R. C. QUIN.

FUEL FEEDING SYSTEM FOR OIL BURNERS.

APPLICATION FILED MAR. 30, 1911.

1,066,948. Patented July 8, 1913.

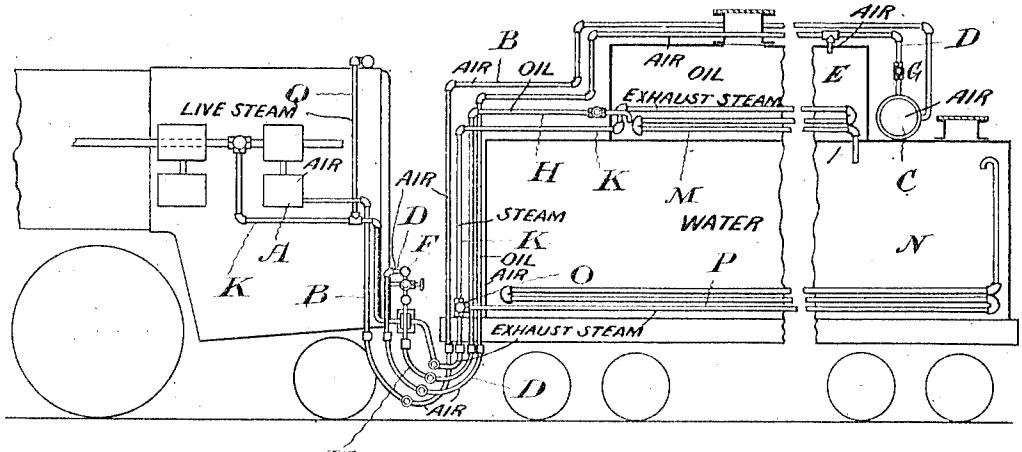


Fig. 1

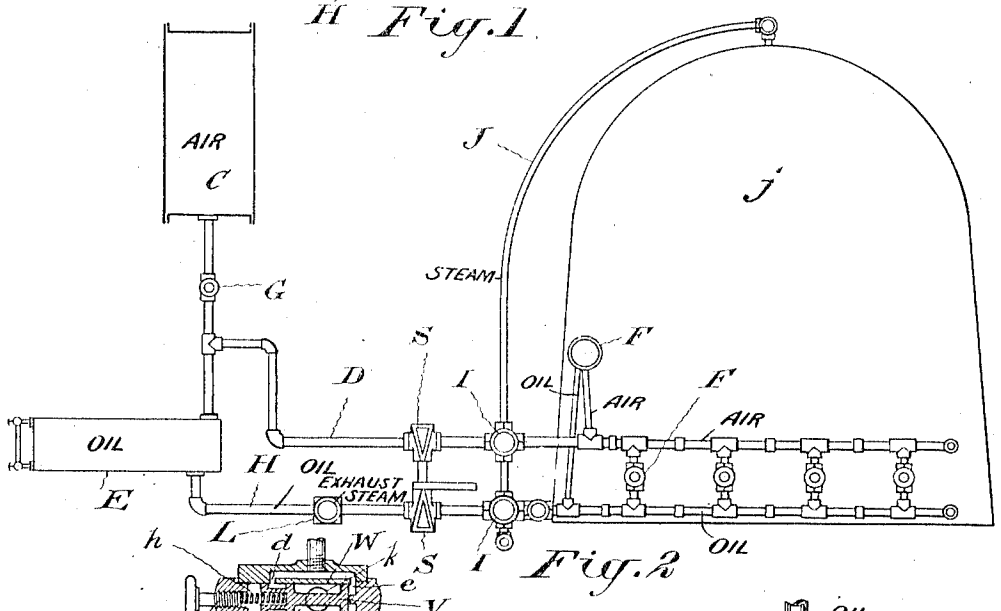


Fig. 2

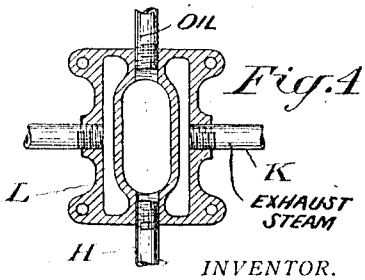


Fig. 4

Fig. 3

WITNESSES:

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FUEL-FEEDING SYSTEM FOR OIL-BURNERS.

1,066,948. Specification of Letters Patent. Patented July 8, 1913.

Application filed March 30, 1911. Serial No. 617,965.

To all whom it may concern:

Be it known that I, RICHARD C. QUIN, of 81 Brock avenue, in the city of Toronto, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Fuel-Feeding Systems for Oil-Burners, of which the following is a specification.

The object of my invention is to devise oil burning means for furnaces which will operate satisfactorily under all weather conditions and in which the consumption of fuel is automatically regulated by the steam pressure.

I attain my objects by the constructions hereinafter described and illustrated in the accompanying drawings, in which—

Figure 1 is a diagrammatic side elevation of the device as applied to a locomotive, Fig. 2 a diagrammatic view illustrating particularly the connections with the burners, Fig. 3 a detail in section of the automatic governor valve, and, Fig. 4 a sectional detail of the heating device located in the oil pipe.

