April 26, 1932. J. B. DAVIS 1,855,667

LIQUID DISPENSING APPARATUS

Filed Jan. 28, 1929 3 Sheets-Sheet 1

Fig. 1.

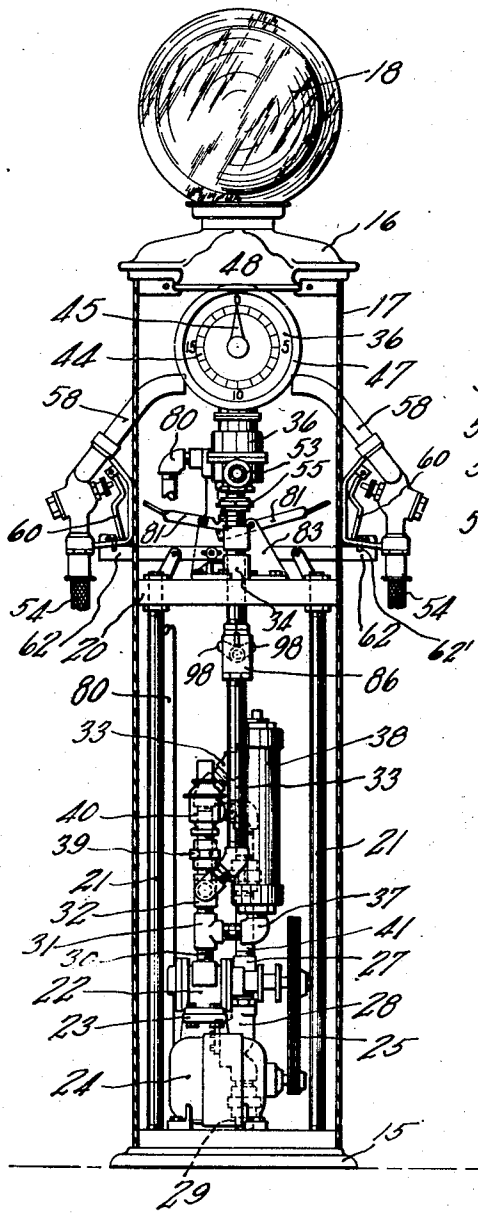
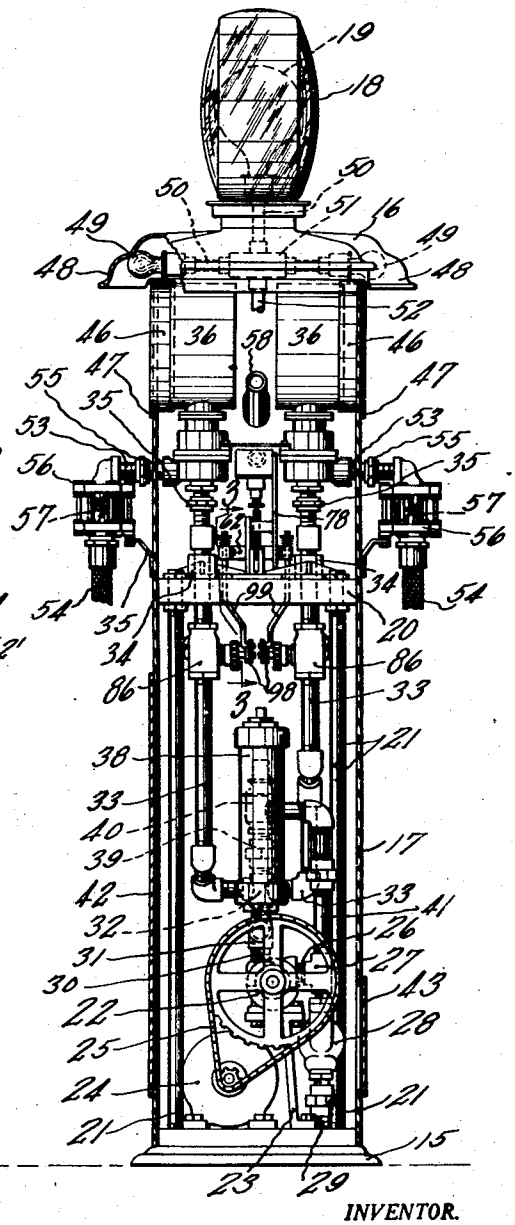


Fig. 2.



