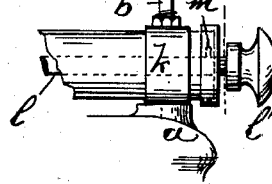
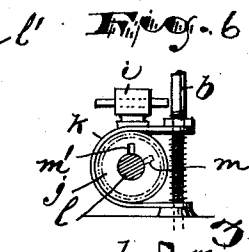
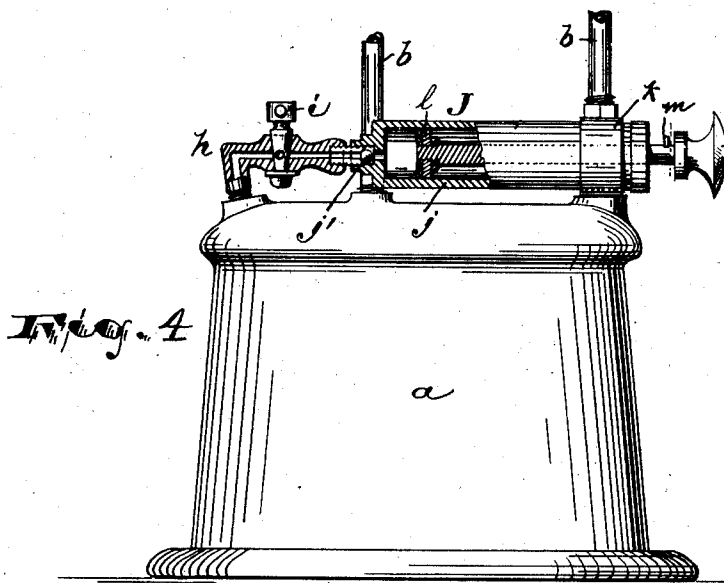
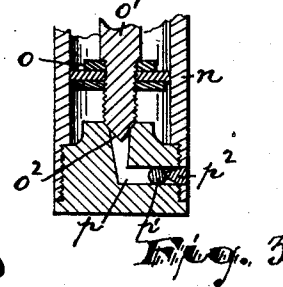
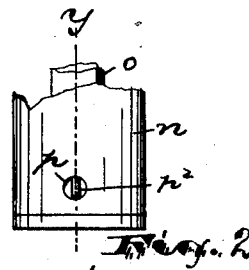
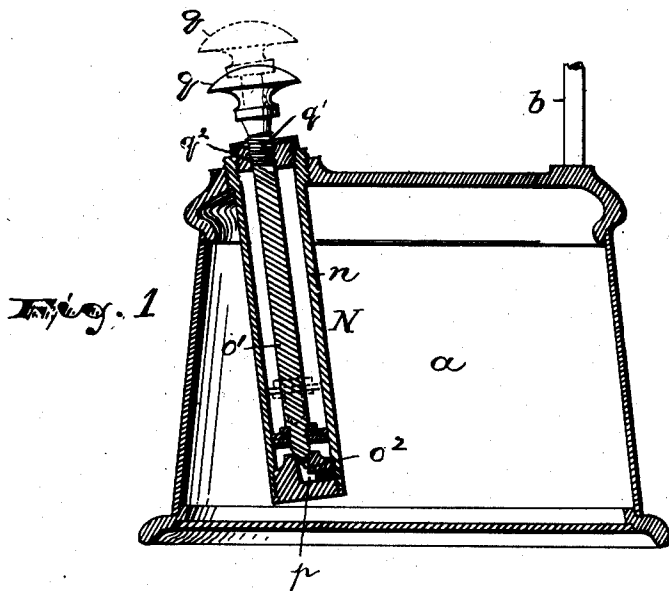


No. 738,518.

PATENTED SEPT. 8, 1903.

O. BERNZ.
PLUMBER'S BLAST FURNACE.
APPLICATION FILED JUNE 5, 1901.

NO MODEL.



WITNESSES:
Henry Pring
Russell M. Everett

Otto Bernz

BY
Drake & Co.
ATTORNEYS

UNITED STATES PATENT OFFICE.

OTTO BERNZ, OF NEWARK, NEW JERSEY.

PLUMBER'S BLAST-FURNACE.

SPECIFICATION forming part of Letters Patent No. 738,518, dated September 8, 1903.

Application filed June 5, 1901. Serial No. 63,201. (No model.)

To all whom it may concern:

Be it known that I, OTTO BERNZ, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Plumbers' Blast-Furnaces; and I do hereby 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 letters of reference marked thereon, which form a part of this specification.

This invention relates to portable blast-furnaces, such as are commonly used by plumbers; and the objects of the invention are to provide improved means for forcing air into the reservoir of the furnace, to secure a more compact and convenient construction, and to obtain other advantages and results, some of which may be referred to hereinafter in connection with the description of the working parts.

