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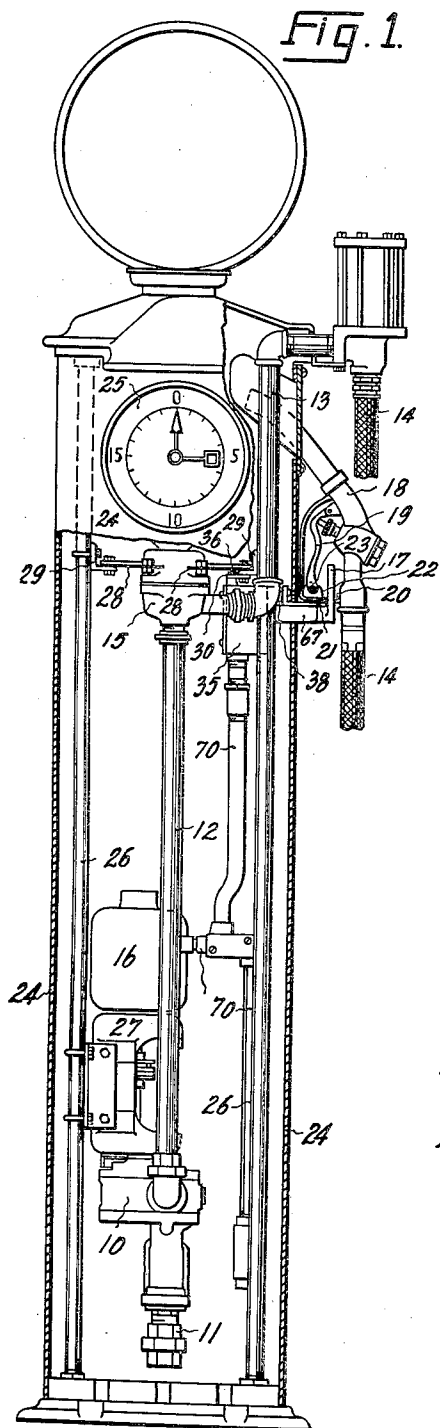
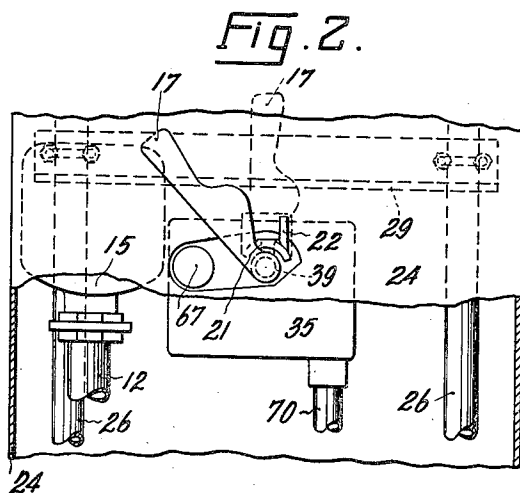
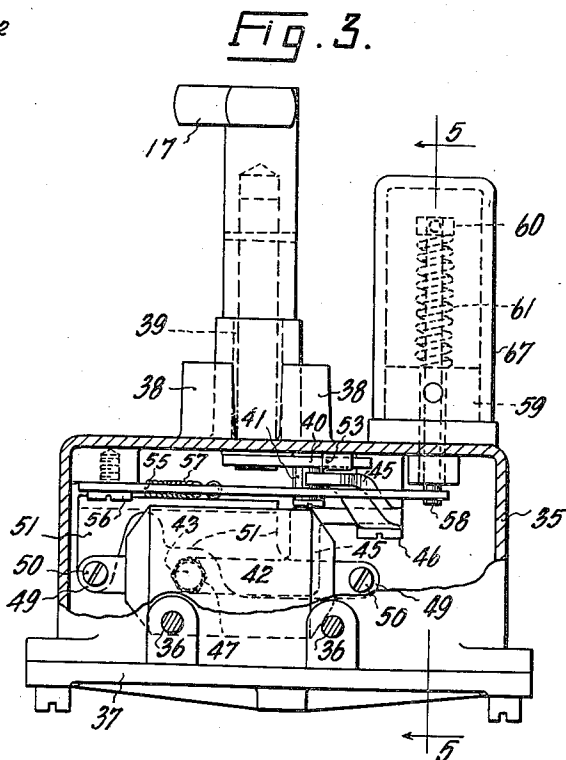
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LIQUID DISPENSING APPARATUS

