

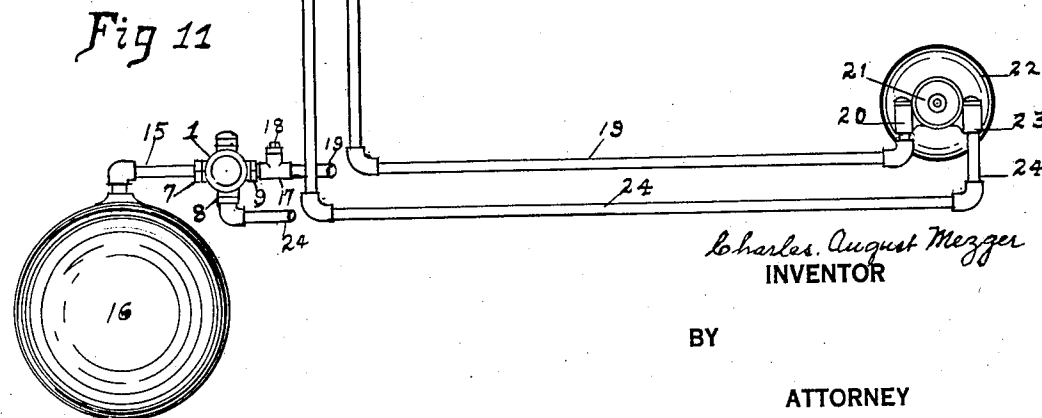
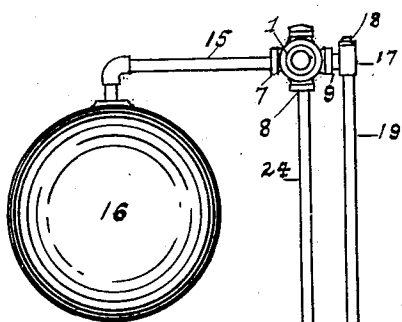
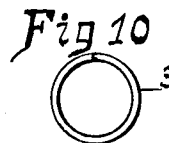
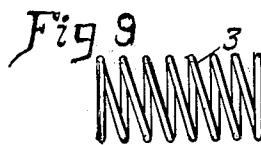
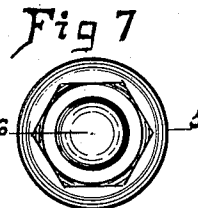
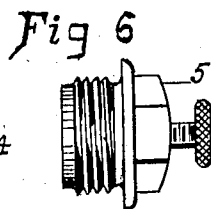
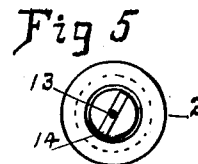
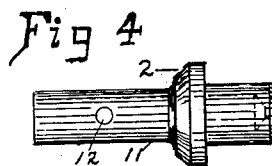
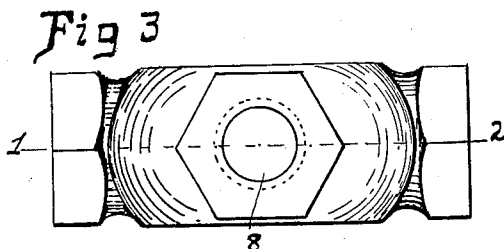
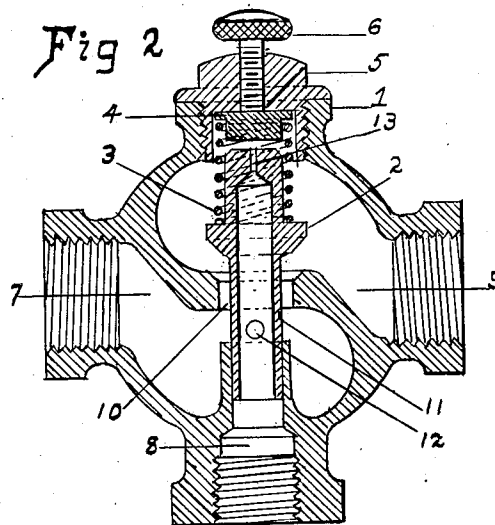
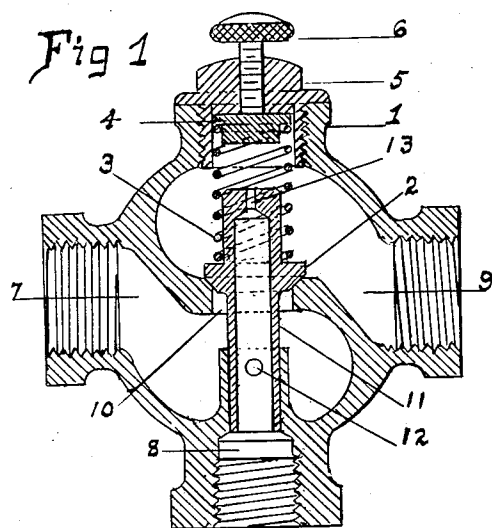
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C. A. MEZGER

