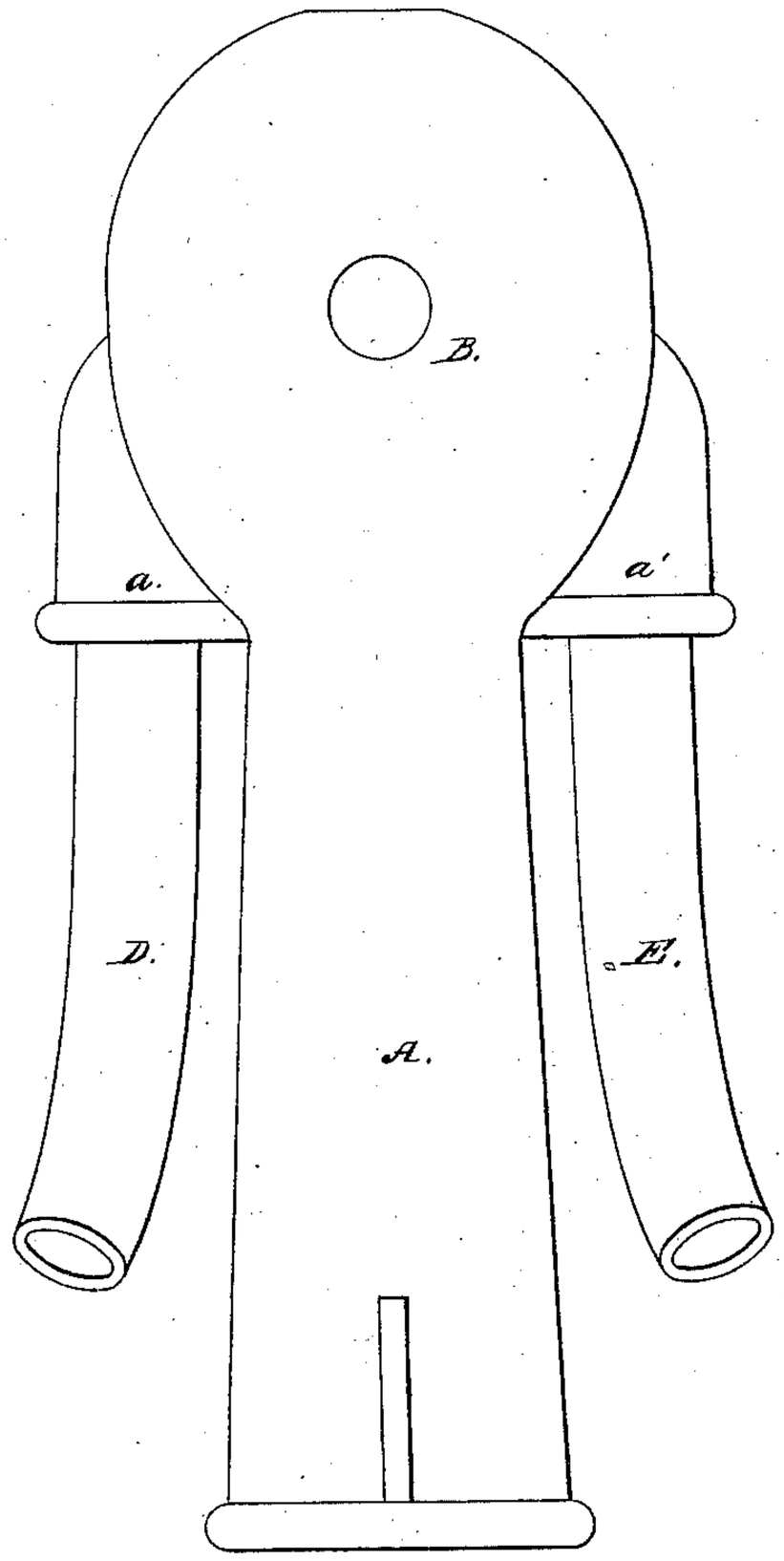


Fig. 2.

