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Yamawaki et al.

[11] **3,797,703**

[45] **Mar. 19, 1974**

[54] **FUEL SUPPLYING APPARATUS**

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[73] Assignee: **Tokico Ltd.**, Kawasaki, Japan

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[30] **Foreign Application Priority Data**

Feb. 17, 1972 Japan 47/16691

[52] **U.S. Cl.** **222/26**, 222/32, 222/74, 222/538, 137/355.18

[51] **Int. Cl.** **B67d 5/30**

[58] **Field of Search** 222/26, 28, 32, 74, 76, 222/538; 137/355.18, 355.19, 355.2, 355.21, 355.23, 355.26, 355.28; 73/198

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Assistant Examiner—Frederick R. Handren
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[57] **ABSTRACT**

A fuel supplying apparatus comprises a fuel supplying hose pipe adapted to be extended downward from a take-up reel disposed above a fueling service area for fueling vehicles, a first indicator provided on the hose pipe, a second indicator installed on a structure such as a building part, means for measuring the quantity of fuel supplied and transmitting the measured result as an electrical signal to the first and second indicators, and means for mechanically zero-resetting the indication of the first indicator and electrically zero-resetting the indication of the second indicator.

6 Claims, 11 Drawing Figures

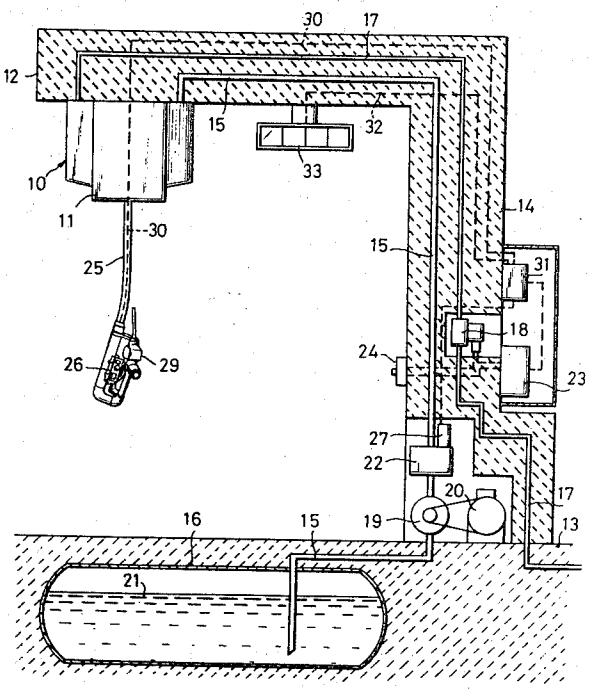
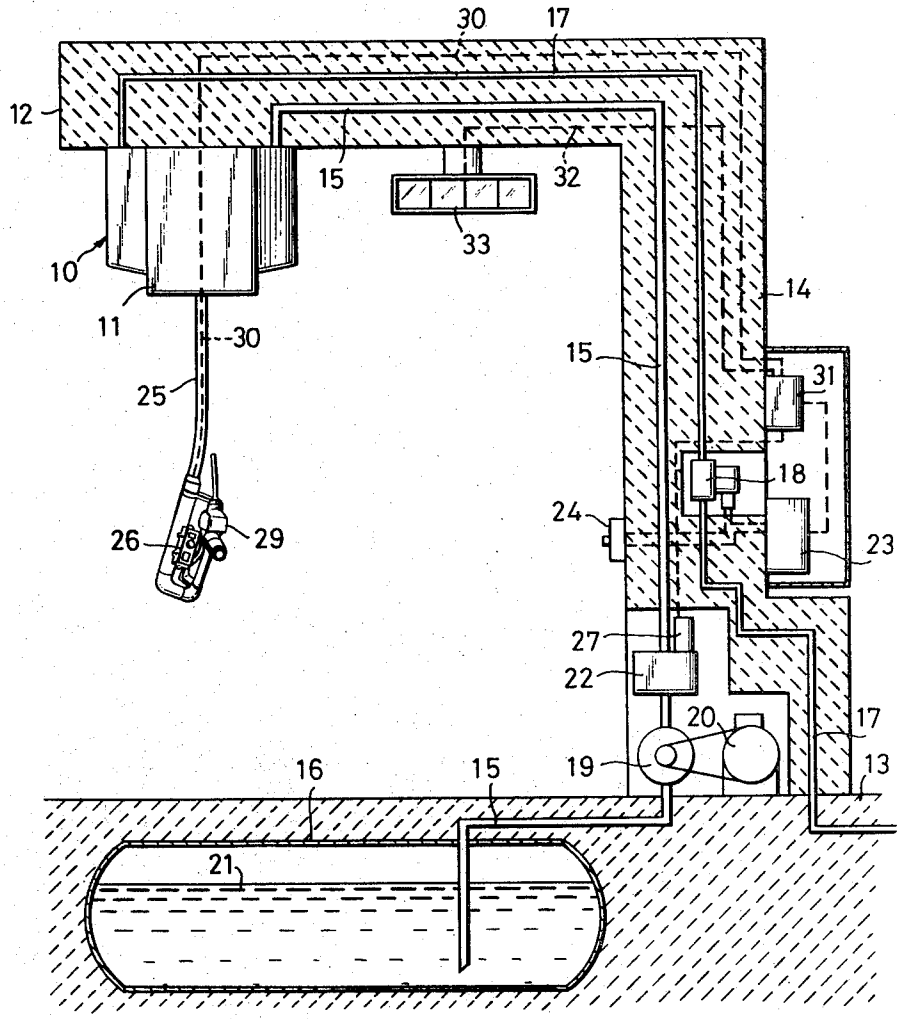