INVENTOR.

BY John B. Davis

Chapin & Neal

ATTORNEYS.

April 26, 1932. J. B. DAVIS 1,855,667

LIQUID DISPENSING APPARATUS

Filed Jan. 28, 1929 3 Sheets-Sheet 2

Fig. 3.

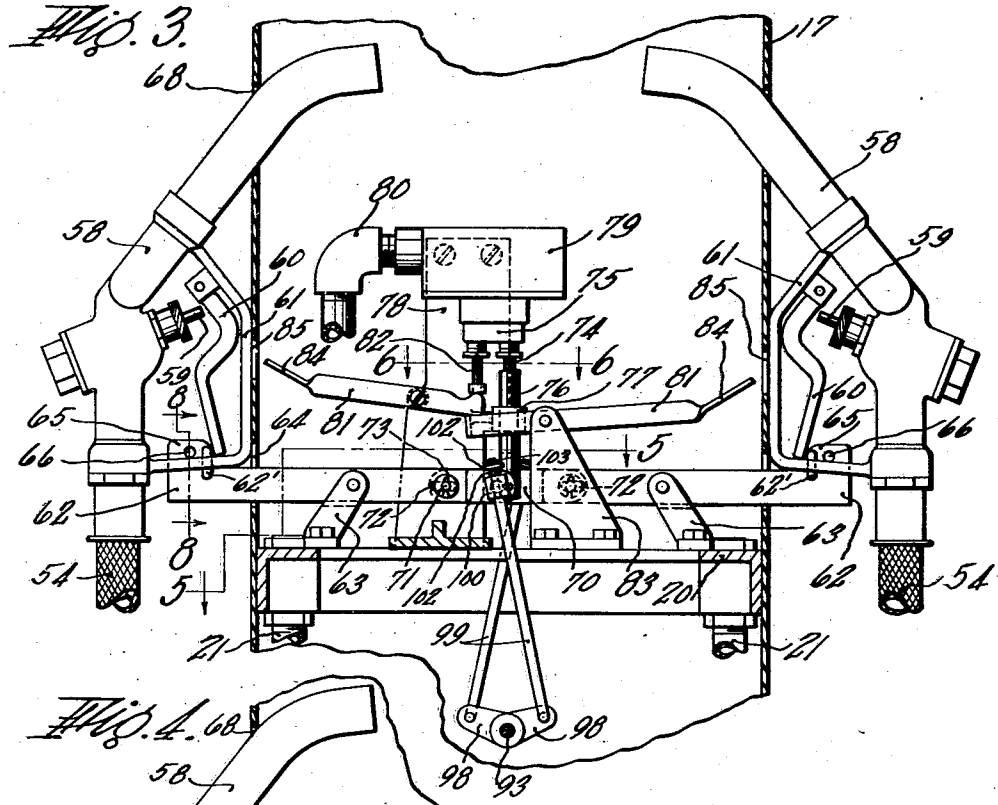
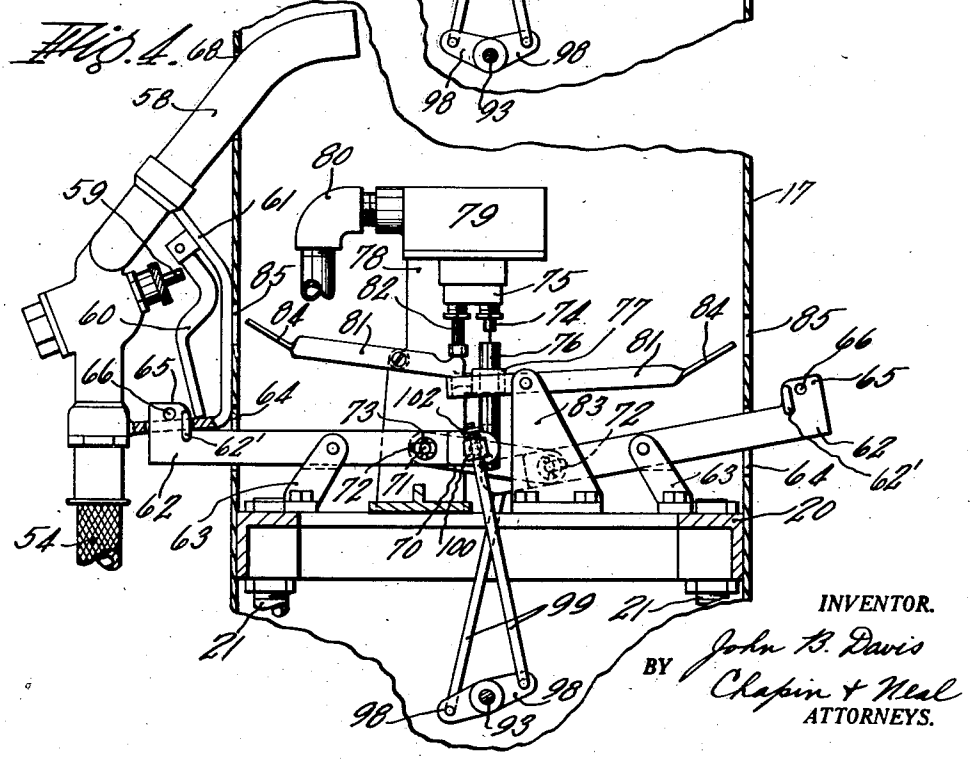


