

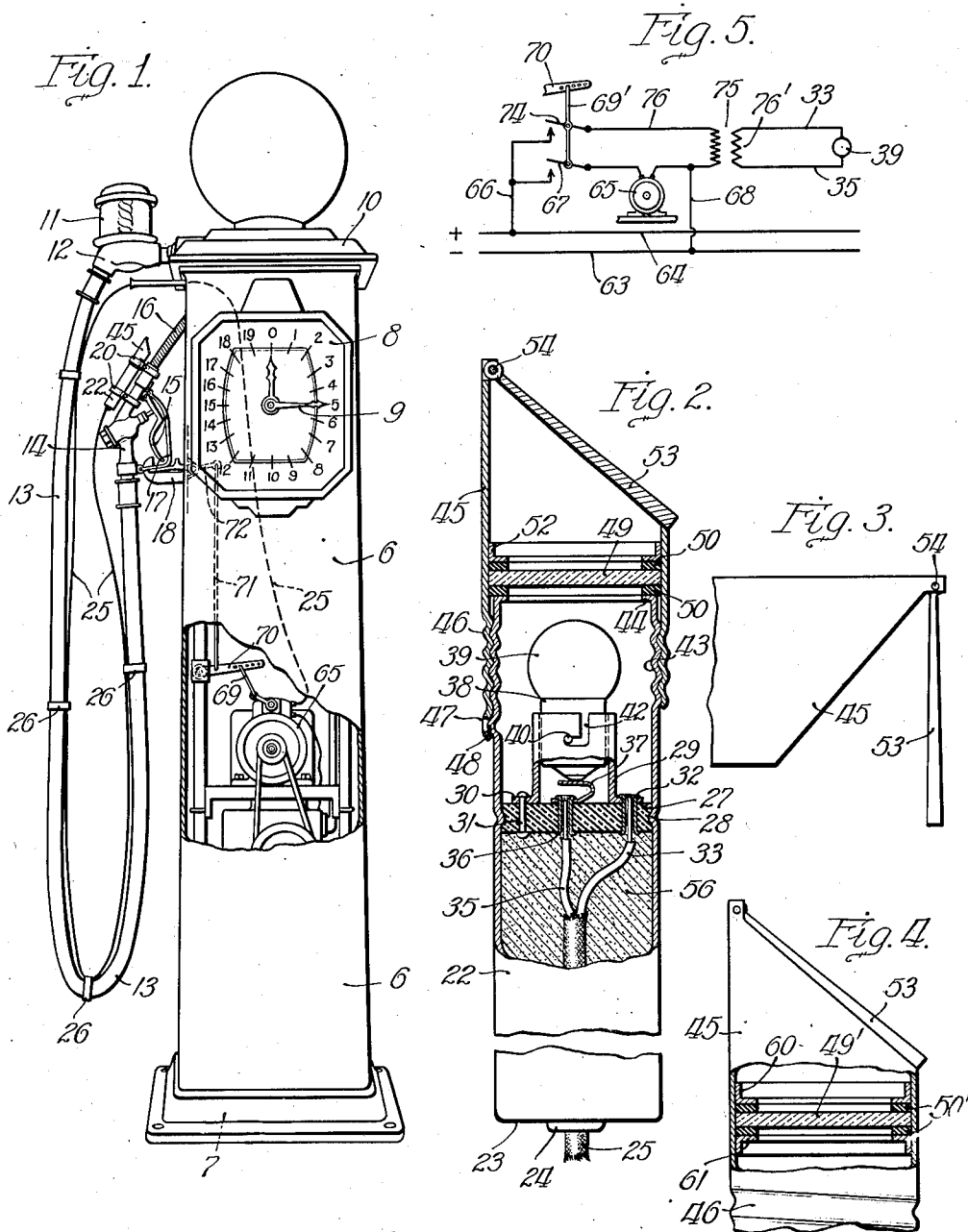
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C. E. BOURRET

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ILLUMINATED HOSE NOZZLE

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Inventor:
Clyde E. Bourret
By: Brown, Jackson, Keltner & Alinger,

Attys.

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ILLUMINATED HOSE NOZZLE

Clyde E. Bourret, Morrisonville, Wis., assignor of
one-half to Roman A. Heilman, Madison, Wis.