FIG. 1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17
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32
33
10
11
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14
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24
23
26
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27
22
20
17
16
15
19
13
21

FIG. 2

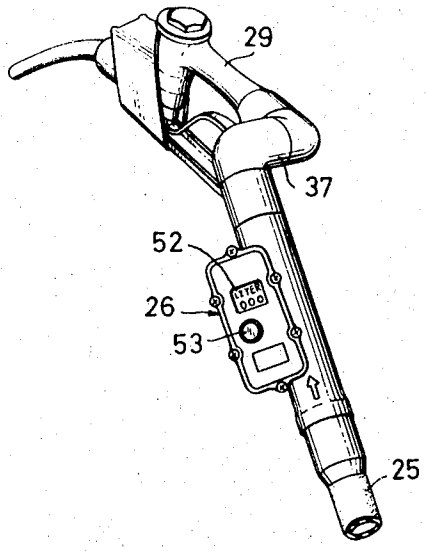


FIG. 3

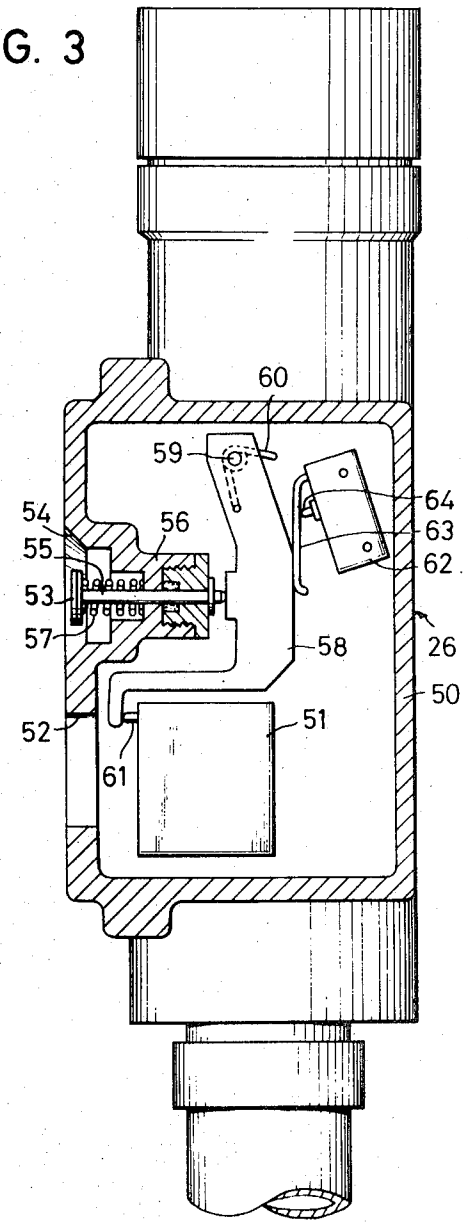
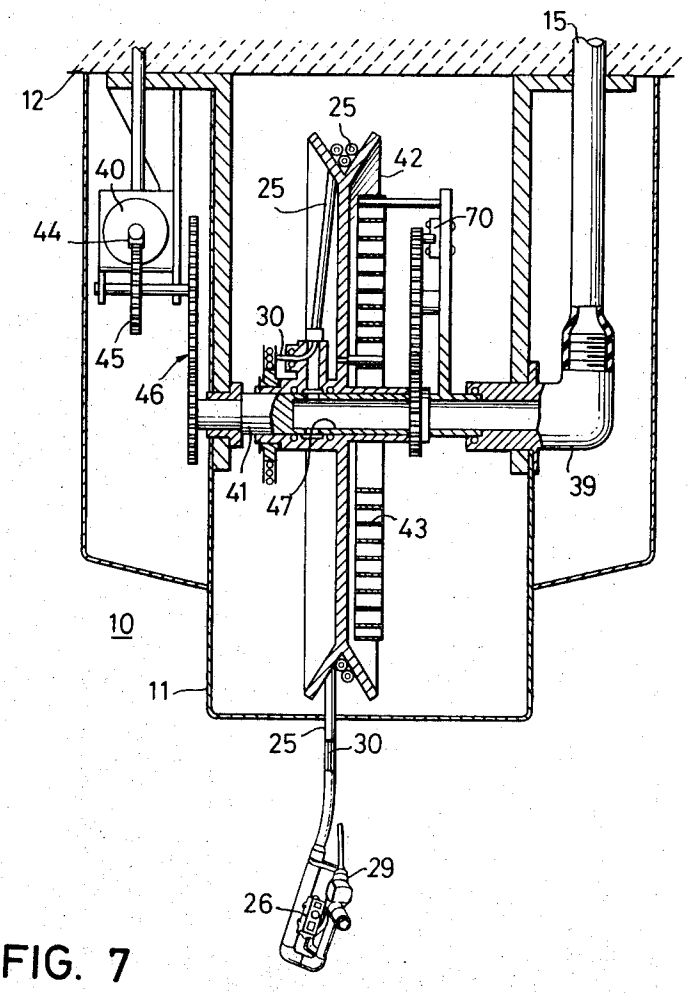


FIG. 4


15
12
25
42
40
25
70
44
30
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46
41
47
43
39
10
11
25
30
29
26