Fig. 4.



INVENTOR.
BY John B. Davis
Chapin & Neal
ATTORNEYS.

April 26, 1932. J. B. DAVIS 1,855,667

LIQUID DISPENSING APPARATUS

Filed Jan. 28, 1929 3 Sheets-Sheet 3

Fig. 5.

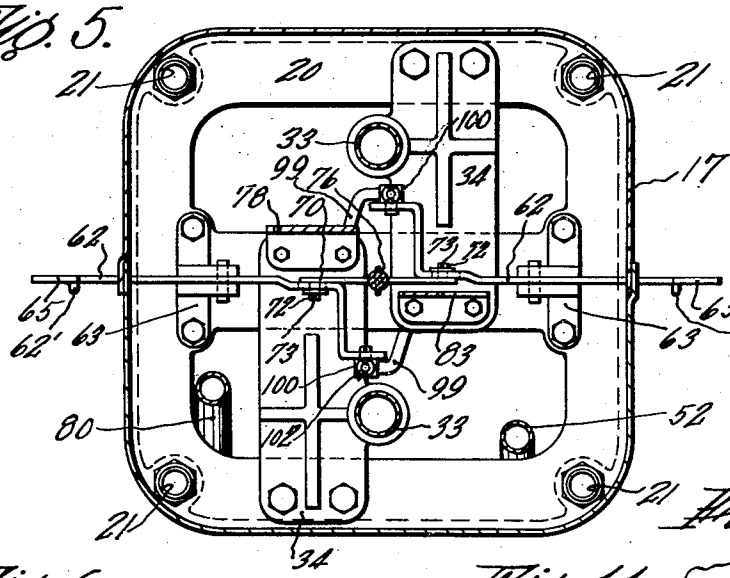


Fig. 7.

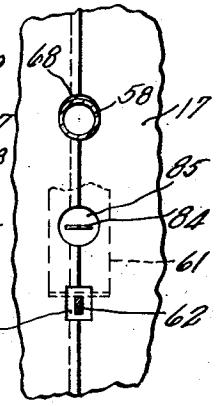


Fig. 6.

