

(No Model.)

C. G. TAYLOR & W. T. ANGELL.  
FORGE TUYERE.

No. 427,933.

Patented May 13, 1890.

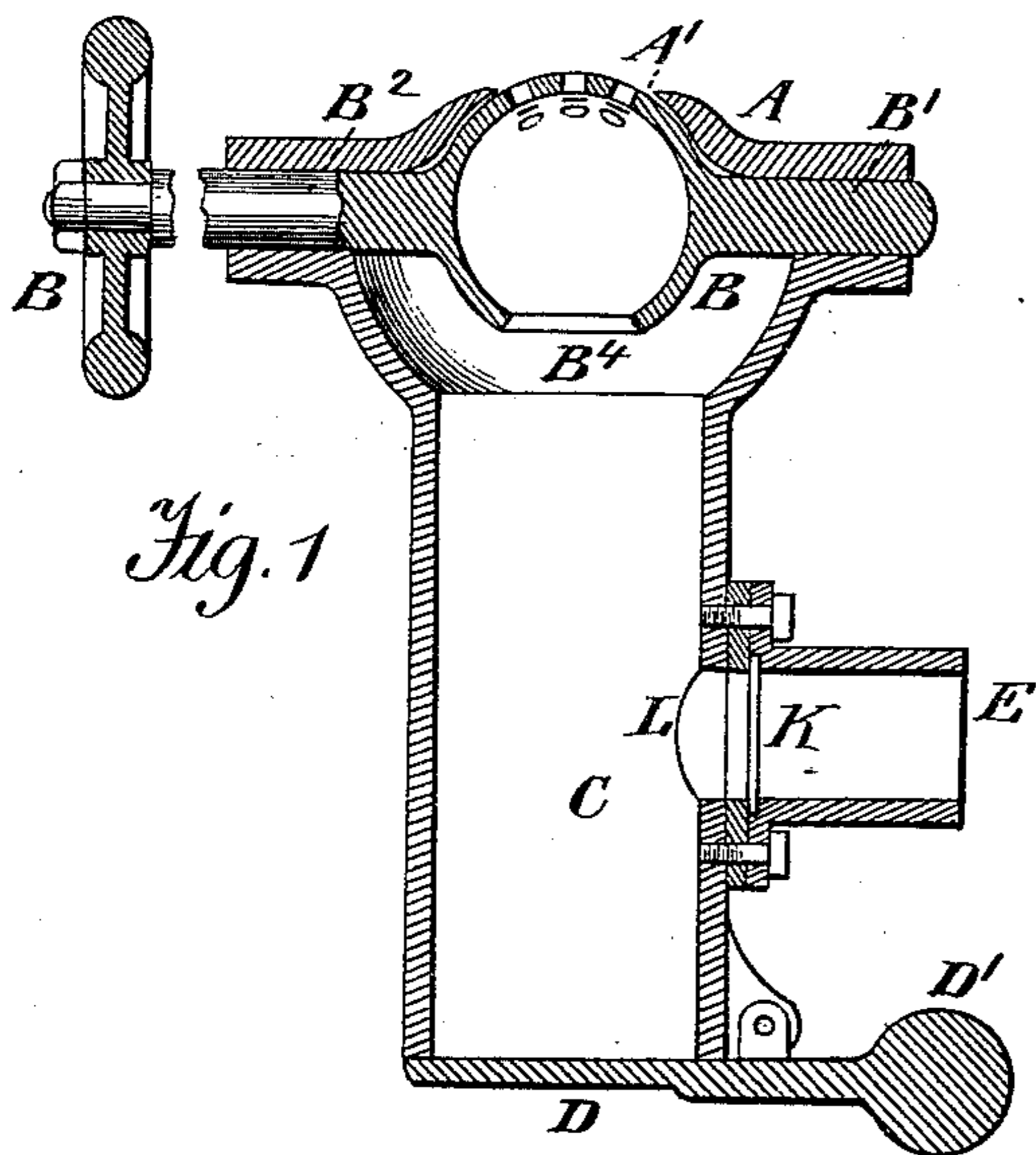


Fig. 1

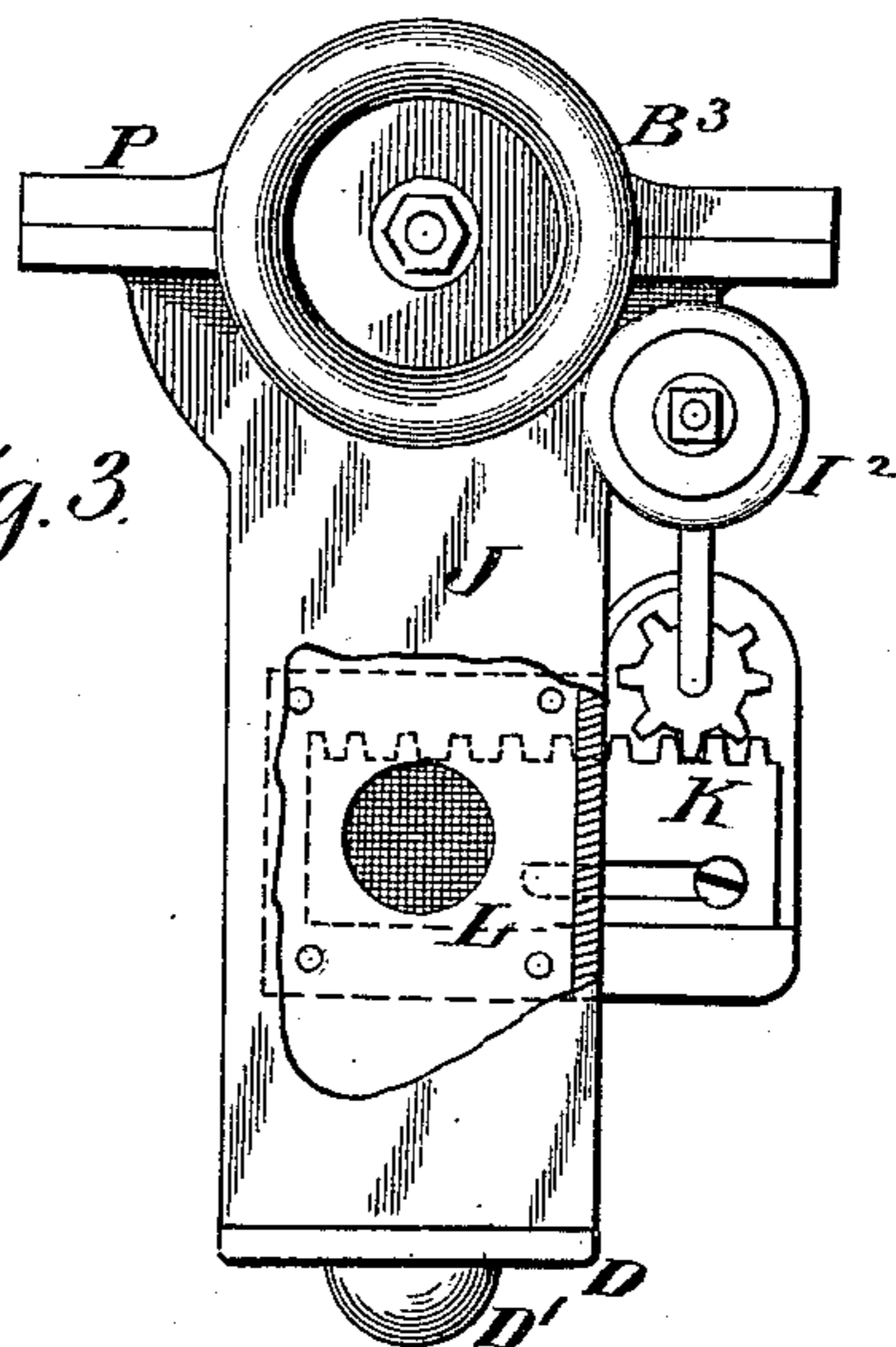


Fig. 3

Fig. 2.

