Jan. 25, 1944. A. L. GRISÉ 2,340,217

HOSE MOUNTING FOR FLUID DISPENSING APPARATUS

Filed Aug. 17, 1942 2 Sheets-Sheet 1

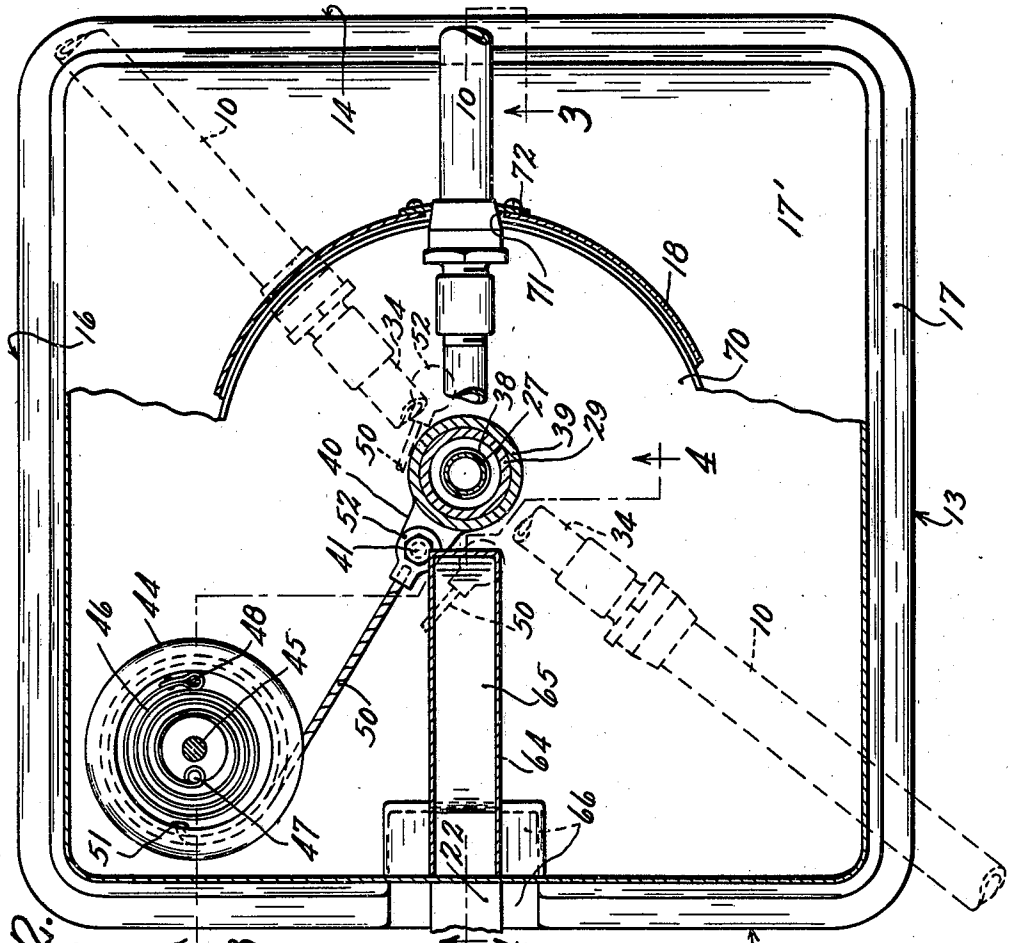


Fig. 2.

