

Aug. 4, 1931.

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1,816,901

LIQUID DISPENSING APPARATUS

Filed June 18, 1929

3 Sheets-Sheet 1

Fig. 1.

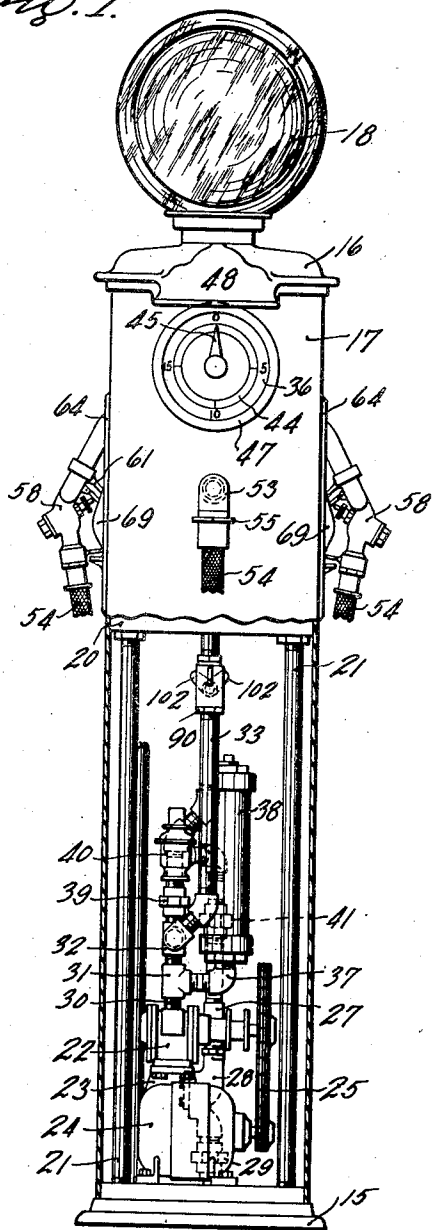
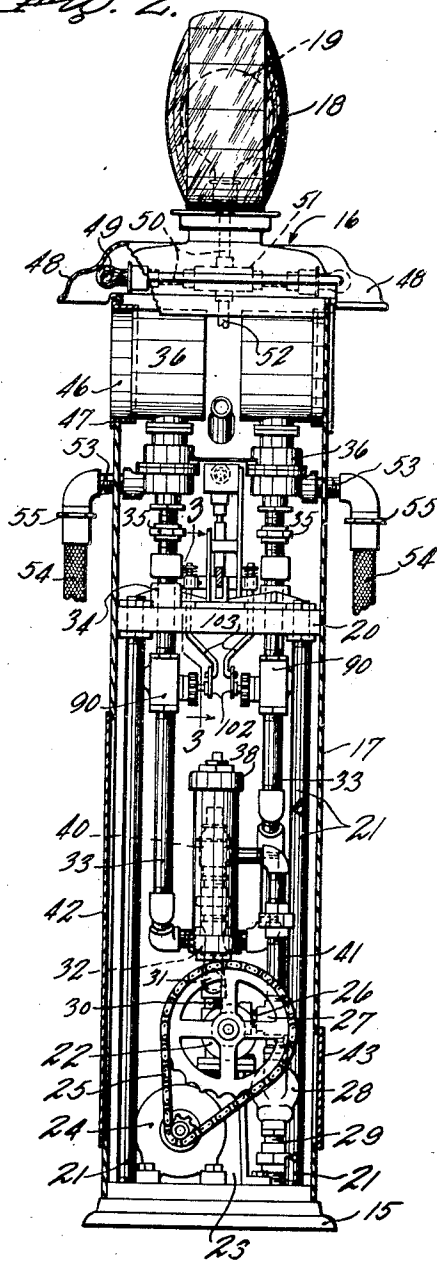


Fig. 2.



