April 3, 1928. 1,664,859

H. C. HEATON

BOILER CLEANER

Filed July 10, 1920

Fig. 1.

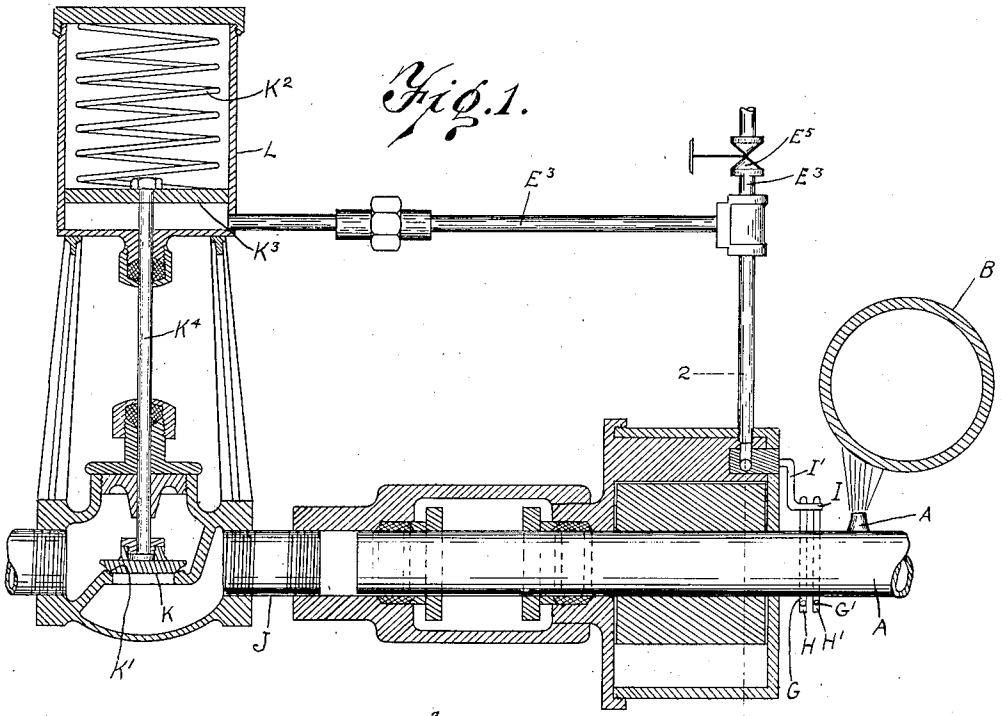
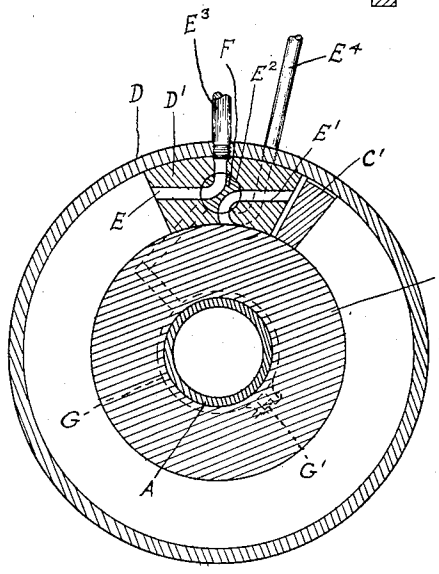


Fig. 2.



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UNITED STATES PATENT OFFICE.

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BOILER CLEANER.

Application filed July 10, 1920. Serial No. 395,260.

The invention relates to boiler cleaners and refers more particularly to boiler cleaners of the type in which jets of steam or the like are discharged against the surfaces to be cleaned. In the particular construction shown in the drawings the blower unit which carries the discharge nozzle is arranged to rotate axially. Also the invention in its broader aspects is not limited to the particular type as illustrated.

One of the main objects of the invention is to provide a new and improved construction of automatically reversing motor for operating soot blowers and this application is in part a divisional of my original application, Serial No. 333,062, filed October 24, 1919. The invention also resides in the novel combination of the motor and blower mechanism; in the feature whereby the supply of steam to the unit is normally cut off by an automatic valve preferably arranged in a portion of the supply pipe near the blower unit and so connected as to be automatically opened when the fluid is admitted to operate the motor; and in such other features of construction and arrangements and combinations of parts as are more fully hereinafter set forth.

In the drawings:

Figure 1 is a fragmentary vertical section through a device embodying my invention;

Figure 2 is a vertical section taken on the line 2—2 of Fig. 1.

