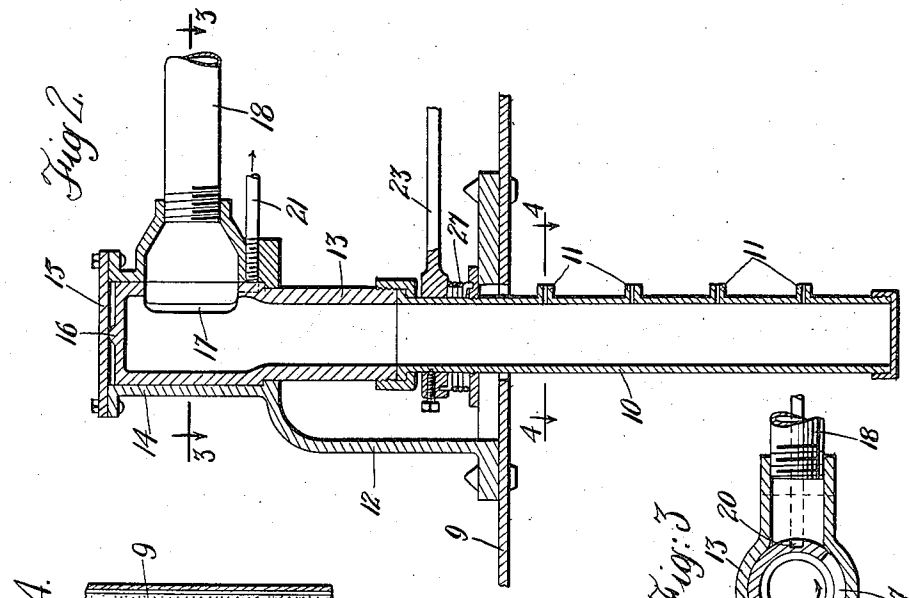
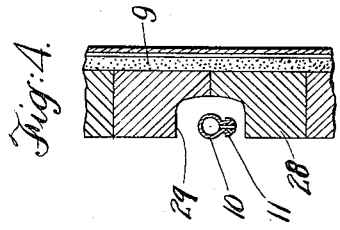
J. M. COLVEN AND A. LOWY.

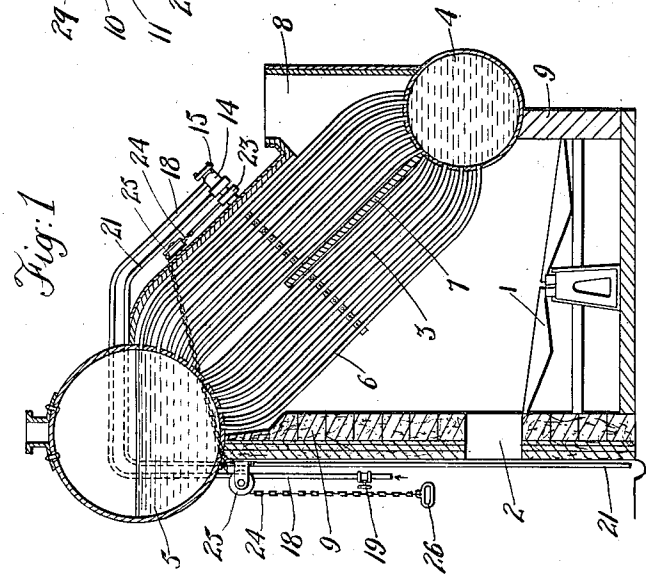
SOOT BLOWER.

APPLICATION FILED MAY 29, 1918.

1,421,675. Patented July 4, 1922.







Inventors

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UNITED STATES PATENT OFFICE.

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SOOT BLOWER.

1,421,675. Specification of Letters Patent. Patented July 4, 1922.

Application filed May 29, 1918. Serial No. 237,336.

To all whom it may concern:

Be it known that we, JAMES M. COLVEN and ARTHUR LOWY, citizens of the United States, and residents, respectively, of Yonkers, county of New York, State of New York, and Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Soot Blowers, of which the following is a specification.

This invention relates to soot blowers for steam boilers, and has for its object to provide an improved form of soot blower in which a movable or oscillating nozzle tube having nozzles arranged with relation to the banks of tubes is constructed to be normally cut off from the supply of blowing steam, and at the same time to vent the steam supply pipe so that when steam is turned on, the first result is to vent the steam pipe of water before the steam is admitted to the blowing nozzles, in order to avoid the danger incident to discharging water on the hot tubes. In carrying out this feature of the invention, the movable nozzle tube extends through the boiler wall into the tube space and is externally connected with the steam supply so that the steam is cut off when the nozzles are in inoperative position while the steam pipe is vented, and movement of the nozzles to operative position closes the vent and admits steam to the nozzles. The nozzle tube is biased by a spring or weight to normally rest in off position, and is connected as to be controllable from the front of the boiler or other convenient point, so that when the operator releases the controlling device, the nozzles are retracted to inoperative position and the vent opened. The vent is also connected by a piping to the same controlling point so that the operator will first turn steam into the supply pipe and wait until it rushes from the vent pipe before operating the nozzles to blow the soot from the tubes. The apparatus is also so arranged in the boiler wall that when in inoperative position, the nozzles are shielded from the direct flow of the gases so as not to be burned out.

In the accompanying drawings,

Figure 1 is an elevation of a boiler equipped with the invention,

Figure 2 is a sectional view of the nozzle tube and its connections,

Figure 3 is a section on the line 3, 3 of Figure 2, and

Figure 4 is a section on the line 4, 4 of Figure 2.

