

E. B. BARNHILL.
BLOWER FOR BOILERS.
APPLICATION FILED SEPT. 1, 1909.

966,987.

Patented Aug. 9, 1910.

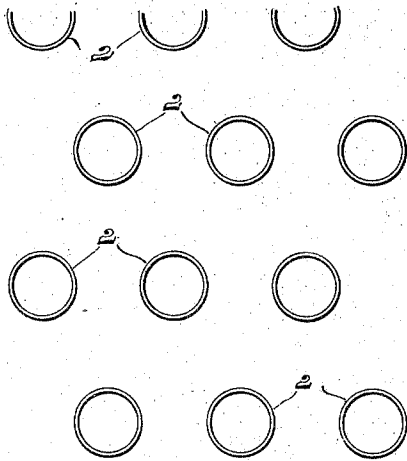


Fig. 1.

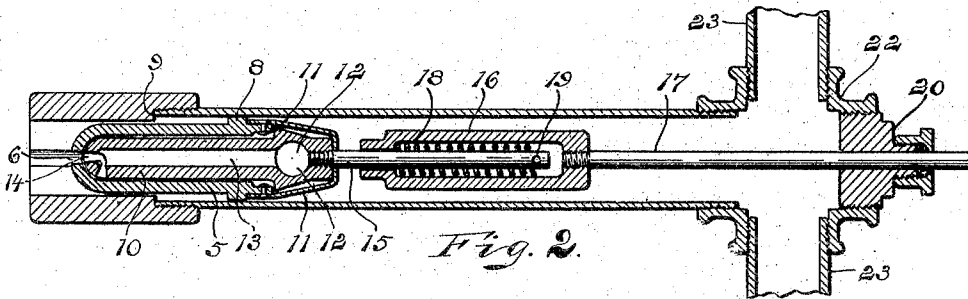
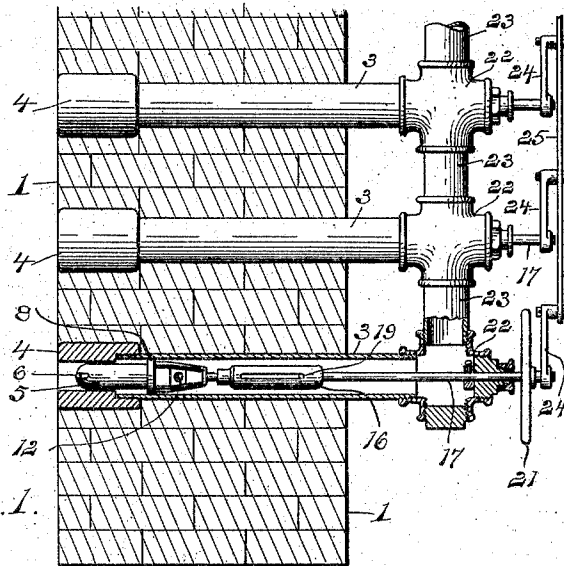


Fig. 2.

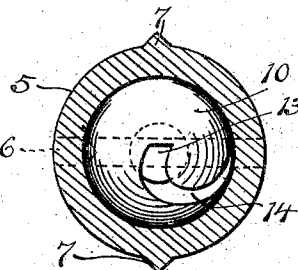


Fig. 3.

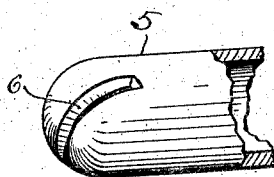


Fig. 4.

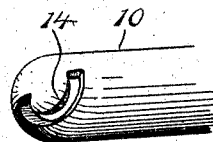


Fig. 5.

Inventor.

Edward B. Barnhill

Witnesses
A. M. Dorr.
C. M. Shannon.

By Barthel & Barthel.

Attorney &

UNITED STATES PATENT OFFICE.

EDWARD B. BARNHILL, OF MARION, INDIANA, ASSIGNOR TO ERNEST W. MICKLIN, OF DETROIT, MICHIGAN.

BLOWER FOR BOILERS.

966,987.

Specification of Letters Patent.

Patented Aug. 9, 1910.

Application filed September 1, 1909. Serial No. 515,685.

To all whom it may concern:

Be it known that I, EDWARD B. BARNHILL, a citizen of the United States of America, residing at Marion, in the county of Grant and State of Indiana, 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.

10 In blowers for water tube boilers wherein a jet of steam is directed between the tiers of tubes, it is necessary that some provision be made for directing the jet back and forth along the tubes in order that as wide an area as possible be cleaned by each nozzle.

15 This invention relates to a blower for water tube boilers wherein an arrangement of the parts enables the operator to direct a jet back and forth between tiers of water tubes, and also to a construction which imparts a most effective shape to the jet whereby a maximum length of pipe may be reached from each nozzle.

20 The invention consists in the matters hereinafter set forth and more particularly pointed out in the appended claims.

25 In the drawings, Figure 1 is a view in cross section of a portion of a water tube boiler equipped with a blower embodying 30 feature of the invention, the outer casing of one of the lower nozzles being indicated in longitudinal section; Fig. 2 is a view in longitudinal section showing the construction of one of the blower nozzles; and Figs. 3, 4, 35 and 5 are views in detail showing the arrangement of a tip and closure.

