No. 791,844. PATENTED JUNE 6, 1905.

J. E. WASHBURN.

FORGE.

APPLICATION FILED NOV. 22, 1904.

Fig. 1.

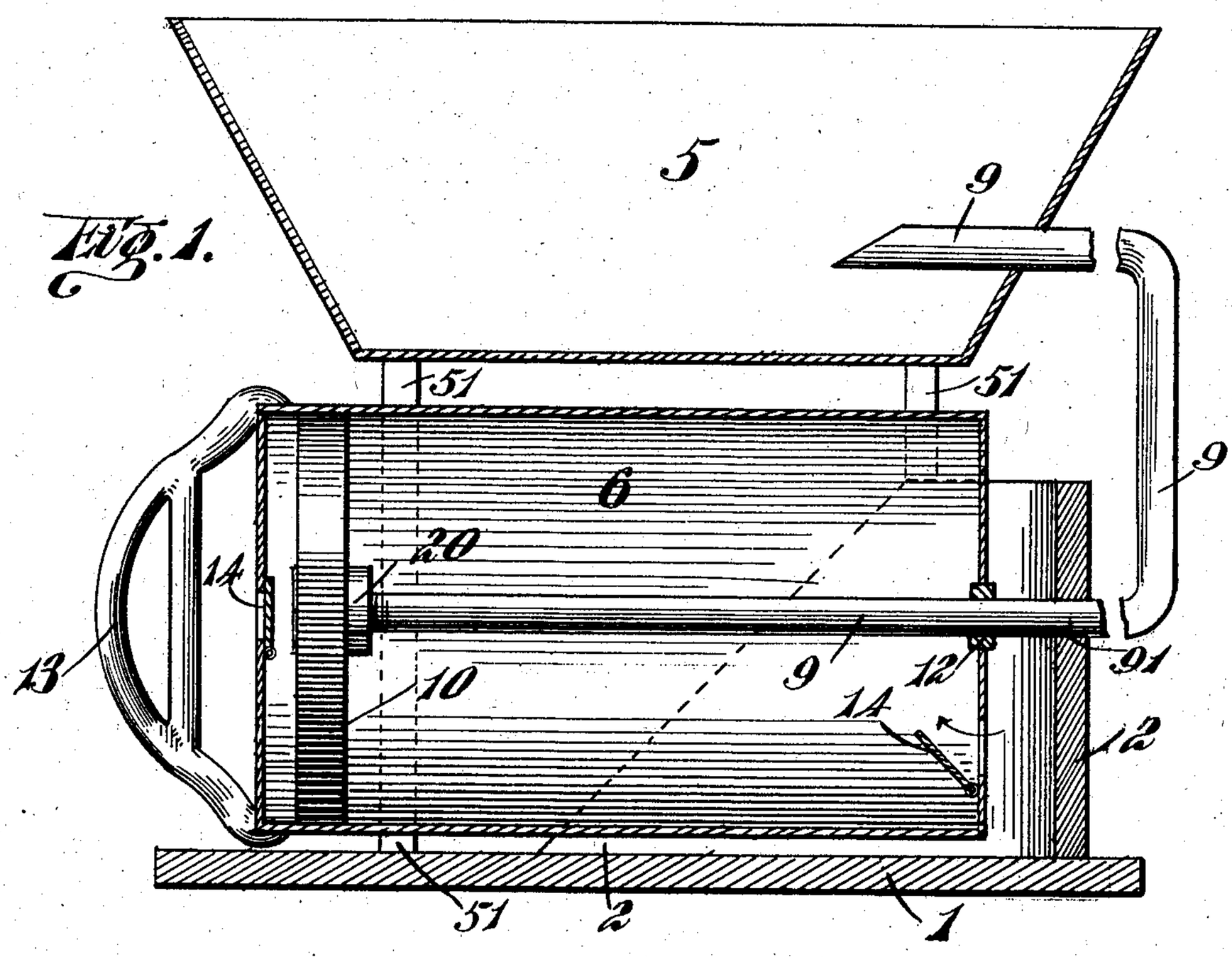


Fig. 2.