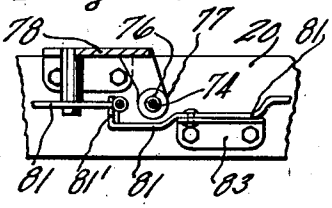


Fig. 8.

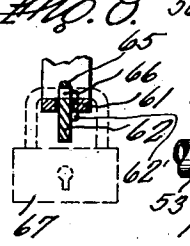


Fig. 11.

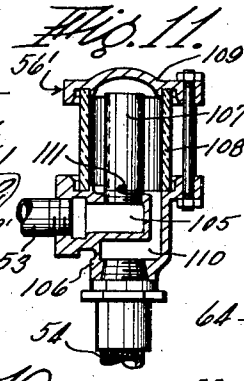


Fig. 9.

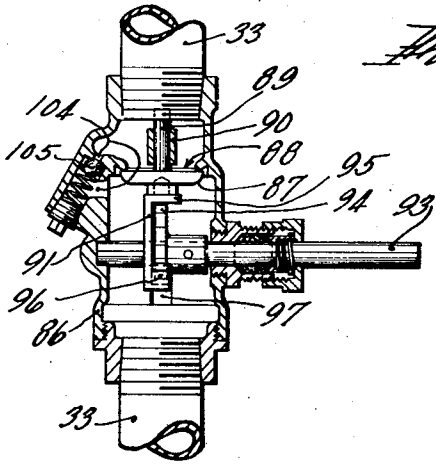
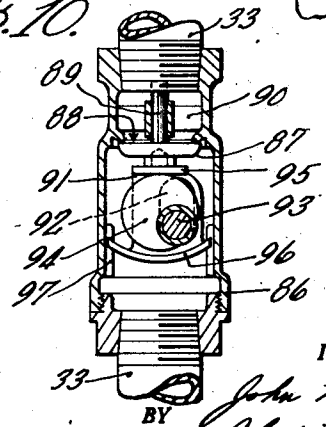


Fig. 10.



INVENTOR.
John B. Davis
BY
Chapin & Neal
ATTORNEYS.

Patented Apr. 26, 1932 1,855,667

UNITED STATES PATENT OFFICE

JOHN B. DAVIS, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR TO GILBERT & BARKER MANUFACTURING COMPANY, OF WEST SPRINGFIELD, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS

LIQUID DISPENSING APPARATUS

Application filed January 28, 1929. Serial No. 335,611.

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 liquid dispensing apparatus having a power-operated pumping means, and consists in the provision of means for stopping the pumping means,—such stopping means being controlled by the hanging up of the hose, and the weight of the nozzle thereof serving to actuate the 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 pumping means will be automatically stopped when, and only when, all the hose nozzles are hung up in inactive position.

Another object of the invention relates to an apparatus of the class just described and consists in the provision of means whereby, when any one of the plurality of hose nozzles are hung up in inactive position, a valve will be automatically closed in the pipe line which serves said nozzle, and whereby when all the nozzles are thus hung up the pumping means will be stopped.

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 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 embodying 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 end of the hose nozzle, the supporting lever for the latter, and the switch lever;

Fig. 8 is a fragmentary cross sectional view taken on the line 8—8 of Fig. 3;

Figs. 9 and 10 are sectional views, taken at right angles of one of the shut off valves used in the supply line to each meter; and

Fig. 11 is a sectional elevational view of a modified form of sight glass indicator for use in the discharge line from each meter.

Referring to Figs. 1 and 2, 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 by 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, whereby access may be had to the motor, pump and associated parts.

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, 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 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 outwardly through casing 17 for connection to a flexible discharge hose 54. Preferably the pipe 53 includes a union 55, and oftentimes, it is desired to interpose between the pipe 53 and hose 54 some sort of a sight glass indicator, such as is shown at 56, by means of which the customer can ascertain whether or not liquid is flowing to the hose. To facilitate this object, a spinner vane 57 may be located within the sight glass device and rotatably mounted therein so as to be revolved by the moving liquid.