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This invention relates to illumination means for hose discharge nozzles, and more particularly is directed to means for illuminating the interior of a tank or the like into which a fluid fuel hose from a dispensing pump or the like discharges.

In filling the fuel tank of automotive vehicles and the like by means of a flexible hose connection from the ordinary type of filling station dispensing unit or fuel pump, the quantity of fuel in the tank is ordinarily not ascertainable by the attendant operating the pump. Because of this, it quite often happens that overflowing of the tank occurs, resulting in loss of fuel, and damage to the luster and finish of the external surface of the tank. Also, it is inherently dangerous to have highly combustible fluid or vapors about the premises, and on the body of the vehicle, due to the possible ignition or explosion of the same.

In the preferred embodiment of the present invention, therefore, I have provided an illuminated hose nozzle which is capable of reflecting light into the tank, whereby the attendant may readily ascertain the level of the fuel within the tank, and thus eliminate, to a large extent, any possibility of having the fuel overflow over the tank surface and surrounding objects. Inasmuch as gasoline vapors are highly inflammable, I have further provided a vapor-proof illuminating structure which is clamped to the nozzle of the gasoline hose, and which is positively sealed against the entrance of any vapor, moisture or the like thereto.

One object of my invention is to provide illuminating means of this type which is directly clamped to the hose nozzle, and which is vapor and explosion-proof.

Another object of the present invention is the provision of illuminating means of this type which is actuated simultaneously with the actuation of the motor for operating the pump, whereby only the switch now in use in the ordinary type of electrically operated pump need be provided. This eliminates separate switching means, reducing the hazards incident thereto, and relieving the attendant of the necessity for operating several control mechanisms.

A further object of the present invention is the provision of a hinged reflector carried by the illuminating means, which is swingable about its pivot in accordance with varying positions of the nozzle, whereby upon insertion of the nozzle into the fuel tank opening the reflector swings into position to direct the light rays into the interior of the tank. A feature of distinct advantage in the present construction is the provision of a

vapor-proof housing for the light bulb which, however, is capable of being readily opened for inspection or replacement of the bulb, but in closed position prevents entrance of moisture, vapors, air or the like into the interior of the bulb housing.

Other objects and advantages of the present invention will appear more fully from the following detailed description, which, taken in connection with the accompanying drawing, will disclose to those skilled in the art the particular construction and operation of a preferred form of my invention.

In the drawing:

Figure 1 is a front elevational view of an ordinary type of electrically operated fluid fuel dispensing unit, such as a filling station pump, provided with the illumination means of the present invention, a portion of the pump structure being broken away to show the operating mechanism therefor;

Figure 2 is a vertical sectional view showing in detail the construction of the illuminating mechanism;

Figure 3 is a fragmentary elevational view showing the illuminating means in one of its operating positions;

Figure 4 is a partial elevational view, broken away to show a modified manner of constructing the vapor-proof housing for the light bulb; and

Figure 5 is a diagrammatic view of the circuit connections for the pump and illuminating means.

Referring now in detail to the drawing, in Figure 1 I have provided a fluid fuel dispensing unit, indicated generally by the reference numeral 6, which is mounted upon a base member 7 suitably supported in position, and which is provided with the dial member 8 having a rotatable arm 9 thereon for indicating the quantity of fuel being delivered. The upper portion of the fuel pump 6, comprising the dome 10, is provided with a visible flow indicator 11 of general type, and is provided with an outlet connection 12 to which the flexible hose 13 is connected. This hose is preferably a metallic lined hose with a braided overlay, and has, at its free end, a control or shut-off valve 14 provided with a trigger operating mechanism 15 and a flexible discharge nozzle tip 16.

The shut-off valve has a trigger guard 17, which is supported, when the pump is not in operation, upon a nozzle hook 18, the nozzle hook having a switch operating lever pivoted with respect thereto, and held in non-operating po-

sition by the trigger guard 17 when the nozzle is placed in position upon the hook.

Secured to the discharge portion of the shut-off valve 14 are a pair of clamp members 20, which members securely grip the nozzle, and in turn are adapted to retain the casing for the illuminating means in position.

