G. BURGESS.

BLOWER FOR BOILERS.

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**1,128,406.**

**Patented Feb. 16, 1915.**

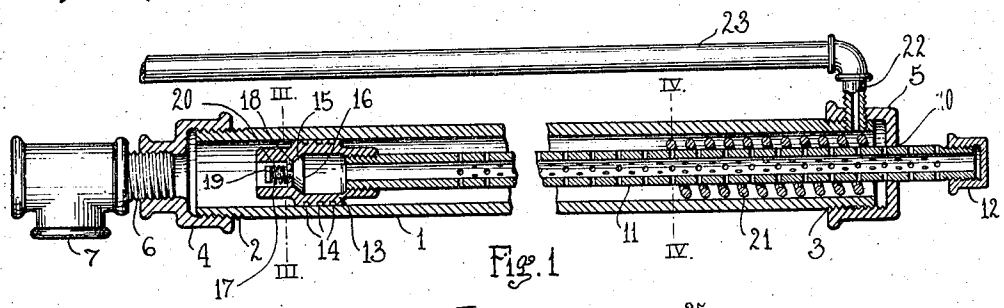



Fig. 1

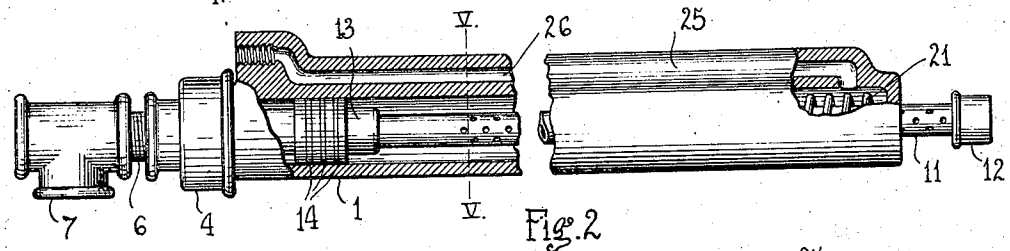



Fig. 2

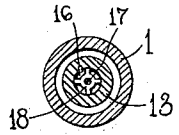



Fig. 3

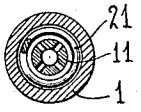



Fig. 4

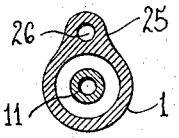



Fig. 5

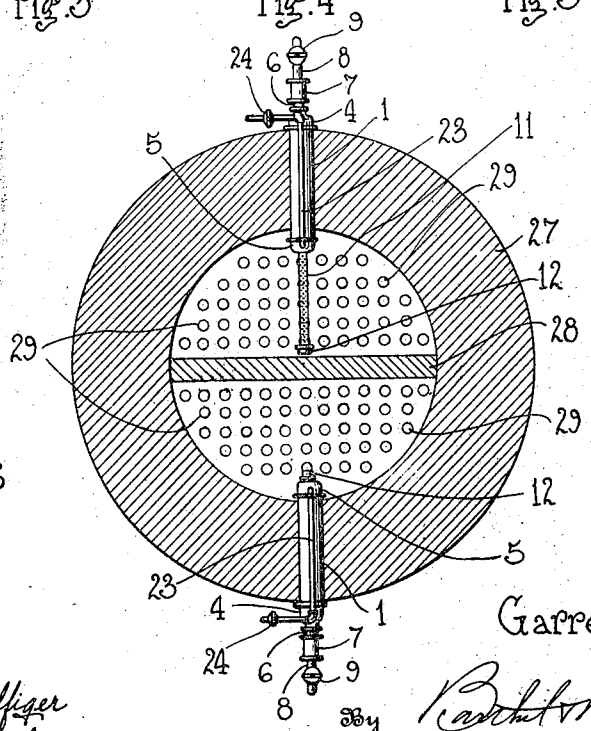



Fig. 6

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# UNITED STATES PATENT OFFICE.

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## BLOWER FOR BOILERS.

1,128,406. Specification of Letters Patent. Patented Feb. 16, 1915.

Application filed September 23, 1914. Serial No. 863,075

*To all whom it may concern:*

Be it known that I, GARRETT BURGESS, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Blowers for Boilers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to steam blowers for boilers, and more particularly to soot cleaners especially adapted for use in cleaning the flues of vertical boilers.

The primary object of my invention is to provide positive and reliable means, in a manner as hereinafter set forth, for expeditiously subjecting the interior of fire tubes or flues to the action of steam or a gaseous fluid, under pressure, whereby soot, ashes and incrustations are removed from the walls of the flues.

Another object of this invention is not only to remove soot, incrustations, and foreign matter from the tubes or flues of a boiler, but to enable the work to be done while the boiler is steaming or in use and without the necessity of opening any portion of the boiler settings, which opening would allow of the escape of heat.

A further object of this invention is to provide a blower embodying a reciprocal steam ejecting member adapted to be placed in an operative position by steam admitted to the blower, and retracted by steam after a blowing operation.