Filed Oct. 20, 1930

2 Sheets-Sheet 1



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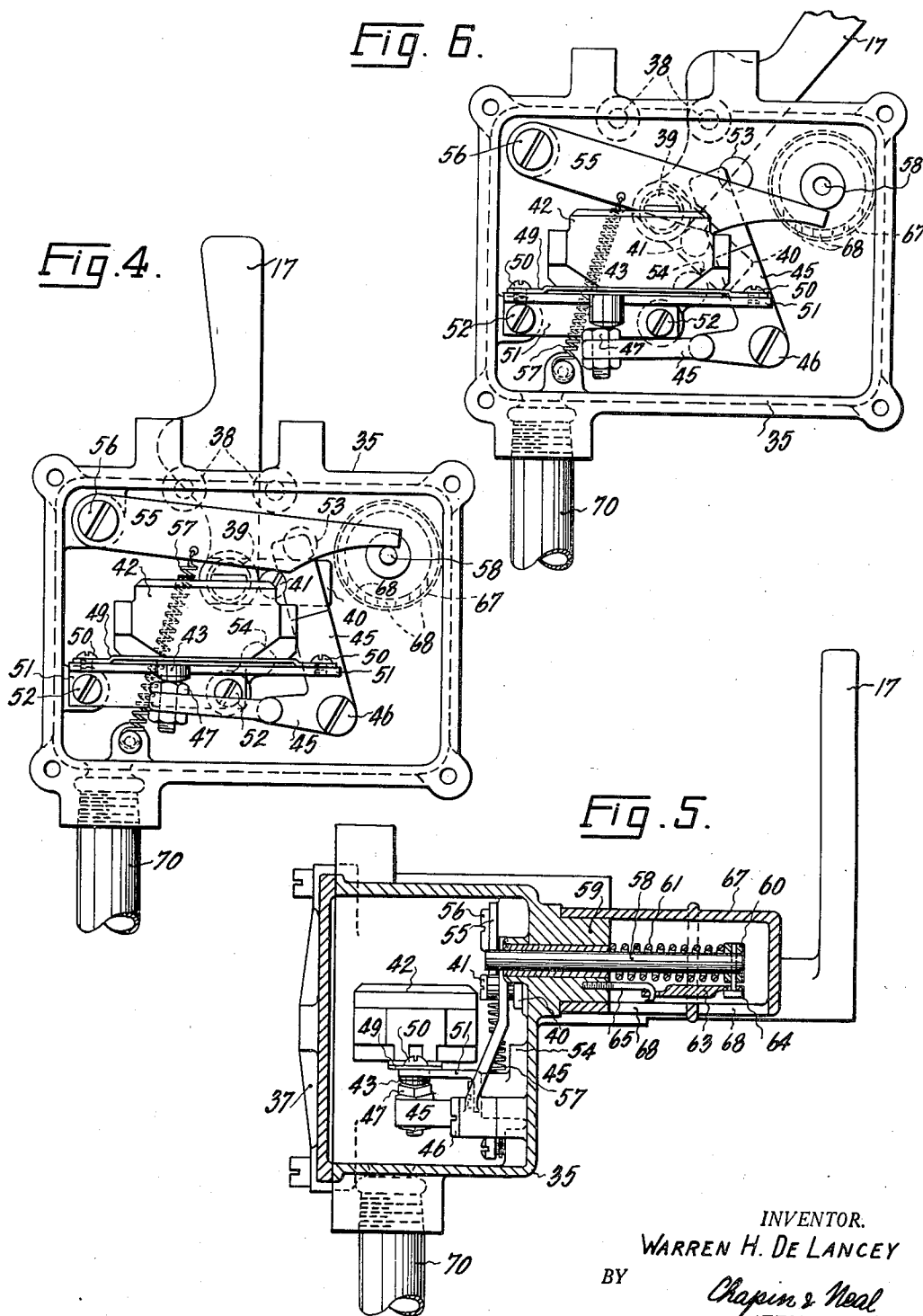
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LIQUID DISPENSING APPARATUS

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UNITED STATES PATENT OFFICE

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LIQUID DISPENSING APPARATUS

Application filed October 20, 1930. Serial No. 489,921.