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PUMPING SYSTEM FOR OIL BURNERS

Original Filed Oct. 24, 1932



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BY

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UNITED STATES PATENT OFFICE

1,998,020

PUMPING SYSTEM FOR OIL BURNERS

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Application October 24, 1932, Serial No. 639,308
Renewed September 17, 1934

4 Claims. (Cl. 103—40)

My invention relates to improvements in systems for circulating fuel oil and other liquids, vapor and gases, and a device by means of which the circulation of same is automatically controlled; and the objects of my improvements are, first, to provide a means for automatically opening the cycle of the circulating system by the pressure of the circulated medium and closing the cycle of circulation by relieving the pressure of same; second, to provide a remote control of a storage tank supply and a circulation system for the automatic operation of same; third, to provide an automatic means to prevent the siphoning of fuel oil or other liquids served from a level above the circulating system through injury and leakage of same; fourth, to provide a means to automatically control the circulation of fuel oil or other liquids served from a storage tank supply below the level of the circulating system.

I attain these objects by means of the control device and circulating system herein described and illustrated in the accompanying drawing in which—

Figure 1 is a sectional view of the control device on the line 1, 2, of Fig. 3, showing the valves closed; Fig. 2 is a similar view showing the valves open; Fig. 3 is a bottom end view of the control device; Fig. 4 is a side view of the control valve; Fig. 5 is a top view of same; Fig. 6 is a side view of the spring plug and adjusting screw; Fig. 7 is a top view of same; Fig. 8 is a view of the spring button; Fig. 9 is a side view of the valve spring; Fig. 10 is an end view of same; Fig. 11 is an illustration of the circulating system, showing storage tanks above and below the level of same.

Similar numerals refer to similar parts throughout the views.

The chambered metal body 1, the valve 2, the coiled spring 3, the spring button 4, the threaded plug 5, and thumb screw 6, constitute the parts of the control device; the body 1 has the inlet chambers with threaded ports 7 and 8; the suction or discharge chamber with threaded port 9; the port 10 communicating between the chambers 7 and 8 has a chamfered circumference to form a valve seat to engage in contact with a chamfered circumference of the valve 2, which has a downwardly extended hollow open ended stem 11, with a port 12, adapted to engage with and slide within the cylindrical extension of the inlet chamber 8; the hollow stem of the valve 2, is also extended upwardly and has a small hole 13, communicating with the slot 14, in the top of same; the upper stem of the valve 2, serves to

form a guide for the spring 3, which is adapted to hold the valve 2, in tensional contact with the valve seat of the port 10, by means of the spring button 4, the threaded plug 5, and the thumb screw 6, threaded into the plug 5.

The control device described is adapted to form a part of the fuel oil circulating system illustrated in Figure 11, and in which the conduit 15, leading from the storage tank 16, is connected to the threaded port 7, of the control device 1; a T fitting 17, with a removable plug 18, is connected to the suction or discharge port 9, and to the suction conduit 19, which leads and is connected to the intake 20, of the circulating pump 21, of the oil burner 22; from the relief valve and discharge 23 of the circulating pump 21, the conduit 24, is extended back to the control device 1, and connected to the threaded inlet port 8.

In operation the circulating conduits 19 and 24 are first primed with fuel oil at the priming port of plug 17, after which the same is closed with the plug 18.

