Jan. 18, 1944. P. E. WAUGH 2,339,308

LIQUID DISPENSING DEVICE

Filed Sept. 24, 1940 3 Sheets-Sheet 1

FIG.-1

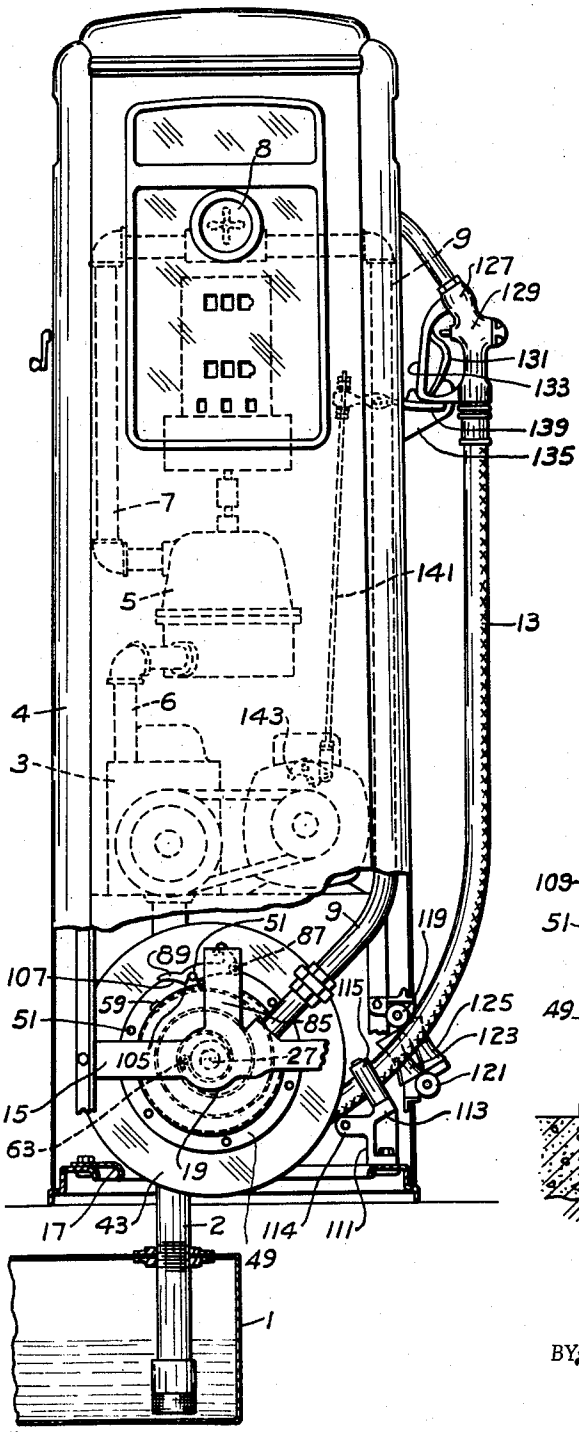


FIG.-2

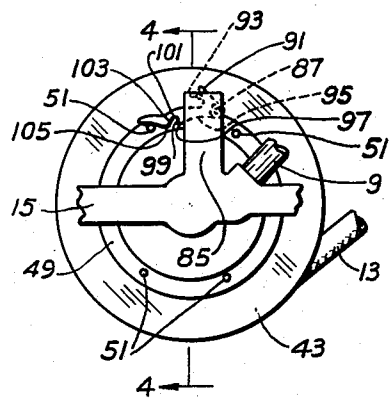
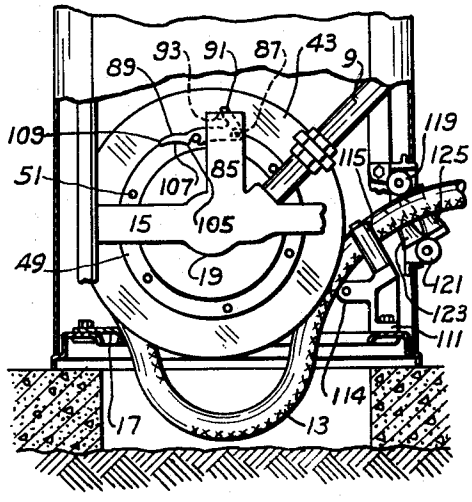


FIG.-3



INVENTOR.