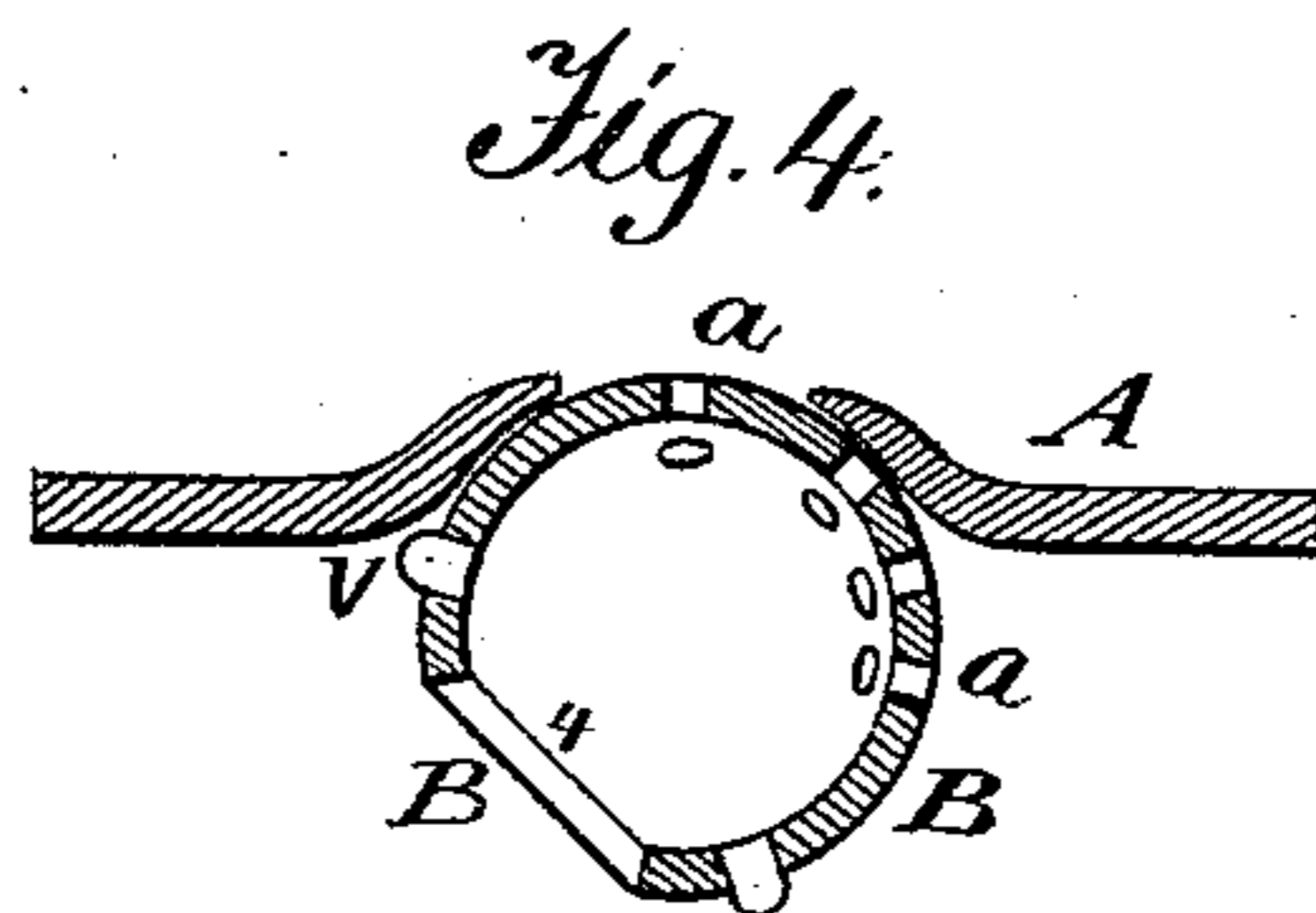