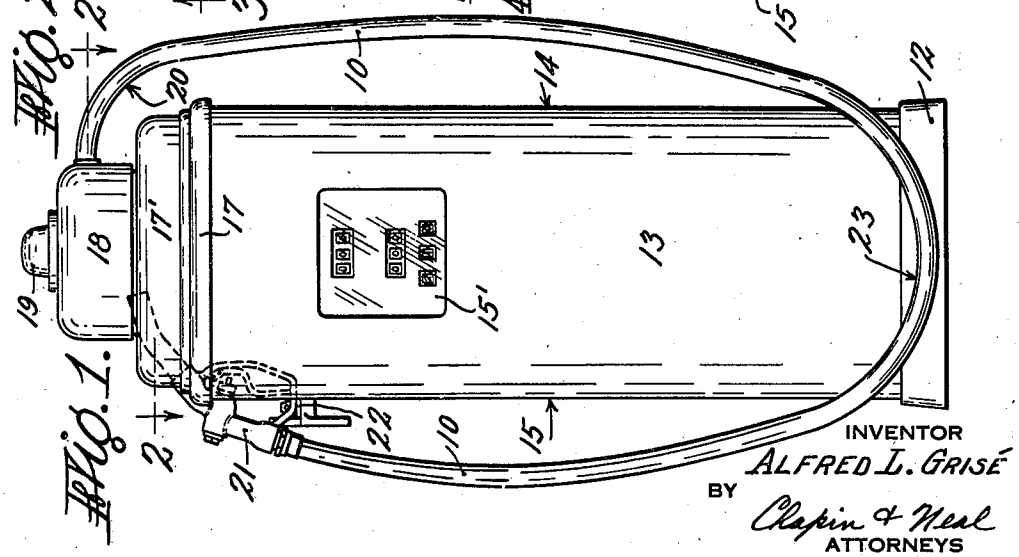


Fig. 1.

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Fig. 3.

