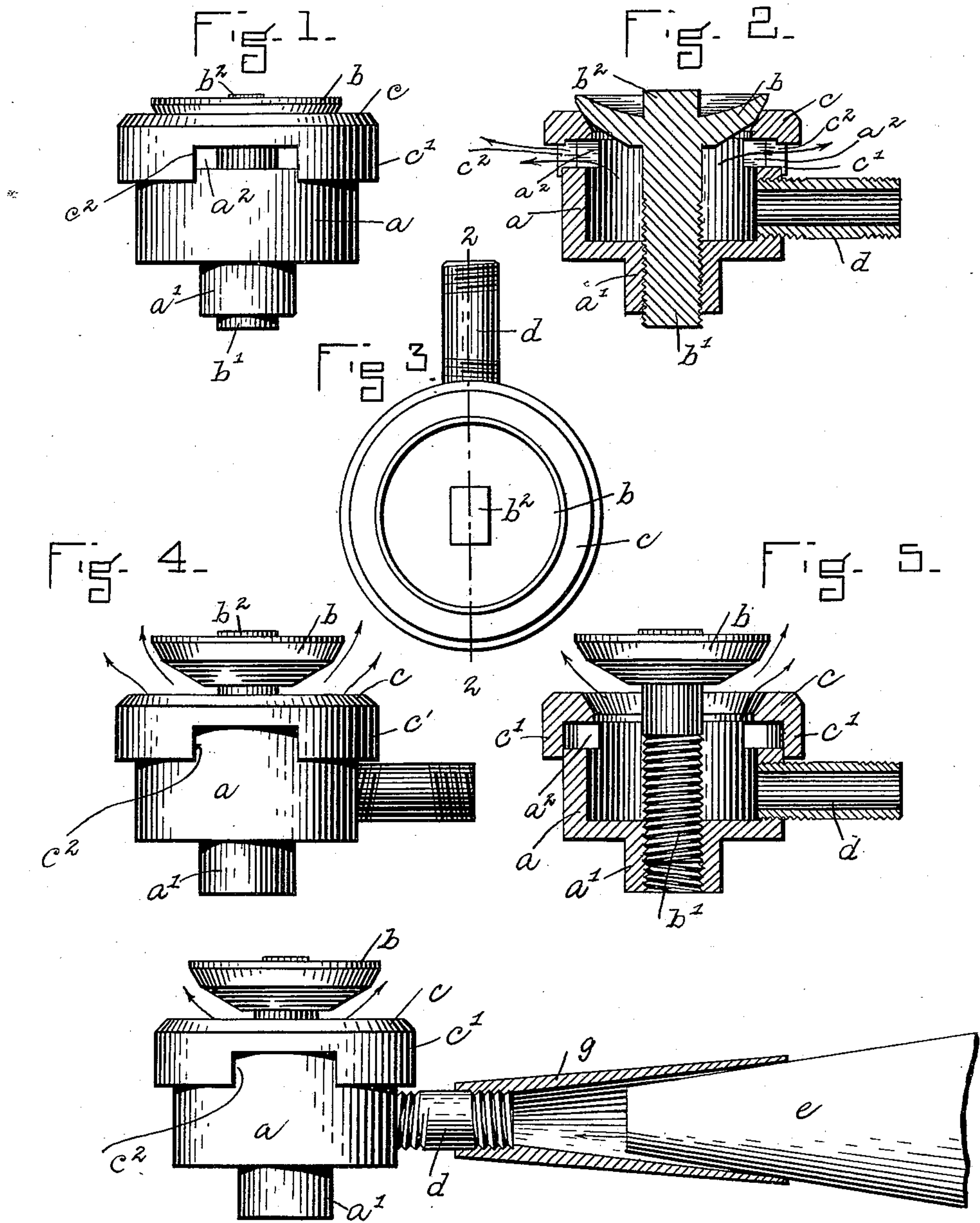


(No Model.)

G. H. BURROWS.
TUYERE.

No. 463,379.

Patented Nov. 17, 1891.



WITNESSES.
J. T. Ball,
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Fig. 6.

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UNITED STATES PATENT OFFICE.

GEORGE H. BURROWS, OF SOMERVILLE, MASSACHUSETTS.

TUYERE.

SPECIFICATION forming part of Letters Patent No. 463,379, dated November 17, 1891.

Application filed February 26, 1891. Serial No. 382,937. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. BURROWS, of Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Tuyeres, of which the following is a specification.

This invention has for its object to provide an improved tuyere, principally for blacksmiths' forges, which shall be capable of adjustment, so as to give different shapes to the area of combustion influenced by the blast, so that the fuel may be burned in a compact mass, the combustion being confined to a circle of small diameter or in a more elongated mass, covering a greater length.