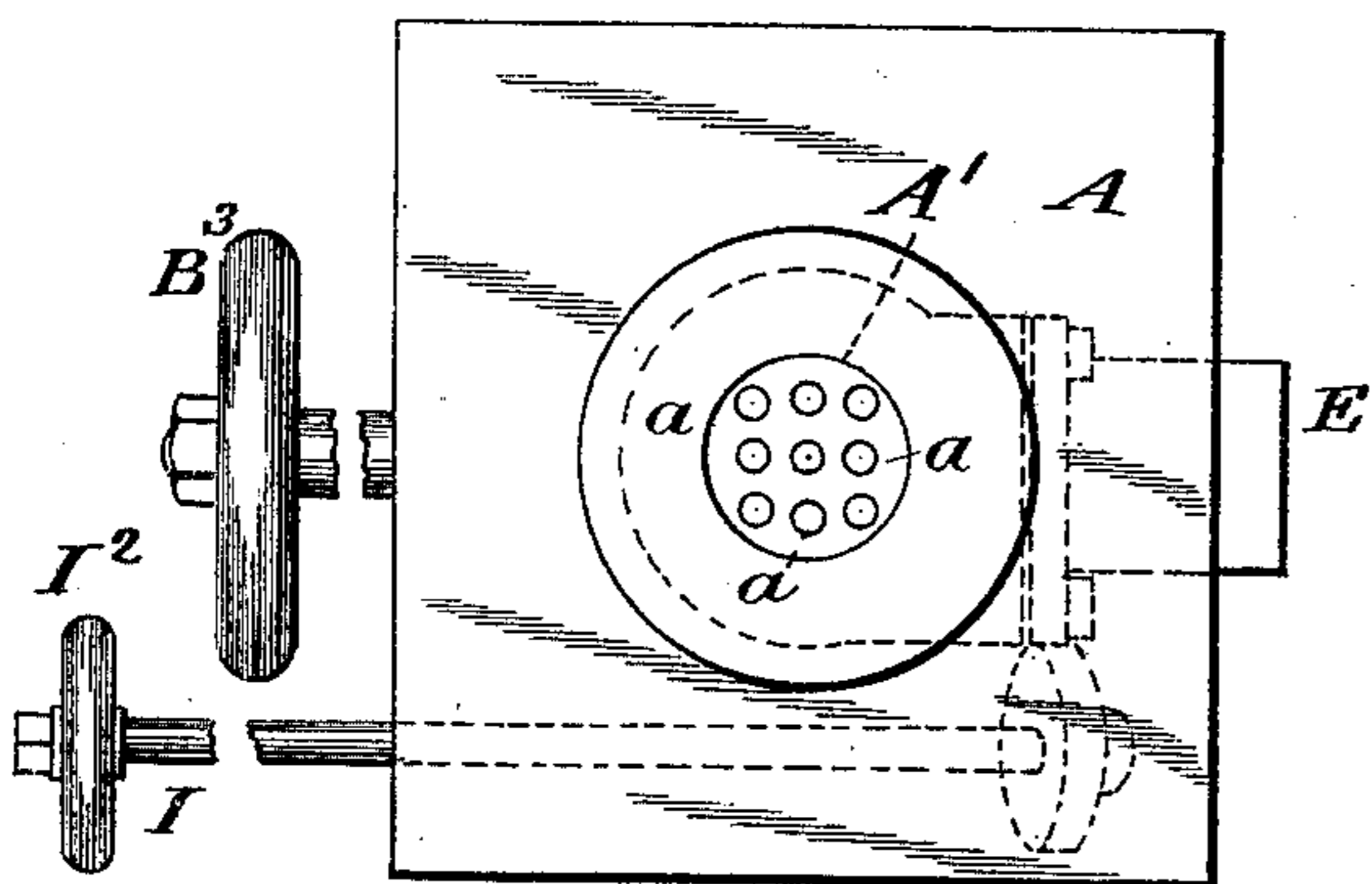