BY: Paul E. Waugh

Cox Moore & Olson

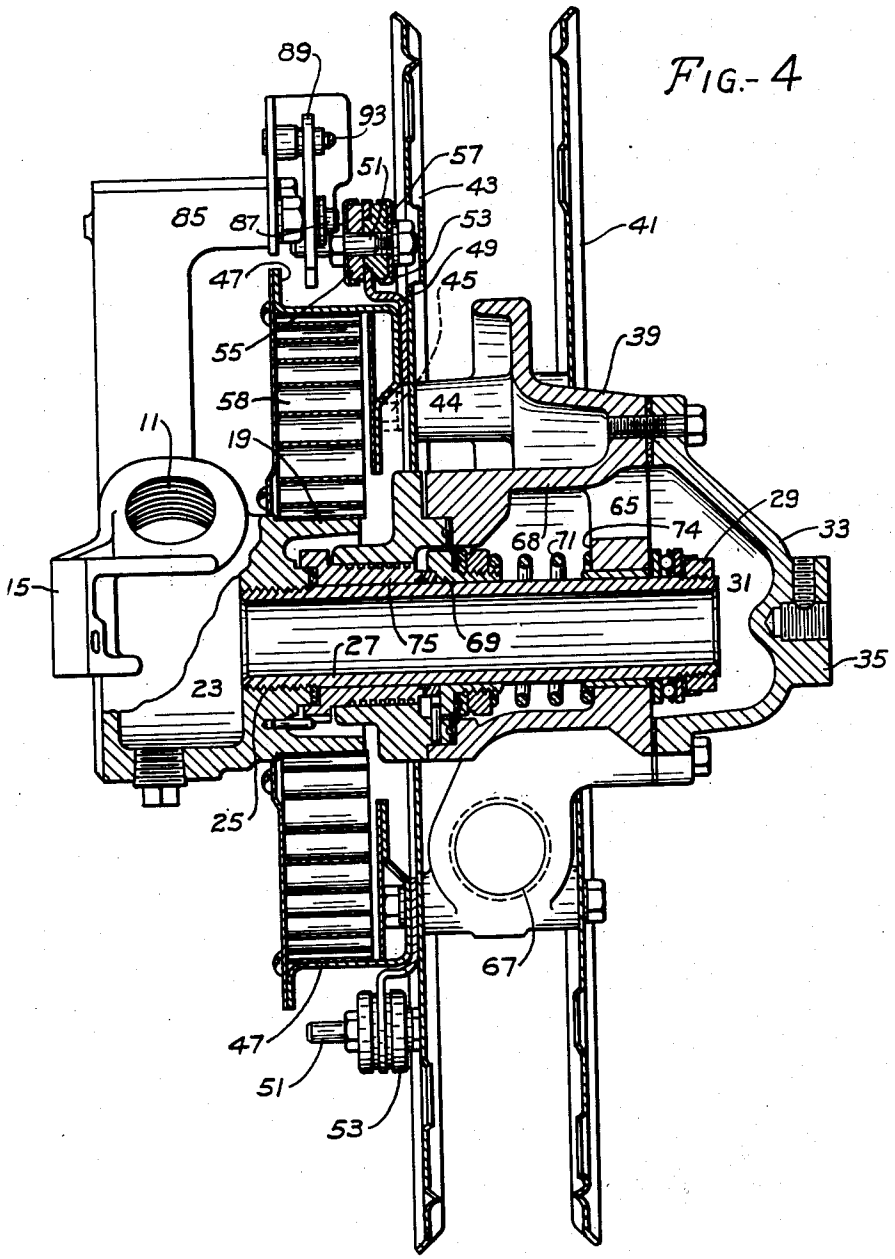
ATTORNEYS.

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LIQUID DISPENSING DEVICE

Filed Sept. 24, 1940 3 Sheets-Sheet 2

FIG.-4



INVENTOR.
Paul E. Waugh
BY: Cox Moore & Olson
ATTORNEYS.