Referring to the drawings, 1 indicates a side wall of a boiler having water tubes 2 arranged in planes in staggered relation. 40 A tubular casing 3 is embedded in the wall 1 parallel to and between the planes of the adjacent tiers of tubes. A cylindrical nozzle 4 designed to withstand the heat of the boiler is secured to the inner end of the casing flush with the inner face of the wall. 45 A tubular tip 5 having a rounded outer end with diametrical slot 6, is longitudinally reciprocable in the nozzle 4 and casing 3, projections 7 engaging key ways in the nozzle 4 or other like means being provided to prevent its rotation, and a collar 8 or other suitable top being adapted to seat itself against an annular shoulder 9 or the like in the nozzle 4 and thereby define the outward

movement of the tip. A cylindrical plug 10 55 whose rounded end conforms to the inner face of the slotted end of the tip 5 is rotatably secured in the tip. A strap 11 or like means removably secures the plug in place. A transverse opening 12 through the 60 inner end of the plug is in communication with an axial aperture 13 which terminates in a port 14 on the outer end of the plug in register with the tip slot 6. The port 14 extends obliquely or in a curved line across 65 the end of the plug so that rotation of the latter moves the opening through the tip caused by the registration of the slot 6 with the port, from side to side of the tip. The plug is rotated by a stem whose inner section 70 15 that is secured directly to the plug, is in non-rotatable telescopic engagement with the sleeve 16 on the inner end of the outer section 17 of the stem, a spring 18 encircling the inner section in compression be- 75 tween the inner end of the sleeve, and stop pins 19 on the section, holding the latter normally retracted. The outer end of the casing 3 is closed by a stuffing box 20 through which the outer section of the stem 80 extends. A hand wheel 21 enables the operator to rotate the stem.

As herein indicated as a preferable arrangement of the ports for use on a large boiler, a set of casings is provided for each 85 tier of tubes, with tees 22 on the outer end of the casing connected and joined to a steam pipe 23. Rock arms 24 on the extremities of the stems are coupled by a link 25 so that the blowers may be manipulated 90 simultaneously.

In operation, the tip is normally held in retracted position by the spring of the telescoping stems. When steam is introduced into the casing, the pressure projects the 95 plug and tip toward the adjacent boiler tubes. The slot of the tip is arranged parallel to the plane of the tubes and directs the steam issuing through the port of the plug in a plane parallel to and between the 100 tiers. By turning the plug the operator directs the jet back and forth along the tubes thereby reaching remote portions of the tubes without difficulty. By arranging the blowers in sets the boiler may be cleaned ex- 105 peditiously without danger to the operator. By forming the tip slot with parallel slides a fan shaped jet is obtained which is not im-

peded by the tubes nearest the nozzle and thereby reaches the tubes at the center of the boiler effectively.

Obviously, changes in the details of construction may be made without departing from the spirit of the invention, and I do not limit myself to any particular form or arrangement of parts.

What I claim as my invention is:—

10 1. In a blower for a boiler, a nozzle, a hollow tip therein having a rounded end wall with transverse discharge slot there-
through, and a plug rotatable in the tip
15 having a port in its end face that is adapted to cross the slot at substantially right angles in all positions of the plug.

2. In a blower for a boiler, a nozzle, a hollow tip reciprocable therein provided with a transverse slot at its inner discharge
20 end, a plug rotatably secured in the tip having a passage terminating in a port that crosses the slot in any position of the plug, and means for turning the plug.

3. In a blower for a boiler a casing adapt-
25 ed to be connected to a source of steam supply at one end and provided with a nozzle at the other, a cylindrical tip non-rotatably reciprocable in the nozzle, provided with a transverse slot in its discharge end, a plug
30 rotatably secured in the tip having a passage therethrough terminating in an elongated port on its inner end that crosses the slot at substantially right angles in any position of the plug, and means for rotating
35 the plug in the tip adapted to hold the tip retracted in the nozzle when not under steam pressure.

4. In a blower for a boiler a casing adapt-

ed to be connected to a source of steam supply at one end and provided with a nozzle 40 at the other, a cylindrical tip non-rotatably reciprocable in the nozzle provided with a transverse slot in its discharge end, a plug rotatably secured in the tip having a pas-
45 sage therethrough terminating in an elongated port on its inner end that crosses the slot at substantially right angles in any position of the plug, a stem extending outside the casing having telescoping sections one of which is secured to the plug, and a spring 50 adapted to hold the stem contracted when the casing is not under steam pressure.

5. The combination of the water tubes and wall of a boiler with a blower consist- 55 ing of a series of cylindrical casings each arranged in the wall transversely to the tubes, a cylindrical nozzle at the inner end of each casing, a non-rotatable tip reciprocable in each nozzle provided with a transverse discharge slot in a plane parallel to 60 the plane of the adjacent tubes, a plug rotatable in the nozzle adapted when turned to deflect a jet through the slot, a stem for turning the plug extending through the
65 outer end of the casing, adapted to hold the tip retracted in the nozzle when the casing is not under steam pressure, and means for simultaneously turning the stems in the several casings.

In testimony whereof I affix my signature 70 in presence of two witnesses.

EDWARD B. BARNHILL.

Witnesses:

S. C. ARBUCKLE,
H. W. RAY.