Fig. 4.

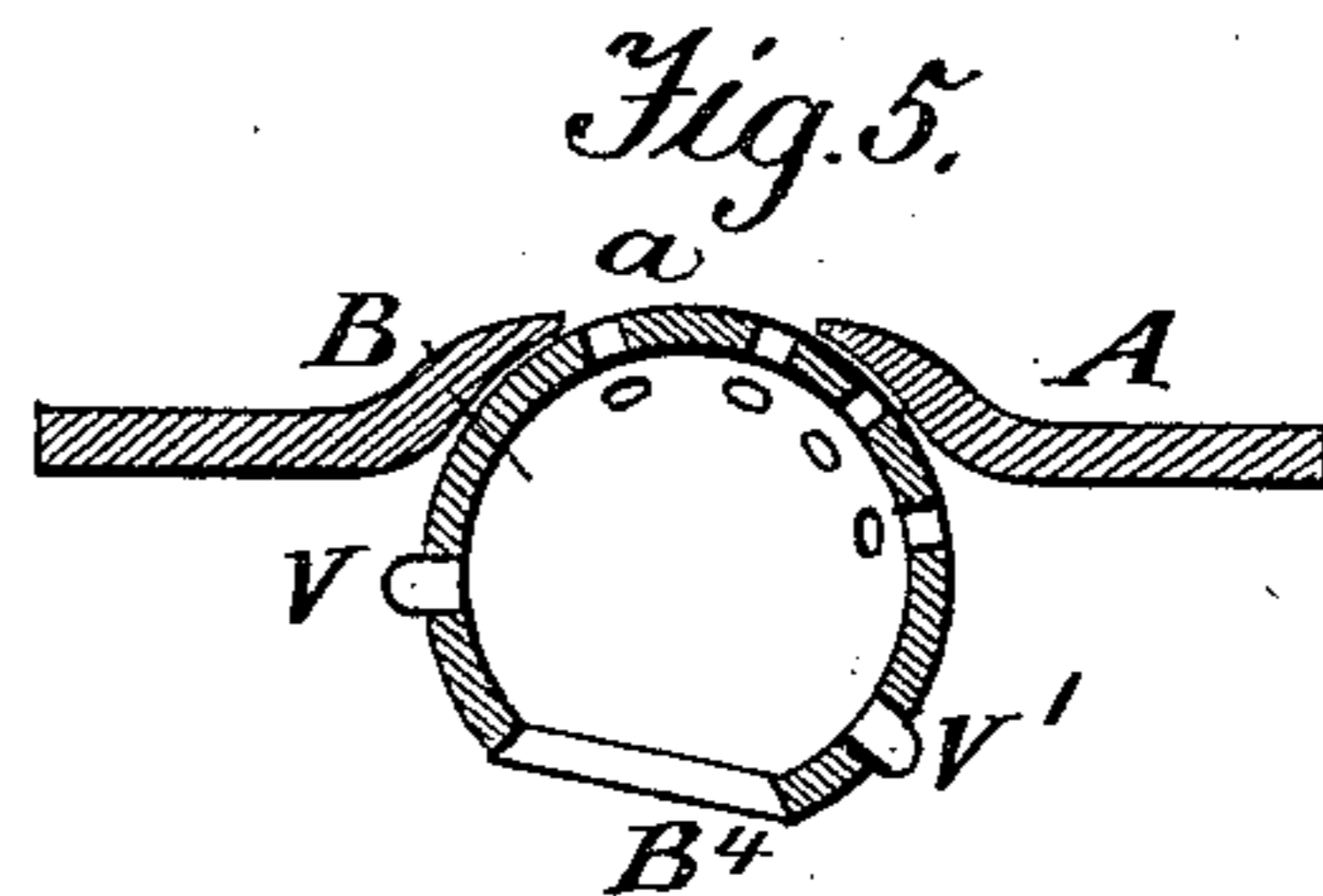


Fig. 5.

