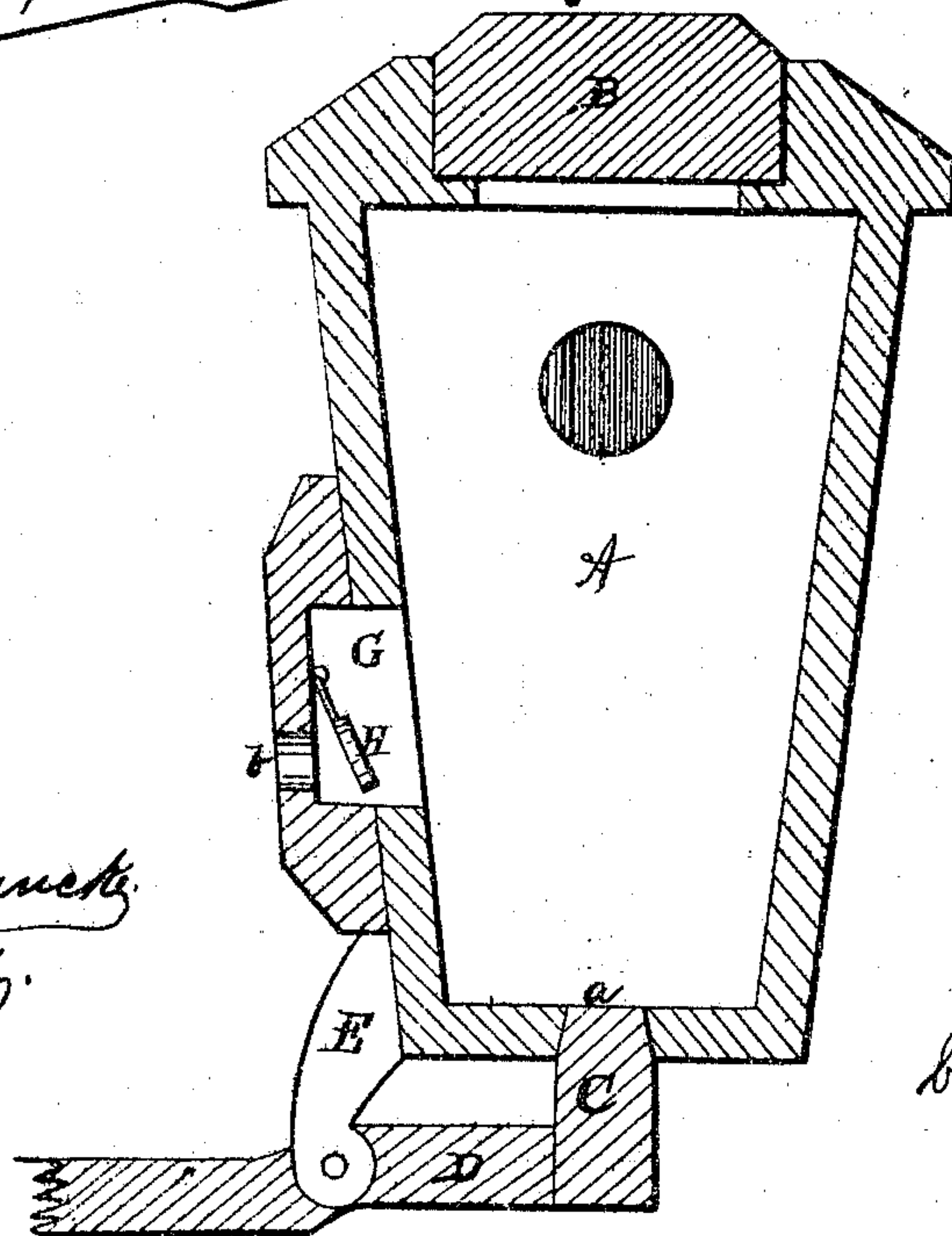