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LIQUID DISPENSING DEVICE

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FIG.-5

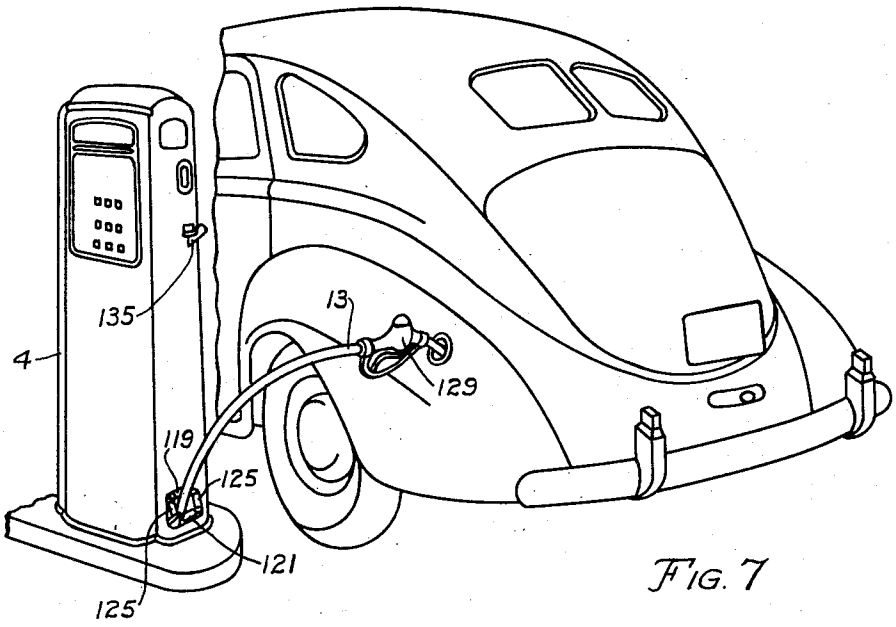


FIG. 6

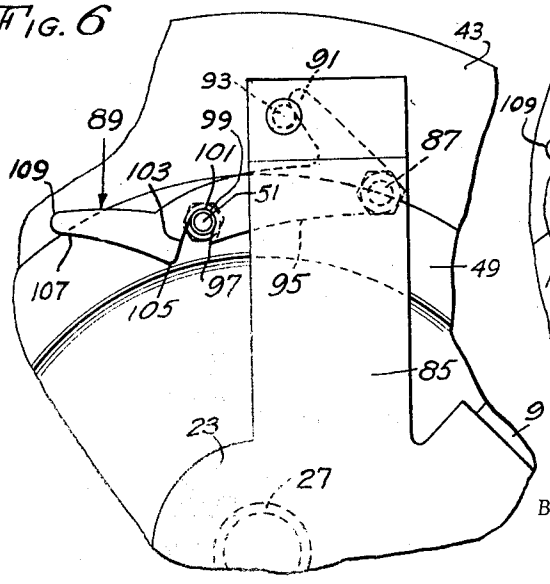
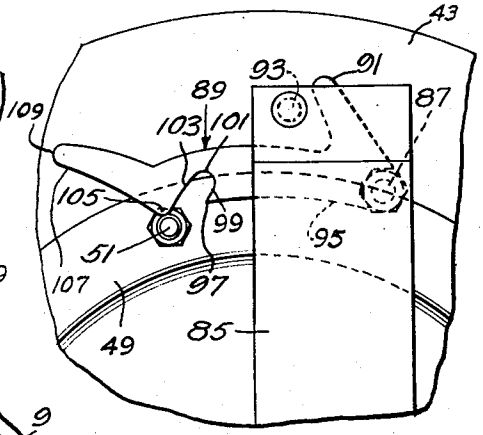


FIG. 7



INVENTOR.
Paul E. Waugh
BY: Cox Moore & Olson
ATTORNEYS.

Patented Jan. 18, 1944 2,339,308

UNITED STATES PATENT OFFICE

2,339,308

LIQUID DISPENSING DEVICE

Paul E. Waugh, Fort Wayne, Ind., assignor to Tokheim Oil Tank and Pump Company, Fort Wayne, Ind., a corporation of Indiana

Application September 24, 1940, Serial No. 358,177

8 Claims. (Cl. 299—78)

This invention relates to dispensing devices for internal combustion engine motor fuel and more particularly it relates to dispensing devices wherein hose storing means is provided, more specifically, a hose reel, upon which the hose is adapted to be wound and unwound so that a relatively short length or relatively longer lengths of the hose may be utilized in dispensing operations.

