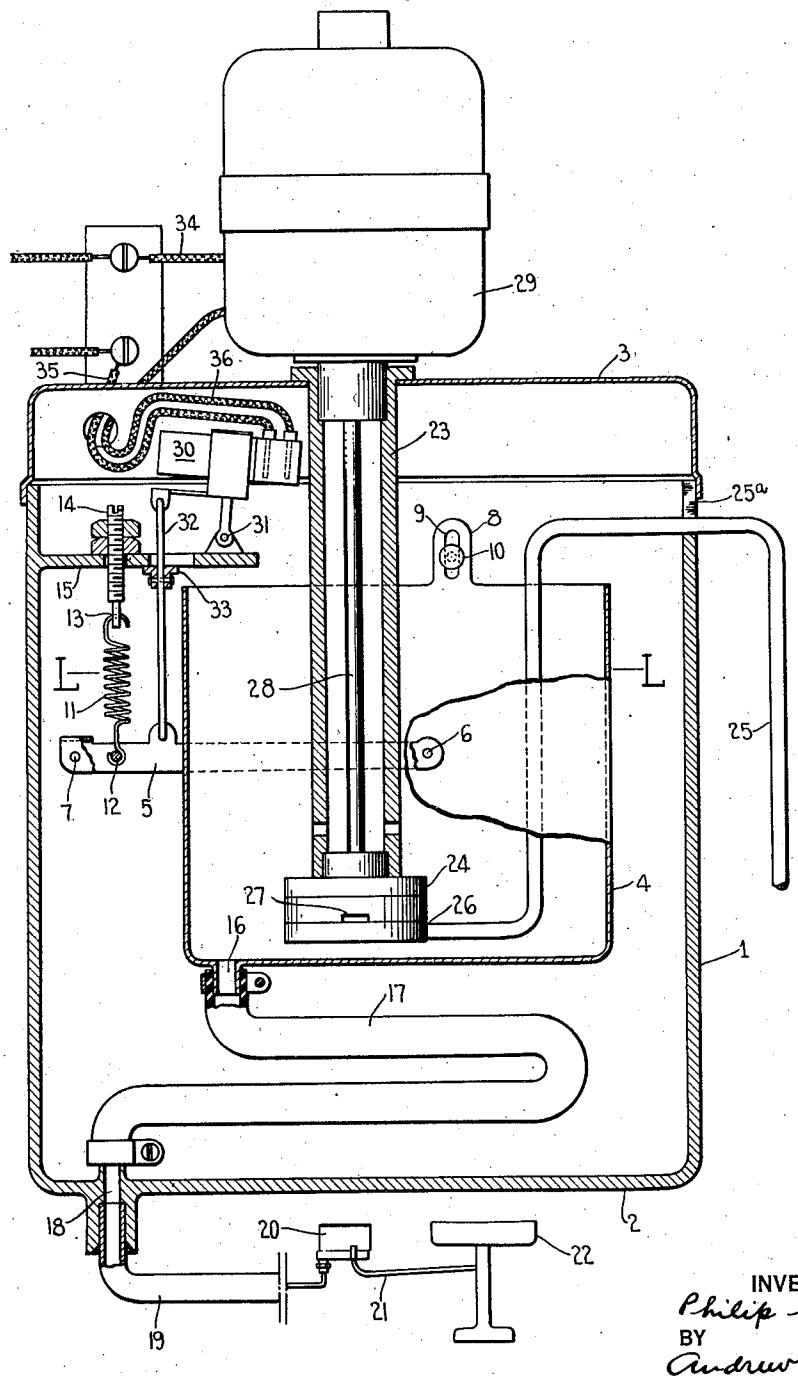
May 29, 1945. P. S. RUSSEL 2,377,185

LIQUID SUPPLYING MEANS

Filed March 24, 1943



INVENTOR
Philip S. Russel
BY
Andrew K. Foulds
his ATTORNEY

Patented May 29, 1945

2,377,185

UNITED STATES PATENT OFFICE

2,377,185

LIQUID SUPPLYING MEANS

Philip S. Russel, Detroit, Mich., assignor to Detroit Lubricator Company, Detroit, Mich., a corporation of Michigan

Application March 24, 1943, Serial No. 480,340

8 Claims. (Cl. 103—31)

This invention relates to new and useful improvements in liquid feeding means and more particularly to pump fed or supplied chambers for feeding liquid fuel to a fluid fuel burner.