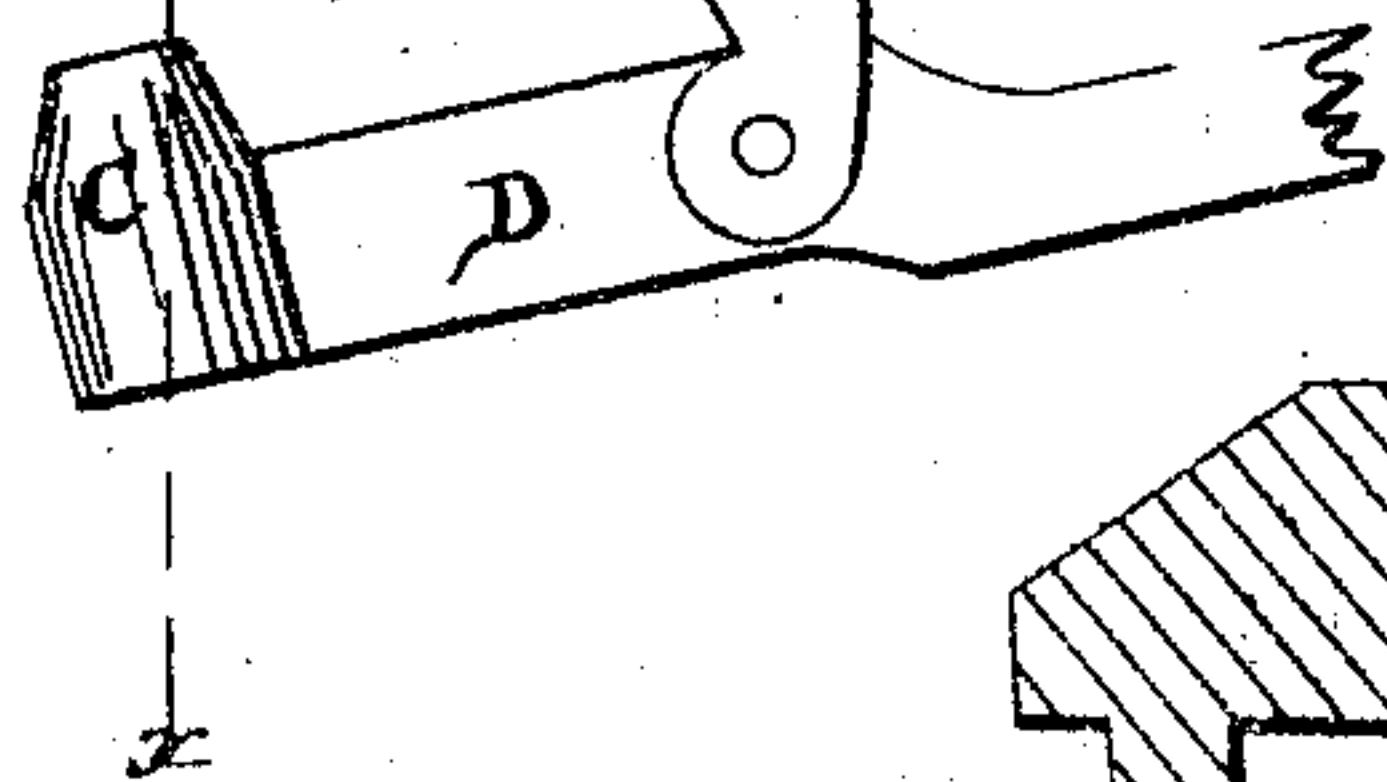
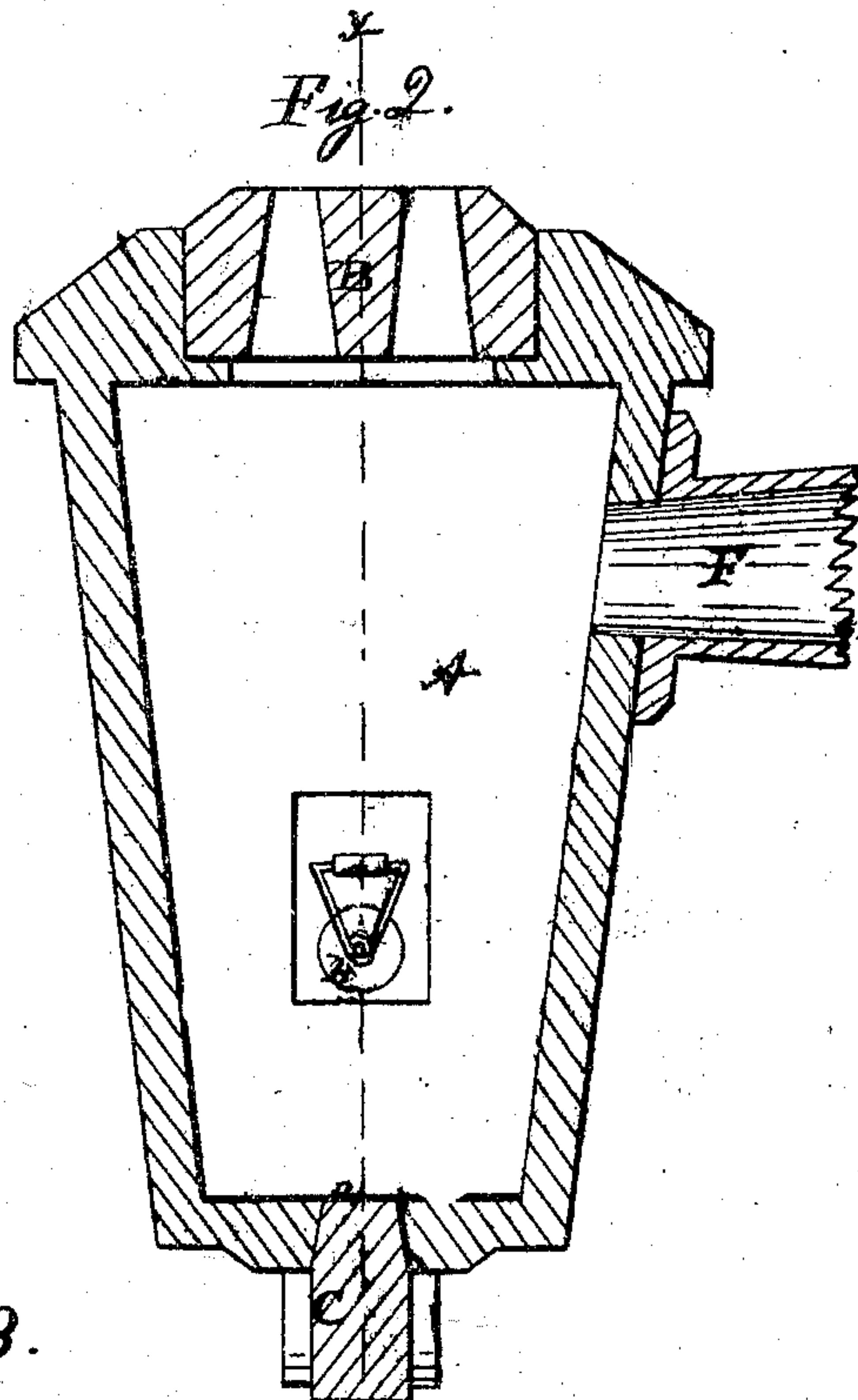