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.

For supporting the nozzles 58, when not in use, a pair of levers 62 are provided one for each nozzle. Each lever is pivotally mounted, at a point intermediate its ends, on a bracket 63, secured to the support 20, heretofore described. The outer end of each lever 62 extends outwardly through an opening 64 in casing 17 and is adapted to support the nozzle 58. The lower part of guard 61 rests on lever 62 and has a slot therein to receive an upstanding lug 65 of lever 62. Such lug has a hole 66 therethrough to receive a padlock, such as is shown conventionally at 67 in Fig. 8, whereby the nozzle 58 may be locked to the lever. The discharge end of nozzle 58 extends into casing 17 through a hole 68, when the nozzle is supported on lever 62, so that even if the valve in the nozzle were opened at such a time, no advantage would result to the one who opened it because the liquid delivered could not be utilized. However, the lug 65 is so arranged as to prevent the lever 60 from being operated sufficiently to open the hose nozzle valve, whenever the nozzle is hung on lever 62.

The two levers 62 are interconnected by a link 70, having at opposite ends trunnions 71 which extend into and through slots 72 formed one in each of the levers and are held in place by cotter pins 73 passed through the projecting ends of the trunnions. This link, when fully raised, as when both nozzles 58 are hung up on levers 62 as shown in Fig. 1, is arranged to open a switch 75 of the push

button type, moving the "off" button 74 thereof far enough, under such circumstances, to accomplish this result. In effecting this work, the link operates through the intermediary of a vertical plunger 76, the lower end of which is forked to straddle the link and is pivotally connected thereto, as indicated. This plunger is slidable in a bearing 77 formed on a bracket 78, secured to support 20. Bracket 78 also serves as a support for an outlet box 79 in which switch 75 is mounted. A conduit 80 extends from box 79 downwardly in casing 17 to the lower end thereof to receive wires by which the switch is connected to the motor 24 and a suitable source of electric current.

Switch 75 is intended to be manually closed and to facilitate this operation from outside casing 17, two levers 81 are provided, either of which when depressed, will move the "on" button 82 of the switch into position to close the same. One of these levers is pivoted at a point intermediate its ends to bracket 78. The other is similarly pivoted to a separate bracket 83 secured to support 20. The first named lever 81 operates directly on button 82 and the other lever 81 has a right angularly turned end 81′ (Fig. 6) which underlies the first named lever and can move the same upwardly to cause it to move button 82. These levers extend in opposite directions and terminate with finger pieces 84 arranged adjacent to and accessible through holes 85 in casing 17. These openings 85 are so arranged as to be closed by the guards 61 of the hose nozzles, when the latter are hung up on levers 62 as best shown in Fig. 7, whereby the motor cannot be started until at least one of the hose nozzles has been removed from its supporting lever.

Interposed in each pipe line 33 is a valve, the casing of which is designated 86. As shown in Figs. 9 and 10, a valve 87 is vertically slidable to and from a seat 88, being guided by its stem 89 which slides in a bearing formed in a spider 90. Fixed to and depending from valve 87 is a yoke 91, slotted at 92 to permit it to slide up and down relatively to an operating shaft 93 which is rotatably mounted in casing 86 and has one end extending out of the latter through the stuffing box shown. Fixed to shaft 93 is an eccentric 94, adapted when turned clockwise, as viewed in Fig. 10, to engage a flange 95 on member 91 and raise the valve 87 to its seat. When turned counterclockwise, eccentric 94 will engage a second flange 96 on member 91 and move the valve away from its seat against the pressure of liquid in pipe 33. The ends of flange 96 ride in grooves 97 (Fig. 9) of casing 86 to prevent turning of the member 91. A movement of shaft 93 through about 45 degrees will open valve 87 sufficiently.