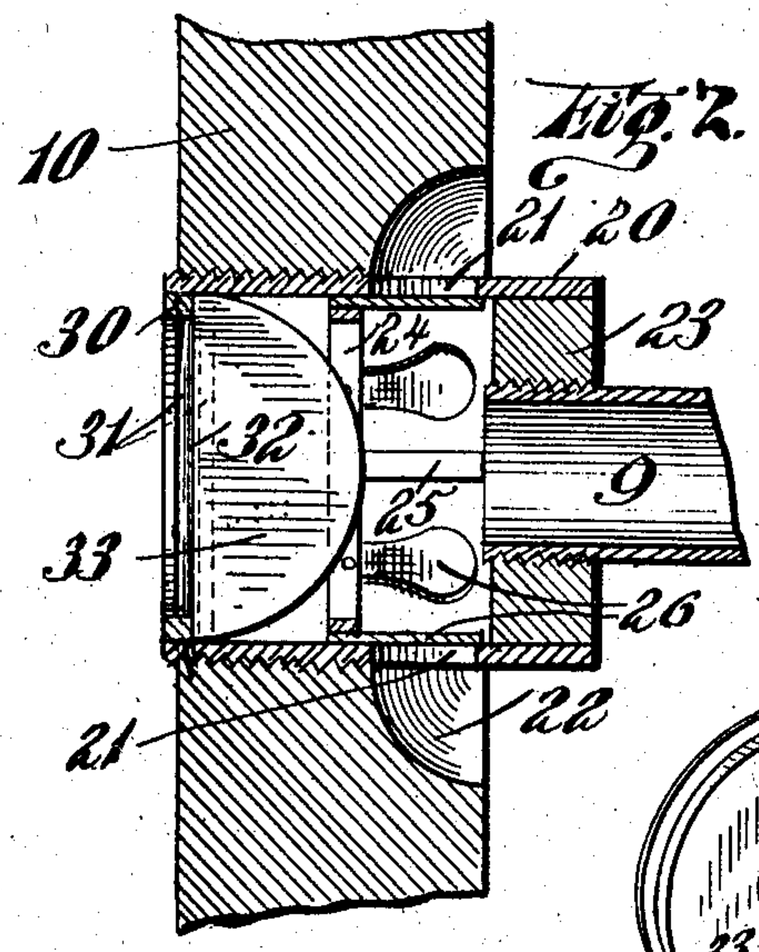


Fig. 3.

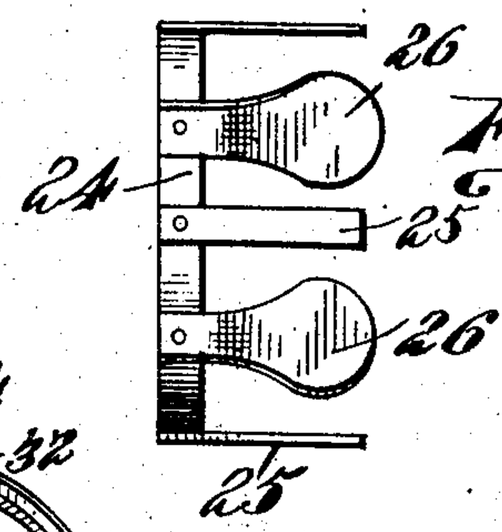
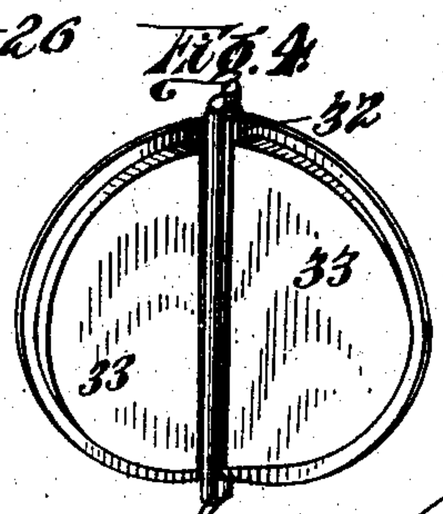


Fig. 4.



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No. 791,844. Patented June 6, 1905.

UNITED STATES PATENT OFFICE.

JOHN E. WASHBURN, OF ROCKPORT, MISSOURI.

FORGE.

SPECIFICATION forming part of Letters Patent No. 791,844, dated June 6, 1905.

Application filed November 22, 1904. Serial No. 233,790.

To all whom it may concern:

Be it known that I, JOHN E. WASHBURN, a citizen of the United States, and a resident of Rockport, Atchison county, State of Missouri, have invented certain new and useful Improvements in Forges; and my preferred manner of carrying out the invention is set forth in the following full, clear, and exact description, terminating with claims particularly specifying the novelty.

This invention relates to furnaces, and more especially to that class of devices thereunder known as "forges;" and the object of the same is to produce an economical and substantial portable forge for the use of the blacksmith or other operator in similar lines of work.

To this end the invention consists, essentially, in a supporting-base, a casing mounted thereon, a cylinder within the casing, a piston within the cylinder, and tubular communications between opposite ends of the cylinder and a fire-pot which is also carried by the structure and in which the operator may heat his irons.

The invention further consists in certain details of construction hereinafter described, all as will appear hereinafter, and as shown in the drawings, wherein—

Figure 1 is a vertical section of this machine. Fig. 2 is an enlarged vertical section of the piston and valve-casing, showing how the former is cut away and how the valves are located within the latter. Fig. 3 is a detail of one set of valves, and Fig. 4 is a detail of the other set of valves.