1 represents the grate having the fire door 2, and 3 represents the boiler consisting of a lower drum 4, a steam drum 5, banks of tubes 6, baffle wall 7, stack 8, and supporting and enclosing walls 9.

One or more soot blowers will be provided for each bank of tubes, the nozzle pipe being located in one side wall and carrying projecting nipples which produce and direct jets of steam over the tubes as the nozzle pipe is oscillated from side to side. 10 is the nozzle pipe, or nozzle, carrying nipples 11 on one side thereof and rotatably mounted in a casting 12 fastened to the vertical side 9 of the boiler. The pipe 10 is coupled, for angular adjustment of the nipples 11, to a plug 13 rotating in the casing 14 of the casting 12, and capable of being withdrawn when the cover 15 is removed. The plug 13 also has a central lug 16 which bears on the cover 15 due to the pressure of the steam. 17 is a port in the plug 13 of slightly less than 180 degrees extent, which is normally closed at the position shown in Figure 3 to cut off the steam supply through pipe 18 which leads from the front of the boiler and is provided with a steam cock 19. When pipe 18 is closed, as seen in Figure 3, a small vent passage 20 in the plug 13 is opened to vent pipe 21, which leads down to the sump at the front of the boiler. The pipe 10 is provided with an operating handle 23 which is adjustably fastened thereto and its outer end is connected by chain 24 running over pulleys 25 to a handle 26 adjacent the valve 19. A spring 27 connected to the handle 23 normally throws the handle 23, and with it the plug 13 into off position, as shown in Figure 3, so as to open the vent 20 from pipe 18 to pipe 21 while cutting off the steam from the nozzles. As seen in Figure 4, the refractory boiler lining 28 is provided with a recess 29 to receive the nozzle pipe 10, which will be held in inoperative position with the nipples 11 as well as the nozzle pipe 10 shielded in the recess from the hot gases.

The handle 23 will be stopped in off position by adjusting it on the pipe 10 so as to stop against the casting 12 or the frame of the boiler, or any other suitable stop can be provided.

When it is desired to blow the soot from the tubes, the boiler tender first opens the cock 19 to supply steam, and then watches the end of pipe 21 until steam blows out. He then knows that there is no water of condensation in the pipes, and that it is safe to admit steam to the nozzle, which he does by alternately pulling down and releasing chain 24 so that the nozzles sweep over an arc sufficient to blow over all of the tubes. The length of port 17 and the position of the nozzle 10 in the recess 29 are such that the jets of steam will sweep along close to the boiler wall 28 without being obstructed by the corner, a suitable form of jet nipple for this purpose being shown in Figure 4.

Various modifications and changes may be made in the specific details of construction herein without departing from the scope of the appended claims.

What is claimed, is:

1. A boiler soot blower comprising a relatively movable nozzle and supply pipe, a port to open and close communication from said supply pipe to said nozzle, a vent for said supply pipe, means normally holding said nozzle and supply pipe to close said port and open said vent, and means for effecting relative movement of said nozzle and supply pipe to open said port and close said vent.

2. A boiler soot blower comprising a relatively movable nozzle and supply pipe, a port to open and close communication from said supply pipe to the nozzle, and a vent for said supply pipe controlled by relative movement of said nozzle and supply pipe and means for effecting relative movement of said nozzle and supply pipe.

3. A boiler soot blower comprising a supply pipe and a nozzle movable relatively to a supply pipe to open communication to the latter as the nozzle is moved, the nozzle body carrying a vent which is open to said supply pipe when the nozzle closes communication with the said supply pipe.

4. A boiler soot blower comprising a nozzle and a supply pipe, a vent to said supply pipe, controlling means, and means biased to hold said controlling means in position to close communication between said nozzle and said supply pipe and to open said vent.

5. A boiler soot blower comprising a relatively movable nozzle and supply pipe, a port to open and close communication from said supply pipe to said nozzle, a vent for said supply pipe controlled by the relative movement of said nozzle and supply pipe, means for rotating said nozzle into operative and inoperative position and means for shielding said nozzle from the flow of gases when in inoperative position.

6. In combination with a boiler having a bank of tubes and a wall at the end of the bank, of a recess in said wall extending transversely of the tubes, a rotatable pipe therein having nozzles arranged to lie in said recess and to project outwardly as the pipe is moved, a supply connected to said pipe, and a vent from said supply controlled by movement of said pipe.

7. A boiler soot blower comprising a supply pipe, a nozzle, a valve carried by said nozzle, means to normally maintain said valve in inoperative position, a vent controlled by said valve to vent said supply pipe and discharging outside the boiler.

8. A boiler soot blower comprising a supply pipe, a nozzle, a valve carried by said nozzle, a vent controlled by said valve for said supply pipe, means for manually opening said valve and means for automatically closing said valve upon the release of the said opening means.

9. In a soot blower comprising a supply pipe, a nozzle, an admitting valve biased normally to remain shut for said nozzle, and a cock in the supply pipe for controlling the fluid pressure, means whereby the supply pipe is automatically vented whenever the cock is opened while the admitting valve is closed.

10. In a soot blower comprising a supply pipe connected with a source of fluid pressure, means in the supply pipe for opening and closing the same to said source, a nozzle, and a single valve for opening and closing said nozzle to said supply pipe, and for venting said supply pipe on the pressure side when the nozzle is cut off from the pressure supply.

Signed at New York city in the county of New York and State of New York this 27th day of May, A. D. 1918.

JAMES M. COLVEN.
ARTHUR LOWY.

Witnesses:
GEO. SOMNER,
ANNA CAREY DILLS.