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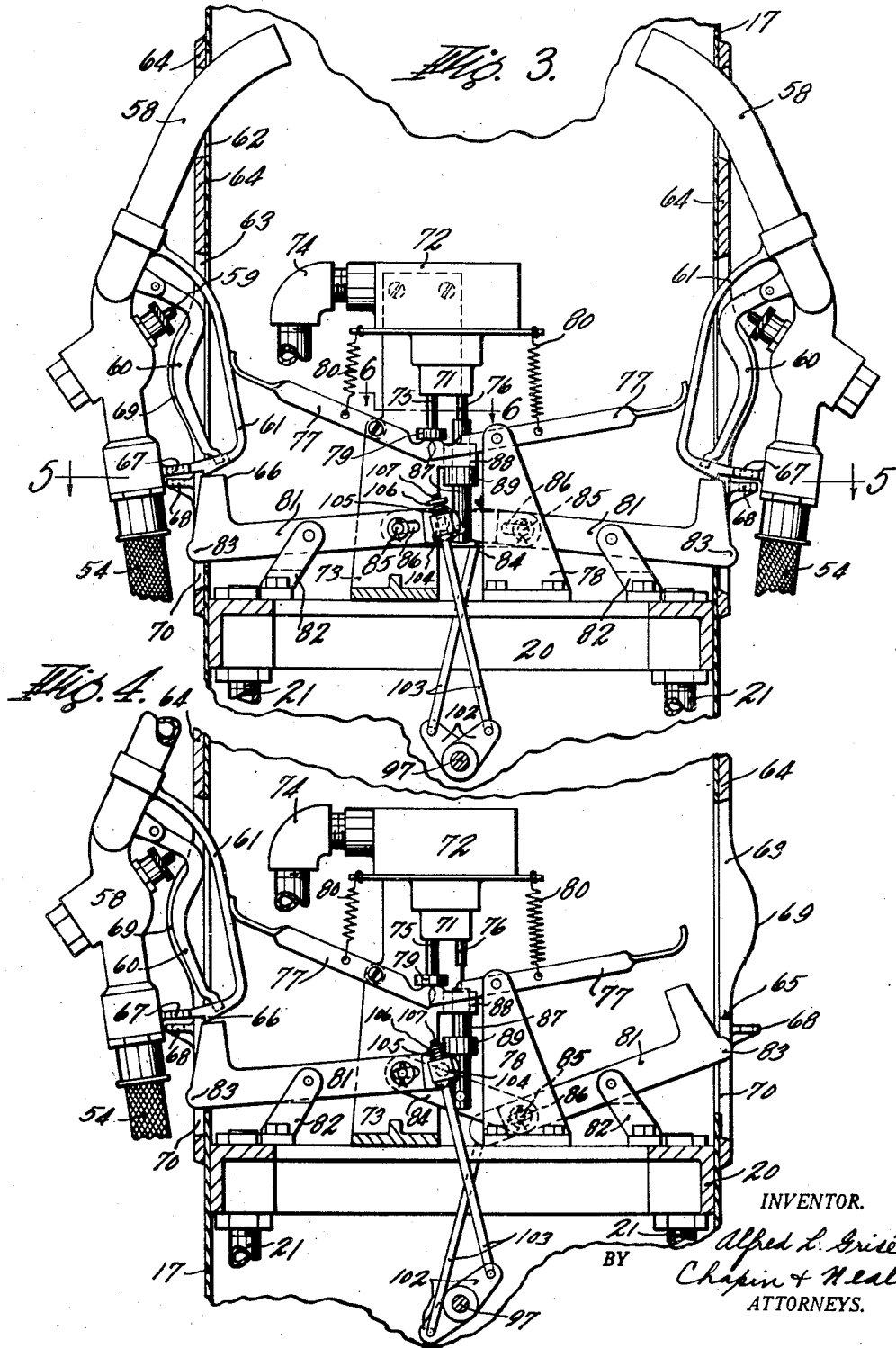
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3 Sheets-Sheet 2



UNITED STATES PATENT OFFICE

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LIQUID DISPENSING APPARATUS

Application filed June 18, 1929. Serial No. 371,355.

This invention relates to liquid dispensing apparatus of a type adapted for dispensing gasoline, oils and the like.

The invention has for one object the provision of improved means for locking up the nozzle of the dispensing hose, when not in use, preferably in a manner such that it not only cannot be used but also so that it is protected from the weather.

The invention also has for an object the provision of hose nozzle locking means of a type which will also prevent opening of the valve of the nozzle while the latter is locked up.

Another object of the invention relates to a liquid dispensing apparatus, having a power-operated pumping means with means for starting and stopping the same, and consists in an arrangement, whereby the hose nozzle when in position for locking prevents access to or operation of said starting and stopping means.

