

(No Model.)

P. J. FITZSIMMONS.
FORGE TUYERE.

No. 535,057.

Patented Mar. 5, 1895.

Fig. 1.

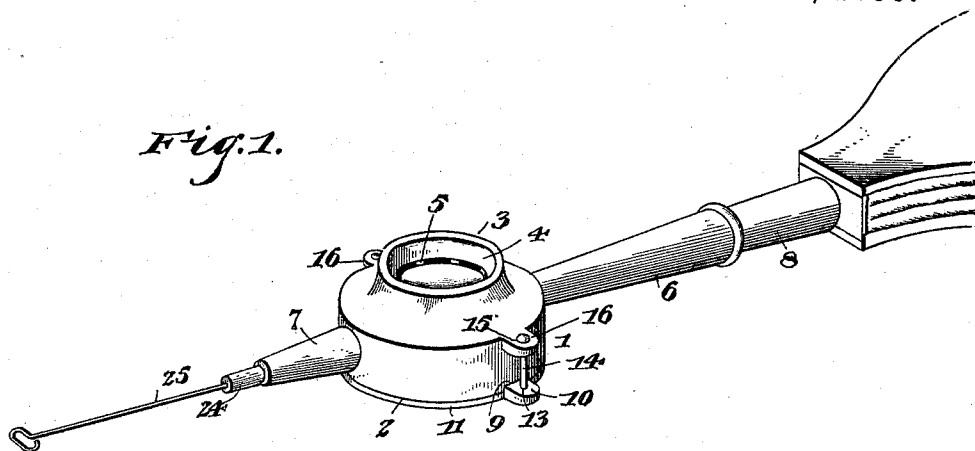


Fig. 2.

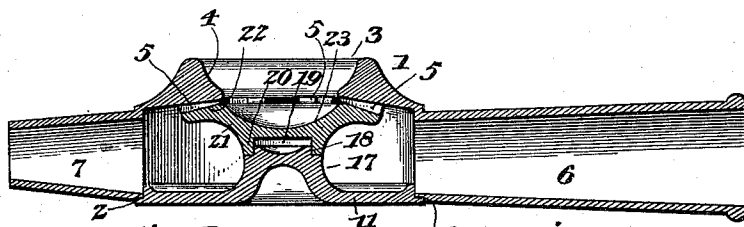


Fig. 3.

Fig. 4.

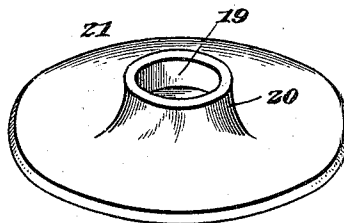
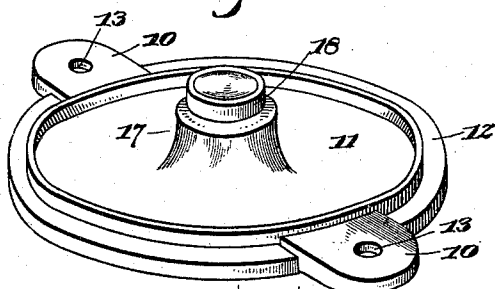
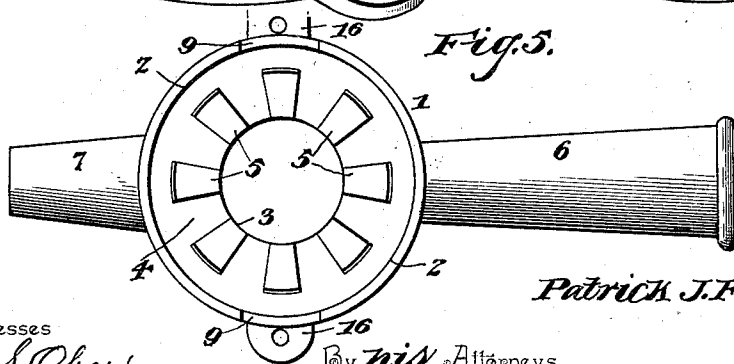


Fig. 5.



Witnesses

C. S. Ober.

J. B. Deane.

By his Attorneys.

Inventor
Patrick J. Fitzsimmons,

C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

PATRICK J. FITZSIMMONS, OF LYONS, IOWA.

FORGE-TUYERE.

SPECIFICATION forming part of Letters Patent No. 535,057, dated March 5, 1895.

Application filed April 28, 1894. Serial No. 509,373. (No model.)

To all whom it may concern:

Be it known that I, PATRICK J. FITZSIMMONS, a citizen of the United States, residing at Lyons, in the county of Clinton and State of Iowa, have invented a new and useful Forge-Tuyere, of which the following is a specification.

My invention relates to that part of the forge which is known as the tuyere; and it consists of certain improved features in the construction of these devices, whereby they may be produced at less cost than ordinarily, and whereby the air is delivered in a more regular and uniform manner.

The invention also consists of an improved device whereby the cleaning of the tuyere can be done with greater ease than in other devices and whereby the degree of the blast may be regulated, all of which will be more completely described hereinafter and finally embodied in the claims.

In the accompanying drawings—Figure 1 represents a perspective view of my complete appliance, showing it connected to the nozzle of the forge. Fig. 2 is a longitudinal section thereof. Fig. 3 is a detail perspective of the bottom plate of the tuyere. Fig. 4 is a similar view of the section which is arranged before the opening of the tuyere. Fig. 5 is a bottom plan of the tuyere chamber, with the normally contained plates removed.

