

A. V. BAYER.
SOOT BLOWER ATTACHMENT.
APPLICATION FILED MAR. 4, 1912.

1,028,180.

Patented June 4, 1912.

FIG. 1.

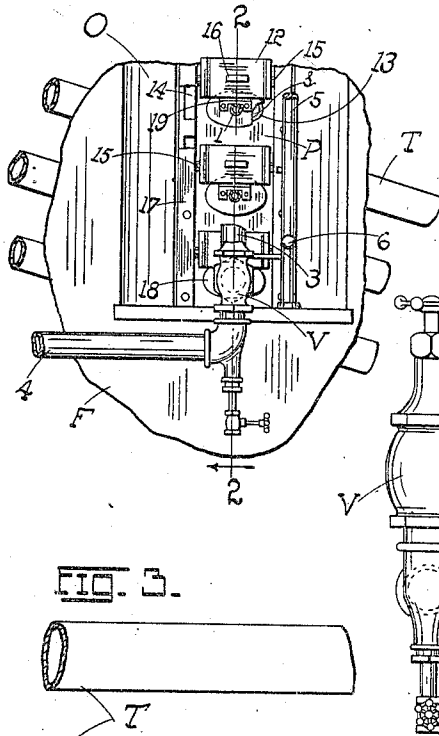


FIG. 2.

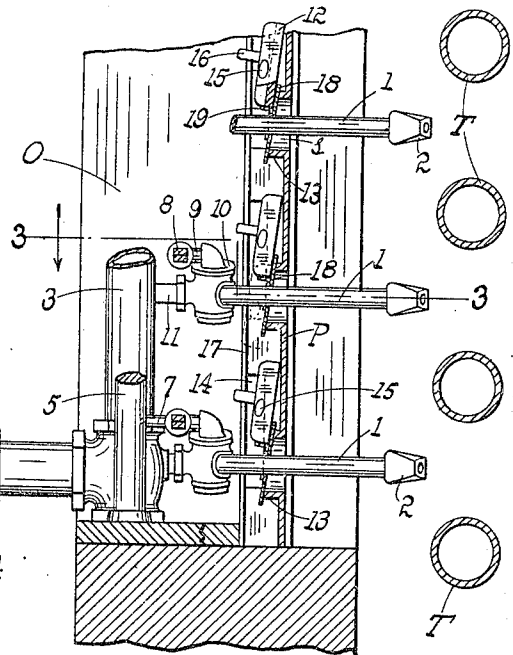


FIG. 3.

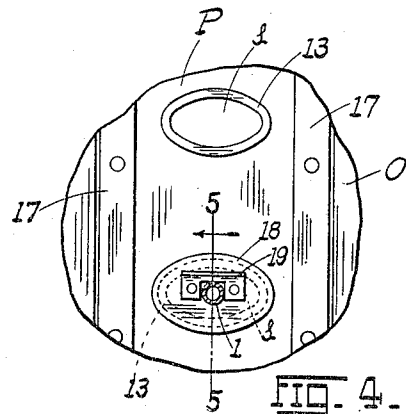
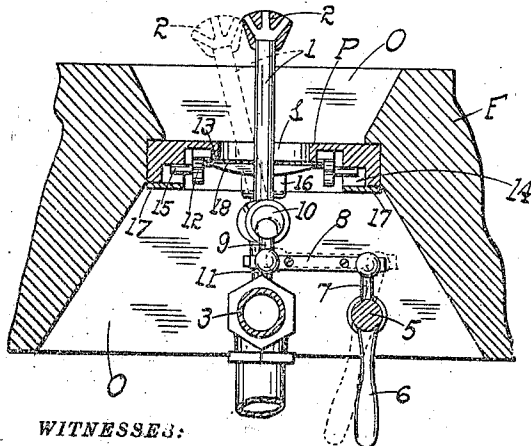
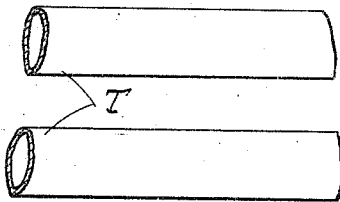
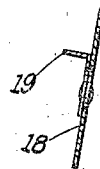


FIG. 5.



WITNESSES:

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UNITED STATES PATENT OFFICE.

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SOOT-BLOWER ATTACHMENT.