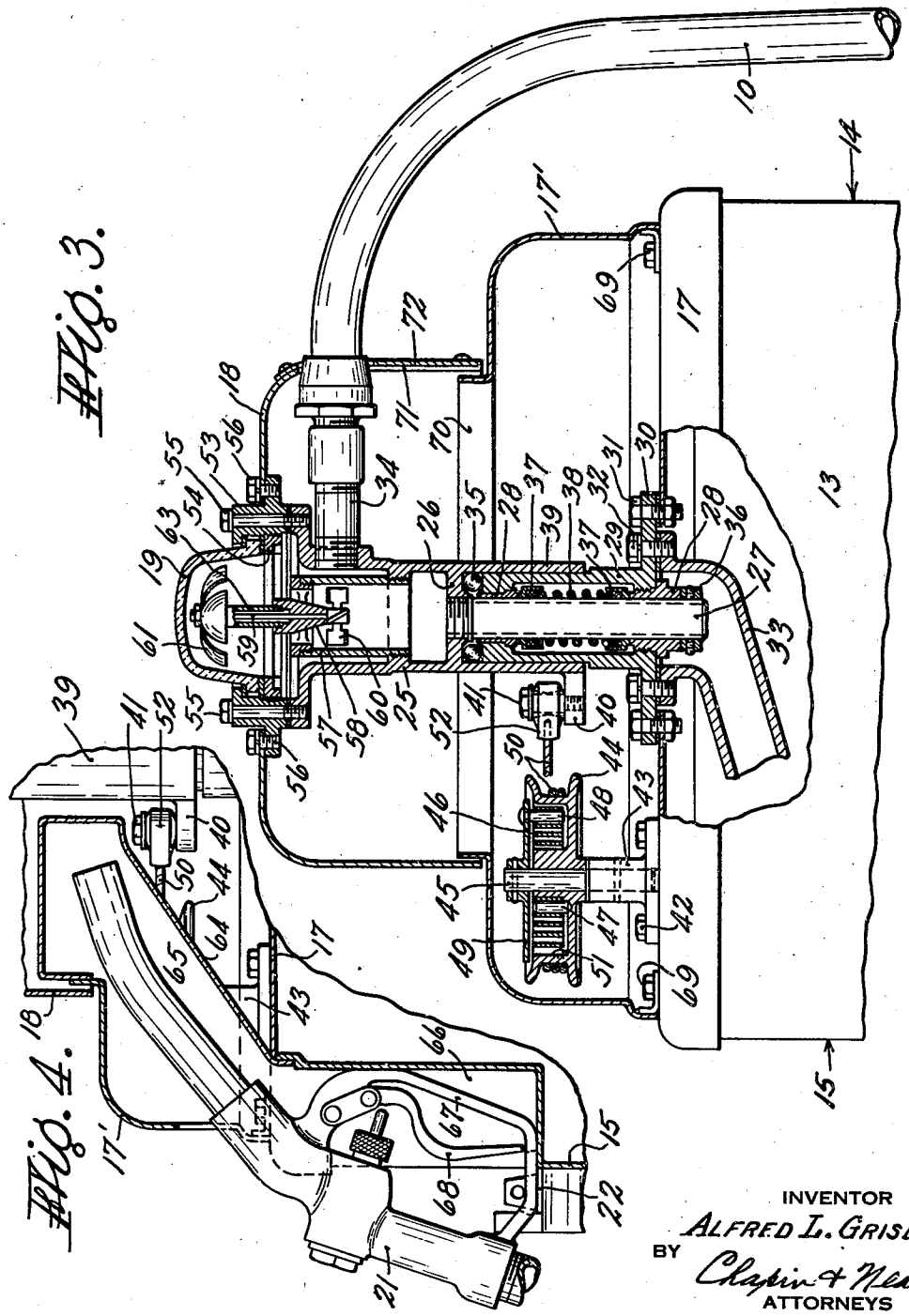


Fig. 4.

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UNITED STATES PATENT OFFICE

2,340,217

HOSE MOUNTING FOR FLUID DISPENSING APPARATUS

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Application August 17, 1942, Serial No. 455,063

5 Claims. (Cl. 299—77)

This invention relates to an improved mounting of the hose on the casing of fluid dispensing apparatus, such for example as that used for dispensing gasoline, i. e., gasoline pumps and the like, and to the hose handling mechanism for such pumps.

So far as I know, the prior art nearest to my present invention is seen in my prior U. S. Patent No. 2,240,458, dated April 29, 1941.

In the present invention, as also in the prior art, it is desired to display the hose in a single loop on and outside the casing of the pump, or other fluid dispensing apparatus. In both my prior invention and this one it is desired to get extra service range for the hose by the use of a turret, mounted on top of the casing and adapted to follow the hose as the latter is pulled in either direction to any desired service position throughout a range of 360 degres. The present invention, however, provides a better arrangement for a greater length of hose in the single loop for a pump casing of given height and the hose is displayed in a different and more pleasing manner.

The invention has for one object to provide for the display of the hose in a single but very broad loop on the outside of the pump casing, such loop starting centrally and near the top of one side of the casing, extending downwardly along such side, crossing to the opposite side of the casing with the lowest portion of the loop located close to but preferably above the ground, and thence extending upwardly along said opposite side and terminating centrally and near the top of such side. The hose nozzle is hung up on a nozzle support at one end, and a hose connection to the pump supports the other end in the loop arrangement stated.

Another object of the invention is to provide in connection with a dispensing hose, draped as above described, a turret to which the inner end of the hose is connected and which can be turned in either direction by pulling on the hose to various radial positions throughout a range of 360 degrees, and mechanism for returning the turret, when the tension on the hose is relaxed, to a predetermined position of rest in which position that portion of the hose, which is connected to the turret, lies on an opposite side of the casing to that side where a nozzle support is adapted to support the delivery end of the hose.

The invention has for a further object the provision of improved means for returning a turret accurately into a desired predetermined position and yet allowing the turret to be turned in either direction and through as much as one complete revolution. This feature of the invention is useful in fluid dispensing apparatus independently of the hose display arrangement.

These and other objects will best be understood as the detailed description proceeds and they will be pointed out in the appended claims.

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

Fig. 1 is a small scale front elevational view of a fluid dispensing apparatus showing the dispensing hose mounted and displayed thereon in accordance with this invention;

Fig. 2 is a sectional plan view, drawn to a larger scale and taken on the line 2—2 of Fig. 1; and

Figs. 3 and 4 are sectional elevational views taken on the lines 3—3 and 4—4, respectively, of Fig. 2.

