Jan. 28, 1930. J. SCHEMINGER, JR 1,745,062

SAFETY DEVICE FOR LIQUID FUEL BURNERS

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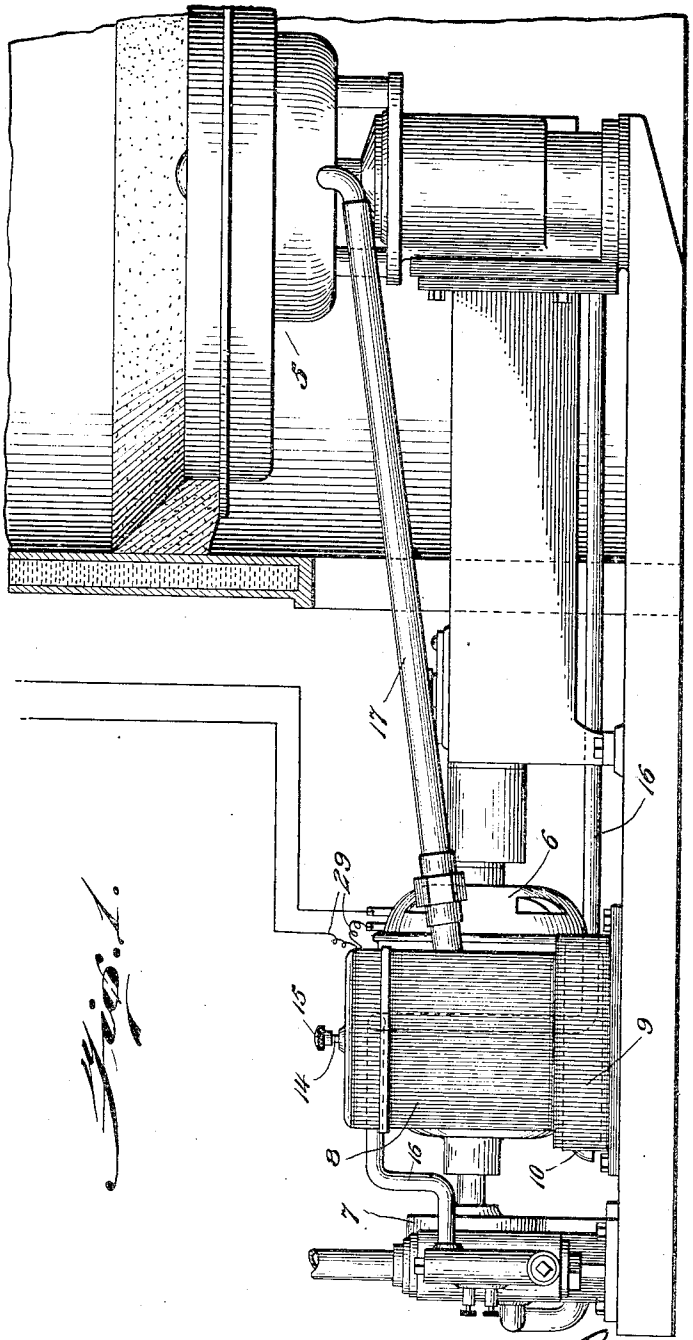


Fig. 1.