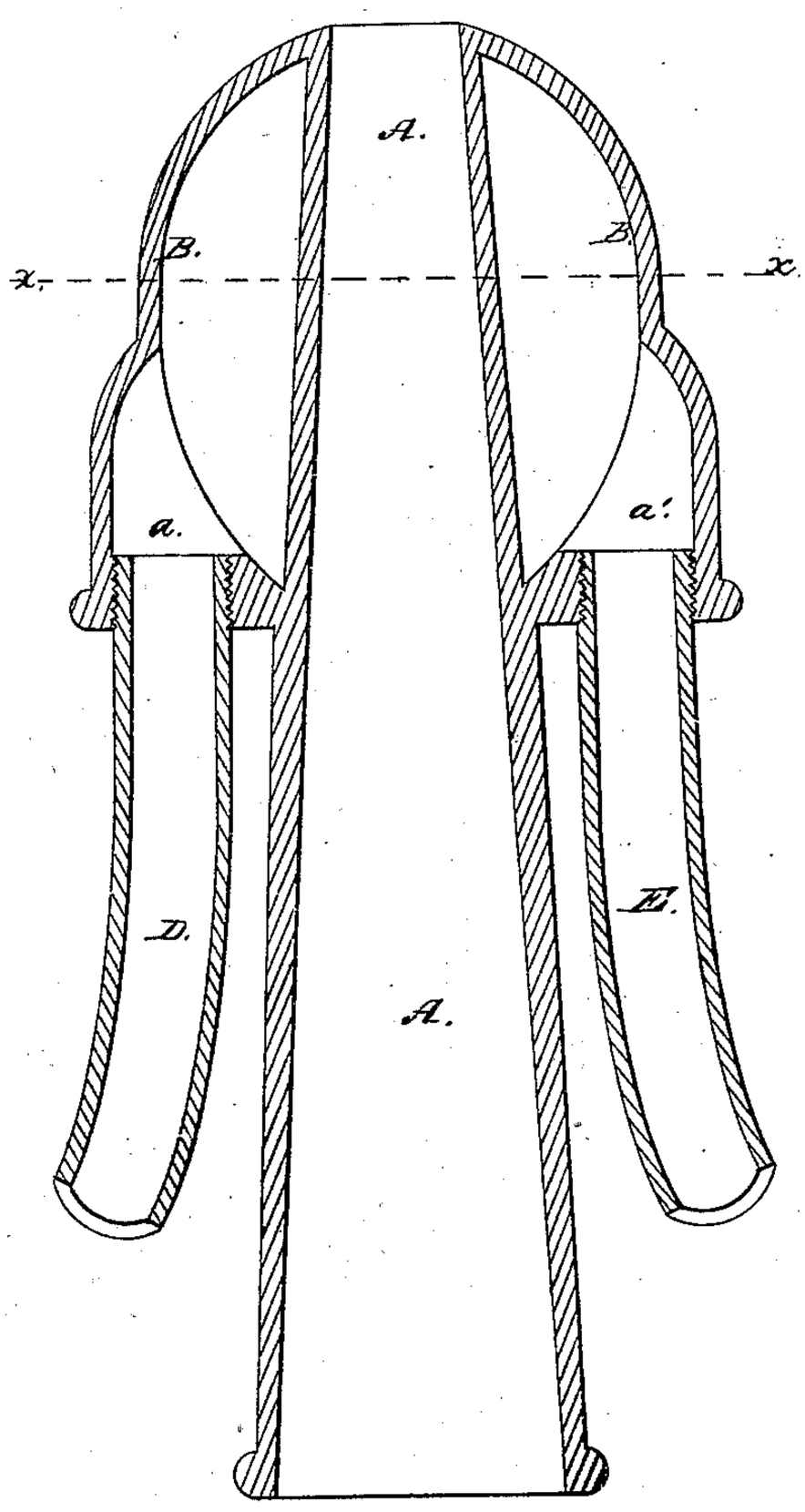
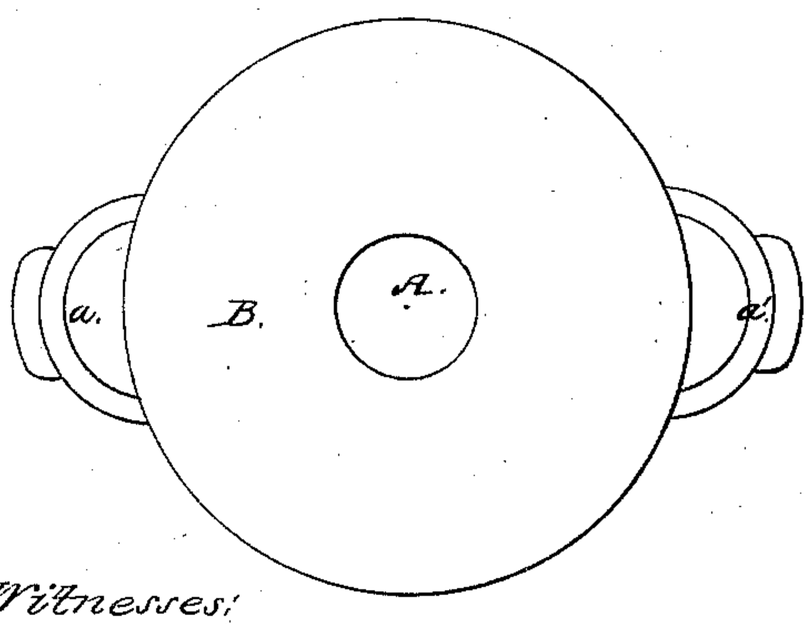
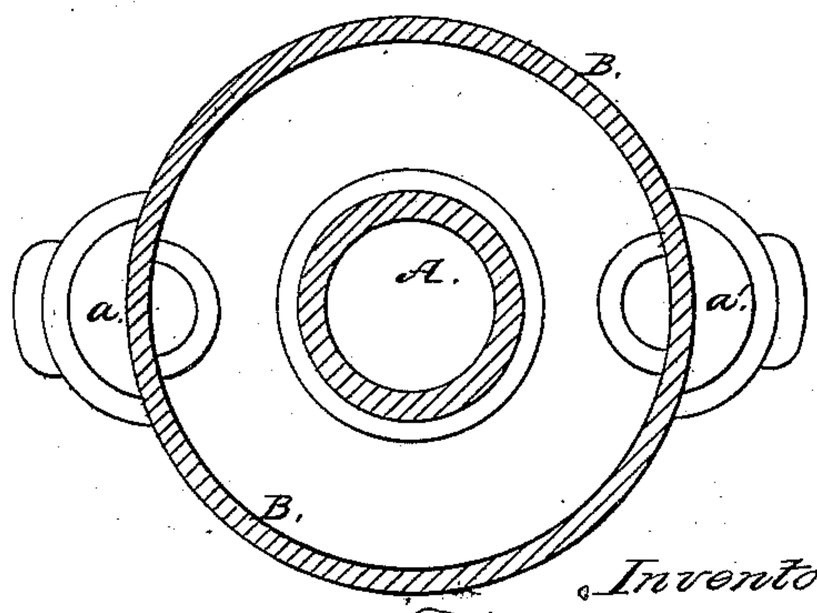