Referring to these drawings, Fig. 1 best shows the manner in which the dispensing hose 10 is generally mounted and displayed on the casing 11 of a fluid-dispensing apparatus. In this case, the apparatus chosen as an illustrative example, is a gasoline dispensing pump. The pump, its actuating means, the meter and any accessories are housed within the vertically upstanding casing 11. The particular casing herein shown has four walls upstanding from a base 12. There is a broad front wall 13, adjoining side walls 14 and 15, and a rear wall 16, similar to the front wall. The broad front and rear walls 15 and 16 customarily have windows, such as 15', through which the quantity and/or cost indications of the register are visible. On top of these four walls is a cap 17; on top of cap 17 is a cap 17'; and on top of the cap 17' is a rotatable turret enclosed by a casing 18 having the shape of an inverted bowl. The turret may, and desirably does, carry a sight-flow indicator having a glass 19. The particular form of casing described, while desirable and at present preferred, is not essential for all purposes and other forms may be used as desired.

The dispensing hose 10 at its inner end extends radially outward from the turret near the very top of the pump casing and normally at the center of the side wall 14. When the hose is not in use, it is draped on the casing in the attractive manner shown best in Fig. 1. The hose, as it extends outwardly, bends downwardly by its weight in a curve 20 of large radius and then passes downwardly along the side wall 14 and in a more or less vertical direction. The curve 20 causes the hose to be held outwardly away from the wall 14. The outer end of the hose carries

any suitable nozzle, such as 21, which, when the hose is not in use, is hung up on a nozzle support 22, mounted on the side wall 15. The nozzle, when placed on this support, causes the hose to be held outwardly away from the wall 15 as it extends along such wall. The two roughly vertical stretches of the hose bend forwardly toward the front wall 13 and are interconnected by a substantially semi-circular lower portion 23, which crosses the broad front wall 13 and lies thereagainst, with its lowermost portion preferably suspended a short distance above the ground. The two roughly vertical stretches of the hose are much more widely spaced than in the hose loop of my prior patent, so that the one loop, in which the hose is displayed, is a very broad one, broader than the front wall 13, which has to be broad enough to accommodate the register shown in back of window 15'.

As a consequence of the described arrangement, it is feasible to display a greater length of hose in a single loop on a casing of given height than when the single loop is displayed in the conventional manner in a single narrow loop disposed wholly on one side, and usually on a narrow side wall of the pump casing. An increase of from 20 to 30 per cent in the length of hose may be obtained if displayed according to this invention, the higher figure applying in case the turret is used. Ordinarily, this means an increase of from two to three feet in the length of the hose. The host, herein shown, is, for example, twelve feet in length exclusive of the nozzle 21. With so much hose available on the outside of the pump, it is seldom desirable to store any more hose on reels or in loops inside the pump casing, particularly when the turret is used, which increases the service range of the hose by allowing it to be pulled to lie in any desired radial direction throughout the complete 360 degree range.

It will be seen that, according to my invention, when a turret is used, the latter should always be brought back to, and held in, a predetermined position of rest in which the inner end of the hose lies on the opposite side of the pump casing from the nozzle support 22, as shown in Fig. 1. Otherwise, the draping of the hose in a broad loop would not be insured and the extra long hose, herein conveniently provided for, would, in its lower portion, lie on the ground.