A further object of the invention relates to a liquid dispensing apparatus having a plurality of delivery hoses, all served from a single power-operated pumping means, and consists in an arrangement, whereby the flow to any one hose must be stopped before the nozzle of that hose can be placed in position for locking and whereby the pumping means must be stopped before all the hose nozzles can be placed in position for locking.

I have chosen as an illustrative embodiment of my invention, a so-called meter type dispenser, including an electrically or other power driven pump which supplies two discharge lines, each including a meter. The invention, however, is capable of use in many other dispensers, which differ widely from that herein shown, and it is therefore not the intention to have the invention restricted to the particular form of dispenser shown.

Other objects and advantages will appear in the following description and will be pointed out in the appended claims.

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

Figs. 1 and 2 are elevational views, taken at right angles, of a dispensing apparatus em-

bodying my invention,—the casing of the apparatus being shown in section to reveal interior mechanism;

Fig. 3 is a fragmentary sectional view taken on the line 3—3 of Fig. 2 and drawn to a larger scale;

Fig. 4 is a view taken similarly to Fig. 3 but showing certain parts in different relative positions;

Figs. 5 and 6 are fragmentary sectional plan views taken on the lines 5—5 and 6—6, respectively of Fig. 3;

Fig. 7 is a fragmentary exterior view showing the openings in the casing for the hose nozzle and the means for supporting the latter in locking position; and

Figs. 8 and 9 are sectional views, taken at right angles, of one of the shut off valves used in the supply line to each meter.

Referring to Figs. 1 and 2, the preferred form of the apparatus includes a base 15, a cap 16, and a two-part sheet metal casing 17 of modified square cross section (see Fig. 5), which supports the cap from the base. The cap may, if desired, carry a dome 18, illuminated by an electric lamp 19. Located within casing 17, and intermediate the ends thereof, is a horizontally disposed support 20, secured as indicated, to the upper ends of four pipe columns 21, upstanding from base 15. In the space above support 20 is contained a pair of meters and means for controlling the discharge of liquid therethrough. In the space below this support is contained an electrically driven pump for supplying liquid to the meters and certain valves and appurtenances as will appear.

The pump, which may be of any suitable type, is shown at 22 and is supported on a bracket 23 fixed to base 15. The electric motor is shown at 24 and is mounted directly on base 15 and connected by a silent chain 25 and suitable sprockets to drive pump 22.

The intake of pump 22 is shown at 26 (Fig. 2) and is connected to the branch of a T 27. To the lower end of T 27 is connected a suitable filter 28 and to the filter is connected a suction pipe 29, adapted for connection to an underground supply tank, (not shown). From the outlet of pump 22, a discharge

pipe 30, including a T 31, leads vertically upwards and is connected to the lower end of a cross fitting 32. To the two lateral branches of the latter are connected discharge pipes 33, which extend vertically upwards through openings in brackets 34 (secured to support 20—Fig. 5) and terminate with unions 35 for connection one to each of the meters 36. The T 31 is connected to a pipe 37 to an air dome 38. The upper outlet of cross fitting 32 is connected by a pipe 39 to a relief valve 40, of any suitable type which will open when the pressure in pipe 39 exceeds a predetermined value. The outlet of valve 40 is connected by a pipe 41 to the upper outlet of the T 27, heretofore described. Thus, a by-pass from the discharge to the suction side of pump 22 is provided, which by-pass is normally closed but will open automatically to relieve excess pressure in either of the discharge lines.

The casing 17 is provided with suitable openings normally closed by doors 42 and 43 (Fig. 2), whereby access may be had to the motor, pump and associated parts, when required. The casing is otherwise closed, except for the openings in which the hose nozzles are received, and the normal condition is that no access can be had to the interior of the casing except through such openings.

The meters 36 may be of any suitable type. A well known standard type is shown conventionally herein and it includes a dial 44 and an indicator hand 45 associated therewith and movable by and proportionately to, the volume of the liquid passing through its pipe 33. The casing 17 is provided with openings, one adjacent the dial face of each meter 36, to receive short cylindrical sleeves 46 (Fig. 2), which are open at both ends and have flanges 47 at their outer ends secured to the casing. The inner end of each sleeve 46 encompasses and partially overlaps the cylindrical part of its meter 36. The cap 16 has projecting from the opposite sides, hoods 48 which overlie the sleeves 46 and within each hood an electric lamp 49 is so located as to illuminate the interior of sleeve 46 and the dial face of the adjacent meter 36. The several sockets for lamps 49 and lamp 19 are connected by conduits 50 to a junction box 51, located centrally in cap 16, and from box 51 a conduit, shown in part at 52, extends downwardly to the base of casing 17. Wires for these lamps extend through these conduits, as will be understood and are adapted to be connected at the base of the casing with suitable service wires.