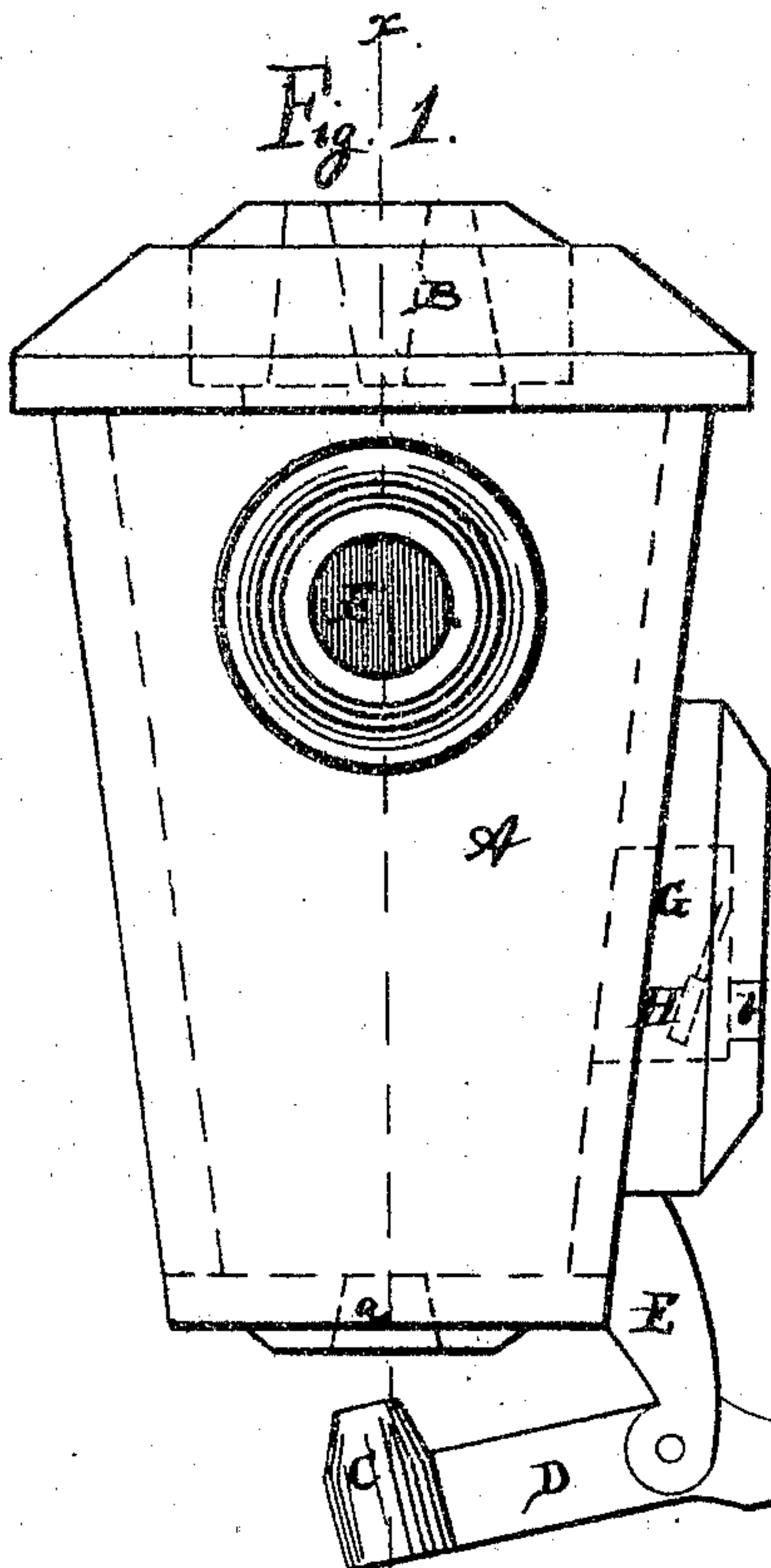