The illuminating means is shown in detail in Figure 2, and comprises a housing member 22 having an inwardly extending flanged end 23 provided with a centrally located bushing 24 through which the insulated conductor cable 25 extends. This conductor cable 25 is carried along the hose 13 by means of clamps 26 secured at spaced intervals along the hose, and enters the fuel pump housing 6 adjacent the flow indicator 12.

Disposed within the housing 22, substantially centrally thereof, is an insulating carrier or base member 27, which is held in position by means of the annular crimp 28 formed in the housing 22, the carrier member 27 being formed of fiber or any suitable insulating material.

Mounted upon the carrier 27 is a light socket 29 having a flanged portion 30 secured to the upper surface of the carrier 27 by means of a pin or rivet 31 and the conductor or contact rivet 32, which receives one conductor 33 of the cable 25, and provides for electrical contact between the conductor 33 and the socket 29.

The other conductor 35, carried by the cable 25, is engaged in the contact sleeve 36 secured to and extending through the carrier member 27, the contact sleeve 36 providing a support for the contact spring member 37 which engages the contact stud carried by the base 38 of the light bulb 39. The light bulb is engaged within the socket 29 in the usual manner by means of the guide pins 40 engaging within the bayonet slots 42 formed in the socket 29. The contact spring 37 serves to urge the bulb 39 outwardly of the socket, to retain it in tight engagement with the socket.

The upper portion of the housing 22 is threaded, as indicated at 43, and the upper end thereof is flanged inwardly, as indicated at 44. A cover for the housing 22, comprising a substantially cylindrical member 45, has its inner threaded portion 46 engaging over the threaded portion 43 of the housing 22. The housing 45 is preferably provided with a lip portion 47 which is snapped over a projecting stud button 48 of the housing 22 in order to lock the housing 45 in fixed position with respect to the housing 22.

A lens 49 is provided within the housing 22 and is held in position therein by means of a pair of sealing gaskets 50 disposed on either side thereof, the lower gasket 50 abutting against and being compressed by the flange 44 when the housing 45 is threaded into closed position upon the housing 22. The upper gasket 50 is held in position by means of an annular angle member 52 which is press-fitted into the housing 45 and is then secured in position by spot welding. The lens may be a flat glass disc, or a lens disc for concentrating or diffusing the light rays emitted from bulb 39.

It will be noted that the upper portion of the housing 45 is cut off at an angle, to provide a substantially oval shaped opening, which is closed by means of the hinged reflector member 53 rotatable about the pin 54 carried by the upper end of the housing 45.

The reflector member 53 may be formed of chrome nickel steel or any other material capa-

ble of taking a high polish, whereby the inner surface thereof acts as a reflector for the light rays emitted from the bulb 39. Optionally, a reflecting surface may be formed on any type of weighted member pivoted in like manner. Further, it will be noted that the reflector 53 is of varying cross section, whereby the lower end thereof is weighted to fall into the position shown in Figure 2 when the illuminating means is disposed in the position shown in Figure 1. The lens opening is thus covered to keep dust and the like from entering therein.

After the carrier 27 has been placed in position and the contacts 32 and 36 have been engaged by the corresponding conductors 33 and 35, the lower end of the housing 22 is filled with a suitable insulating compound, such as sealing wax or a similar substance, indicated at 56, to seal effectively the lower end of the housing against the entrance of vapors, moisture or the like. The upper end of the housing is sealed against the entrance of such vapors by the engagement between the threaded portion 43 and the threaded portion 46 of the two housings. Further, by the provision of the sealing gaskets 50, no vapors or moisture can enter the light housing past the lens member 49.

It is thus apparent that I have provided a vapor and explosion proof light housing, wherein the light contacts and all of the electrically conducting portions thereof are sealed against the entrance of vapor, moisture or the like. However, by reason of the threaded engagement the housing can be easily opened for inspection or replacement of the bulb 39.

In Figure 3 I have shown the upper end of the light or illuminating means in one of its operating positions, in which it will be noted that by reason of the weighted reflector 53, the reflector swings into the position shown, to reflect light rays from the bulb 39 into the interior of a tank opening or the like into which the nozzle 16 may be inserted. Regardless of the angle of the nozzle with respect to the fuel opening, the freely swinging reflector 53 will always assume a position such that the light rays will be reflected into the tank or opening. Thus the level of fluid within the tank may be readily ascertained by the attendant at the time that the tank is being filled.