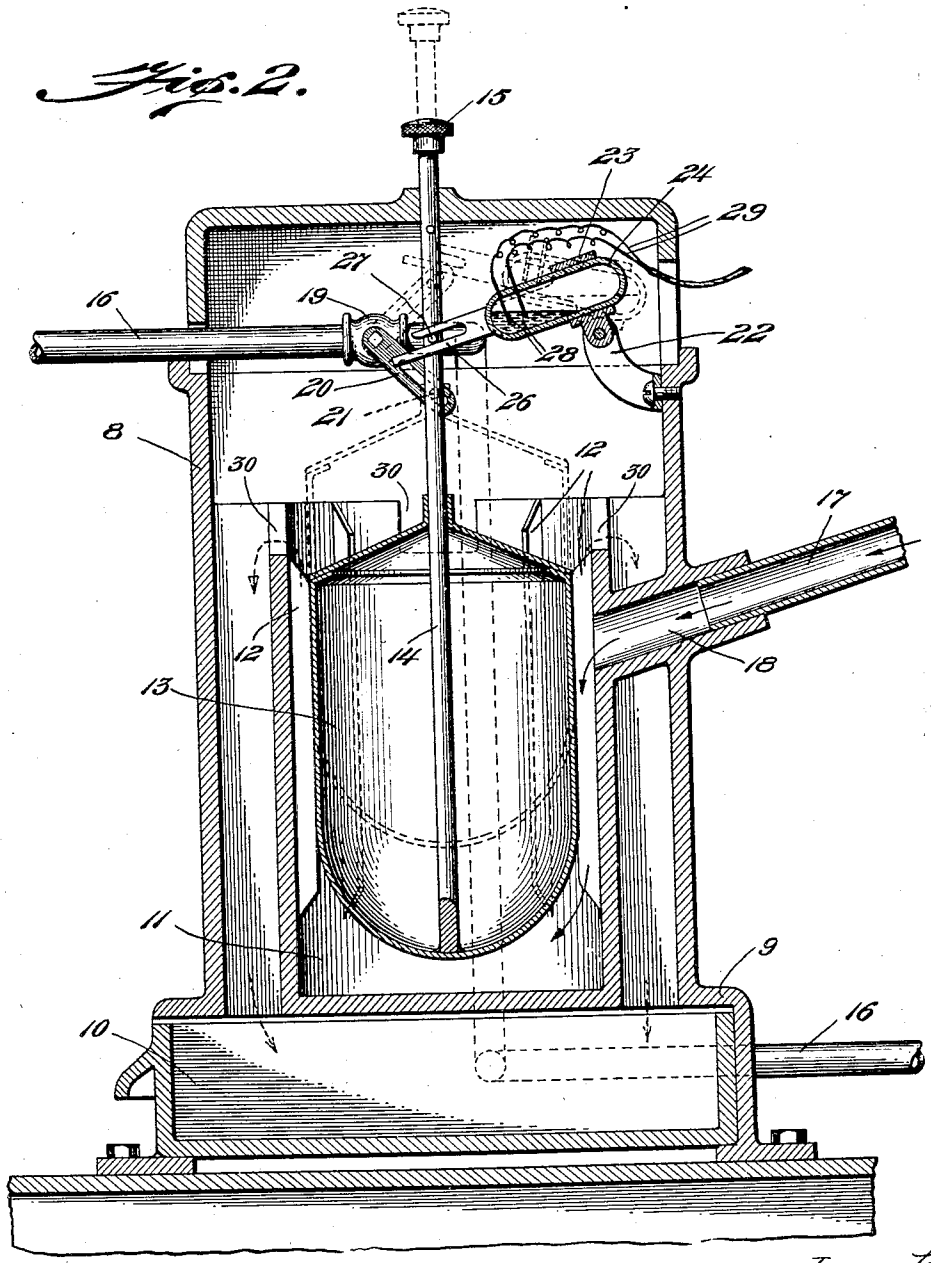
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Fig. 2.



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UNITED STATES PATENT OFFICE

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SAFETY DEVICE FOR LIQUID-FUEL BURNERS

Application filed May 10, 1926. Serial No. 108,190.

This invention relates to liquid flow control devices and aims to provide improved overflow cut-off means as a safety appliance for oil burners and the like.

The principle object of the invention is to provide automatically operable means for stopping the motor which drives the pump used in supplying liquid fuel to the burner or other point of delivery so as to stop the pump and to simultaneously close a valve in the feed pipe, thereby positively cutting off the supply of fuel to the burner in event of the flame being accidently extinguished, and to utilize the overflow from the burner for this purpose.