This invention relates to improvements in liquid dispensing apparatus and more particularly, to apparatus adapted for dispensing highly inflammable liquids, such for example, as gasoline.

Gasoline dispensing apparatus, in a form at present widely used, includes some form of power operated pumping means which, when once started, will operate continuously until stopped and deliver without any interruption in flow, any desired quantity of gasoline. Speedy delivery is the aim. The operator has nothing to do but insert the hose nozzle in the tank to be filled, open the valve in the nozzle at the discharge end of the hose, and let the stream of gasoline flow until the tank is filled to the desired extent, when the flow is cut off by closing the nozzle valve.

There are certain fire hazards in such an arrangement. The power pump is started by a control near the intake end of the hose, when the operator picks up the hose nozzle preparatory to a filling operation. During such operation, the operator stands at a distance from the pump and cannot operate the control. Should the hose break, gasoline would be discharged near the pump and if the gasoline takes fire, the operator might not be able to reach the control to stop the pumping. It has also been urged that there is the danger that the hose might be torn from the pump, if for example the automobile is driven off before the hose nozzle is removed from the tank. Either contingency mentioned would result in a stream of gasoline being discharged on the ground adjacent the pump and create a serious fire hazard.

This invention has for its object the provision of safety mechanism to guard against the above and other fire hazards.

This and other objects will appear as the detailed description proceeds and will be pointed out in the appended claims.

The invention will be disclosed with reference to the accompanying drawings, in which:—

Fig. 1 is a small scale elevational view, partly in section, of a gasoline dispensing apparatus embodying the invention;

Fig. 2 is a fragmentary elevational view taken at right angles to Fig. 1;

Fig. 3 is a plan view with parts broken away, of the safety switch mechanism;

Fig. 4 is a front elevational view thereof with the cover removed to reveal interior mechanism;

Fig. 5 is a cross sectional view taken on the line 5—5 of Fig. 3; and

Fig. 6 is a view taken similarly to Fig. 4 but showing the parts as they would appear after the switch has been opened by the safety mechanism.

Referring to Fig. 1 of these drawings; the dispensing apparatus comprises a suitable pump 10 for drawing liquid from an underground supply tank through a pipe shown in part at 11 and for expelling it through a delivery conduit comprising fixed pipes 12 and 13, and a flexible hose 14. A suitable meter, such as a flow meter 15, is interposed between pipes 12 and 13 to measure the quantities dispensed. The pump 10 is driven by an electric motor 16 and this motor is controlled by a handle 17 and means later to be described in detail. The hose 14 has at its discharge end a valved hose nozzle 18 of the well known self closing type with an operating lever 19, adapted when pressed toward the body of the nozzle to open the valve. Control of the liquid dispensed is thus at the discharge end of the hose although the operator has to start the motor by moving handle 17 prior to the dispensing operation.

The nozzle 18, when not in use, is hung up by its guard 20 from a fixed support 21, mounted adjacent handle 17. This support 21 does not interfere with movement of the handle from "off" to "on" position but the guard 20, when placed on the support, projects into the path of movement of the handle and prevents movement of the same from "off" to "on" position. If the handle is in "on" position (shown by dotted lines in Fig. 2), the guard cannot be placed on the support until the handle is first moved to the "off" position shown by full lines in Fig. 2. Thus, the operator is compelled to stop the motor and the pumping of liquid before he can hang up his hose nozzle.

Arrangement is made for locking the nozzle 18 to its support 21 and incidentally locking the nozzle valve lever 19 against movement. For example, such lever, when in "closed" position lies adjacent a lug 22 on support 21. These parts 19 and 22 are in side by side and non-interfering relation but have registering holes, such as 23, by means of which they may be pad-locked together. By thus locking the parts, the lever 17 is held against movement such as to open the nozzle valve and the guard 20 is prevented from being lifted off its support.