An object of the invention is to provide novel means for controlling operation of the pump in accordance with the quantity of liquid contained in the supply chamber.

Another object is to provide a feeding means in which the pump is positioned within the supply chamber so that any pump leakage is immaterial.

The invention consists in the improved construction and combination of parts to be more fully described hereinafter and the novelty of which will be particularly pointed out and distinctly claimed.

In the accompanying drawing to be taken as a part of this specification, there is fully and clearly illustrated a preferred embodiment of the invention in which drawing:

The figure is a view in vertical central section through a liquid feeding means embodying the invention and showing the same operatively connected to a liquid fuel burner.

Referring to the drawing by characters of reference, 1 designates generally a housing or casing having a bottom wall 2 and a cover or closure member 3. Within the casing 1 there is a container 4, preferably of cylindrical cup-like form, which is supported for vertical movement by parallel supporting arms 5 secured to the outer side walls of the container 4 by trunnions 6 and pivotally mounted in the casing 1 by a shaft 7. The container 4 has an extension 8 with a guide slot 9 cooperable with a pin or stub shaft 10 projecting from the wall of casing 1 and serving as a guide means for substantially vertical movement of the container 4. The container 4 is urged upwardly and carried by a helical coil spring 11 having one end anchored to the arms 5, as at 12, and having its other end connected, as at 13, to an adjustment screw 14 supported by a bracket arm 15 projecting inward from the side wall of the casing 1.

The bottom wall of the container 4 has an outlet 16 to which is secured one end of a flexible outlet conduit 17 of any suitable oil resistant tubing, such for example as Thyacol. The other end of the flexible conduit 17 is connected to an outlet 18 through the bottom casing wall 2. A conduit 19 connects the outlet 18 to a constant liquid level supply device 20 which is connected by a conduit 21 to a liquid fuel burner 22 of the gravity fed type.

Carried by the cover member 3 and extending downward into the container 4, there is a tubular supporting member 23 to the lower end of which there is secured a pump 24, preferably of the gear type. An inlet conduit 25 leading from a suitable source of liquid fuel supply extends through a slot 25a in the side wall of the casing 1 and into the container 4 for connection as at 26 to the inlet of the pump 24, which has its outlet 27 discharging into the container 4. The supporting member 23 extends downward into the container 4 below the liquid level to be maintained therein designated by the line L—L so that the pump 24 will be submerged in the liquid and any possible leakage therefrom will be immaterial. The pump 24 is driven by a shaft 28 which extends upward through the member 23 and is connected at its upper end to the drive shaft of an electric motor 29 which is carried in the upper end of the supporting member 23 and accordingly carried by the cover member 3. The motor 29 is controlled by a switch 30 of the mercury tube type which is pivotally supported for tilting or rocking action on the pivot pin or shaft 31 which is carried by the bracket 15. The switch 30 is operatively connected to one of the container supporting arms 5 by a thrust or operating rod or member 32 which extends upward through an aperture in the bracket 15. A stop member 33 on the rod 32 cooperates with the under side of the bracket 15 to limit upward movement of the arms 5 by the spring 11. This stop 33 also limits the tilting of the switch 30 by the spring 11. The motor 29 is supplied with current by conductors or lead wires 34, 35, the lead wire 35 connecting to one terminal of the switch 30. A lead wire 36 connects the other terminal of the switch 30 to the motor 29, thereby to complete the motor circuit.

The operation of this device is as follows. The parts are in the position in which the liquid discharging into the container 4 from the pump outlet 27 has not reached the predetermined desired level, designated by the line L—L. Accordingly, the spring 11 is holding the container in its uppermost position, limited by the stop member 33, and is holding the switch 30 in circuit making position so that the motor 29 is driving the pump 24. The liquid fuel discharging from the pump outlet 27 will be feeding through the outlet 16 and flexible tube 17 to the constant level device 20, assuming that the burner 22 is in operation. The rate of discharge by the pump 24 is, of course, in excess of the consumption by the burner 22, and accordingly the liq-

uid level will increase in the container 4, and when the level reaches the line L—L, then the weight of the liquid in the container 4 will overcome the supporting force of the spring 11, thereby to move the container 4 downward and pull the switch 30 to circuit open position, the switch rocking on its pivot 31. Opening of the switch 30 will stop further operation of the pump 24 and as soon as sufficient liquid has been consumed by the burner 22 from the container 4, the spring 11 will move the container 4 upward to again close the switch 30 and restart the operation of the pump 24. When the operation of the burner is stopped or if further supply of liquid fuel from the outlet 16 is halted, then the weight of the liquid in the container 4 will hold the switch 30 in open position, so that the operation of the pump 24 will be discontinued.