The opening and closing of valves 87 is controlled by the levers 62. Each shaft 93 has a lever 98 fixed thereon and each lever is connected by a link 99 to the inner end of the lever 62 which it underlies. Preferably, the lever 62 has pivotally mounted thereon a block 100 and the link 99 slides through and projects above this block. A spring 101 encompasses the upper end of each link and acts between the block 100 and a washer 102 which is held in place by a cotter pin 103. The arrangement is such as to permit some travel of lever 62 after valve 87 has been drawn to its seat, the excess travel being permitted by the spring 101 which then compresses. When either one of the hose nozzles 58 is hung up on its lever 62, the weight of the nozzle swings the lever and closes that valve 87 which controls the flow of liquid to the nozzle thus hung up. When the nozzle is removed from its lever 62, the latter may be overbalanced so as to tilt up into the position shown in the right hand part of Fig. 4 to automatically open the valve. Sometimes, however, such automatic opening of the valve is not desired and in such case the lever can be arranged so that it must be manually lifted into the described position.

To insure that the operator hangs the proper hose nozzle on the proper nozzle, the levers 62 may have projections, such as 62′ which fit in the slots formed in guards 61. The levers 62 and guards 61 are made right and left with respect to such projections and slots so that the right hand guard will not fit on the left hand lever and vice versa.

The dispensing system is normally a closed one since the valves of the hose nozzles and valves 87 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 87, 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 86 of valve 87, a by pass 104 around such valve. This bypass is controlled and normally closed by a spring-pressed ball valve 105. On expansion of liquid in the upper part of the system, valve 105 will open to allow liquid to pass into the lower portion of the system which includes the air dome.

In Fig. 11, a modified form of sight glass indicator is shown at 56′. This device is upturned from discharge pipe 53 rather than downturned as is the device 56 shown in Fig. 2. The pipe 33 discharges into a chamber 105 in the base 106 of the device and from this chamber a pipe 107 extends upwardly within glass cylinder 108, terminating just short of cap 109. The base of cylinder 108 communicates with a chamber 110 in base 106 and the

hose 54 receives the outflow from chamber 110. A small hole 111 is provided near the base of pipe 107, allowing the glass cylinder 108 to drain back into this pipe. Thus, should there be a leak in the meter or any of the connections thereto, liquid will drain out of the glass cylinder through hole 111 and there will be a drop in liquid level in the glass, which will warn the purchaser. Any leak in hose 54 or the connections thereto, will also be apparent from inspection of the glass cylinder. The pipe 107 extends nearly to cap 109 in order that the greater part of the air may be driven out of the glass cylinder when the apparatus is first put in use. There will be some air in the cap but so little that the glass cylinder 108 will normally show full of liquid.

In operation, one or both of the nozzles 58 are removed from their supporting levers 62, as required. The removal of either one of the nozzles uncovers an opening 85 through which access may be had to the finger piece 84 of one of the levers 84. Such finger piece is depressed manually and the depression of either one will move the left hand lever 81 in Fig. 3 so as to raise button 82 and close switch 75, whereby motor 24 is started and pump 22 operated. In case one nozzle only is removed from its lever 62, the raising of button 82 will lower button 74 which will depress plunger 76 and link 70 and thereby move that lever 62 in a direction such as to open the valve 87 to which this lever is connected, in case the lever has not already been so moved. Usually, it is arranged so that the lever 62 has to be manually raised in order to open its valve 87 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 87 as soon as nozzle 58 is removed therefrom. Having started the pump and opened one or both of the valves 87, 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 of 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 register 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 valves 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 bypass the pumped liquid.

As soon as the desired amount of liquid has been dispensed the nozzle 58 is hung up on its lever 62. The result will be a closing of that valve 87 which controls the flow to the nozzle thus hung up. The hanging up of one nozzle will not raise link 70 far enough to operate button 74 and open switch 75 but the hanging up of both nozzles will raise link 70 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 supporting levers. This cannot be done until each nozzle is properly placed on its lever. 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 by lugs 65, and (3) access to the finger pieces 84 of levers 81 for operating switch 75 is prevented by the guards 61 which close the openings 85.