The invention consists in the improved blast-furnace for plumbers and in the arrangements and combinations of parts of the same, all substantially as will be hereinafter set forth and finally embraced in the clauses of the claim.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in each of the several figures, Figure 1 is a vertical section of a reservoir of the furnace, taken centrally through the air-pump. Fig. 2 is a side view of the lower part of the pump; and Fig. 3 is a section of the same on line *y*, Fig. 2. Fig. 4 is an elevation of the furnace-reservoir, showing a preferred form of air-pump applied thereto, said pump and its connections being partly in central longitudinal section to show the construction more clearly. Fig. 5 is a detail side view of the outer end of the pump, showing the piston locked in position; and Fig. 6 is an end view of the same, as on line *z*, Fig. 5.

In said drawings, *a* indicates the reservoir of the furnace, said reservoir being of any usual construction adapted to form a base for the furnace and having uprights *b* projecting from its top. It is to means for compressing

air in said reservoir that my invention particularly relates, and to this end an elbow-tubing *h* is screwed at one arm into the top of the reservoir near its side, the other arm extending radially inward over the top of the reservoir and being provided with a petcock *i*. To the end of said horizontal arm of the elbow-tube *h* is connected the nozzle of an air-pump *J*, lying diametrically across the top of the reservoir in horizontal position, with its outer end at or projecting over the edge of the reservoir, so that the piston can be conveniently operated from the side of the furnace. A strap *k* may bind the pump to one of the uprights *b* and hold it rigid. Said pump *J* comprises a cylinder *j*, having at its end next the nozzle a common ball-valve *j'*, preventing backflow into the cylinder, and a piston *l*, having a handle *l'* at its outer end.

In operation the petcock *i* being opened the piston *l* is actively reciprocated to force air through the pump into the reservoir, and when the desired pressure is attained the petcock *i* is closed. The petcock *i* is not absolutely necessary, since the valve *j'* of the pump stops backflow; but for greater safety I prefer to employ the petcock, said petcock being ground to fit its seat and effect a most impervious closure.

To prevent the piston *l* from being left in withdrawn position, and thus inconveniently projecting from the side of the furnace, I have provided a lug *m* on said piston near its handle adapted to pass through radial slot *m'* in the end wall of the cylinder when the piston is pushed in and then be turned out of alinement with said slot by a twist of the piston. This locks the piston in its innermost position.

Under some conditions I may seat a pump *N* in a threaded perforation in the top of the reservoir, so that the pump projects downwardly within the reservoir with only its rear end projecting to provide access to the piston-handle, as shown in Fig. 1. In this construction the nozzle is a mere outlet-passage *p* through the inner end of the cylinder *n*, said passage being closed against backflow by a ball-valve *p'*, whose outward escape is prevented by a V-shaped tongue *p''*, of sheet metal, set edgewise centrally in the outlet.

In this construction also the inner end of said outlet-passage p is adapted to be closed by the conical end o^2 of the piston o , said piston having for this purpose screw-threads q' on its rod o' next to the handle g , which screw-threads are adapted to engage corresponding threads q^2 on the walls of the perforation of the end wall of the cylinder in which the piston-rod works. This enables the piston o after sufficient air has been pumped in and the piston restored to innermost position to be readily screwed inward by a few turns to securely close the outlet p and also hold the piston against inadvertent withdrawal.

15 Having thus described the invention, what I claim as new is—

1. In a plumber's blast-furnace, the combination with a reservoir, and supporting-rods extending upward from the top thereof, of an air-pump cylinder horizontally and transversely disposed above said reservoir and lying at its outer end at the side of one of said supporting-rods, an elbow-tube rigidly coupled at one end to the inner end of said cylinder and at its opposite end being in rigid communication with the interior of the reservoir through its top, a stop-cock in said elbow-tube, a strap passed around said cylinder near its outer end and being connected at its extremities to the said adjacent supporting-rod, means for tightening said strap, and a piston working in said cylinder.

2. In a plumber's blast-furnace, the combination with a reservoir a , uprights b , and extending upward from the top thereof, of an air-pump cylinder horizontally and trans-

versely disposed above said reservoir and lying near its outer end at the side of one of said uprights, an elbow-tube rigidly coupled at one end to the inner end of said cylinder and at its opposite end being screwed into a perforation in the top of the reservoir, a stop-cock in said elbow-tube, a strap passed around said cylinder near its outer end and being perforated at its ends and receiving the said adjacent upright, and a piston working in said cylinder.

3. In a plumber's blast-furnace, the combination of a reservoir a , an air-pump cylinder horizontally and transversely disposed above said reservoir, an elbow-tube rigidly coupled at one end to the inner end of said cylinder and being screwed at its opposite end into the top of the reservoir, a stop-cock in said elbow-tube, fixed uprights projecting upward from the top of the reservoir arranged to support a top plate, one of said uprights being threaded at its lower end and located at the side of the outer end of the air-pump cylinder, a strap passing around said cylinder and having its ends perforated and receiving the said upright, a nut on the said upright above said strap ends, and a hand-piston in said cylinder.

In testimony that I claim the foregoing I have hereunto set my hand this 19th day of April, 1901.

OTTO BERNZ.

Witnesses:

CHARLES H. PELL,
C. B. PITNEY.