What is claimed and is desired to be secured by Letters Patent of the United States is:

1. A liquid supply device, comprising a container having an outlet, means supporting said container for movement by weight of liquid therein, a pump within and for supplying liquid to said container at a higher rate than the rate of flow from said outlet, a motor for driving said pump, said container serving to catch leakage of liquid from said pump a switch controlling the operation of said motor, and means operable upon movement of said container by weight of liquid therein to actuate said switch to stop said motor.

2. A liquid supply device, comprising a container having an outlet, means supporting said container for movement by weight of liquid therein, a pump in said container below the liquid level therein for supplying liquid to said container simultaneously with flow from said outlet, a motor for driving said pump, a switch controlling the operation of said motor, leakage from said pump being caught by said container, and means operable upon movement of said container by weight of liquid therein to actuate said switch to stop said motor.

3. A liquid supply device, comprising a container, means supporting said container for movement by weight of liquid therein, a pump within and for supplying liquid to said container, a motor for driving said pump, a switch controlling the operation of said motor, means operable upon movement of said container by weight of liquid therein to actuate said switch to stop said motor, said container having an outlet for discharge of liquid simultaneously with the supplying of liquid by said pump, a casing enclosing said container and having an outlet, leakage from said pump being caught in said container and discharged therefrom through said outlet, and a flexible outlet conduit communicatively connecting said outlets.

4. A liquid supply device, comprising a container having an open top, spring means supporting said container for movement by weight of liquid therein, a pump within and for supplying liquid to said container, a motor mounted above said container and for driving said pump, a drive shaft connecting said motor to said pump, a sleeve member surrounding said shaft and supporting said motor, and said pump, a switch controlling the operation of said motor, and means operable upon movement of said container by weight of liquid therein to actuate said switch to stop said motor, said spring means determining the weight of liquid in said container at which said switch will be actuated to stop said motor.

5. A liquid supply device, comprising a container, a pivoted supporting arm for said container, means guiding said container for substantially vertical movement, a pump within and supported separately from said container below the liquid level therein and having an outlet discharging into said container, a supply conduit extending into said container and connected to the inlet of said pump, a motor for driving said pump, a switch controlling operation of said motor, an operating member connecting said arm to said switch to actuate said switch to stop said motor upon downward movement of said container, said container having an outlet for the discharge of liquid therefrom simultaneously with the supply of liquid thereto by said pump, and a spring connected to said arm and supporting said container, said spring determining the liquid level in said container at which downward movement of said container will actuate said switch.

6. A liquid supply device, comprising a casing, a container in said casing, means carried by said casing and supporting said container for movement by weight of liquid therein, a pump positioned in said container below the liquid level therein and having an outlet discharging into said container, means carried by said casing and supporting said pump, a motor operatively connected to said pump to drive the same and supported by said casing, a switch controlling operation of said motor, means operable by movement of said container for actuating said switch to stop said motor upon predetermined liquid level in said container, said container having an outlet, said casing having an outlet, and a flexible conduit in said casing and connecting said outlets.

7. A liquid supply device, comprising a casing, a container in said casing, spring means carried by said casing and supporting said container for movement by weight of liquid therein, a pump positioned in said container below the liquid level therein and having an outlet discharging into said container, means carried by said casing and supporting said pump, a motor operatively connected to said pump to drive the same and supported by said casing, a switch controlling operation of said motor, and means operable by movement of said container for actuating said switch to stop said motor upon predetermined liquid level in said container, said spring means determining the predetermined liquid level in said container.

8. A liquid supply device, comprising a casing, a container in said casing, spring means carried by said casing and supporting said container for movement by weight of liquid therein, a pump positioned in said container below the liquid level therein and having an outlet discharging into said container, a cover member on said casing, means carried by said cover member and supporting said pump, a motor operatively connected to said pump to drive the same and mounted on said cover member, a switch controlling operation of said motor, and means operable by movement of said container for actuating said switch to stop said motor upon predetermined liquid level in said container, said spring means determining the predetermined liquid level in said container.

PHILIP S. RUSSEL.