In Figure 4 a modified construction is shown, in which the lens 49' is held in position by means of a pair of sealing gaskets 50' which are compressed thereagainst and against the inner periphery of the housing 45 by means of a pair of annular angle members 60 and 61, which members may be pressed into tight engaging position with the gaskets 50', and held in this position while being spot welded in place. Any other suitable means for securing the members 60 and 61 in fixed position within the housing may be provided. In this construction, the sealing engagement for preventing passage of vapors past the lens 49' into the interior of the light housing is effected independently of the housing 22, so that the upper end of the housing need not be flanged as shown at 44 in Figure 2.

Considering now in detail the manner of connecting the light circuit for simultaneous operation with the operating circuit for the dispensing unit, in Figure 5 I have shown the conductors 63 and 64 leading from any suitable source of electrical current. An electric motor, shown at 65 in Figures 1 and 5, is connected through conductor 66 and switch member 67 to the line conductor 64. The other side of the motor 65 is

connected through conductor 68 to line conductor 63, so that upon closing of switch 67 a circuit is completed through the actuating motor.

The starting switch 67 is ordinarily incorporated in the end wall of the motor, as shown in Figure 1, and is actuated by a link connection 69 to a pivoted level member 70, which is connected through link 71 to the pivoted switch operating arm 72 engaged by the trigger guard 17. Upon removal of the hose from the hook 18, the trigger guard releases the arm 72, which allows the arm 70 to drop, and thus closes the switch 67.

A second switch, indicated at 74, is connected to operate simultaneously with switch 67, when the illumination means of the present invention is incorporated in the motor circuit, the link member 69' (Figure 5) corresponding to the link member 69 of Figure 1.

Thus, upon removal of the trigger guard from the pivoted lever 72, the switches 67 and 74 are simultaneously closed, and the actuating motor 65 is operated to deliver fuel to the outlet 12 of the dispensing unit. At the same time, the transformer 75 is energized through conductor 76, connected through switch 74 to conductor 66, which in turn is connected to the line conductor 64, the other side of the transformer circuit being connected through conductor 68 to line conductor 63. The secondary 76' of the transformer 75 is connected through the conductors 33 and 35 to the light bulb 39 in the manner described in connection with Figures 1 and 2. Thus, upon removal of the hose nozzle from the hook, the actuating motor 65 is placed in operation, and at the same time the light bulb 39 is energized through the secondary of the transformer 75, the two circuits being simultaneously closed by switches 67 and 74. Thus, during all times that the trigger guard is not engaged over the hook 18 the light will be actuated, and insertion of the nozzle 16 into a fuel tank opening will cause the reflector 53 to swing away from the housing 45, whereby light rays emitted from the bulb 39 will be directed into the fuel tank opening to enable the attendant to ascertain readily the level of fluid in the fuel tank. It will thus be apparent that no additional switching equipment need be provided in order to actuate the illumination means of the present invention.

It is apparent that various changes and modifications may be made in certain details of construction herein disclosed, and I do not intend to be limited to the exact details shown and described, except as limited by the scope and spirit of the appended claims.

I claim:

1. Illumination means for the nozzle of a discharge hose for a fluid fuel dispensing unit comprising a first housing, a light socket secured therein, a bulb member mounted in said socket, electrical conductors connected to said socket, sealing means in said housing preventing entrance of moisture and vapors along said conductors, a second housing secured in sealing engagement over said first housing and having lens means sealed therein, and a weighted closure member pivoted to said second housing and having a light reflecting surface, said closure member being freely swingable out of closing position upon tilting of said nozzle to direct light rays along said nozzle.

2. The combination with a fluid fuel dispensing unit including a delivery hose having a nozzle provided with a shut-off valve, of illumination means clamped to said nozzle and comprising a

moisture and vapor proof sealed housing containing a light emitting member, a lens for said member, and a freely swingable weighted reflector pivoted to the end of said housing and forming a dust-proof closure therefor when not in use, said reflector swinging into position to reflect light rays from said member in the use of said nozzle.