A still further object of this invention is to provide a simple, durable and inexpensive blower that can be advantageously used in connection with a vertical boiler, particularly of the "Wicks" type.

The above and other objects are obtained by a mechanical construction that will be hereinafter specifically described and then claimed, and reference will now be had to the drawing, wherein—

Figure 1 is a longitudinal sectional view of the preferred form of blower, partly broken away; Fig. 2 is a side elevation of a modified form of blower, partly broken away and partly in section; Fig. 3 is a cross sectional view taken on the line III—III of Fig. 1; Fig. 4 is a similar view taken on the line IV—IV of Fig. 1; Fig. 5 is a similar view taken on the line V—V of Fig. 2; and Fig. 6 is a horizontal sectional view of a vertical boiler provided with blowers in accordance with this invention.

A blower in accordance with my invention comprises a tubular body or cylinder 1 having the ends thereof exteriorly screw-threaded, as at 2 and 3 to receive a reduction nipple 4 and a cap 5. The reduction nipple 4 has a short connection 6 with a T 7, which is connected to a steam supply pipe 8 provided with a controlling valve 9. The T 7 also constitutes a drain for the tubular body or cylinder 1.

The cap 5 has a concentric opening 10 and reciprocal in said opening is a perforated or apertured steam ejecting member 11. This member is arranged longitudinally of the body or cylinder 1 and the outer end thereof is closed by a cap or plug 12. The inner end of the member 11 is connected to a hollow piston head 13 provided with packing rings 14. The interior of the hollow piston 13 affords a valve seat 15 for a valve 16, said valve having the stem 17 extending through a spider 18 forming part of the hollow piston. The end of the valve stem 17 has a head 19 and encircling said valve stem, between the head 19 and the spider 18 is a coiled compression spring 20 that holds the valve 16 normally seated. In the body or cylinder 1, adjacent the cap 5, is a coiled spring 21 that encircles the member 11 and cushions a reciprocal movement of the member 11 when impinged by the piston 13. The cap 5 has a connection 22 with a steam supply pipe 23 and said pipe is provided with an ordinary valve 24 for controlling the admission of steam to the body or cylinder 1.

In Figs. 2 and 5 of the drawings, there is illustrated a slight modification of the invention, wherein the blower body or cylinder 1 has a longitudinal enlargement 25 provided with a by-pass 26 serving functionally the same purpose as the steam supply pipe 23 and the connection 22.

A vertical boiler of the "Wicks" type is illustrated in Fig. 6 and designated 27, said boiler having a baffle 28 and flues 29. The blowers are permanently mounted in the boiler setting whereby the reciprocal steam ejecting members 11 of the blower can be shifted into proximity to the baffle 28 to permit of steam being equally distributed at the flue sheet of the boiler.

When steam is admitted to a blower body or cylinder the piston 13 is moved toward the inner end of the blower body or cylin-

der, thereby projecting the steam ejecting member 11. Simultaneous with this operation the steam under pressure unseats the valve 16 and steam is admitted to the member 11 and ejected through the perforations or apertures thereof. The inward movement of the member 11 is cushioned by the spring 21 and after the flues 29 of the boiler have been blown and thoroughly cleaned, the supply of steam to the blower body or cylinder 1 is shut off and the supply admitted to the inner end of the body or cylinder 1 through the medium of the pipe 23. The steam under pressure then retracts the steam ejecting member 11 and restores the same to normal position.

The preferred embodiments have been illustrated, but it is to be understood that the structural elements are susceptible to such modifications and variations as fall within the scope of the appended claims.

What I claim is:—

1. In a blower for boilers, a cylinder, a hollow piston reciprocal therein and having open ends, a check valve in the outer end of said piston and opening direct into said piston, a perforated steam ejecting member concentric with said cylinder and connected to the outer end of said piston and adapted to be projected from the inner end of said cylinder, means in the inner end of said cylinder and encircling said member for cushioning the movement of said piston in one direction, a nipple on the outer end of said cylinder adapted to admit steam thereto, and an enlargement longitudinally of said cylinder provided with a bypass communicating with the inner end of said cylinder to admit steam thereto whereby said piston is restored to normal position.

2. In a blower for boilers, a cylinder, a hollow piston reciprocal therein and having open ends, a check valve at the outer end of said piston and opening direct into said piston, a perforated steam ejecting member concentric with said cylinder and connected to the outer end of said piston and adapted to be projected from the inner end of said cylinder, means in the inner end of said cylinder for cushioning a movement of said piston in one direction, a nipple on the outer end of said cylinder adapted to admit steam thereto, and an enlargement longitudinally of said cylinder provided with a bypass communicating with the inner end of said cylinder to admit steam thereto whereby said piston is restored to normal position, the bypass of said enlargement having the outer end thereof offset to provide clearance for said nipple.

In testimony whereof I affix my signature in presence of two witnesses.

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Witnesses:

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