A further object is to provide means associated with the valve-actuating mechanism whereby the overflow from the burner is collected so that it may be subsequently returned to the source of supply and thus prevent waste of unconsumed oil or other liquid fuel.

A further object is to provide in connection with float-controlled means for actuating an electric switch to open the motor-circuit and thereby stop the pump and cut off the oil supply to the burner, manually operated means whereby the collected liquid fuel may be forced into a removable receptacle for restoration to the source of supply and the float-controlled mechanism simultaneously restored to operable position for stopping the motor when the burner is again started, in case the flame is again extinguished.

The invention will first be hereinafter more particularly described with reference to the accompanying drawings, which are to be taken as a part of this specification, and then pointed out in the claims at the end of the description.

In said drawings, Figure 1 is a side elevation, partly in section, of a liquid fuel burner having my improved safety device associated therewith; and

Figure 2 is a vertical sectional view of the safety device, on an enlarged scale, showing in dotted lines the float and associated parts in the position they occupy when operated to open the motor-circuit and close the cut-off valve.

Referring to said drawings, in which the same reference numerals are used to denote corresponding parts in different views, 5 denotes a conventional oil burner having associated therewith an electric motor 6 which is included in a normally closed electric circuit in the usual manner for operating a rotary pump 7 for supplying fuel to the burner.

The numeral 8 denotes a rectangular casing into which the overflow of oil or other liquid is conducted for stopping the motor in case the fire is accidently extinguished when the burner is in operation. This casing, as shown in Fig. 2, may be cast with a rectangular hollow base 9, in which a drawer or receptacle 10 is slidably fitted, and within the casing above said drawer is provided a well or liquid fuel collecting reservoir 11, having its outer side walls spaced from the inner side walls of the casing. A plurality of spaced ribs 12 are provided on the inner face of the reservoir walls and extend vertically of the same.

A hollow float 13, preferably circular in cross-section, and having a convex or rounded lower end, is mounted in the reservoir in contact with the ribs 12 and is guided thereby in a true vertical direction. A rod 14 passes vertically through the float and has its lower end secured within the same as shown, while its upper end projects through the top of the casing 8 and carries a manipulating head or knob 15.

An oil or liquid fuel supply pipe 16 leads to the burner from the pump 7 into and through the casing 8, and a downwardly inclined overflow pipe 17 leads from the burner into the casing through a tubular member 18 connecting the casing 8 and reservoir spanning the space therebetween adjacent the upper end of the reservoir, so that the overflow from the burner will be conducted into the reservoir as indicated by the arrows.

The aforesaid liquid fuel supply pipe is passed through the upper end of the casing 8 and is provided with a rotary cut-off valve 19, to which a slotted arm 20 is attached, and a pin 21, projecting laterally from the rod 14, engages the slot in said arm so as to cause the arm to rise and fall with the float 13.

A bracket 22 projecting from the inner side of the casing near its upper end has pivoted thereto a collar 23, which embraces a capsule or glass tube 24 containing mercury. This capsule or tube 24 in normal position is inclined downwardly toward the cut-off valve in the delivery section of the feed pipe and carries a forwardly projecting bifurcated or slotted arm 26 engaged by a pin 27 on the rod 14, located directly above the pin 21. The glass tube 23 contains a quantity of mercury sufficient only to normally establish electrical connection between a pair of spaced electrodes 28 carried by and projecting transversely through the lower end of the tube and secured outside of the tube to conductor wires 29 in electrical connection with the motor 6.

In operation, assuming that the burner is accidently extinguished, causing an overflow of the liquid fuel, the overflow will be conducted into the reservoir 11 through the overflow pipe 17, and as the liquid fuel rises in the reservoir the float 13 will be raised and through it the arm 20 will be moved to the dotted line position shown in Fig. 2, thus closing the cut-off valve which controls the passage of liquid fuel to the burner, and at the same time the ascending rod 14 will move the glass tube 24 to the dotted line position shown in said Fig. 2, thus causing the mercury to flow to the opposite end of the tube, thereby breaking the electric circuit which includes the motor and stopping the operation of the pump.