3. In a fluid fuel dispensing unit having an electrically operated pump, a hook support, a delivery hose for said unit having a shut-off valve at the free end thereof and an extending nozzle portion, a guard member for said valve adapted to be engaged on said hook support, circuit closing means for actuating said pump operable upon removal of said guard from said support, a transformer connected in shunt in said circuit and energized by operation of said circuit closing means, a light member, means connecting said light member to the secondary of said transformer, a moisture and vapor proof housing clamped to said nozzle portion and enclosing said light member, and light reflecting means freely swingable with respect to said housing for reflecting light rays from said light member upon tilting of said nozzle.

4. Illumination means adapted to be secured to a discharge nozzle of a gasoline dispensing unit comprising a cylindrical cup-shaped housing, a carrier member having a light socket thereon secured in said housing and spaced from the base thereof, a light member in said socket, conductors leading through the base of said housing and connected to said socket, insulating and sealing means disposed within said housing between said carrier member and said base and preventing entrance of vapor therein, a second housing threaded over the upper end of said first housing, lens means sealed within the second housing and providing a vapor proof chamber about said light member, said second housing having its upper end cut off at an angle, a weighted reflector member hinged to the upper end of said second housing and freely swingable with respect thereto, and means for energizing said conductors simultaneously with the operation of said dispensing unit.

5. Illuminating means for use with fluid fuel delivery nozzles comprising a vapor-proof casing having a light member therein, a transparent closure member in one end of said casing, and a reflector freely hinged to said end of said casing and positionable to reflect light rays from said member upon tilting movement of said casing.

6. Illuminating means for use with fluid fuel delivery nozzles comprising an elongated vapor-proof casing having a light member disposed therein, transparent closure means in said casing adjacent one end thereof, and a reflector hinged to said end of said casing and freely swingable into position to reflect light rays downwardly from said light member irrespective of the angular tilting of said casing.

7. Illumination means for use with delivery nozzles for liquids comprising a vapor-proof casing having a light member therein, transparent closure means in said casing adjacent one end thereof, said end of said casing being cut off at an angle, and reflector means hinged to the projecting portion of said end of said casing and freely swingable into position upon tilting of said casing to reflect light rays from said light member downwardly.

8. Illumination means for use with a fluid delivery nozzle comprising a casing having a light

- member disposed therein, transparent closure means for one end of said casing in alignment with said light member, the end of said casing beyond said closure means being cut at an angle to define an oval-shaped opening, and a reflector pivoted to the extending portion of said end and swingable into a vertical position upon tilting of said casing to reflect light rays from said member downwardly.
9. Illuminating means for use with fluid fuel delivery nozzles comprising a vapor-proof casing having a light member therein, a transparent closure member in one end of said casing, and a reflector hinged to said casing and freely swingable into a position to reflect light rays from said light member at an angle with respect to the axis of said casing upon tilting of said casing out of a horizontal position.
10. In combination, a fluid fuel nozzle for delivering fuel to a vehicle fuel tank, a light member carried by said nozzle, and a freely swingable reflector carried by said light member and adapted to be automatically positionable to direct light rays from said light member downwardly into said fuel tank opening upon tilting of said nozzle.
11. The combination with a fluid fuel dispensing unit including a delivery hose having a shut-off valve at the end of said hose, and a delivery nozzle connected to the outlet side of said valve, of a moisture and vapor-proof housing clamped to said housing, a light bulb member sealed within said housing, means for energizing said light bulb member, and means pivoted to one end of said housing and positionable upon tilting of said nozzle to direct light rays emanating from said housing along said nozzle.
12. In combination, a fluid fuel delivery unit having a nozzle, vapor-proof illuminating means associated with said nozzle, and a reflector hinged to said illuminating means and positionable by tilting movement of said nozzle to direct light rays emanating from said illuminating means along said nozzle.
13. The combination with a vapor-proof housing having a light bulb sealed therein and having a transparent closure member in one end thereof, of a reflector pivoted to said housing exteriorly of said closure member and automatically positionable by tilting of said housing to vary the direction of the light rays emanating through said closure member.
14. In combination, a fluid fuel nozzle for delivering fuel into a vehicle fuel tank, illuminating means associated with said nozzle, and a reflector carried by said illuminating means and automatically positionable, by tilting of said nozzle, to direct light rays from said illuminating means downwardly into the opening in the fuel tank.

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