For returning the turret I provide the mechanism shown in Figs. 2 and 3. The turret, in the particular form herein shown, consists of a hollow, fluid-containing and conducting, more or less cylindrical member 25. This member has a base 26 from which depends a hollow shaft or pipe 27, suitably secured, as by the screw threads shown, to the base. This shaft is rotatably mounted in upper and lower bearing bushings 28 fixed in a vertically-disposed cylindrical standard 29. This standard has a base flange 30 resting on the cap 17 and secured thereto as by bolts 31. Also secured to this flange, as by cap screw 32, is the elbow 33 of the discharge pipe of the meter of the fluid dispensing apparatus. Fluid from such pipe passes through hollow shaft 27 into the turret, from which it leaves by way of a radially outwardly extending pipe 34, fixed at one end to the turret and having fixed to its other end the inner end of hose 10. The base of the turret rests on an anti-friction thrust bearing 35, mounted on the top of the standard and carrying the weight of the turret and attached parts. A collar 36, fixed on the lower end of shaft 27, engages the lower end face of the lower bearing bushing 28 to take any upward thrust of the turret. Seal rings 37, mounted on shaft 27, are pressed apart by a spring 38, one against each of the two adjacent end faces of bearing bushings 28 to prevent leakage. The turret has depending from its base a hollow cylindrical skirt 39, the inner surface of which is finished to have a bearing engagement with the finished outer surface of standard 29. It will be clear that by pulling on the hose 10, the turret 25 with its enclosing casing 18 may be turned about a vertical axis throughout a complete revolution. Whichever way the hose is pulled, the turret follows it and, accordingly, the hose may be brought into any of a large number of radical positions throughout a range of 360 degrees. A few of these radial positions are shown in Fig. 2.

The skirt 39 on the turret presents a cylindrical outer surface which may be used as a pulley or drum. It also carries a crank 40, to which is fixed an upstanding stud 41, forming a crank pin. Fixed to the cap 17, as by bolts 42, is a standard 43, supporting a drum 44 and having fixed thereto a stud 45, on which said drum is rotatably mounted. The upper face of drum 44 is recessed to receive a spiral spring 46, the inner end of which is fixed to the hub of the drum as best shown at 47 in Fig. 2. The outer end of spring 46 is fixed to a pin 48 (Fig. 3) depending from a plate 49, fixed to the upper end of the stationary stud 45. This plate has been cut away in Fig. 2 in order to show the spring. A cable 50, fixed at one end at 51 to drum 44, is wound several times around the drum and has its outer end fixed to an eye 52. The crank pin 41 passes through this eye. The hole in the eye is tapered outwardly in opposite directions from its center so that the eye can rock up or down as may be necessary as the cable is wound up on or unwound from the drum. The crank pin 41 and eye 52 form a convenient means of attaching the cable 50 to the drum-like member 39 and, while such fastening is desirable and preferred, other fastening means might be used. For example, the outer end of the cable might, like its inner end, be fixed directly to the periphery of the drum-like member.

From an inspection of Fig. 2, it will be clear that the spring 46 will return and hold the turret and the attached hose, at its inner end, always in a predetermined radial position whenever the tension on the hose is relaxed. The spring turns the drum 44 and the turret until the tangent portion of the cable lies in line with the radial line which connects the center of the the turret to the center of the crank pin or other point of attachment of the cable to the member 39. The predetermined position is that shown in Figs. 1, 2, and 3, in which the inner end of the hose lies directly opposite to the hose support 22. There is no longer any turning moment through which the spring can act to turn the turret. The turret may, however, be turned in either direction from the illustrated position by pulling on the hose. If the hose is swung upwardly, taking the view in the drawings, from its normal rest position, shown by full lines in Fig. 2, the crank 40 will turn in a counterclockwise direction and, if turned downwardly from the rest position, crank 40 will turn clockwise. Nothing prevents complete rotation of the turret in either direction. After the crank has been turned through an angle of about 120 degrees,

the cable will be moved so as to lie tangent to the drum-like surface of the skirt 39 of the turret. This position of the cable is shown in Fig. 24 by the upper set of dotted lines. If the turret is turned further in the same direction, the cable will be wound on the drum-like skirt 39. It will thus be seen that the turret can be turned throughout a complete revolution. Actually, the turret may be turned more than one complete revolution, if desired, although this is seldom necessary. The amount of turning of the turret is limited only by the amount of cable on the drum.