The numeral 1 designates in all cases a base, which may be mounted upon legs or may rest upon a suitable support. 2 is a box-shaped casing mounted on this base and adapted in shape to a cylinder 6, whose axis is longitudinal of the casing and which reciprocates bodily therein. The pipe 9 passes through and is fixed in the rear end of the casing at 91, and the packing 12 is in the rear end of the cylinder. The latter has outwardly-closing valves 14 in its opposite ends, and the piston 10 is fixed upon the inner end of the pipe, so that as the cylinder reciprocates it moves over the piston. The fire-pot 5 is preferably superimposed above the cylinder and casing and supported by legs 51 from the base 1, and the pipe 9 is of course bent upward and directed into the fire-pot, as necessary.

Any desirable form of valves may be used; but I prefer to employ the valves shown in Figs. 2 and 3, which are located in the end and in the side of the pipe 9.

20 is a valve-casing somewhat larger than the pipe 9 and by preference screwed into the piston 10. This casing is provided with side holes 21, and the piston is cut away, as at 22, to permit the exit of air from these holes. Within the inner end of the casing is fixed a reducing-collar 23, which may well be screwed upon the inner end of the pipe 9, thus rendering the valve-casing removable from the pipe and from the piston when it is desired. 24 is a ring passed into this casing and held at proper position therein by feet 25, and attached to this ring are flap-valves 26, so positioned that they are adapted to close outwardly against the holes 21, thus forming the valve-inlets for air from one side of the piston into the pipe 9. Into the other extremity of the casing is passed a ring 30, across which are fixed two rods or wires 31, and between these wires is fastened a flexible sheet 32, as of leather, to which are secured two semicircular disks 33, of some stiff material, thereby forming flaps which close outwardly against said ring 30. This valve thus provides the inlet for air from the other side of said piston into the pipe 9. It will be seen that when the handle 13 is grasped and reciprocated the entire cylinder moves bodily within the casing and over the straight inner end of the pipe 9, the two sets of valves alternately admitting air into the pipe 9 and pumping it upward into the fire-pot 5.

I do not confine myself to the exact form of valves employed. The proportions and materials of parts are not essential, save that the fire-pot and the pipe must be constructed of some non-combustible material, as is obvious.

What is claimed as new is—

1. In a forge, the combination with a base, a casing mounted thereon, a fire-pot superimposed above the casing, and legs holding it in that position; of a blowpipe whose body extends through the horizontal center of the casing and whose end is bent upward and directed into the fire-pot, a cylinder having packing in its rear and adapted to slide on said body, inlet-valves in both ends of the cylinder, a handle therefor, a solid piston within the cylinder, a valve-casing extending through and removably mounted within the piston, and inlet-valves in the valve-casing opening at both sides of said piston.

2. In a forge, the combination with a fire-pot, a fixed blowpipe directed thereinto and having a horizontal body, and a cylinder adapted for reciprocation on said body and having inlet-valves in both ends; of a valve-casing detachably connected with the end of said pipe, a piston detachably connected with said casing, and inlet-valves in the latter opening through both sides of the piston.

3. In a forge, the combination with a fire-pot, a fixed blowpipe directed thereinto and having a horizontal body, and a cylinder adapted for reciprocation on said body and having inlet-valves in both ends; of a valve-casing of larger bore than the pipe and having radial holes, a collar fixed in the casing and detachably connected with the pipe, a piston within the cylinder and detachably mounted on the collar, the piston being cut away opposite said holes, and inlet-valves in the casing opening at both sides of said piston.

4. In a forge, the combination with a fire-pot, a fixed blowpipe directed thereinto and having a horizontal body, and a cylinder adapted for reciprocation on said body and having inlet-valves in both ends; of a valve-casing detachably secured to the end of the pipe, a piston within the cylinder secured to said casing, radial valves in the latter opening to one side of the piston, a ring in the casing adjacent the other side of the piston, and inwardly-opening valves carried by said ring.

5. In a forge, the combination with a fire-pot, a fixed blowpipe directed thereinto and having a horizontal body, and a cylinder adapted for reciprocation on said body and having inlet-valves in both ends; of a valve-casing detachably secured to the end of the pipe, a piston within the cylinder secured to said casing, radial valves in the latter opening to one side of the piston, a ring in the casing adjacent the other side of the piston, two diametric wires across said ring, a flexible sheet clamped between the wires, and stiff valve-sections secured to the side halves of said sheet.

In testimony whereof I have hereunto subscribed my signature this 19th day of November, A. D. 1904.

JOHN E. WASHBURN.

Witnesses:

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