Fig. 3.

Fig. 4.





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UNITED STATES PATENT OFFICE.

LEVI A. DOLE, OF SALEM, OHIO.

IMPROVEMENT IN TUYERES.

Specification forming part of Letters Patent No. **58,077**, dated September 18, 1866.

To all whom it may concern:

Be it known that I, LEVI A. DOLE, of Salem, Columbiana county, and State of Ohio, have invented a new and Improved Tuyere; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is an external view of the improved tuyere. Fig. 2 is a diametrical section through it. Fig. 3 is an end view of the discharging end of the tuyere. Fig. 4 is a section through the hollow globe.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to an improvement in the construction of tuyeres which have water-chambers surrounding those parts which are most exposed to the intense heat of the furnace, for the purpose of keeping the tuyere cool and preventing it from rapidly burning out.

The nature of my invention consists in constructing tuyeres of this description of one piece of metal, so that there shall not be any joints to become leaky in case of neglect to keep the tuyere cool by the stopping of the circulation of water through the chambers, as will be hereinafter described.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawings, A represents a tapering pipe, which may be made of any suitable capacity for the passage of air through it. The largest end of this pipe A is suitably affixed to the nozzle of a bellows or air-engine, and the air is discharged through the smallest end directly into the bed of the forge or furnace. Surrounding the small end of the pipe A is a hollow globe, B, which forms a chamber that has but two openings, *a a'*. These openings *a a'* are tapped to receive screw-threads, that are formed on pipes D E, which communicate with a keg or suitable reservoir of water, so that the chambered globe B shall be kept filled with water for cooling and keeping cool the discharging end of the globe.

The tapering pipe A and its globe B are cast in one solid piece, so that there are no joints, in the following manner: A sand core is made corresponding in shape and size to the chamber within the globe B, with two necks on it for producing the inlet and outlet passages *a a'*, and this core is suitably anchored and centered within a sand mold corresponding in shape and size to the exterior of the tuyere.

In this manner the thickness of the metal of the tuyere-pipe and its hollow globe may be made equal throughout, and thus no danger from unequal expansion or contraction need be apprehended.

This tuyere is placed in the forge or furnace with one pipe, D, above the other, E, the lowest pipe being connected near the bottom of a water-reservoir, while the other pipe passes over the top of such reservoir, and is bent downward, so as to conduct the water and steam from the hollow globe B back into said reservoir, thus allowing of a circulation of water through this globe where it is heated.

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

A tuyere which is composed of blast-pipe A and a chambered portion, B, cast in one piece, substantially as described.

L. A. DOLE.

Witnesses:

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