Referring now to Fig. 3, the turret may, and desirably does, carry a sight flow indicator of any suitable form. The sight glass 19, previously referred to, is flanged at its base to fit into a recess in a rim 53 and is held liquid-tight therein by an annular nut 54. The rim 53 is secured liquid-tight by cap screws 55 to the flanged upper end of the turret. The casing 18 is secured by cap screws 56 to the rim 53. Located coaxially within the upper portion of the turret is an annular dam in the form of a pipe 57 extending above the pipe 34. Fluid must flow up and over the dam and thence downwardly outside the dam in order to reach pipe 34. Fixed in the central and upper portion of the pipe 57 is a bearing 58 for a vertical shaft 59, having fixed to its lower end a turbine wheel 60, located in the path of flow of, and revolved by, the liquid passing up pipe 57. On the upper end of shaft 59 is a spinner wheel 61 located within glass 19. A pipe standard 63 extending upwardly from bearing 58 serves to support and steady the upper end of shaft 57.

As herein shown, the hose nozzle 21, when in place on support 22, is located partially within the pump casing in order to shield the outlet tube of the nozzle from the weather. A portion of the interior of cap 17' is divided off by a wall 64 to form a housing 65 for the outlet tube of the nozzle. Such housing communicates with a recess 66 in the side wall 15 of the pump casing. Recess 66 receives the guard 67 and valve-actuating lever 68 of the nozzle. The lever is thereby made relatively inacessible for actuation when in the stored position. As will be clear from Fig. 2, the housing 65 is located centrally of the side wall 15 and in front of the drum 44. The inner end of the housing extends inwardly close to the turret 25, but such end is raised above the crank 40, crank pin 41, and eye 52, as will be clear from Fig. 4, so as not to interfere with the rotation of these parts.

The turret 25 and the mechanism for returning it to a predetermined normal position may be completely assembled on top of cap 17 before the cap 17' and turret casing 18 are put in place. Having this assembly completed, one puts the cap section 17' in place and secures it by the bolts 69 which may be reached through the large circular hole 70 in cap section 17'. Then, the casing 18 is put in place. Casing 18 has a hose-receiving slot extending from its lower edge upwardly far enough to allow the casing to be slipped into place over the hose. The casing 18 is then fastened by the cap screws, and the slot 71 is covered by a plate 72 suitably secured to casing 18 as indicated.

The operation of the invention will be clear from the foregoing description and will be but briefly summarized. To serve a customer, the operator removes nozzle 21 from its support 22 and carries it to the dispensing point. Because of the turret, the inner end of the hose can turn freely as required. The hose cannot, as is possible with the ordinary hose mounting, bend around the pump casing. The hose nozzle may be carried in any direction without necessarily bending the hose to reach the dispensing point. The turret enables a complete circular dispensing area to be obtained and the long hose enables this circular area to be substantially greater than has heretofore been reasonably feasible without resort to hose reels or other hose-storing means within the pump casing. After the customer has been served, the nozzle is replaced on its support and, as soon as the tension on the hose is relaxed, the spring 46 will return the turret accurately into the predetermined normal position illustrated. In such position, the inner end of the hose is always located on the opposite side of the casing from the nozzle support. Therefore, when the hose is hung up, it will always be draped in the described form of a single, very broad loop and will be displayed neatly and attractively against the front of the pump casing.

Now that the operation is generally understood, there are a few special features about the structure, mode of operation, and results to which I will refer—and against a background of prior art.

