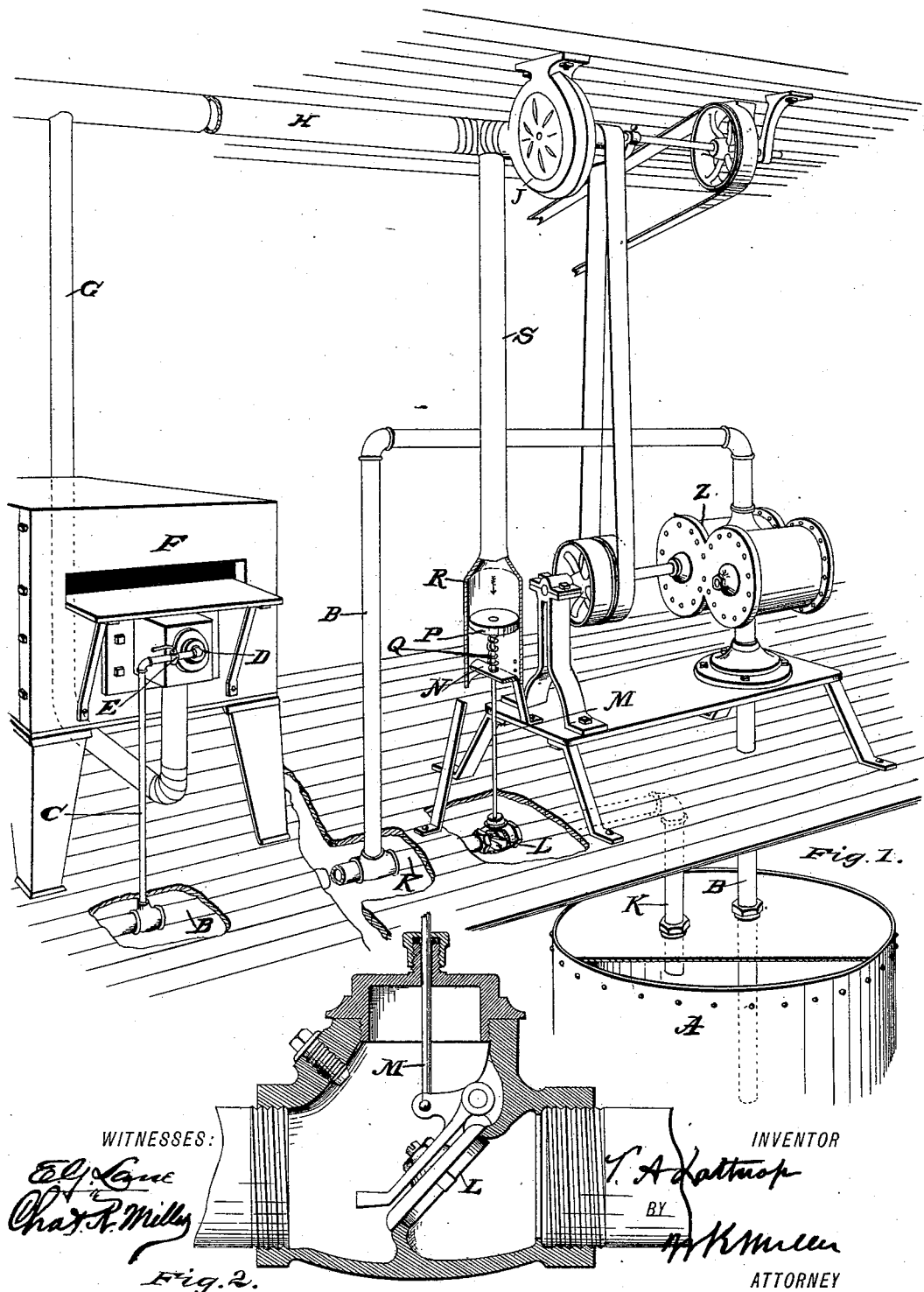


(No Model.)

T. A. LATHROP.
MECHANISM FOR AUTOMATICALLY OPERATING VALVES FOR
OIL BURNERS.

No. 431,596.

Patented July 8, 1890.



UNITED STATES PATENT OFFICE.

THOMAS A. LATHROP, OF CANTON, OHIO.

MECHANISM FOR AUTOMATICALLY OPERATING VALVES FOR OIL-BURNERS.

SPECIFICATION forming part of Letters Patent No. 431,596, dated July 8, 1890.

Application filed January 2, 1890. Serial No. 335,614. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. LATHROP, a citizen of the United States, and a resident of Canton, county of Stark, State of Ohio, have
5 invented a new and useful Improvement in Mechanism for Automatically Operating Oil-Valves, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of
10 this specification.