The arrangement by which the hanging up of all the nozzles 58 automatically stops the pump while the hanging up of less than the whole number of nozzles does not, is important as a convenience and avoiding needless consumption of power by motor 24. As soon as operation of the motor is no longer required, it is automatically shut off if the operator hangs up the nozzle as he should. No other means are provided for supporting the nozzle, when not in use, and thus the operator is practically forced to use the lever 62, as intended. The arrangement for locking the hose nozzles to the levers 62, so that operation of the valves thereof is prevented, is also a feature of the invention as is also the arrangement whereby the nozzle guard 61 prevents access to the switch operating levers 81.

In the event that the dispenser includes only one hose, the hanging up of the nozzle of that hose on its lever 62 will be made to open the switch 75. The apparatus, as shown, will so function for, if one of the levers 62 is permanently held down, just as it is by the weight of a hose nozzle, the other lever 62 under the weight of its hose nozzle will open switch 75.

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 up of the hose nozzles, and these features, while useful in the particular form of dispenser shown, are also capable of use in dispensers differing in form and type from that herein shown.

What I claim is:

1. Liquid dispensing apparatus, comprising, power-operated pumping means, a plurality of conduits through which liquid may be forced by said means, means interposed in each conduit for measuring the liquid passing therethrough, each such conduit including a flexible hose terminating in a nozzle, a plurality of supports one for each hose nozzle on

which such nozzles may be hung when not in use, means for starting said pumping means in operation, and means operable only when all said nozzles have been hung on their respective supports to stop the operation of said pumping means.

2. Liquid dispensing apparatus, comprising, power-operated pumping means, a plurality of discharge conduits connected thereto and each including a flexible hose terminating with a nozzle, a valve interposed in each of said conduits, a plurality of members one for each valve movable independently to open or close their respective valves, each of said members serving also to support the nozzle of that hose the flow through which is controlled by the valve operated by such member, each of said members movable by the weight of its nozzle into position to close its valve, means for starting said pumping means, and means controlled jointly by said members for stopping said pumping means when all said nozzles are hung up on their supporting members.

3. Liquid dispensing apparatus, comprising, power-operated pumping means, a plurality of discharge conduits connected thereto and each including a flexible hose terminating with a nozzle, a valve interposed in each of said conduits, a plurality of members one for each valve movable independently to open or close their respective valves, each of said members serving also to support the nozzle of that hose the flow through which is controlled by the valve operated by such member, each of said members movable by the weight of its nozzle into position to close its valve, means for starting said pumping means, and means automatically operable when all said valves are closed to stop said pumping means.

4. Liquid dispensing apparatus, comprising, power-operated pumping means, a plurality of discharge conduits connected thereto and each including a flexible hose terminating with a nozzle, a valve interposed in each of said conduits, a plurality of members one for each valve movable independently to open or close their respective valves, each of said members serving also to support the nozzle of that hose the flow through which is controlled by the valve operated by such member, each of said members movable by the weight of its nozzle into position to close its valve, means for starting said pumping means, and means operable only when all said nozzles are hung on their respective supporting members to stop said pumping means.

5. Liquid dispensing apparatus, comprising, power-operated pumping means, a discharge conduit connected thereto and including a flexible delivery hose terminating with a nozzle, means for measuring the liquid passed through said conduit, a normally closed casing housing both said means and part of said conduit leaving the hose and nozzle outside the casing, a member projecting out from the casing to support the nozzle when not in use and to which the nozzle can be locked, an opening in the casing substantially closed by said nozzle when the latter is hung up on said support, and means within the casing accessible only through said opening for starting said pumping means.