A represents an air pump which may be the ordinary air pump of a locomotive. From this pump the pipe B leads to an air chamber C. From this air chamber the pipe D leads to the oil tank E and also by a suitable branch leads to the burner or burners F. In this pipe D adjacent the air chamber C is preferably located a pressure reducing valve G. From the oil tank E the oil piping H leads to the burner or burners F. The burners may be of any ordinary type in which pressure of the air is used to inject a mingled spray of oil and air into the furnance.

As it is desired to reduce the supply of fuel when the steam pressure in the boiler heated by the burners exceeds a predetermined amount, I locate in the air pipe D and the oil pipe H the governor valves I. To these valves steam from the boiler *j* is led through the pipe J. (See Fig. 2.) Any suitable governing valve which would cut down the supply of air and fuel to a predetermined minimum, as soon as the steam pressure rises to a predetermined maximum, would answer the purpose of my invention. Of course, suitable separate manual controlling valves S will be provided in the oil and air pipes. A preferred form of automatic valve is shown in Fig. 3. This is of the globe valve type, but the valve disk R has one or more small holes *a* formed therein so that even when the valve disk is on its seat a small flow of oil or air is permitted as it is not desirable to completely extinguish the flame at the burners when steam pressure is too high, but merely to reduce the heat. A piston T is secured to the valve stem and moves in the cylinder U provided with ports *b* and *c* leading respectively to its opposite ends. These ports are controlled by the pistor valve V movable in the cylinder W. The steam pipe J communicates with opposite ends of the cylinder W through the ports *d* and *e*. A leakage groove *f* in the piston, when the piston valve V is in the position shown, affords communication between the ports *d* and *b* and steam pressure holds the piston T raised and the valve R raised. The other side of the piston is at the same time open to the atmosphere through the exhaust groove *g* and the exhaust port *k*. The piston V is held in normal position by the pressure of the coil spring *h*, which is adjusted in tension by the screw *i*. As the steam pressure on the right hand end of the piston V is balanced only by the spring, if the pressure rises high enough to overcome the tension of the spring, the piston V will move to the left and thus bring the port *c* in communication with live steam passing through the port *e* and the port *b* in communication with the exhaust *k* through the groove *g*. This causes the piston T to move down and close the valve. As soon as steam pressure goes down the parts resume their normal positions.

As in cold weather difficulty is experienced due to thickening of the crude oil usually employed, I provide means for heating the oil. For this purpose an exhaust steam pipe K is led from the air pump, and in this pipe is located a box L through which the exhaust steam passes and which is provided with a chamber into and from which the oil pipe H is led. The oil is thus given a heating close to the burners. From the box L the exhaust steam pipe passes to a coil M located within the oil tank. The drip pipe *l* from the coil is preferably led into the water tank N. When heating of the oil tank is not necessary, the exhaust steam may be diverted through the medium of the three way valve O into the coil P located in the water tank, thus devoting all the exhaust steam to the heating of the feed water, or as much of it as may be desired. Live steam may be admitted when desired into the pipe

K by means of the valve controlled pipe Q, leading from the boiler to the pipe K so as to increase the heating effect in very cold weather.

It is thought that from the above description it will be clearly seen that I have devised a construction which will satisfactorily accomplish the objects of my invention as set out in the preamble to this specification.

What I claim as my invention is:—

1. In oil burning apparatus the combination of an air pump; an air reservoir connected with the pump; an oil tank; an oil burner; a pipe leading from the oil tank to the burner; an air pipe leading from the air reservoir to the oil tank and provided with a branch leading to the burner; an exhaust steam pipe from the air pump leading through the oil tank; and means adjacent the burner for utilizing the heat of the exhaust steam passing through the exhaust pipe to heat the oil in the oil pipe.

2. In oil burning apparatus the combination of an air pump; an air reservoir connected with the pump; an oil tank; an oil burner; a pipe leading from the oil tank to the burner; an air pipe leading from the air reservoir to the oil tank and provided with a branch leading to the burner; an exhaust steam pipe from the air pump leading through the oil tank; a water tank; a branch of the exhaust steam pipe leading into said water tank; and a valve controlling the flow of exhaust steam to the oil tank or water tank.

3. In oil burning apparatus the combination of an air pump; an air reservoir connected with the pump; an oil tank; an oil burner; a pipe leading from the oil tank to the burner; an air pipe leading from the air reservoir to the oil tank and provided with a branch leading to the burner; an exhaust steam pipe from the air pump leading through the oil tank; a water tank; a branch of the exhaust steam pipe leading into said water tank; a valve controlling the flow of exhaust steam to the oil tank or water tank; and a valve-controlled live steam pipe connected with the exhaust steam pipe.

Dated at Toronto this 27th day of March, 1911.

RICHARD C. QUIN.

Signed in the presence of—
A. CAMPBELL,
W. G. MCMILLAN.