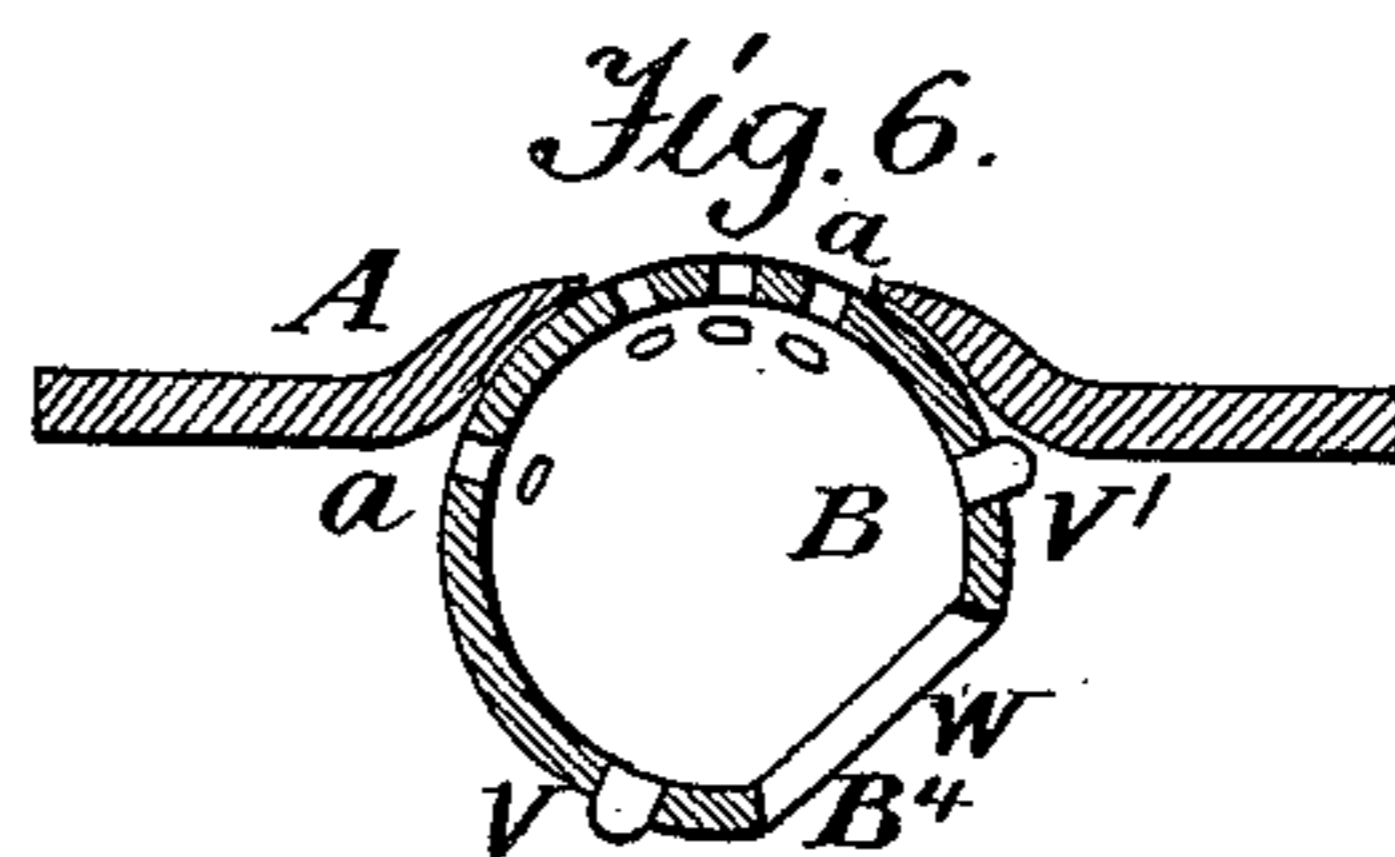


Fig. 6.

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# UNITED STATES PATENT OFFICE.

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## FORGE-TUYERE.

SPECIFICATION forming part of Letters Patent No. 427,933, dated May 13, 1890.

Application filed January 3, 1890. Serial No. 335,827. (No model.)

*To all whom it may concern:*

Be it known that we, CLARENCE G. TAYLOR, a citizen of the United States, residing at Ann Arbor, in the county of Washtenaw and State of Michigan, and WILLIAM T. ANGELL, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Forge-Tuyeres; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to certain new and useful improvements in forge-tuyeres, such as are used in forges for blacksmiths' work. This invention has for its objects to generally improve upon the construction and at the same time render more efficient and serviceable in operation this class of devices.

The further and more immediate objects of the present invention are to provide a forge-tuyere in which the danger of burning out the top of the tuyere center will be in a great measure obviated, a more perfect regulation of the fire may be maintained, the danger of gas explosions lessened, and the clogging of the tuyere while in use will be prevented.

To these ends and to such others as the invention may pertain the same consists in the peculiar combinations and in the novel construction, arrangement, and adaptation of parts, all as more fully hereinafter described, shown in the drawings, and then specifically defined in the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, like letters of reference indicating like parts throughout the several views, and in which drawings—

Figure 1 is a central vertical section through a forge-tuyere constructed in accordance with my invention. Fig. 2 is a top plan view of the same. Fig. 3 is a front elevation; and Figs. 4, 5, and 6 are sectional details, which will be more particularly hereinafter referred to.

Reference now being had to the details of

the drawings by letter, A represents the top plate of the forge-tuyere, which is provided with a central opening A', beneath which opening is placed the hollow metallic shell or ball B, which shell has cast integral there- with upon its opposite sides the extensions B' and B<sup>2</sup>, which form a support for the shell, and also serve as a shaft for rotating the shell, as will be more particularly hereinafter described. The shafts B' and B<sup>2</sup> are suitably journaled within the upper portion of the frame of the machine directly beneath the plate A, and the extended end of the shaft B<sup>2</sup> is provided with an operating-wheel B<sup>3</sup>.