FIG. 7

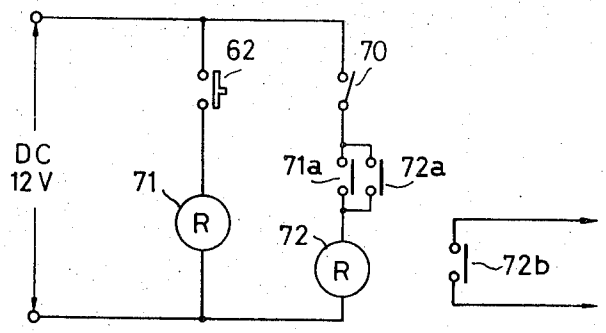

62
70
DC
12 V
71
71a
72a
R
72
R
72b

FIG. 5A

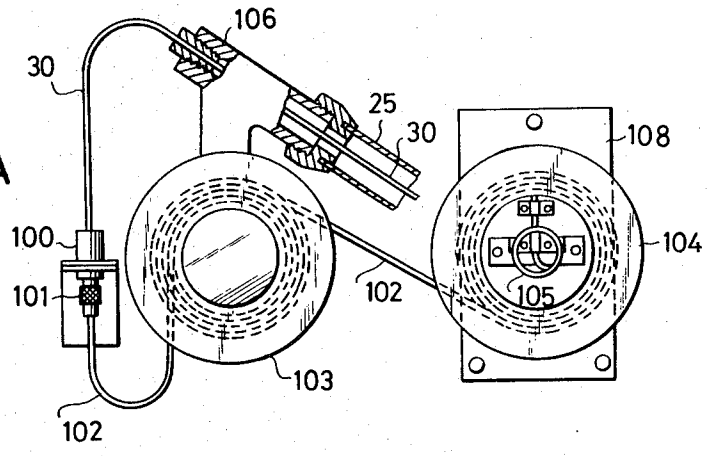


FIG. 5B

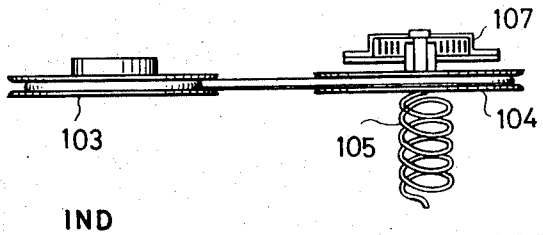


FIG. 6

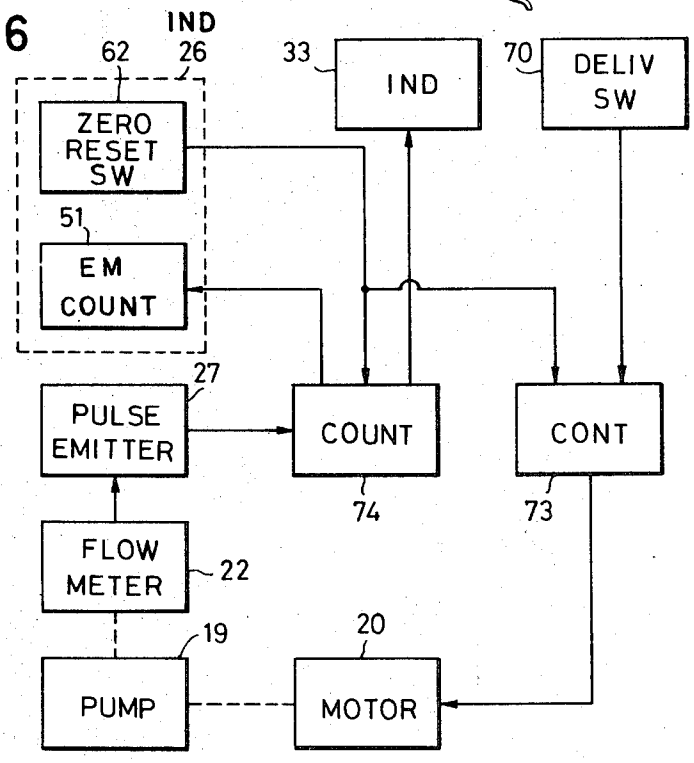


FIG. 8B

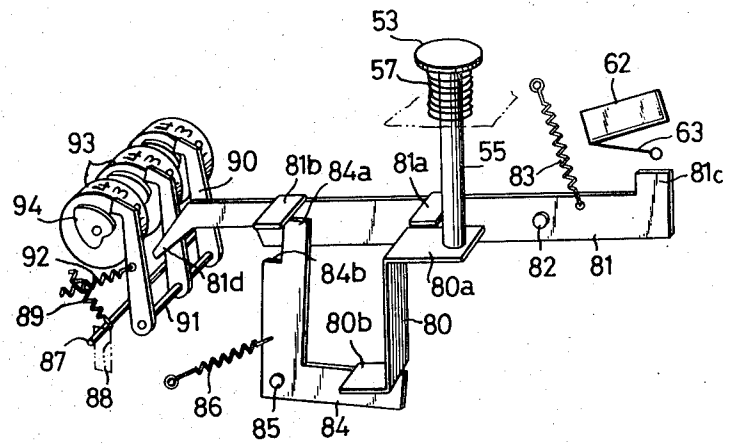


FIG. 8C

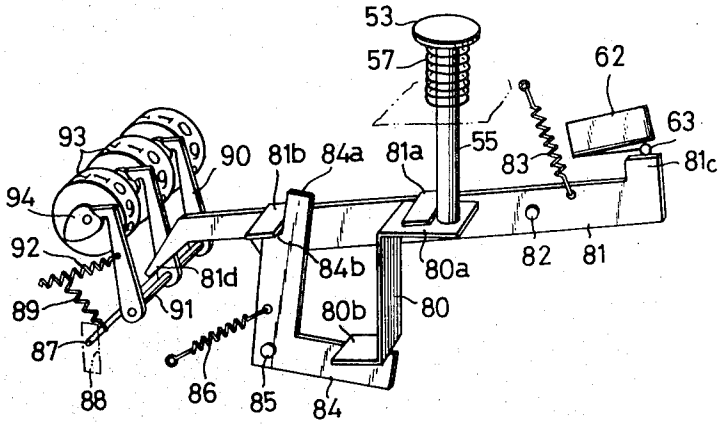
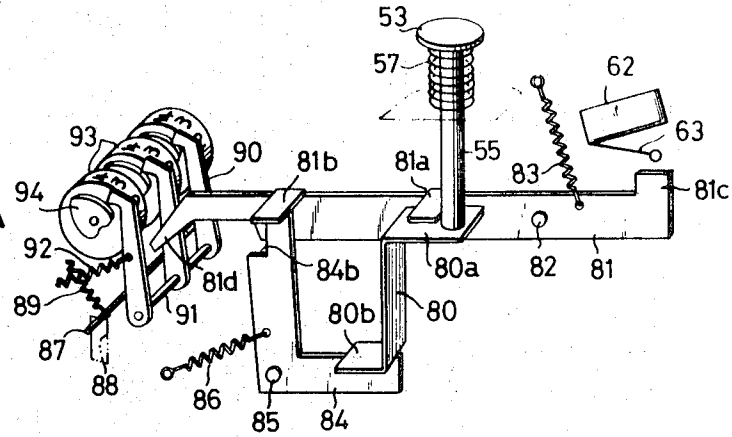


FIG. 8A



FUEL SUPPLYING APPARATUS

BACKGROUND OF THE INVENTION

This invention relates generally to an apparatus for supplying or dispensing fluid fuels and more particularly to an apparatus of the type wherein a fueling hose with a dispensing nozzle at its one end is pulled down from a delivery unit of overhead type installed on an erected structure above a vehicle such as an automobile and is then used to fuel the vehicle. More specifically, the invention relates to a fuel supplying apparatus in a system of the type referred to above wherein indicators are respectively provided at a suitable position on the erected structure and near the dispensing nozzle, and there are provided means whereby the zero-resetting of the indicator near the fueling nozzle causes simultaneous zero-resetting of the indicator provided on the erected structure.

Heretofore, there have been fuel supplying apparatuses of the stationary type comprising a necessary number of so-called gasoline pumps or stand posts each provided in built in state with an electric motor, a pump, a flowmeter, and an indicating meter or indicator and installed on "islands" constructed above ground within the fueling service area of a so-called fuel filling station or service station. In a known fueling system of this type, the entire area of the service area cannot be used effectively for fueling vehicles such as automobiles, for example. Another problem is that there are instances of accidental contact or collision of automobiles driven into the service area with the gasoline pumps.

As one measure for solving these problems, a system wherein a fuel supplying pipe with a nozzle is provided overhead in a manner permitting lowering and raising thereof on a ceiling or beam extending horizontally from a wall or column of a building structure and is lowered to a required fueling height at the time of fueling has been proposed. In this system, in general, a flowmeter is provided in a stationary pipe line passing through the wall or column from an underground storage vessel to the above mentioned fuel-supplying pipe, and an indicating device adapted to display digitally on a large-size illuminated indicator a fuel quantity in accordance with a signal from this flowmeter is used, the indicator being installed at a high, easily visible position such as the ceiling or beam.

With this indicating device, the service station operator must perform the work of supplying the required fuel quantity as he looks away and up from the dispensing nozzle he is holding to read the indicator. In an extremely difficult condition depending on the direction of parking of the automobile to be fueled, the operator must carry out the work of supplying the fuel until the quantity thereof ordered by the customer is reached as the operator turns around and gazes upward toward the indicator. Consequently, it has been extremely difficult for the operator to supply accurately the ordered quantity of fuel. Furthermore, it has been difficult in many cases for the driver seated in his seat in the automobile to read the indicator.