The reference numeral 1 indicates the body of the tuyere, which is circular in shape and provided with the open lower end 2, and with the slightly raised and centrally perforated top or dome 3. The top 3 is formed with its opening or perforation, at the lower side of the annular downwardly and inwardly inclined face 4, while the inner or bottom face of the top 3, is oppositely inclined, and provided with the radial ribs 5, which extend from the inner periphery of the opening in top 3 outwardly and nearly to the side of the body 1.

Communicating with the body 1, and arranged oppositely thereon are the tubes 6 and 7, which are cast integral with the body and project outwardly therefrom and in longitudinal alignment. The tube 6 is larger than

its companion 7, and tapers slightly from its outer end inwardly and is provided for the reception of the nozzle 8, of the blast creating bellows. The nozzle 8 fits snugly within the tube 6, and so that an air tight joint will be effected. Formed in the lower edge of the body 1, and at its open end are the oppositely arranged notches or depressions 9, which are two in number, and arranged in longitudinal alignment and at right angles to the tubes 6 and 7. In these depressions 9, the lugs 10, of the bottom plate 11, are adapted to respectively lie, and the periphery of plate 11 is formed with an upwardly opening rabbet groove 12 therein, which is adapted to receive the lower edge of the body 1, and to form an air tight joint therewith. The lugs 10, of plate 11, are arranged with their upper sides above the rabbet groove 12, so that the edge of the body will lie snugly within the groove, while the lugs project beyond the periphery of the plate and are formed with the openings 13, therein. Through these openings 13, the bolts 14 pass, and from the lugs 10, the bolts 14, proceed up, parallel with the sides of the body 1, and through the openings 15, in the ears or lugs 16, which are formed on opposite sides of the body's upper edge, and in vertical alignment with the lugs 10. By this means the plate 11, is securely connected to and made to close the lower end of the body 1. Formed integral with the plate 11, and axially co-incident therewith is the vertical stud 17, which projects up for a short distance and which is formed on its upper end with the peripheral and annular groove 18. This groove forms a circular reduced or spindle like portion, and said portion is adapted to pass into the annular recess 19, formed in the lower end of the downwardly extending stud 20, of top plate 21.

The plate 21 is circular in shape and is formed on its upper face, with the outwardly and downwardly inclined face 22, which is concentric with the periphery of the plate, and communicates on its inner extremity with the depression 23. The depression 23, occupies the whole of the upper face of plate 21, which is not occupied by the incline 22, and is of a

size about equal to that of the opening in top 3 of the body 1. The position of plates 11 and 21 may be seen in Fig. 2, and there it will be seen that the plate 21 is arranged upon the stud 17, and with its inclined face 22 in engagement with the radial ribs 5, of body 1, thereby leaving a space between the said ribs, through which the air is adapted to pass, on its way to the fire.

10 The tube 7 is adapted to furnish means for cleaning the tuyere of cinders and other accumulations, and to this end it is provided with the removable plug or stopper 24, which is of such a size that it will fit snugly therein, and is provided with the rod 25, by which it may be withdrawn. Rod 25 may be of any length necessary, it being intended to extend it to the side of the forge so that it may be readily reached by the operator.

20 By means of the stopper or plug the flow of air through the tube 7 may be allowed to continue unrestrained, or cut off to any degree. Also, when it is desired to clear the body of the tuyere, the plug 24 may be removed and the blast of air through the pipe 7 will carry out with it the objectionable accumulations. It will be understood that the tuyere is embedded in the body of the forge, with the top 3 flush with the surface of the fire pot or box, and with nozzle 7 in communication with a passage leading from the interior to the exterior of the brickwork or body. It is also necessary that the rod 25 extend through said passage and out to the side of the forge, so that it may be reached and operated by the attendant.

I have not shown the bellows for creating the blast, which it is the purpose of the tuyere to direct, but since that is well understood, it is not thought necessary to further describe it. When the air passes from the nozzle 8, it proceeds, *via* pipe 6, into the body 1, and thence out the space between the ribs 5 and into the fire, which is, as will be understood, arranged above and around the inclined face 4 of the body. By this means the blast is di-

vided and regularly and properly distributed through the fire.

Having described my invention, what I claim is—

1. A forge tuyere, comprising in its construction a circular body portion provided with oppositely arranged lugs on its sides and having a dome-shaped upper end, and an open lower end, said upper end being formed with a central orifice and with internal ribs radiating therefrom, a removable bottom plate provided with lugs projecting beyond the sides of the body, bolts connected to the respective lugs on the plate and on the body portion, the said plate having an inwardly-projecting and rabbeted stud at its upper side, a second and circular plate located within the body and provided on its under side with a recess adapted to receive the rabbeted portion of said stud, the upper side of the second plate being formed with a plane circular portion adapted to bear against the internal ribs of the body portion, and an inlet pipe communicating with the body portion, substantially as described.

2. A forge tuyere, comprising in its construction a circular body portion having an open lower end and an orificed upper end, a removable bottom plate provided with an upwardly-projecting lug, a second plate located within the body portion and mounted upon the lug of the bottom plate, the said plate being held adjacent to the orifice in the top of the body, an inlet pipe communicating with the body, an outlet pipe diametrically opposite from the inlet pipe and in the same plane therewith, and a plug removably secured within said outlet pipe whereby the plug may be withdrawn to effect the blowing out of the body portion, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

PATRICK J. FITZSIMMONS.

Witnesses:

F. F. THEDENS,

W. E. MARQUIS.