Among the objects of the present invention are to provide a service station pump construction having a hose reel within the lower portion of the housing, the housing being provided with an adjacent aperture through which the hose is adapted to extend, in combination with guide means for the hose which will maintain the hose on the reel and prevent the hose from wrapping about the hub portion of the reel; to provide a hose reel construction involving a relatively tall housing having a hose reel within the base of the housing upon which the flexible hose of the dispensing line is adapted to be normally coiled, such housing at a basal portion directly opposite the hose reel having an opening therein through which the free end of the hose is adapted to pass, said opening being provided with anti-friction guide means disposed so that a relatively shorter length of hose extending through this opening and normally suspended from a nozzle support located adjacent the top of the housing may be extended in all directions relatively to the housing and while in such direction may be pulled through the opening with a minimum of sharp bends therein and with a minimum of effort; to provide an economical, compact reel construction for coiling the hose within the housing; to provide a reel construction and associated latching mechanism therefor for holding the reel with the hose in extended position and whereby a pull on the hose at the nozzle end will either latch the hose or release the same for retrieving movement into the hose housing; to provide guard mechanism in association with the reel for preventing the hose from jumping off the reel during either the winding or unwinding operation; and to provide these and other objects of invention as will be apparent from a perusal of the following specification when taken in connection with the accompanying drawings, wherein:

Figure 1 shows a conventional type of hose reel dispensing device embodying the present invention;

Figure 2 is a view showing the hose reel and latch mechanism in unlatched position;

Figure 3 shows the lower structure of the dispensing device and discloses the purpose of the guides in association with the latching means;

Figure 4 is a cross sectional view of the reel construction;

Figure 5 is a view showing the use of a short length of hose for filling an automobile that is close by;

Figures 6 and 7 are enlarged views of the latching mechanism.

Referring now to the drawings in detail, the pump is used in association with an underground tank 1 adapted to hold a quantity of liquid fuel for internal combustion engines, such as gasoline and the like. From the tank 1 extends the usual type of suction pipe 2 having at its lower end the usual foot valve. The pipe 2 extends upwardly to a motor driven pump 3 disposed within a housing 4 of the dispensing unit. The pump is driven by the usual type of electric motor having an actuatable switch. The pump is connected to a meter 5 by means of a pipe 6 forming a part of the flow line, and the discharge side of the meter is connected by means of a pipe 7 to a sight gauge 8, the discharge side of which is connected to a pipe 9. The pipes 2, 6, 7 and 9 form the stationary part of a dispensing line which is located within the housing. Connected to this stationary dispensing line through the intermediary of the hose storing means, herein shown specifically as a hose reel, is a flexible hose 13 which is adapted normally to be stored upon the hose storing mechanism and which on being wound on or unwound from such storing mechanism emerges from the housing through an opening in a lower basal portion of the housing, hereinafter referred to, and then when the hose is not in use extends upwardly longitudinally of the housing a distance equal to substantially two-thirds the height of the housing. At its opposite end the hose 13 is provided with a terminal nozzle. In the present instance, the nozzle is provided with a valve and a manually actuatable control member therefor for controlling the dispensing operation after the pumping means or liquid forcing means has been actuated.

Referring particularly to Figure 1, it will be noted that the hose storing mechanism is herein shown specifically as a hose reel and which in detail is supported on a cross brace 15 supported from the four uprights of the housing 4. The cross brace 15 has a central hub-like portion 19 and a vertically upstanding support 85. The hose reel is supported at one end only from the cross brace 15. The support 15 is provided with a central hollowed out hub portion 23 connected by a

threaded inlet 11 with pipe 9 and is formed with a threaded opening 25 to receive a stationary sleeve 27 which extends centrally of the hub portion and forms a liquid carrying conduit. The opposite end of the sleeve 27 is externally threaded to receive a ball bearing raceway and retaining nut 29. The raceway forms a bearing for the rotatable portion of the hose storing reel. The opposite end of the sleeve 27 opens into a chamber 31 formed by a hollow, rotatable casting 33, which is formed on its extreme end 35 with means for attaching switch control apparatus as shown in Frank B. Eller's application for Liquid dispensing device, our Case No. 28, Serial No. 357,535, filed September 18, 1940. The hub portion is bolted to a spacing member 39 of the reel, which forms a seat for the circular hose. The spacing member carries thereon two sheet metal annuli 41 and 43 which form the storage space for the hose which is coiled therebetween. The spacing member 39 is provided with a plurality of laterally extending spacing lugs 44, through the end of which bolts 45 pass for attaching a spring housing 47 and the reel annuli thereto. This also forms a support for an annular or disk-like bracket 49 carrying on its periphery six latch actuating pins 51. These pins are mounted in a flexible support 53 comprising two sheet-metal half cups compressing therebetween two rubber washers 55 and 57 whereby to deaden the sound when the pins contact the latch mechanism hereinafter referred to. The outer end of a coil spring 58 passes through an opening in the spring housing 47 and is looped around the edge of the opening 59 formed and fastened in such position. The inner end of the coil spring 58 is looped about a pin 63 and bent back on itself and fastened. The pin is fixed in the extending hub-like portion 19 of the casting 15. The hollow hub member 33 is provided with an internal conduit 65 which communicates with the passage 31 thereof, and the chambered portion 65 is provided with a threaded outlet 67 to receive the inner end of the hose which is adapted to be coiled on the hose reel. In addition, the member 31 is provided with an internal wall 68 which surrounds a coil spring 71, which, in turn, surrounds the sleeve 27 for pressing a yieldable packing laterally against rings 69 and ring 75 and inwardly about the stationary sleeve 27. At the opposite end the spring abuts and presses against a suitable wall 74 of the spacing casting 39. By this construction the hub member 33, the reel and the spring housing rotate on and relatively to the support sleeve 27 and bracket 15, while at the same time preserving a liquid-tight connection therebetween.