The motor, pump and meter are usually housed in a suitable casing, such as 24; while the hose 14, its nozzle 18, handle 17 and support 21 lie outside the casing. This casing has an opening to reveal the dial 25 of the meter. The motor pump and meter may be supported within housing 24 in any suitable manner. As shown, there are within the housing four upstanding pipe column supports 26. The motor 16 and pump 10 are mounted on a common frame 27 and this frame is secured as indicated to two of the supports 26. The meter 15 is supported by plates 28, bolted as indicated in Fig. 1, to angle irons 29. These angle irons are clamped to the supports 26, as shown in Figs. 1 and 2. Bolted to one of the angle irons 29 is a bar 30, serving as will appear, as a support for the motor switch.

The motor switch is contained within a box 35, secured by cap screws 36 to bar 30 and having a removable cover plate 37 to allow access to the interior mechanism. The support 21 is secured, as indicated in Fig. 1, to a pair of bosses 38 formed on this box 35. The box also affords a bearing for a shaft 39 to which handle 17 is fixed. Shaft 39 terminates just inside box 35 and has fixed to its inner end an arm 40 carrying a roll 41. The switch is of the push button type, its body being indicated at 42 and the push button at 43. The switch is of the self opening type and continued pressure on the push button is required to hold the switch closed. The button 43 is shown in "on" position in Fig. 4 and in "off" position in Fig. 6. The button is held in "on" position by the roll 41 and an intervening bellcrank 45. The latter, pivoted at 46 to the back wall of box 35 has an upstanding arm engaged by roll 41 and a horizontally extending arm which engages the push button by means of an adjustable abutment 47 thereon. The switch includes a plate 49 which is secured by screws 50 to an angle iron 51 which in turn is secured by screws 52 to the rear wall of box 35. Fixed stops 53 and 54 on said wall limit the movement of arm 40 and define its "on" and "off" positions respectively. Movement of handle 17 in a clockwise direction until arrested by the abutment of arm 40 with stop 54 will allow the upstanding arm of bellcrank 45 to swing

to the left and its horizontal arm to be lowered by the push button 43. Movement of handle 17 back into the illustrated position will cause roll 41 to force the bellcrank 45 to turn in a clockwise direction and cause its horizontal arm to press the push button 43 into "on" position and hold it there by reason of the roll riding into a recess in the upstanding arm of the bellcrank. The switch, thus far described, is of a known type.

A feature of the invention is the provision of automatic means, which are releasable in case of fire adjacent the pump, for causing the switch to open. A lever 55, pivoted at 56 to the rear wall of box 35, overlies roll 41 and is drawn downwardly toward the same by a spring 57. The spring is restrained from moving lever 55 downwardly beyond the position illustrated, by a rod 58 which underlies the free end of the lever. This rod is slidably mounted in a bearing provided in a boss 59 on the rear wall of box 35. The inner end of the rod normally projects into box 35 far enough to restrain movement of lever 55. The outer end of the rod has fixed thereto a collar 60 and a coil spring 61, which encompasses the rod, acts between the outer end face of boss 59 and collar 60, tending to withdraw rod 58 from its underlying relation with lever 55. Such action of the spring is restrained by a fusible link 63 which interconnects a pin 64 on collar 60 and a pin 65 fixed to boss 59. On rupture of the link 63, spring 61 will withdraw rod 58 from beneath lever 55 and spring 57 will then draw this lever downwardly, causing roll 41, arm 40 and handle 17 to move automatically into their "off" positions and allowing the push button 43 to move to "off" position.

The link, spring 61 and the outer end of rod 58 are preferably housed in. As shown, a tubular housing 67, having a closed outer end, is slipped over boss 59 as shown and suitably held thereto. The under side of this housing is provided with several slots 68 to facilitate the access of heat or flame to the fusible link.

As will be understood, the switch 42 is suitably connected in circuit with the motor 16 and a source of electrical supply,—the wires comprising such circuit being housed in conduits 70.