6. Liquid dispensing apparatus, comprising, power-operated pumping means, a discharge conduit connected thereto and including a flexible delivery hose terminating with a nozzle, means for measuring the liquid passed through said conduit, a normally closed casing housing both said means and part of said conduit leaving the hose and nozzle outside the casing, a member projecting out from the casing to support the nozzle when not in use and to which the nozzle can be locked, an opening in the casing substantially closed by said nozzle when the latter is hung up on said support, and means within the casing accessible only through said opening for starting said pumping means, said member being movable under the weight of the nozzle when hung thereupon to stop said pumping means.

7. Liquid dispensing appartus, comprising, power-operated pumping means, a discharge conduit connected thereto and including a flexible delivery hose terminating with a nozzle, means for measuring the liquid passed through said conduit, a normally closed casing housing both said means and part of said conduit leaving the hose and nozzle outside the casing, a member projecting out from the casing to support the nozzle when not in use and to which the nozzle can be locked, an opening in the casing into which the delivery end of said nozzle must be inserted before it can be hung up and locked to said member, an opening in the casing substantially closed by said nozzle when the latter is hung up on said support, and means within the casing accessible only through said second-named opening for starting said pumping means.

8. In a liquid dispensing apparatus, a casing, pumping means housed therein, a discharge conduit, a flexible hose connected to the latter and disposed outside said casing; a nozzle on the delivery end of said hose having a valve, a lever for operating the same and a guard for said lever; a member projecting out from the casing on which the nozzle may be hung up by its guard, the latter having an opening and said member having a part projecting through said opening into the path of said lever so as to prevent movement thereof for opening said valve, and means whereby said nozzle may be locked to said lever.

9. Liquid dispensing apparatus, comprising, electrically-operated pumping means, a pair of conduits through which liquid may be pumped by said means, means interposed in each conduit for measuring the liquid pumped therethrough, each conduit including a flexible hose terminating with a nozzle, a pair of levers one for each hose on which the nozzles of the hoses may be hung when not in use, a link connecting said levers, a switch overlying said link, and a member for opening said switch movable by said link when either nozzle is hung on its lever and movable sufficiently to open said switch only when both nozzles are hung on their levers.

10. Liquid dispensing apparatus, comprising, electrically-operated pumping means, a pair of conduits through which liquid may be pumped by said means, means interposed in each conduit for measuring the liquid pumped therethrough, each conduit including a flexible hose terminating with a nozzle, a valve in each conduit, a lever for each valve movable to open and close the same, said levers serving also to support said nozzles when not in use and each movable by the weight of its nozzle into position to close its valve, a link connecting said levers, a switch overlying said link, and a member for opening said switch movable by said link when either nozzle is hung on its lever and movable sufficiently to open said switch only when both nozzles are hung on their levers.

11. In a liquid dispensing apparatus, power operated pumping means, a pair of conduits through which liquid may be forced by said means, each said conduit including a flexible hose terminating in a nozzle, a support for each nozzle movable from one position to another under the weight of the nozzle, connecting means between said supports movable on movement of either support but movable to a greater degree when both nozzles are hung up on their supports than when only one nozzle is hung up, and a control device for said power operated means operable by movement of said connecting means to stop the power operated means only when both nozzles are hung up on their supporting means.

12. In a liquid dispensing apparatus, a discharge conduit including a flexible hose, a nozzle on the delivery end of the hose having a valve, a lever for operating the valve, a guard for said lever secured to the nozzle and having an opening, and a support on which the nozzle may be hung up by its guard, said support having a part extending through said opening for holding the nozzle against displacement on the support, said part projecting beyond said guard and having an opening in such projecting portion to receive a padlock, whereby the nozzle may be locked to said support.

13. In a liquid dispensing apparatus, a discharge conduit including a flexible hose, a nozzle on the delivery end of the hose having a valve, a lever for operating the valve, a guard for said lever secured to the nozzle and having an opening, and a support on which the nozzle may be hung up by its guard, said support having a part extending through said opening and into the path of said lever so as to prevent movement thereof for opening said valve.

In testimony whereof I have affixed my signature.

JOHN B. DAVIS.