Describing in detail the construction shown in the drawings, A designates a rotary blower unit having jets or nozzles A′ through which steam or other suitable cleaning fluid is discharged against the boiler tube B or other surface to be cleaned. The construction is such that in order to direct the steam jets to clean a particular area or part of the boiler the blower A is rotated through an arc in one direction and then reversed and rotated in the opposite direction. For actuating the blower element and automatically reversing its direction of travel, the following mechanism is employed. Fixedly secured to the rotating unit A is a sleeve C carrying a movable abutment C′, which in the operation of the device cooperates with a stationary abutment D′ in the casing D. The abutment D′ is preferably formed with passageways E and E′ for water, steam or other suitable fluid, these passageways each opening at their inner end into a chamber E^2 controlled by a valve F. The chamber E^2 also has an intake connection E^3 leading to a source of fluid under pressure and an exhaust connection E^4. As shown in Figure 2 the valve F is a four-way valve and is so arranged that when the parts are in the position shown in Figure 2, its parts connect the intake E^3 with the space at the right of the stationary abutment D′. The pressure of the water will then force the movable abutment C′ to the right and thus rotate the blower unit A in a clockwise direction. The exact extent of the movement in either direction will be governed by the position of the eccentrics H and H′, which eccentrics are preferably formed with split collars G, so that they can be clamped in any position upon the unit A by the set screws G′. Positioned in the path of the eccentrics H and H′ is a bar I on the valve handle I′.

Whenever the blower element or unit A′ has reached its desired rotation in a clockwise direction the eccentric H will strike against the bar I and swing the handle I′ to the right. This will rotate the valve F so as to connect the passageway E with the intake and the passageway E′ with the exhaust and automatically reverse the direction of rotation of the blower unit A. When the unit reaches the end of its reverse travel the action of the eccentric H′ on the handle I′ will again return the apparatus to clockwise rotation. It is obvious that this automatic reversing will continue as long as the supply of pressure is not cut off, and the speed with which the unit A is rotated can be adjustably controlled by a needle valve E^5 in the intake passage E^3. The arrangement as above described is not only simple in construction and operation but is so arranged that it can be applied, if desired, to the usual type of rotary blower unit A.

In addition to the usual control valves the present novel mechanism includes an automatic steam control valve K which is normally pressed to its seat K′ by means of a spring K^2 operating on the piston K^3 secured to the valve steam K^4. The piston is arranged to reciprocate in a cylinder L, the construction being such that the valve K is normally pressed toward its seat by the spring K^2 and is forced away from its seat against the tension of the spring K^2 when

ever the water or other fluid under pressure is admitted through the intake connection E^3 to the cylinder L. Therefore, whenever the motor is in operation the valve K will be automatically held away from its seat admitting the steam or other cleaning fluid through the supply pipe J to the blower unit A. As soon, however, as the water or other fluid under pressure is cut off from the motor mechanism the spring K^2 will automatically force the piston K^3 forward and move the valve K to its seat.

While I have shown and described this automatic valve arrangement in connection with one particular type of reversing mechanism, it is not necessarily limited to the particular motor mechanism shown and various changes in the details of construction and arrangements and combinations of parts can be made within the scope of my invention.

What I claim as my invention is:

1. The combination with a rotative blower unit, of a motor adapted to drive said unit, a valve controlling the supply of steam or other cleaning substance to said blower unit, a piston connected to said valve, a cylinder receiving said piston, a spring within said cylinder engaging one side of said piston and urging the valve to its seat, and a common means for supplying an energizing fluid to said cylinder at the other side of the piston and to the motor.

2. The combination with a rotative blower unit, of a motor adapted to drive said unit, a valve controlling a supply of cleaning substance to said unit, a piston having actuating connection to said valve, a cylinder receiving said piston, connections for delivering a fluid to said cylinder for unseating the valve and to said motor for rotatively actuating the same, a common control means for said connections, and means urging said valve to its seat.

3. The combination with a rotative blower unit, of a cleaning fluid supply pipe connected with the unit, a valve controlling the supply of cleaning fluid to said unit, a piston operatively connected with said valve, a fluid motor for actuating the blower unit, a second fluid supply pipe leading to said motor and having a pipe branched therefrom to supply fluid to said piston, a single controlling means for permitting flow of fluid causing the simultaneous operation of the motor and piston.

4. The combination with a rotative blower unit, of a cleaning fluid supply pipe for the unit, a fluid-actuated valve controlling the flow of cleaning fluid thru said supply pipe, a fluid-actuated motor for rotating said unit, a second fluid supply pipe leading to said motor and having a pipe branched therefrom to supply fluid to said fluid-actuated valve, and a single controlling means permitting flow of fluid for causing the simultaneous operation of said fluid-actuated motor and said fluid-actuated valve.

In testimony whereof I affix my signature.

HERMAN C. HEATON.