The outlet pipe 53 of each meter 36 extends horizontally outward through casing 17 for connection, preferably through a union 55, to a flexible discharge hose 54.

The hose 54 is usually a long one and is shown in part only in the drawings,—the inlet end of each hose appearing in Fig. 2

and the outlet end of each appearing in Fig. 1. To the outlet end of each hose is secured a valved nozzle 58 of any suitable type. That shown herein is, except for minor details, substantially like the device disclosed in Eickmann Patent No. 1,585,332, dated May 18, 1926, and includes a valve which is normally held closed by a spring but which can be opened by pushing inwardly on a plunger 59. A hand lever 60 is provided which, when moved toward the body of the nozzle, will open the valve thereof, and a fixed guard 61 is provided to protect the lever from being operated accidentally, i. e., in case the nozzle is dropped.

In order to support the nozzles 58, when not in use, sets of upper and lower holes 62 and 63 are provided in the housing, one set for each nozzle. The upper hole 62, roughly oval in form, is arranged to receive the outlet portion of the nozzle while the lower hole 63, rectangular in form, is arranged to receive the handle 60 and guard 61 of the nozzle. As shown, these holes pass through the casing 17 as well as through an ornamental plate 64, secured to the casing. One first thrusts the outlet end of nozzle 58 into hole 62 and then swings the nozzle downwardly and inwardly in an arc like path until the guard 61 enters the hole 63. The nozzle, when released, will be supported by the lower part of the guard resting on the lower wall 65 of hole 63. At such time, a lip 66 on guard 61 engages the inner wall of casing 17 and holds the nozzle from swinging out of hole 63 unless the nozzle is first raised sufficiently to clear wall 65. In swinging the nozzle into position, the outlet end thereof bears on the wall of hole 62 and forms a rough sort of pivot for the swinging movement. On guard 61 is a perforated ear 67, which when the nozzle is supported on wall 65, overlies a perforated ear 68 formed on plate 64, whereby by padlocking these ears together the nozzle may be locked to the casing 17. When in this locking position, the outlet end of the nozzle lies within the casing and is protected from the weather. Also, handle 60 is rendered inaccessible, the plate 64 being bent outwardly, as shown at 69 in Fig. 3, in a curve more or less closely conforming to the curvature of handle 60, to prevent one from readily grasping the same. Below hole 63 is a slot 70 which is of less width than hole 63 and opens at its upper end into the lower end of the hole for a purpose which will later appear.

For the purpose of starting and stopping the pump motor 24, a suitable switch, such as the push button switch 71 (Fig. 3) is provided. Switch 71, as shown, is mounted in an outlet box 72, which is fixed to a bracket 73 upstanding from member 20 and to which is connected a conduit 74. This conduit extends downwardly in casing 17 towards the base thereof and serves to carry the wires by

which switch 71 is connected in the circuit of motor 24. Switch 71 has the usual "On" and "Off" push buttons 75 and 76, respectively. When button 75 is pushed upwardly it will close the switch and push button 76 downwardly. The switch is shown in closed position,—button 76 having been pushed upwardly into the illustrated position for the purpose and causing button 75 to move down into the position shown. For the purpose of conveniently operating the button 75 to start the motor, two levers 77 are provided, one of which is pivoted intermediate its ends to bracket 73 and the other to a bracket 78 on member 20. The inner ends of these levers 77 underlie a head 79 on the lower end of the button 75 and the outer ends extend one toward each of the openings 63 in casing 17,—terminating in positions such that an operator can conveniently reach them through the openings 63 when the hose nozzles 68 are withdrawn therefrom (see the right hand part of Fig. 4). Springs 80, one for each lever 77, tend to hold the same in the positions illustrated. By depressing either lever, button 75 will be elevated to close the switch and start the motor. When nozzle 58 is hung up in inactive position, the guard 61 engages the outer end of the adjacent lever 77 and prevents depression of the same, as might otherwise be possible by the use of a hooked wire inserted through some one of the openings in shell 17.