The upper portion of the ball or shell B is provided with a series of holes a, communicating with the hollow interior of the shell, the said holes being placed at such relative positions upon the face of the shell as to permit of a greater or less number of holes being presented beneath the central opening in the plate A as may at any time be found either necessary or desirable in order to properly regulate the fire, as will be readily understood, the change in the position of the shell being regulated by means of the operating-wheel B<sup>3</sup>. The lower portion of the shell B is provided with a large-sized opening B<sup>4</sup>, through which any foreign substances which enter the shell through the openings in its upper portion are allowed to drop, thus preventing the possible accumulation of a mass of foreign matter within the shell, as would otherwise be the case. This opening B<sup>4</sup> also serves to admit air to the interior of the shell, as will presently appear.

Beneath the shafts B' and B<sup>2</sup> is provided a chamber C, the lower end of which chamber is provided with a gravity-valve D, which valve forms the bottom of the chamber. The said valve is normally held in a closed position by the counter-weight D', but is adapted to be opened when a sufficient force is exerted upon its upper face to overcome the weight of the counter-weight. The chamber C is provided upon one of its sides with an air-inlet passage E, and the admission of the air to the chamber C by said inlet is regulated by the sliding damper K. The upper edge of the damper-plate K is provided with a series of cogs, with which mesh the pinions

of the wheel I, carried upon the shaft I', the opposite end of which shaft is provided with an operating-wheel I<sup>2</sup>. Thus it will be seen that the movement of the damper-plate K  
5 may be regulated by turning the wheel I<sup>2</sup>.

L is a wire screen, which covers the air-inlet opening E between the damper K and the chamber C, and serves to prevent the flame from entering the air-chamber in the event of  
10 a gas explosion.

The operation of the device is simple and will be readily understood. For example, we will suppose that but a slight fire is needed. The operating-wheel B<sup>3</sup> is turned so as to rotate the shell B to such a point as to present  
15 but a single opening or row of openings, as the case may be, beneath the opening in the plate A, as shown in Fig. 4 of the drawings, while the wheel I<sup>2</sup> is turned so as to open but slightly the damper K, thus admitting a sufficient amount of air. When a greater heat is required, the shell will be turned so as to present the desired number of holes beneath the opening in the plate A, and the damper K  
25 will be moved so as to admit the desired amount of air. The shell B being thin, there will be little danger of clogging of the holes a, and when for any reason they may become clogged they may be readily cleared. The large opening B<sup>4</sup> in the lower portion of the ball serves to permit the refuse matter to escape from the shell.  
30

If at any time there should be an explosion of gas within the interior of the shell or the chamber C, possible injury to the tuyere-  
35 forge will be prevented by the valve D at the bottom of the chamber C, the force of the explosion serving to force open the valve and permitting the free escape of the gases, as will be readily understood.  
40

Having thus described our invention, what

we claim as new, and desire to secure by Letters Patent, is—

1. In a forge-tuyere, a hollow shell provided with a series of openings, the top plate  
45 of the tuyere provided with a central opening, and means for rotating the shell, the said shell having a larger opening B<sup>4</sup>, combined with an air-inlet to a chamber beneath the shell and a sliding valve for regulating the  
50 admission of air thereto, substantially as described.

2. In a forge-tuyere, the combination, with the top plate having openings, of the rotative shell having a plurality of openings and a  
55 large opening upon its under side, an air-inlet beneath the shell, a sliding valve for controlling the admission of air through said inlet and provided with cogs and a gear-wheel meshing with said cogs and provided with a  
60 suitable handle, substantially as specified.

3. The herein-described forge-tuyere, the same comprising in combination a hollow metallic shell, the upper portion of which is provided with a series of holes, and its lower  
65 portion with an opening, as described, mechanism for rotating the shell, a chamber beneath the tuyere, provided with a weighted valve, and an air-inlet passage communicating with the chamber and provided with a valve for  
70 regulating the admission of air thereto, and mechanism, substantially as described, for operating the damper, substantially as shown and described, and for the purpose specified.

In testimony whereof we affix our signatures  
75 in presence of two witnesses.

CLARENCE G. TAYLOR.  
WILLIAM T. ANGELL.

Witnesses:

R. A. WINSLOW,  
J. M. SMOOTS.