1,023,180.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, AUGUST V. BAYER, citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Soot-Blower Attachments, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in soot-blower attachments; and it consists in the novel details of construction more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is an elevation of a portion of the side wall of a water-tube boiler furnace showing my invention applied thereto; Fig. 2 is an enlarged vertical transverse section on the line 2—2 of Fig. 1, parts being in elevation; Fig. 3 is a horizontal section on the zig-zag line 3—3 of Fig. 2; Fig. 4 is a front elevation of the wall-plate with my attachment in position, the nozzle being in cross-section; and Fig. 5 is a cross-section of the nozzle attachment only, on the line 5—5 of Fig. 4.

The present improvement finds special application in that type of water-tube boiler in which the tubes are cleaned by a nozzle inserted through the side wall of the boiler-furnace, and from which the cleaning fluid (usually steam) is projected across the tubes. Types of such boiler are the Babcock and Wilcox and the Edge Moor. The blowing nozzle is generally one which oscillates in the general direction of the tubes, being inserted through an opening formed in a wall-plate specially built in the furnace wall for the accommodation of the several nozzles.

It is the object of my invention to provide suitable means operating in conjunction with the nozzle for permanently keeping covered the opening or slot in said wall-plate (through which the nozzle has a definite range of oscillation or sweep) so as to prevent the induction through said slot of outside air currents into the furnace. These currents not only chill the boiler tubes but they in a measure condense the steam projected from the nozzle and thereby interfere with the successful blowing or cleaning of the boiler. Under my invention the slots or openings in the wall-plate remain per-

manently covered or shielded, so that the blowing of the boiler is perfect.

The advantages of the invention will be best apparent from a detailed description thereof which is as follows:—

Referring to the drawings, F represents the side furnace-wall of a well-known type of water-tube boiler (the Babcock and Wilcox) and T the inclined tubes entering into the construction of the water-tube section of the same. As well understood in the art the side wall is provided with a recess or opening O opposite the tubes, said opening being closed by a wall-plate P provided with laterally elongated (usually elliptical) openings or slots s through which are passed steam nozzles 1 terminating in spray-heads 2 opposite the tubes T, for the projection of a cleaning fluid (steam) by which the boiler is blown from time to time and the tubes cleansed of any accumulations of soot, ashes, dirt and other foreign material. The nozzles in practice have a definite range of oscillation across the openings s in planes substantially parallel to the boiler tubes, so as to take in as large a section of the tubes as possible during the blowing operation. Any means for imparting oscillation to the nozzles may be adopted, the mechanism shown not being herein claimed, constituting as it does the subject-matter of a distinct application. It may however, be briefly referred to in order to explain at least one mode of actuating the nozzles.

Mounted centrally in front of the wall-plate P is a fixed riser 3 which is supplied with steam from the steam feed-pipe 4, a suitable controlling valve V being positioned where most convenient for regulating the supply. The pipe 4 preferably draws its steam supply from the shell or drum of the boiler, not here shown. Mounted to one side of the riser is a rocker-bar 5 provided with an operating handle 6, the bar having distributed thereon a series of lever arms 7 which are coupled through the links 8 to the lever-arms 9 of the rotatable members of the hollow steam-joints 10 from which lead the nozzles 1. The joints 10 are mounted at the inner ends of the short tubes or shunts 11 carried by the riser 3, through which tubes the steam flows into the joints 10 and thence into the nozzles 1 and spray-heads 2. The axes of rotation of the joints are at

right angles to the tubes T, so that when the rocker-bar 5 is rocked back and forth, the nozzles have imparted to them a swinging movement or oscillation substantially parallel to the boiler tubes. This feature however, is not herein claimed.

The dimensions of the slots *s* formed in the wall-plate P and through which the nozzles 1 project are sufficient to allow for the necessary oscillation or traverse imparted to the nozzles; but it is apparent that unless the slot is kept permanently closed, atmospheric air will be drawn into the furnace through the slot, thereby chilling the tubes; and when the nozzle is blown, large quantities of air would be drafted through the slot into the furnace not only chilling the tubes but condensing a portion of the steam projected from the nozzle. The condensed steam instead of thoroughly cleaning the tubes would moisten the soot and ashes accumulated thereon causing a considerable portion of the material to cling to the tubes and the boiler would be only partially or imperfectly blown or cleaned. Where the boiler was blown by hand, the holes *s* upon the conclusion of the operation were covered over by plates 12 (preferably flanged at the sides) the plate bearing against the inclined edge of the beveled flange or hollow boss 13 surrounding the hole, and resting with its lower edge at the bottoms of the guide-ways or recesses 14 formed at the sides of the wall-plate P, the sides of the plate 12 being provided with pins or trunnions 15 operating in the guide-ways. When it was desired to insert a nozzle through the hole *s* to blow the boiler, the plate 12 was simply lifted by the front finger-hold or lug 16 and raised until its lower edge rested on top of the flange 13. During the blowing, of course the hole *s* was uncovered so that air was drafted into the furnace—an objection overcome by my present invention. After the trunnions 15 were inserted in the recesses 14, plates 12 were prevented from dropping out by the strips 17 subsequently riveted to the plates 12 over the recesses. These plates 12 though no longer serving their original function of covering up the slots or holes *s* are availed of as suitable adjuncts to my attachment. This attachment consists of a shield or plate 18 of a shape to cover up the slot *s* and partly overlap the inclined edge of the flange 13 against which it is designed to bear, the shield being simply passed or slipped over the nozzle 1. Riveted to the shield adjacent the opening thereof, and positioned above the nozzle is an angle-bracket or ledge 19 against which the lower edge of the plate or gravitating member 12 is allowed to rest. The resting of the plate 12 upon the ledge 19 not only serves to maintain the shield 18 in proper position on the nozzle 1, preventing outward dis-