For operating the "Off" button 76 to open switch 71 and stop the motor, two levers 81 are provided, each pivoted intermediate its ends to a bracket 82 on member 20. The outer end of each lever extends into slot 70 and can rise into hole 63 but no part of this lever, except for a small finger piece 83, extends beyond casing 17. No part of either lever 81 extends beyond this casing sufficiently to serve as a support for the hose nozzles 58, wherefore the latter must be hung up in the manner described,—no other means being provided for this purpose, and the casing 17 being closed except for such openings. The inner and adjacent ends of the two levers 81 are interconnected by a link 84, having trunnions 85 fixed thereto, one near each end thereof, and extending one into a slot 86 in one of the levers and the other into a similar slot in the other lever. A vertical plunger 87, disposed in axial alinement with button 76 and underlying the same, is slidably mounted in a bearing 88, formed on bracket 73. The lower end of plunger 87 is forked to straddle link 84 and is pivotally connected thereto at a point centrally between the ends thereof. A collar 89, fixed to plunger 87, limits the upward movement of the latter by abutment with bearing 88. The link 84 is shown in fully raised position in Fig. 3 and when the link is thus positioned, plunger 87 will have been raised high enough to operate

button 76 and open switch 71. When the outer ends of both levers 81 lie entirely within the confines of slot 70, the link 84 is positioned as shown in Fig. 3. When either lever 81 is raised, as shown in the right hand part of Fig. 4, the outer end of the lever will extend above the lower wall of hole 63 and block the insertion of the hose nozzle therein. The lever must first be moved downwardly into the position shown in the left hand part of Fig. 4 before the hose nozzle is inserted in hole 63. When one lever 81 is up and the other down, as shown in Fig. 4, the link 84 assumes an intermediate position in which its upper end has not been raised high enough to operate button 75. When both levers are down, the link is fully lowered and becomes horizontally disposed. The arrangement is such that before both hose nozzles can be hung up in inactive position, the motor must be shut off by moving both levers 81 into the positions shown in Fig. 3. The operator can move the levers by the finger piece 83 or he may prefer to cam them down by the guard 61 of the hose nozzle during the operation of inserting the nozzle in hole 63.

Interposed in each pipe line 33 is a valve, the casing of which is designated 90. As shown in Figs. 9 and 10, a valve 87 is vertically slidable to and from a seat 92, being guided by its stem 93 which slides in a bearing formed in a spider 94. Fixed to and depending from valve 91 is a yoke 95, slotted at 96 to permit it to slide up and down relatively to an operating shaft 97 which is rotatably mounted in casing 90 and has one end extending out of the latter through the stuffing box shown. Fixed to shaft 97 is an eccentric 98, adapted when turned clockwise, as viewed in Fig. 9, to engage a flange 99 on member 95 and raise the valve 91 to its seat. When turned counterclockwise, eccentric 98 will engage a second flange 100 on member 95 and move the valve away from its seat against the pressure of liquid in pipe 33. The ends of flange 100 ride in grooves 101 (Fig. 8) of casing 90 to prevent turning of the member 95. A movement of shaft 97 through about 45 degrees will open valve 91 sufficiently.

The opening and closing of valves 91 is controlled by the levers 81. Each shaft 97 has a lever 102 fixed thereon and each lever is connected by a link 103 to the inner end of the lever 81 which it underlies. Preferably, the lever 81 has pivotally mounted thereon a block 104 and the link 103 slides through and projects above this block. A spring 105 encompasses the upper end of each link and acts between the block 104 and a washer 106 which is held in place by a cotter pin 107. The arrangement is such as to permit some travel of lever 81 after valve 91 has been drawn to its seat, the excess travel being permitted by the spring 105, which then com-

presses. Before either one of the hose nozzles 58 can be hung up in locking position, its lever 81 must be moved to close that valve 91 which controls the flow of liquid to the nozzle thus hung up. When the nozzle is removed from its support, the lever 81 may be overbalanced so as to tilt up automatically into the position shown in the right hand part of Fig. 4 and open the valve. Sometimes, however, such automatic opening of the valve is not desired and in such case the lever is arranged so that it must be manually lifted into the described position.