When it is desired to again start the burner, the handle 15 is depressed, thus causing the capsule or tube 24 and arm 20 to be restored to their initial positions in which the electric circuit will be again closed and the cut-off valve in the fuel feed pipe opened, and by the same operation the liquid fuel in the reservoir 11 will be forced therefrom through apertures or slots 30 in the upper edge of the reservoir into the space between the casing and reservoir and conducted into the receptacle or drawer 10 which may then be removed and the fuel therein returned to the source of supply.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:—

1. An apparatus of the character described comprising a casing, a receptacle slidably mounted in the bottom thereof, a reservoir supported within the casing and spaced from the sides thereof and arranged to receive liquid fuel overflowing from a point of delivery, a valve-controlled fuel feed pipe leading through the casing above said reservoir to said point of delivery, an electric motor included in a normally closed electric circuit, a switch pivotally supported in the casing and normally completing the motor circuit, a float in the reservoir, means operatively connecting the float, valve and switch whereby the valve will be closed and the electric circuit broken when the liquid in the reservoir raises the float, and manually operable means for lowering the float to force the contents of the reservoir into said receptacle, thereby simultaneously opening the valve and re-setting the switch.

2. In an apparatus of the character described, a portable receptacle, a reservoir supported above the receptacle connected therewith and adapted to receive liquid overflowing from a point to which it is delivered, a liquid fuel control valve in the feed pipe leading to a point of delivery arranged above the reservoir, an electric circuit including a motor and a circuit closer pivotally supported adjacent the valve; said motor being operatively connected with a pump for supplying the liquid fuel, a float in said reservoir, a rod projecting vertically from said float, spaced pins carried by said rod, slotted arms fixed to the valve and circuit closer respectively, and each engaged with one of said pins, and a handle carried by said rod for forcing the float downwardly, whereby said valve is opened and said circuit closer moved into closed position and the contents of the reservoir emptied into said receptacle.

3. In an apparatus of the character described, a casing enclosing a reservoir into which liquid fuel overflowing from a point of delivery is conducted; said reservoir being spaced from the inner wall of the casing, a vertically slidable float within the reservoir and spaced from the inner wall thereof, a portable receptacle housed in said casing below the reservoir into which liquid overflowing the reservoir is conducted, a feed-pipe entering the casing above the reservoir and extending to said delivery point; said feed-pipe having a liquid fuel control valve therein, a make-and-break device arranged within said casing for completing an electric circuit therethrough, a rod extending from said float upwardly through said casing and provided with a handle for depressing the float so as to cause the liquid therein to overflow into said receptacle, and connections between said rod and said valve and between said device and said rod whereby the valve will be closed and the electric circuit broken when the float is raised.

4. An apparatus of the character described comprising a casing having a removable catch receptacle in the base thereof and a reservoir formed therewithin above said receptacle in spaced relation from its walls, the said reservoir being adapted to receive liquid fuel overflowing from a point of delivery in communication with a source of fuel supply; a buoyant piston-like element movably guided in said reservoir and adapted to be raised by liquid fuel therein, a fuel supply pipe extending through said casing to the aforesaid

point of delivery having a normally open valve controlling the passage of liquid fuel supply therethrough; an electric circuit including a switch normally completing the circuit through an electric motor for operating a pump for supplying liquid fuel to the point of delivery, and means operatively connecting the valve of said supply pipe and the switch of said circuit with said buoyant piston-like element whereby the circuit is broken to stop the motor and the valve in said supply pipe is closed to cut off the supply of fuel when said buoyant element is raised sufficiently, said buoyant element being adapted to be manually lowered to force the contents of the reservoir into the catch receptacle and thereby serve to throw the valve again into open position and to move the switch to again complete the circuit.

In testimony whereof I affix my signature.

JOHN SCHEMINGER, JR.