placement thereof, but holds it against turning or rotary displacement. It also causes the shield to hug the edge of the flange 13 so that the slot *s* remains permanently covered. Of course, the lateral oscillation or traverse of the nozzle in the slot *s* is not excessive owing to the proximity of its axis of oscillation to the wall-plate P, so that the movement of the shield 18 carried by the nozzle is never so great as to cause an uncovering of the slot, the shield, at all times overlapping the inner edge of the hollow boss or flange 13. It will thus be seen that by simply passing my shield 18 over the nozzle 1 and allowing the weighted plate 12 to rest on the ledge 19 thereof, the slot *s* is kept permanently closed, and when the boiler is blown, no steam is condensed as there is no influx of cold air into the furnace, and the cleaning is perfect. Since the plate 12 is not susceptible of lateral movement, the contact between it and the ledge 19 is a rubbing one owing to the lateral movements to which the shield is subjected with the oscillations of the nozzle. These oscillations being along inclined planes (substantially parallel to the boiler tubes T), the plate 12 is free to rise and fall to conform to said oscillations as the trunnions 15 thereof are loose in their pockets or recesses 14.

Having described my invention, what I claim is:—

1. In combination with a boiler-furnace wall provided with an opening, a nozzle oscillating across the opening, and projecting a cleaning fluid against the boiler, a shield passed over the nozzle, and a member overlapping the shield for maintaining the same in close proximity to the wall opposite said opening whereby the latter is kept permanently covered with the oscillations of the nozzle.

2. In combination with a boiler-furnace wall provided with an opening, a nozzle oscillating across the opening and projecting a cleaning fluid against the boiler, a shield mounted loosely on the nozzle and moving therewith in front of and across the opening, and a weighted member resting on the shield and maintaining the same in close proximity to the wall opposite the opening, whereby the latter remains permanently covered.

3. In combination with a roller-furnace wall-plate provided with an opening opposite the boiler, said opening being bounded by a flange having its outer edge disposed in a plane inclined upwardly toward the wall-plate, an oscillating nozzle operating through said opening for projecting a cleaning fluid against the boiler, a shield passed over the nozzle and bearing against the inclined edge of the flange and overlapping the opening, a ledge on the outer face of the

shield above the nozzle, and a gravitating member resting on said ledge for pressing the shield against the flange and preventing displacement thereof on the nozzle, the shield covering the opening during the movements of the nozzle.

4. In combination with a boiler-furnace wall-plate provided with an opening opposite the boiler, said opening being bounded by a flange terminating in an upwardly inclined edge directed toward the plate, a nozzle passed through the opening and having a definite range of movement across the same for projecting a cleaning fluid against the boiler, a shield passed over the nozzle and engaging the end of the flange and overlapping the opening, a ledge carried by the outer face of the shield above the opening formed therein for the reception of the nozzle, a weighted plate resting on the ledge, and means for movably anchoring said plate to the furnace wall, for the purpose set forth.

5. As an article of manufacture, a soot-blower nozzle attachment comprising a plate

having an opening for the insertion of the nozzle, and a ledge secured to one face of the plate adjacent to the opening, as set forth.

6. In combination with a boiler-furnace wall provided with an opening, a blower nozzle oscillating across the opening, a shield mounted on the nozzle and moving therewith, and a weighted member resting on the shield and having rubbing contact therewith for maintaining the shield in proper relation to the opening traversed by the nozzle, the shield overlapping the opening and preventing ingress of atmospheric air into the furnace.

7. In combination with a boiler-furnace wall provided with an opening, a blower member traversing said opening, and a sliding shield disposed about said member and covering the opening.

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

AUGUST V. BAYER.

Witnesses:

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JOS. A. MICHEL.