The dispensing system is normally a closed one since the valves of the hose nozzles 58 and valves 91 are closed, when the apparatus is not in use. All pipes are filled with liquid as is also each flexible hose 54. On this account it is necessary to provide relief for possible expansion of the liquid in the closed system. Normally, the air dome 38 sufficiently serves the purpose but when shut-off valves, such as 91, are required to be interposed in the discharge line, as shown, that part of the system above the shut off valves has no means for relieving expansion. To provide such relief, there is provided in the casing 90 of valve 91, a by-pass 108 around such valve. This by-pass is controlled, and normally closed, by a spring-pressed ball valve 109. On expansion of liquid in the upper part of the system, valve 109 will open to allow liquid to pass into the lower portion of the system, which includes the air dome.

In operation, one or both of the nozzles 58 are removed from their supports in casing 17, as required. The removal of either one of the nozzles uncovers the opening 63, through which access may be had to the finger piece of one of the levers 77. Such finger piece is depressed manually and the depression of either one will raise button 75 and close switch 71, whereby motor 24 is started and pump 22 operated. In case one nozzle only is removed, the raising of button 75 will lower button 76 which will depress plunger 87 and link 84 and thereby move one lever 81 in a direction such as to open the valve 91 to which this lever is connected, in case the lever has not already been so moved. Usually, it is arranged so that the lever 81 has to be manually raised in order to open its valve 91 against the pressure of the pumped liquid, although as heretofore described, the lever is sometimes overbalanced sufficiently so that it will swing and open its valve 91 as soon as nozzle 58 is removed. Having started the pump and opened one or both of the valves 91, accordingly as one or both of the nozzles 58 are to be used, such nozzle or nozzles are inserted in the filling opening or openings or the tank or tanks to be filled. The operator then opens the valve of each nozzle by pressing on the lever 60. The meter or meters 36 regis-

ter the quantities dispensed and the operator stops the flow by releasing lever 60, when the desired quantities have been dispensed through hose or hoses 54. The valve of both nozzles 58 may be closed while motor 24 is running but this does no harm because the relief valve 40 will open and by-pass the pumped liquid.

As soon as the desired amount of liquid has been dispensed the nozzle 58 is hung up as described. This necessitates moving lever 81 and the result will be a closing of that valve 91 which controls the flow to the nozzle thus hung up. The hanging up of one nozzle will not raise link 84 far enough to operate button 76 and open switch 71 but the hanging up of both nozzles will raise link 74 sufficiently to effect this result, thus stopping the operation of the pump.

When the apparatus is to be locked up, as at night, it is simply necessary to padlock the nozzles to their supports. This cannot be done until each nozzle is properly placed on its support and the nozzles cannot be so placed without first moving levers 81 out of obstructing relation with respect to opening 63.

When the nozzles are so placed, the following results are effected:—(1) the discharge end of each nozzle lies inside casing 17 and is protected against the weather, (2) operation of valve levers 60 is prevented, (3) access to the finger pieces of levers 77 for operating switch 71 is prevented, and (4) the valves 91 are closed.

The arrangement, by which the hanging up of all the nozzles 58 forces the operator to stop the pump, while the hanging up of less than the whole number of nozzles does not, is important as a convenience and as avoiding needless consumption of power by motor 24. As soon as operation of the motor is no longer required, it must be shut off before the operator can hang up the nozzles as he should. No other means are provided for supporting the nozzles when not in use, and thus the operator is practically forced to use the one means supplied and operate lever 81 as intended.

In the event that the dispenser includes only one hose, the lever 81, when moved to enable the hanging up of the nozzle of that hose, will be made to open the switch 71. The apparatus, as shown, will so function for, if one of the levers 81 is permanently held down as in the position shown in the left hand part of Fig. 4, the other lever 81 when moved down will open switch 71.

I am aware that dispensing apparatus of the type including a power-driven pump, a meter in the discharge line from the pump and a by-pass around the pump, which is controlled by a relief valve, is old. My invention relates to the particular features, above noted, relating to the operation of the

motor switch, the shut off valves and the locking of the hose nozzles, and these features, while useful in the particular form of dispenser shown, are also capable of use in dispensers differing widely in form and type from that here shown.

What I claim is:

1. Liquid dispensing apparatus, comprising, power-operated pumping means, a delivery conduit connected therewith and including a flexible hose terminating with a nozzle, a valve in said conduit, a normally closed casing housing said means and part of said conduit leaving the hose and nozzle outside said casing, said casing having an opening in which the nozzle may be partially inserted when not in use, said casing serving to support said nozzle when inserted in said opening, and a member movable into and out of a position in which it obstructs insertion of the nozzle in said opening, said member effective when moved into said position to open said valve and when out of said position to close said valve, said member also effective when moved out of said position to stop said pumping means.