The stationary bracket 15 is provided with an upstanding, laterally extending portion 85. The laterally extending portion 85 forms a support for a pivot connection 87 on which an elongated latch 89 is pivotally mounted. The latch 89 is provided with a leg 91, which is adapted in shifted position to abut a stop pin 93 mounted on the bracket 85, and in addition the latch member is provided on its under edge with a relatively long, substantially straight edge 95 terminating in an inwardly extending relatively deep slot 101, having a short straight side wall 99 and forming a cam 97. The opposite wall 103 of the slot projects as at 105 well beyond the opposite wall 99 of the slot, and thence the latch curves inwardly as at 107, tapering to a somewhat rounded, elongated leg 109. This latch is adapted to cooperate with a series of latching pins 51 disposed in equally spaced relationship on the periphery of the rotatable reel disk 49. In the operation of this latch mechanism it is to be noted that it reciprocates up and down as the pins rotate thereunder, but the latch is always kept substantially horizontal by its mounting on the bracket 85.

The hose reel operates normally anti-clockwise when the hose is being unreeled from its lower periphery. In this direction of rotation the stop pins 51 contact the surface 95 of the latch, raising the latch about its pivotal pin 87. When the stop pin 51 reaches the downwardly cammed portion 97 in this direction of rotation, the pins move the latch upwardly and pass freely thereunder because the latch is free to move upwardly. Whenever the hose has been extended to its desired length, the coil spring 58 tends to rewind the reel and in so doing the pins 51 move backwardly in a clockwise direction and first strike the curved cam surface 107 of the latch. If it is desired to latch the hose reel in thus extended position, this retrieving movement of the hose and the reel will be purposely made relatively slow and under this slow movement the pins 51 pass first under the curved cam portion 107 and the latch will have sufficient time to drop after the pin has passed the point 105 so as to cause the pin to enter the slot 101. Under this arrangement the reel is held against further movement with the hose maintained in extended position, so that the operator need not maintain a tension on the hose. To unlatch the hose the operator pulls the hose out slightly, which rotates the reel in an anti-clockwise direction and brings the pin 51 out of the slot 101 and beyond the cam surface 107 some distance. The hose is then released with a quick movement and the reel spring will spin the reel in a clockwise direction at a sufficient speed so that when the pins again pass the cam point 107 or the point 105 the latch cannot act quickly enough and the pins 51 will be cammed past the slot 101 before the point 97 can contact the latch and direct the pin into the slot 101. As long as the reel is turning in a clockwise direction at sufficient speed, the latch will be impotent to operate. It is only when the speed is slow that the weight of the latch will cause it to fall upon the pin and direct the pin into the slot 101. When none of the pins 51 is in contact with the lower side of the latch, the upper arm 91 of the latch rests upon the stop 93. This stop has a sleeve of rubber disposed about it which eliminates noise or clattering. It will be noted that the pins 51 are likewise resiliently or rubber clad so as to prevent noise in operation.

Means is provided in association with the housing, the reel mechanism, its latching mechanism, and the reciprocable hose for preventing the hose from departing or coming off the reel during either the winding or unwinding movement. At times the latching mechanism, during the retrieving or winding-up movement of the hose, locks the reel from further movement before the hose, which has been withdrawn from the housing, is fully wound upon the reel. Thus there is presented a condition where the reel is locked from movement and an extra length of hose is on the outside of the housing. In such a condition, heretofore operators have attempted to tuck or force this extra length of hose through the opening in the base of the housing into the space at the bottom of the housing. Any attempt of this kind tends to cause the hose to either gather in the well in the base of the housing or to move

laterally to a position off the reel whereby, when the hose is subsequently pulled out, it will come completely off the reel and lodge. To prevent this occurrence, means is provided in association with the housing, the reel, and the hose for preventing coming off the reel within the housing either upon the unwinding or winding operation.