Prior art pumps have been used with hose handling reels. And these reels have been spring operated to wind up the hose, it being unwound by pulling out to the dispensing point. One of the objections to these spring-operated reels is this: They need considerable force stored in the spring to draw back a long hose for storage. The attendant had to drag the hose out against a strong spring. That is objectionable, particularly when intermittently repeatd all day long. It tires out even a husky attendant. Another objection is the fact that unless the attendant takes good care to hold fast, the hose will be pulled out of his hands by the spring action. The further the hose is pulled out the more spring force is stored for the return. The result has been in such prior spring reel structures that when the attendant reached the dispensing point, he personally had to exert a substantial force to counteract the spring. Efforts have been made to avoid these objections to the spring return of the hose. An example is the hanging of a normal length of hose for use outside the pump without any spring return for such length, which arrangement was combined with a festooning device for an extra length of hose. The extra length was pulled out only when actually needed. It was spring or weight returned when the normal length was hung up on the pump casing. An example is seen in the Hope Patent No. 2,225,271, dated Dcember 17, 1940. My own prior art effort represented by my aforesaid patent, which is the nearest prior art to my instant invention so far as I know, avoided a spring return altogether. One idea in said patent is that a freely turning turret presents an apportunity for an extra length of range for the dispensing nozzle with a given length of hose.

The structure of the present invention provides for a spring return of the hose, or part of the hose, to the normal hose position. One feature of this spring return structure is that the amount of spring force need be only a fraction of what is needed in prior art spring return devices in hose handling apparatus. This will be seen from the fact that the attendant need never use more force

in reaching any dispensing point in his range than the force necessary to carry the weight of the hose, swiveled from curve **20**, Fig. 1, plus the force necessary to merely turn the turret **18**. The turning of the turret on its bearings would take almost no force at all were it not for the opposition of the spring return device. But this spring return device can be made to function with just enough spring force to merely turn the turret on its bearings when the attendant carries the hose nozzle to its recess for hanging up, as seen in Fig. 1.

A specific cycle of operations outlined from Fig. 1 will make my point clearer. Suppose the automobile to be serviced is in position for the delivery point of gasoline to be located radially of the pump in the plane of the drawing and to the left of Fig. 1. The attendant takes the nozzle **21** and walks to the delivery point. The weight of the hose is supported half by the attendant at the outer end and half by the turret at the inner end. As loop **23** starts to rise for the hose to be extended, the turret starts to turn. It will continue to turn through 180° as the attendant walks away carrying the nozzle. During delivery, assume that the hose is positioned in substantially a straight line from its turret connection to the nozzle. Such is one extreme position of the hose reach from the pump. If from that position the attendant merely laid the nozzle on the ground, the turret return spring need not be strong enough to move the nozzle from where it is laid. Such spring, to accomplish my purpose, need only be strong enough to turn the turret on its anti-friction bearings, while supporting one end of the hose and while the attendant carrying the other end walks back to hang the nozzle on its support. During such walk-back operation the spring turns turret **18**. It will do this if merely strong enough to swing one end of the suspended hose while the other end is carried back. The consequence is that the attendant is not subjected to a pull-back force in objectionable amount. This spring force is preferably made just large enough to work under conditions within a 360° turn of the turret; 180° in the example given. This need not be enough for the turret to return to its normal position unless the attendant carries the nozzle back to the casing. The operation is not at all like the prior art hose return mechanism. And the attendant does not have to do his work under heavy spring pressure in extending the nozzle to extreme dispensing points.

I do not intend to limit my invention to a small amount of spring force but to point out the fact that there is an advantage in using a small amount compared to a large amount. In fact, my invention in some aspects is useful without any automatic return feature for the turret. The latter could be turned back by the attendant to handle the hose for its idle arrangement, as seen in Fig. 1. But of course the ordinary pump attendant would neglect the advantage of always putting both ends of the hose back into the nice position of Fig. 1. It will be understood, as it is common practice, that the attendant must hang up his nozlze end after each sale, in order to zeroize his indicator and start the pump for the next sale. The pump operating mechanism is arranged to require it.

My automatic return of the inner end of the hose loop insures the pump's being returned after each sale to the position of parts seen in Fig. 1. This is important in filling station apparatus where so much effort has been and is being made to maintain and improve the appearance of such prominent apparatus as gasoline pumps.

The scope of the invention is pointed out in the appended claims.