# Hugh Laird. Tuyere.

Nº 74.918.

Patented Feb. 25. 1868.



WITNESSES.

Alex. A. C. Klauety.  
D. O'wandy.

INVENTOR.

Hugh Laird.  
by Wiedersheim & Co.  
attys.



# United States Patent Office.

HUGH LAIRD, OF MECHANICSBURG, PENNSYLVANIA.

*Letters Patent No. 74,918, dated February 25, 1868.*

## 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, HUGH LAIRD, of Mechanicsburg, in the county of Cumberland, and State of Pennsylvania, have invented a new and useful Improvement in Tuyeres; and I do hereby declare the following to be a clear and exact description of the nature thereof, sufficient to enable others skilled in the art to which it appertains to fully understand and use the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side elevation.

Figure 2 is a central vertical section in the line *x x*, fig. 1.

Figure 3 is a similar view in line *y y*, fig. 2.

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

My invention consists in placing a valve within a recess in the side of the air-chamber of a tuyere, so that when the blast of air from the bellows shall cease, fresh air shall be admitted into the chamber to cool the grate, and prevent the extinguishing of the fire, all as will be hereinafter more fully described.

In the drawings, A represents the air-chamber or reservoir, of usual form, and supporting the detachable fire-grate B. The bottom of the reservoir has a conical opening, *a*, into which fits the conical plug C of the lever D, which is mounted on the projecting arm E, secured to one side of the reservoir. It is evident that if it be desired to remove the ashes, cinders, or coals from the forge or fireplace, the grate being removed, they will drop into the chamber, and the contents therein will readily have an outlet when the conical plug C is withdrawn from the opening *a*. The advantages of the conical shapes of the plug and opening are that they are necessary to the completion of a closed chamber. The more the plug is forced into the opening, the tighter will the joint between them become, consequently there is little or no chance for the escape of air. When the ashes or cinders shall have passed the top edge of the bottom, they will have free exit on account of the tapering form of the opening *a*, whereby there will be no lodgment or clogging in the opening. This will also allow the ready return of the plug in place. F is a pipe for conveying air from the bellows into the chamber. It is suitably secured to one side of the chamber, and is of ordinary form and construction. On the inside of the chamber, I form a recess, G, having an opening, *b*, communicating with the atmosphere. A valve, H, is suspended within the recess, and covers the opening *b*. I secure the valve to suitable arms, which are hinged to the chamber, whereby the valve has a swinging motion, and always will fit over the opening *b*.

The valve may be constructed of metal, leather, or other suitable material, and may have other means of attachment to the chamber than that described.

The operation is as follows: Air is forced into the chamber A through the pipe F. It will immediately free the air-chamber and close the valve H, whereby no air can enter the chamber, except such as is forced therein by the bellows. The grate B will become heated by the fire, and the air, as it passes through the grate, will also be heated and assist combustion. So soon as the blast ceases, the valve H will open and allow the admission of ordinary air. This will cool the grate B and prevent its burning out, as also keep the fire burning. When the ashes pass through the grate, or the cinders are allowed to drop into the chamber, the valve being within the recess, and out of the way of the falling matter, will be free to open and shut. Should a quantity rest or lodge in the recess, the valve will not be clogged, for it is placed above the bottom of the recess, and consequently operates without hindrance. As the air-chambers are generally of tapering form, or the form of an inverted pyramid, the ashes, &c., are directed to the centre of the bottom, where they can be quickly removed. All the parts of my tuyere are simple in construction, and none are in the way of each other, so as to complicate the operation thereof, and I therefore consider my invention practical and useful.

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

The combination of air-chamber A, valve-recess G, valve H, plug C, and lever D, arranged substantially as described.

To the above, I have signed my name, this 15th day of August, 1867.

HUGH LAIRD.

Witnesses:

DAVID HEIGBY,

JOHN A. WIEDERSHEIM.