The bottom of the dispensing housing is provided with a preferably cast metal base to which is attached the guard bracket 111. The bracket 111 is provided with a hose guiding roller 114 disposed to rotate about a horizontal axis in slightly spaced relationship from the reel as the hose uncoils from the reel. The bracket 111 is provided with an angular support 113 on which is mounted two additional rollers 115, which are inclined vertically rearwardly and lie with their inner peripheries just within the planes of the vertical disks of the reel so as to vertically guide the hose as it comes off or goes onto the reel. It is to be noted that the bracket 111 is disposed within the housing to the rear of the opening. The rollers 115 guide the hose off the reel in a direction toward the opening in the housing. In addition to these rollers, the opening in the housing is likewise provided with rollers. For instance, there is a pair of rollers, an upper 119 and a lower 121 which are spaced apart and are adapted to guide the hose through the opening in such a way as to prevent abrupt bends in the hose. Cooperating with the upper and lower rollers 119 and 121 are two vertically inclined rollers 123 and 125 on each vertical side of the opening between which and said upper and lower rollers the free end of the hose is adapted to pass. These inclined rollers are formed in double concave formation so as constantly to direct the hose to a location substantially midway between the rollers. It will be noted that the lower roller 121 is disposed forwardly of the upper roller 119 and that the lower roller 121 is mounted substantially outside of the opening of the housing. This is likewise true of each roller 125 of the inclined pair. By this arrangement the hose is frictionlessly directed through the opening of the housing. These rollers thus provide a universal bearing or pivotal mounting about which the free end of the hose may be swung in any desired direction and with the opening as a point of pivot, and at the same time the rollers permit, if desired, an additional length of hose to be withdrawn through the opening while the hose is extended in any desired direction.

By reference to the construction of the reel mechanism, it is to be noted that it is a very simple structure, one which is liquid-tight and which permits the easy rotation of the reel mechanism relative to the stationary portion thereof, and in addition provides a pivotal mounting for the latch mechanism in association with the stops carried by the confronting face of the reel mechanism. The foregoing provides a very compact relation and a structure which is reliable in operation, cheap in construction and assembly, and silent in operating the reel in either direction.

The construction of the friction rollers at the basal portion of the housing in cooperation with the rotatable reel mechanism and the opening in the housing is one which effectively guides the hose as it coils upon and uncoils from the reel mechanism, and also effectively guides the hose through the opening in the housing and permits the bending of the hose in any desired direction. In addition, the guard bracket at the base of the housing is peculiarly effective. It has been found by experience that many times when the hose is being returned to its nozzle support, the latch will tend to stop the reel before sufficient hose is retrieved, which condition causes a surplus amount of hose to accumulate outside the housing. To cure this, the attendants have heretofore attempted to force this extra hose into the casing, and due to the fact that the reel could not rotate and take up the surplus, the extra hose many times has been forced into the pit located below the pump housing. In the present instance, the guard rollers 115 and 114 in combination with the adjustable guard 17 prevent the hose from jumping off the reel during the unwinding and rewinding operation. It will be noted that the guard 17 is adjustably disposed relatively close to the edge of the reel disks 41 and 43, so that the hose cannot pass laterally of the reel at this point, and, in addition, at the front of the reel the guard 114 is adjustably disposed on the bracket 111 relatively close to the periphery of the reel at the front of the housing; this is the horizontal roller, and is combined with the two spaced apart, backwardly inclined rollers 115, which lie, as heretofore stated, in the vertical plane of the vertical reel sides or ends 41 and 43. Without these guards in position, the hose could leave the reel, and on the next dispensing operation the attendant, in withdrawing the hose, would pull the same off the reel and it would tend to wrap about the hub, which would tend to damage the hose, and cause jamming and prevent operation. This would cause the attendant to open the housing of the pump to replace the hose upon its reel. The guards in the position heretofore described prevent any excessive hose from leaving the reel or at least from getting out of alinement. Even if the hose should be forced into the pit, upon the next withdrawal, the hose will return to its reel. These guards can be of any design, such as a metal shield entirely about the reel, or rollers, or other types of retainers. They cooperate most effectively with the latch mechanism for maintaining the hose on the reel in any desired angular position of the reel mechanism.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is as follows:

1. In a device of the class described, the combination of a housing having an opening, a reel mounted in said housing opposite said opening, said reel including a stationary pipe adapted to be connected with a source of liquid supply, a rotatable reel hub mounted on said pipe for rotation relatively thereto, said hub being provided with an internal passage connecting with said stationary pipe, liquid sealing means between said stationary pipe and said rotatable hub, said hub having a laterally extending discharge opening and a pair of substantially parallel hose guides extending radially therefrom, a flexible hose connected to the liquid discharge of said reel hub and adapted to be coiled about said hub between said hose guides, the free end of said hose passing outwardly through the opening of said housing and at its end being provided with a control nozzle, a coil spring having one end connected to the stationary part of said reel and the other end connected to said rotatable hub portion, a support disposed adjacent said reel, a plurality of pins on said reel adapted on angular movement of said reel to move in arcuate paths, a relatively long lever pivotally mounted on said stationary support directly in the path

of said pins, said lever being elongated substantially horizontally and being pivoted at one end, the bottom portion of said lever intermediate its length being provided with a reentrant upwardly inclined slot having substantially parallel walls, the edges of said lever on each side of said slot being curved upwardly to provide cam faces, said lever having a stop arm, and a stationary stop associated with said arm to prevent abnormal downward movement of said lever while permitting upward movement of said lever when a pin engages said cam surface.

2. In a device of the class described, the combination of a housing having an opening, a reel mounted in said housing substantially opposite said opening, said reel including a stationary pipe adapted to be connected with a source of liquid supply, a rotatable reel hub mounted on said pipe for rotation relatively thereto, said hub being provided with an internal passage connecting with said stationary pipe, and a pair of sheet metal annuli bolted in spaced relation to said hub, and angularly extending in parallel relation from said hub to provide an annular storage space therebetween, a hose having connection with the liquid discharge channel of said hub and coiled between said annuli with the outer end of said hose passing outwardly through the housing provided with a dispensing nozzle, a spring housing mounted adjacent an outer face of one of said annuli, a spring coiled within said housing and having one end attached to said housing and the other end attached to a stationary part of the reel, and a sheet metal ring mounted between said spring housing and the adjacent hose guide, said ring being provided with a plurality of laterally extending pins, each of said pins being provided with sound deadening material, the stationary part of said reel having a bracket overlying the spring housing, and a relatively elongated latch pivotally mounted on said overlying support and adapted normally to lie in a substantially horizontal plane, the underside of said elongated lever being formed with an inclined, upwardly extending notch and the under side of said lever on each side of said notch having inwardly curving pin camming walls, the side wall of said notch when pivotally mounted on said lever being substantially shorter than the opposite wall, and said opposite wall from its outer end to the free end of said lever being formed with an arcuate, inwardly extending continuous curve, said lever having means engaging a stop on the stationary part of the support for preventing said lever from dropping below a predetermined horizontal position when no pin is contacting said lever.

3. In a device of the class described, the combination of a housing having an open bottom and having one of the upright walls of said housing provided with an opening in its face, a reel mechanism mounted in said housing for rotation about a horizontal axis directly opposite said opening, the central portion of said reel forming a liquid conduit, a flexible hose coiled on said reel and forming a liquid pipe connection with said conduit, the free end of the hose passing through said opening and having a dispensing nozzle on its end, spring means for normally rotating said reel in said housing to wind the hose thereon, hose guard means mounted within said housing adjacent the lower rear portion of said reel whereby to direct the hose onto the reel at said guard, and hose guiding rollers mounted on the front of said housing at the base thereof inwardly of said opening and adjacent the periphery of said reel, one of said rollers being disposed horizontally and lying directly adjacent the periphery of said reel, rollers rotatably mounted about an axis inclined rearwardly to the vertical and lying in planes substantially in the plane of each side guide plate of each reel, whereby to prevent the hose jumping off the reel at the front of said reel as said hose passes through the opening in said housing.