What I claim is:

1. In fluid dispensing apparatus, a supporting casing, a dispensing hose, a turret rotatably mounted on said casing and to which the inner end of said hose is connected, fluid supply means in said casing and connected to said end of the hose, said turret adapted to follow the hose when the latter is pulled from an initial radial position to any other radial position for dispensing, and means for moving said turret back to said initial position when the pull on the hose is released.

2. In fluid dispensing apparatus, a supporting casing, a dispensing hose, a turret rotatably mounted on said casing, said hose near its inner end having a connection with said turret, whereby the turret follows the hose as the latter is pulled from an initial radial position to any other radial position for dispensing, a fluid supply conduit in said casing connected to the inner end of said hose, said turret having a drum-like member fixed thereto and located coaxially thereof, a drum rotatably mounted in said casing, a cable wound on said drum and fixed at one end thereto and at the other end to said drum-like member, and spring means for winding the cable on said drum and thereby turning said member, turret, and the inner end of said hose into a predetermined radial position.

3. In fluid dispensing apparatus, a supporting casing, a dispensing hose, a turret rotatably mounted on said casing, said hose near its inner end having a connection with said turret, whereby the turret follows the hose as the latter is pulled from an initial radial position to any other radial position for dispensing, a fluid supply conduit in said casing connected to the inner end of said hose, said turret having a drum-like member fixed thereto and located coaxially thereof, a drum rotatably mounted in said casing, a cable wound on said drum having one end fixed thereto and the other end fixed to said drum-like member, and spring means for winding the cable on said drum, said turret when turned in either direction from its initial position by pulling on the hose unwinding said cable from its drum and winding it on said member, said spring means operable on release of the hose to rewind the cable on its drum and unwind it from said member and pull the latter back into said initial position in which the tangent portion of the cable lies in line with the radial line which connects the center of drum-like member to the point thereon at which the cable is attached.

4. In fluid dispensing apparatus, a supporting casing, a dispensing hose, a turret rotatably mounted on said casing, said hose near its inner end having a connection with said turret, whereby the turret follows the hose as the latter is pulled from an initial radial position to any other radial position for dispensing, a fluid supply conduit in said casing connected to the inner end of said hose, said turret having a drum-like member fixed thereto and located coaxially thereof, a crank pin carried by said member, a drum rotatably mounted in said casing, a cable wound on said drum and connected to said crank pin, and spring means for winding the cable on said drum, said turret when turned in either direction from its initial position by pulling on the hose un-

winding said cable from its drum and winding it on said member, said spring means operable on release of the hose to rewind the cable on its drum and unwind it from said member and pull the latter back into said initial position in which the centers of said member and crank pin align with the tangent end portion of said cable.

5. In fluid dispensing apparatus, an upstanding casing, a turret rotatably mounted on top of said casing to turn about a vertical axis, a dispensing hose having a portion near its inner end extending radially out of said turret and having a nozzle on its outer end, nozzle-supporting means mounted on one side of said casing, yieldable means for holding said turret in a predetermined position in which said radially extending portion lies on the opposite side of said casing, said hose when not in use being draped in a wide loop extending from the turret along the last-named side of the casing toward the bottom thereof and thence upwardly along the first-named side of the casing to said nozzle supporting means, said turret adapted to be turned in either direction from said predetermnied position by a pull on the hose and to follow the hose as it is swung to any desired radial position, said yieldable means operable when the pull on the hose is relaxed to return the turret to said predetermined position and space said radially-extending portion from said hose-supporting means to enable the hose to be draped in the aforesaid wide loop and with its lower portion held above the ground.

ALFRED L. GRISÉ.

CERTIFICATE OF CORRECTION.

Patent No. 2,340,217. January 25, 1944.

ALFRED L. GRISÉ.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, first column, line 32, for the word "host" read --hose--; and second column, line 17, for "radical" read --radial--; page 3, second column, line 39, for "repeatd" read --repeated--; line 65, for "apportunity" read --opportunity--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 28th day of March, A. D. 1944.

Leslie Frazer

(Seal) Acting Commissioner of Patents.