The invention also has for its object to provide improved means for connecting the tuyere with the nozzle of the bellows which supplies the blast.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a side elevation of my improved tuyere. Fig. 2 represents a section on line 2 2 of Fig. 3. Fig. 3 represents a top view of the tuyere. Fig. 4 represents a side view, and Fig. 5 a section, both showing a different adjustment of the tuyere from that shown in Figs. 1 and 2. Fig. 6 represents a side elevation of the tuyere and of a portion of the nozzle of the bellows, together with a sectional view of a device for connecting the air-inlet pipe of the tuyere with the nozzle of the bellows.

The same letters of reference indicate the same parts in all the figures.

In the drawings, *a* represents a cylindrical chamber forming the body portion of the tuyere, said chamber being closed at its bottom, with the exception of an internally-threaded sleeve *a'*, which receives and is engaged with the stem *b'* of a valve *b*, which controls the exit of the blast from the top of said chamber.

c represents a ring mounted loosely upon the top of the chamber *a* and provided with a downwardly-projecting flange *c'*, which covers a portion of the exterior of the chamber. The inner margin of said ring is beveled and constitutes a seat for the valve *b*, so that the said valve is adjusted to its lowest position, as shown in Figs. 1 and 2. The blast cannot escape upwardly through the top of the chamber *a*; but when said valve is raised, as shown

in Figs. 4, 5, and 6, an upward passage of the blast is permitted, as indicated by the arrows in said figures.

d represents the inlet-pipe which conducts the blast from the nozzle *e* of the bellows or other air-forcing apparatus to the chamber *a*. Said chamber has in its upper portion two outlet ports or openings *a²a²* at diametrically-opposite sides of the chamber, said ports being arranged to be covered by the flange *c'* of the ring *c*, when said ring is turned to a given position, as shown in Figs. 4, 5, and 6, the ports being thus obstructed, so that the blast cannot pass through them. The flange *c'* has recesses *c²*, which are adapted when the ring *c* is turned to another position to coincide with the ports *a²*, as shown in Figs. 1 and 2, thus permitting the blast to escape through the ports *a²*, as indicated by the arrows in Fig. 2.

When a compact fire of generally-circular form is desired, the ring *c* is turned to cause its flange *c'* to close the ports *a²a²*, and the valve *b* is raised, as shown in Fig. 5. The blast is thus caused to pass upwardly in an annular stream, and thus act upon the fuel directly above the tuyere, causing only a circular area of combustion in the fuel. When a more elongated fire is desired, the ports *a²a²* are opened, the blast being thus caused to pass nearly horizontally in opposite directions from the tuyere, the valve *b* being closed if it is desired to provide a long and somewhat attenuated area of combustion, and opened if it is desired to provide a circular area with lateral extensions at opposite points.

The valve *b* may be adjusted by means of the tongs or other suitable implement thrust down into the fuel and engaged with a boss or projection *b²* on the upper side of the valve, the valve being rotated by said implement to either raise or lower it.

In Fig. 6 I show the inlet-pipe *d* connected by a tapered coupling *g* with the nozzle *e* of the bellows. Said coupling is internally threaded at one end to receive the threaded outer end of the pipe *d*, and is made of sufficient diameter at its opposite end to receive the nozzle *e*, which fits snugly in the coupling *g*.

The pipe *d* is provided at one end with a right-hand screw-thread and at the other end

with a left-hand screw-thread, one of said threads engaging an internal thread correspondingly formed in the chamber *a*, and the other in the coupling *g*. The object of these
 5 right and left screw-threads is to enable the tuyere to be readily disconnected from the nozzle of the bellows whenever it becomes necessary to remove the tuyere for repairs or
 10 renewal, the described arrangement of screw-threads enabling the pipe *d* to be disconnected both from the coupling *g* and from the tuyere by rotating said pipe in one direction, as will be readily seen.

The close fit of the larger end of the coupling *g* around the nozzle *e* obviates the necessity of making a tight joint by cement between the nozzle of the bellows and the coupling or conduit that connects it with the tuyere.

20 It will be seen that when the valve *b* is removed access can be conveniently had to the interior of the tuyere for the purpose of cleaning out the same.

I claim—

25 1. In a tuyere, the combination of a chamber having an inlet-pipe, an open top and outlet-ports below said top, a ring adapted to rotate on the top of said chamber and provided

with a flange formed to act as a valve to open and close the said outlet-ports, the inner edge 30 of said ring being formed as a valve-seat at the top of the chamber, and a vertically-adjustable valve formed to be seated on said seat, as set forth.

2. In a tuyere, the combination of a cham- 35 ber having an inlet-pipe, an internally-threaded sleeve or socket at its lower portion, an open top above said socket and outlet-ports below said top, a ring adapted to rotate on the top of said chamber and provided with a 40 flange formed to act as a valve to open and close the said outlet-ports, the inner edge of said ring being formed as a valve-seat at the top of the chamber, and a valve formed to be seated on said seat and provided with a screw- 45 threaded stem engaged with said socket, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 24th day of 50 February, A. D. 1891.

GEORGE H. BURROWS.

Witnesses:

C. F. BROWN,

A. D. HARRISON.