My invention relates to improvements in mechanism for automatically operating valves to regulate the supply of oil to a carbon-oil burner and to drain the oil from the burner-
15 supply pipes.

With these ends in view my invention consists of certain features of construction and combination of parts, as will be hereinafter described, and set forth in the claims.

20 Figure 1 is a perspective illustrating my invention, and Fig. 2 is a vertical sectional view of the drain-valve.

A represents an oil-tank placed below grade; B, the supply-pipe leading from the tank to
25 the supply-pump Z, which may be of any desired form, preferably a rotary, as shown in the drawings. For reasons hereinafter stated the pipe B may be extended on indefinitely, and to supply any desired number of burn-
30 ers a reducing-pipe C, to extend from the supply-pipe B to the burner D, in which pipe is placed a bib-cock E or any desired form of cock or valve to check or cut off the supply of oil to the burner, and thereby regulate the
35 fire.

To spray the oil as it enters the forge F and to support the combustion thereof, a blast-pipe G is provided, said pipe connected with a supply-pipe H, extending to a rotary
40 blower J, by which air is forced to the burners. This is a short description of one of the successful ways of supplying oil and air to the forge; but heretofore there has been no means provided by which the supply of oil
45 might be automatically adjusted to the supply of wind-blast—that is, that the supply of oil might decrease with a decrease of pressure of air in the blast-pipe.

The object of my invention, which I will
50 now set forth, is to supply means by which the supply of oil may be automatically adjusted to the supply of blast and to auto-

matically drain the oil from the oil-supply pipe B and forge-pipe C, and to this end I have placed in the drain-pipe K a straight-
55 way valve L, to which valve is pivotally secured a piston-rod M, as shown in Fig. 2. The upper end portion of said rod is supported by a bracket N, and on the end thereof is mounted a piston-head P, and between said
60 bracket and head is provided a coil-spring Q, the energy of which is exerted upwardly to raise the piston-head, and thereby open the valve L. About said piston is placed a cyl-
65 inder R or enlarged portion of the blast-pipe S, or, if preferred, the end of the blast-pipe itself may be placed about the piston, the size of such parts to be adapted to the size of the valve L and the desired air-pressure.

In operation the blower and pump are op-
70 erated or stopped simultaneously, as shown in Fig. 1, the pump Z having a belt engagement with a pulley on the fan-shaft, both blower and pump taking power from the same
75 source.

In starting the plant, the air-blast from the supply-pipe H, through the pipe S to cylinder R, will force the head P down, and by the rod M, connecting head P with the valve L, will close
80 the valve. The pump having started simultaneously with the blower, oil has been pumped from the tank A through the supply-pipe B to the burners, the flow resisted only by the burner-valve E and the drain-valve L. The
85 air-pressure on the large piston-head P, overcoming the energy of the spring, will hold the valve L in a closed position, the pressure of oil in the supply-pipe to be regulated by the speed of the pump and allowed slippage; but
90 if for any cause the air-blast should vary or fall below that required for a perfect combustion of the oil, the spring Q will then raise the piston-head P, and by its rod-connection with the drain-valve L will open said valve
95 correspondingly and allow a portion of the oil to flow back through the drain-pipe K to the tank, and thereby prevent flooding the forge or furnace with unvaporized oil, and when the blast-pressure is restored the pressure on the piston-head will overcome the
100 spring and close the drain-valve against the backward flow of the oil, and when the plant is stopped for the night or for any cause the drain-valve will be opened by the spring to

allow all the unconsumed oil in the burner and supply-pipes to drain back to the tank, and thereby avoiding explosion or fire.

Having thus fully described the nature and object of my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with an oil-tank and a burner having an oil-supply pipe, of a drain-pipe having a spring-actuated valve and connected to said oil-supply pipe, and an air-blast pipe connected to said burner and to the valve-casing, whereby the valve is held in a closed position by the pressure of the air-blast, substantially as set forth.

2. The combination, with an oil-tank, a burner having an oil-supply pipe, and means for forcing the oil through the supply-pipe under pressure, of a drain-pipe having a spring-actuated valve and connected to said oil-supply pipe, and an air-blast pipe connected to said burner and to the valve-casing,

whereby the valve is held in a closed position by the pressure of the air-blast, substantially as set forth.

3. The combination, with an oil-tank and a burner having an oil-supply pipe, of a drain-pipe having a valve and connected with said oil-supply pipe, an air-blast pipe connected to said burner, a piston-head located within said air-blast pipe, and a spring-actuated connection between said piston-head and valve, whereby the valve is held in closed position by the pressure of the air-blast, substantially as set forth.

In testimony whereof I have hereunto set my hand this 18th day of December, A. D. 1889.

THOMAS A. LATHROP.

Witnesses:

W. K. MILLER,
CHAS. R. MILLER.