In the normal inactive condition of the dispensing apparatus, the hose nozzle 18 is hung up on its support 21 and this means that the control handle 17 must be in "off" position and the motor switch open. When liquid is to be dispensed, the operator removes the nozzle from support 21 and then throws handle 17 to "on" position to close the switch and start the motor driven pump. The nozzle is then carried to and inserted in the tank to be filled and the flow of gasoline is controlled by the valve in the nozzle. Should the hose break, leak or be torn away from the apparatus, while the operator is stationed at

the nozzle end of the hose, causing gasoline to be discharged around the pump, the operator can readily stop the motor and thus the pumping, provided that he can reach handle

17. Should the leaking gasoline take fire or should there be fire from any other cause in the immediate vicinity of the pump so that the operator is prevented from reaching handle 17, this handle will be automatically moved by the spring actuated lever 55, when the latter is released by the melting of link 65. Although not limited thereto, the link is designed to melt at about 180 degrees Fahr., and the safety mechanism will thus readily respond even to a small fire if in the immediate vicinity of the apparatus.

While the invention contemplates broadly a safety switch which will open automatically by means responsive to abnormal heat in the immediate vicinity of the dispensing apparatus, it is deemed preferable, although not necessarily essential for all purposes, to combine the safety provisions with the usual motor control switch rather than to provide a separate switch unit as the safety device. Aside from the savings in cost of material, assembly of parts and wiring incident to the preferred arrangement, there is the important advantage that the apparatus is not rendered wholly inoperative by rupture of the fusible link. One can still operate the pump by manipulating the handle 17, although it will be necessary for someone to hold the handle in "on" position. Otherwise, the spring 57 will move the handle to "off" position. Until the fusible link is replaced to hold rod 58 in position to prevent movement of lever 55, the switch will stay open unless manually held closed. Thus, operation of the apparatus can be effected in an emergency even though a new fusible link is not immediately available to replace the ruptured one. However, the emergency operation requires an extra operator to be stationed at the handle 17 so that such operation is conducted only under due precaution. The nuisance of having an extra operator for the purpose of operating handle 17 will compel early attention to the matter of replacing the fusible link.

The invention has been disclosed herein in an embodiment at present preferred for the purpose of illustration, but it is desired to claim the invention as broadly as the state of the prior art will permit.

What I claim is:

1. In a liquid dispensing apparatus, a liquid delivery line, power operated pumping means to force liquid through said line, means for measuring the liquid forced through said line, a normal control member manually movable from one position to another to start and stop said power operated means and thereby control the delivery of liquid through said line, and means respon-

sive to abnormal rise in temperature adjacent the apparatus to automatically move said normal control member into position to stop said power-operated means.

2. In a liquid dispensing apparatus, a liquid delivery line, a pump for forcing liquid through said line, an electric motor for driving the pump, means for measuring the liquid forced through said line, a manually operated switch effective for normal use in starting and stopping the motor, normally restrained means effective when released to automatically open the switch, and means including a fusible connection for normally restraining the last named means and for releasing the same for action in the event of abnormal rise in temperature adjacent the apparatus.

3. In a liquid dispensing apparatus, a liquid delivery line terminating in a flexible hose, an electrically operated means for forcing liquid through said line, means for measuring the liquid forced through said line, a normal control means adjacent the inlet end of said hose for starting and stopping said electrically operated means and thereby controlling the delivery of liquid through said line, and a heat responsive safety device adjacent said control means for moving the same to stop the electrically operated means in the event of abnormal rise in temperature adjacent the apparatus.

4. In a liquid dispensing apparatus, a liquid delivery line terminating in a flexible hose, an electrically operated means for forcing liquid through said line, means for measuring the liquid forced through said line, a switch in the circuit of said electrically operated means tending to move to open position, a manually operated lever for operating said switch, means effective when the switch is moved to closed position to hold it there until moved back to open position by said lever, a spring actuated member, and means including a fusible link for normally restraining said member from movement, said member effective when released by the breaking of the link to release the aforesaid switch holding means and allow the switch to open if not already thus positioned.

In testimony whereof I have affixed my signature.

WARREN H. DE LANCEY.