2. Liquid dispensing apparatus, comprising, power-operated pumping means, a delivery conduit connected therewith and including a flexible hose terminating with a nozzle, a valve in said conduit, a normally closed casing housing said means and part of said conduit leaving the hose and nozzle outside said casing, said casing having an opening in which the nozzle may be partially inserted when not in use, said casing serving to support said nozzle when inserted in said opening, and a member movable by the starting of said pumping means into position to obstruct insertion of said nozzle into said opening, said member effective when moved into said position to open said valve and when moved out of said position to close said valve and stop said pumping means.

3. Liquid dispensing apparatus, comprising, a normally closed casing, power-operated pumping means housed therein, a plurality of delivery conduits served by said pumping means and each including a flexible hose extending outside said casing and terminating with a nozzle, said casing having openings one for each nozzle in which openings the nozzles may be partially inserted, said casing having means for supporting the nozzles when thus inserted, a plurality of members one for each opening independently movable into and out of position to obstruct insertion of a nozzle in its opening, means for starting said pumping means and effective only when one of said nozzles has been withdrawn from its opening and one member moved into said position, and means for stopping said pumping means and effective only when all said members have been moved out of said position.

4. Liquid dispensing apparatus, comprising, a normally closed casing, power-operated pumping means housed therein, a plurality of delivery conduits served by said pumping means and each including a flexible hose extending outside said casing and terminating with a nozzle, a valve in each of said conduits, said casing having openings one for each nozzle in which openings the nozzles may be partially inserted, said casing having means for supporting the nozzles when thus inserted, a plurality of members one for each opening, independently movable into and out of position to obstruct insertion of a nozzle in its opening, means whereby each member controls one of said valves, opening or closing the valve accordingly as the member is moved into or out of said position, means for starting said pumping means, and means effective only when all said members have been moved out of said position to stop said pumping means.

5. Liquid dispensing apparatus, comprising, power-operated pumping means, a delivery conduit connected therewith and including a flexible hose terminating with a valved nozzle having a lever for operating the same, a normally closed casing housing said means and part of said conduit leaving the hose and nozzle outside said casing, said casing having an opening in which the nozzle may be sufficiently inserted when not in use to prevent access to said lever, said casing serving to support said nozzle when inserted in said opening, and a member movable into and out of a position in which it obstructs insertion of said nozzle into said opening and effective when moved out of said position to cause the stopping of said pumping means.

6. Liquid dispensing apparatus, comprising, power-operated pumping means, a delivery conduit connected therewith and including a flexible hose terminating with a valved nozzle having a lever for operating the same, a normally closed casing housing said means and part of said conduit leaving the hose and nozzle outside said casing, said casing having an opening in which the nozzle may be sufficiently inserted when not in use to prevent access to said lever, said casing serving to support said nozzle when inserted in said opening and a member movable on starting said pumping means into position to obstruct insertion of said nozzle into said opening and effective when moved out of said position to stop said pumping means.

7. Liquid dispensing apparatus, comprising, pumping means, a delivery conduit connected therewith and including a flexible hose terminating with a valved nozzle having a lever for operating the same, a valve in said conduit, a normally closed casing housing said means and part of said conduit leaving the hose and nozzle outside said casing, said casing having an opening in which the nozzle

my be sufficiently inserted when not in use to prevent access to said lever, said casing serving to support said nozzle when inserted in said opening, and a member movable into and out of a position in which it obstructs insertion of the nozzle in said opening, said member effective when moved into said position to open said valve and when out of said position to close said valve.

- 10 8. Liquid dispensing apparatus, comprising, power-operated pumping means, a delivery conduit connected therewith and including a flexible hose terminating with a valved nozzle having a lever for operating
- 15 the same, a valve in said conduit, a normally closed casing housing said means and part of said conduit leaving the hose and nozzle outside said casing, said casing having an opening in which the nozzle may be sufficiently inserted when not in use to prevent access to said lever, said casing serving to support said nozzle when inserted in said opening, and a member movable into and out of a position in which it obstructs insertion of the
- 20 nozzle in said opening, said member effective when moved into said position to open said valve and when out of said position to close said valve, said member also effective when moved out of said position to stop said pumping means.

In testimony whereof I have affixed my signature.

ALFRED L. GRISE.

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