4. A device of the class described, the combination of an upstanding housing, said housing having an open base overlying a pit, a liquid dispensing line passing upwardly through said base in the housing, a hose reel mounted in the base of said housing and adapted to rotate about a horizontal axis, said reel providing parallel hose guide discs disposed in vertical spaced-apart planes between which the hose is adapted to be coiled upon said reel, said reel being directly opposite an opening in the basal wall of said housing, the base of said reel at the rear of the housing opposite said opening having a mounting, a guard adjustably mounted on said mounting for adjustment in a horizontal plane toward and from the spaced peripheries of the sides of said reel and extending across the space between said sides of the reel, whereby to maintain the hose from jumping off the reel at the location of said guard, said base at the front and slightly below the opening in said housing being provided with a mounting, a bracket on said mounting extending across the front of said housing and below said opening inwardly thereof, said bracket having a relatively long roller means thereon disposed to rotate about a horizontal axis and mounted relatively close to periphery of the side guide plates of said reel, said bracket having upwardly extending rollers each inclined slightly backwardly away from said opening, each roller lying substantially in the plane of one of the side plates of said reel and forming a guard to prevent the hose from jumping off said reel adjacent said opening.

5. In a device of the class described, the combination of an upstanding housing having at the base of one of the vertical walls thereof a hose opening, a reel mounted in the base of said housing adjacent said opening and providing spaced-apart vertically extending side hose guides between whch a coil of hose is adapted ot be coiled, said hose having a connection with a source of supply, the terminal of said hose passing outwardly through said opening and being provided with a dispensing nozzle, spring means for normally coiling said hose on said reel, the opening in said housing being provided with hose guiding rollers, one of said rollers lying directly in the mouth of said opening at the top thereof and extending across said opening, and rotating about a horizontal axis, a lower roller mounted in the bottom of said opening and rotating about a horizontal axis, said horizontal roller being disposed substantially wholly outside the opening of said housing, and pairs of spaced-apart, diagonally extending rollers disposed on each vertical side of the opening, said rollers lying at a rearward inclination to a vertical line, and one of each pair of said rollers lying directly in said opening, and another of said parallel rollers having its upper end partially lying in said opening, and having its lower end lying outside of said opening, said rollers being concaved in both directions with the narrow diameter intermediate their length and spaced apart to receive the hose therebetween,

whereby all of said rollers provide a universal guide for said hose to permit the same to be extended in any direction.

6. In a device of the class described, in combination with a housing having opposed walls, a rotatable reel mounted in the base of the housing between said walls, one of said walls having a hose opening adjacent the periphery of said reel, a liquid dispensing line including a flexible hose adapted to be coiled on said reel, said hose passing through the opening in the housing and terminating in a dispensing nozzle, and means mounted within the housing adjacent the wall of said housing opposite the wall having the hose opening therein and likewise disposed adjacent the periphery of said reel for maintaining the hose on the reel during the turning movement of said reel.

7. In a device of the class described, in combination with a housing, a rotatable reel mounted in the base of the housing, said housing having an opening adjacent said reel, a liquid dispensing line including a flexible hose adapted to be coiled on said reel, said hose passing through the opening in the housing and terminating in a dispensing nozzle, spring means for turning said reel to wind said hose thereon, latching means for holding said reel with the hose in unwound position, and guide means in said housing disposed adjacent spaced peripheral portions of said reel for preventing said hose from jumping off said reel during the winding or unwinding movement thereof, said means comprising a guide disposed on substantially opposite sides of the peripheral portions of said reel and disposed relatively close to the rim of said reel to maintain said hose on said reel during the winding and unwinding movements, and including means associated with the opening of said housing for guiding said hose within the hose storage space of said reel during the winding or unwinding motion thereof.

8. In a device of the class described, in combination with a substantially rectangular housing having an opening in one of its upright walls, a turnable hose storing reel rotatably mounted in said housing between said walls, said reel having two annular discs between which the hose is adapted to lie when wound up on said reel, a hose mounted on said reel between said discs and adapted to pass through the opening of said housing, hose guide means mounted within the housing at that side of the housing opposite the side having the opening, said guiding means extending transversely of the path of movement of the periphery of the parallel reel discs and substantially coextensively with the space therebetween and lying relatively close to the peripheral portions of the reel discs during their rotation whereby to confine the hose between the parallel reel discs during hose winding and unwinding movements, and additional hose guiding means associated with the reel and the wall opening, spaced portions of which hose guiding means are located at the opening in the housing and between which spaced portions the hose passes for guidance during the winding and unwinding movements of the hose, said additional hose guiding means including a guide located transversely of and relatively close to the path of movement of the parallel hose discs and extending substantially coextensively with the distance therebetween and on that side of the reel adjacent the opening in the housing whereby to direct the hose as it unwinds from said reel directly to and over the hose guide means in the housing.

PAUL E. WAUGH.