A portion of the circulated fuel oil is consumed by the burner 22, the remaining portion being passed by the relief valve on the burner to the discharge port 23, under pressure of the circulating pump 21, and returned through the conduit 24, to the control device 1, where it enters the chamber 8, of the same forcing the valve 2, off of the seat of the port 10, against the tension of the spring 3, as shown in Figure 2, thus holding open the tank inlet and at the same time uncovering the port 12, of the valve stem 11, to permit the returned oil to enter the chambers 7, and 9, to be circulated with the fuel oil from the storage tank, and during the operation of the circulating pump 21, open communication will be maintained between the chambers 7, 8, and 9, by the pressure of the returned oil in the chamber 8, of the control device 1; should the circulating system be injured so as to cause a leak in same or the operation of the circulating pump be discontinued the pressure of the oil in the chamber 8, of the control device 1, will be relieved and the tension of the spring 3, will seat the valve 2, and cover the port 12, the trapped oil in the chamber 8, escaping through the small hole 13, to permit the valve 2 to be firmly seated thus closing communication between the storage tank and the circulating system.

In the control device of the circulating system described, the tension of the spring 3 may be adjusted by the regulating screw 6, and the port 7 is shown connected to the tank inlet conduit 15, so the valve 2 will open in the direction of the flow

of the oil from the tank 16, and in which case the tension of the spring 3 is adjusted to overcome the atmospheric pressure; the inlet conduit 15 may, however, be connected to the port 9, and the port 7 connected to the T fitting 17 of the conduit 19, so that the valve 2 will open against the flow of the oil from the tank 16, in which case the tension of the spring 3, would be only that required for the seating of the valve 2, to close the port 10; the trapped oil in the chamber 8, being allowed to escape into the chamber 7, through a small hole in the valve stem 11, instead of as previously described.

The circulating system and control device herein described for use with fuel oil may also be used for the controlled circulation of other liquids, also for vapor and gases without departing from the principle of my invention the scope of which is intended to cover the use for same.

Having described my invention, what I claim as new, and desire to secure by Letters Patent is—

1. A control device for fluid pumping systems comprising a valve body providing an inlet chamber, an outlet chamber, a return chamber, and a separate fluid connection to each of said chambers, a port in the valve body connecting the inlet and the outlet chambers, a valve adapted to seat across said port, said valve having an extension slidable in the return chamber and provided with a passageway connecting the inlet and the return chambers, and a resilient means acting to hold the valve on its seat and to close said passageway against the wall of the return chamber, the pressure in the return chamber acting to move the valve from its seat to open communication between the inlet and the outlet chambers through said port, and between said return and inlet chambers through said passageway.

2. A control device for fluid circulating systems comprising a valve body providing an inlet chamber, an outlet chamber, a return chamber, and a separate fluid connection to each of said chambers, a communicating passageway in the valve body connecting the inlet and the outlet chambers, a valve having an extension slidable in the return chamber and adapted to open and close the communication between the chambers, a resisting means acting upon said valve to close the communication between said chambers, the pres-

sure in the return chamber acting to move the valve to open the communication between the chambers.

3. A pumping system for oil burners comprising a pump, a valve body having an inlet chamber, an outlet chamber, and a return chamber, a connection from the inlet chamber to a source of supply, a connection from the outlet chamber to the pump inlet, said pump having a discharge line provided with a by-pass connected to the return chamber, a port in said valve body connecting the inlet and outlet chambers, a valve adapted to seat across said port, said valve having an extension slidable in the return chamber and provided with a passageway connecting the inlet and return chamber, and resilient means acting to hold the valve on its seat and to blank off said passageway against the wall of the return chamber, the pressure in the pump by-pass acting in the return chamber against the valve extension to move the valve from its seat, whereby fluid may pass from the source of supply through the valve body to the pump, and from the by-pass through the return chamber and the valve passageway to the inlet chamber to be recirculated by the pump.

4. A fluid circulating system comprising a pump, a valve body having an inlet chamber, an outlet chamber, and a return chamber, a connection from the inlet chamber to a source of fluid supply, a connection from the outlet chamber to the pump inlet, said pump having a discharge line provided with a by-pass connected to the return chamber, a communicating passageway in the valve body connecting the inlet and the outlet chambers, a valve having an extension in sliding engagement with the return chamber and adapted to open and close communication between the said chambers, a resisting means acting upon the valve to close the communication, the pressure in the pump by-pass acting against the valve extension to move the valve to open the communication whereby fluid may pass from the source of supply through the valve body to the pump and from the by-pass through the return chamber and the valve passageway to be recirculated by the pump.

CHARLES AUGUST MEZGER.