The above described problems have been solved in accordance with the present invention by providing an indicator on the fuel-supplying pipe, which is installed on the ceiling or beam in a lowerable and raisable manner as described above, in a position near the dispensing nozzle.

SUMMARY OF THE INVENTION

It is a prime object of the present invention to provide a fuel supplying apparatus of the type referred to above wherein a first indicator provided at an appropriate position on the lowerable and raisable fuel-supplying pipe and a second indicator provided on a part such as the ceiling or wall of an erected structure operate in response to measurement signals from a flowmeter provided in the structure to measure quantities of supplied fuel to indicate these quantities, and, moreover, the zero-resetting of the first and second indicators are carried out simultaneously.

Another object of the invention is to provide a fuel supplying apparatus of the type referred to above wherein, with the lowerable and raisable fuel-supplying pipe in a state wherein its nozzle has been lowered from a waiting position at a height where it is clear of the paths of vehicle and yet can be reached by hand of an operator to a fuel supplying position where it can fill the fuel tank of a vehicle, the fuel supplying operation can be carried out consecutively any number of times merely by carrying out zero-resetting of the above mentioned first indicator after each completion of fueling operation or prior to the start of each succeeding fueling operation.

Still another object of the invention is to provide a fuel supplying apparatus as stated above wherein a wire for transmitting measurement signals and for transmitting zero-resetting signals is installed through the lowerable and raisable fuel-supplying pipe, and there is provided a take-up device for taking up the wire in a positive manner without development of twist in the wire when the fuel-supplying pipe is wound up on a hose reel.

A further object of the invention is to provide a fuel supplying apparatus as set forth above wherein there is provided a zero-resetting device capable of positively carrying out the above mentioned zero-resetting operation with a single pushing operation.

Other objects and further features of the invention will be apparent from the following detailed description with respect to the specific preferred embodiment of the invention when read in conjunction with the accompanying drawings, throughout which like and equivalent parts are designated by like reference numerals.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG. 1 is a side elevation, partly in vertical section, showing the essential organization of one embodiment of the fuel supplying apparatus according to the present invention;

FIG. 2 is a perspective view of dispensing nozzle and a first indicator provided in the vicinity of the nozzle;

FIG. 3 is a side view, partly in longitudinal section, showing the first indicator provided in the vicinity of the nozzle;

FIG. 4 is an elevation, partly in vertical section, of a delivery unit;

FIGS. 5A and 5B are a side elevation and a plan view, respectively, showing a take-up device for a signal transmitting wire for transmitting signals;

FIG. 6 is a schematic block diagram of one embodiment of a signal transmitting system in the fuel supplying apparatus of the invention;

fig. 7 is a circuit diagram of one embodiment of a control device; and

FIGS. 8A, 8B, and 8C are diagrammatic perspective views showing another embodiment of a zero-resetting device according to the invention and respectively indicating different operational states.

DETAILED DESCRIPTION

In the embodiment of a fuel supplying apparatus according to the invention as shown in FIG. 1, a housing 11 of a delivery unit 10 of a vertical section as shown in FIG. 4 is secured to the lower surface of a ceiling or beam 12. The ceiling 12 extends horizontally from the upper part of a pedestal pillar or wall structure 14 erected upward from the ground level 13 and is disposed above a service area for fueling vehicles driven thereinto. Moreover, the clearance height of this ceiling 12 is such that it will not obstruct the passage of all types of vehicles loaded with cargo.

A wall of an office building or shop may be used for the wall structure or pillar 14, or the structure 14 may be a separately built structure. The built structure having a structure built up of the ceiling or beam 12 and the wall structure or pillar 14 or an equivalent structure is hereinafter referred to simply as the "erected structure." A stationary fuel conducting pipe 15 is installed along a path from the interior of a fuel reservoir tank 16 installed underground in a buried state, through the wall structure 14 and the interior of the ceiling 12, to a stationary bearing pipe fitting 39 within the delivery unit 10 shown in FIG. 4. An air pipe 17 connected at its one end to a compressed air source (not shown) is also passed through the wall structure 14, at an intermediate point in which, this air pipe 17 passes through a three-way electromagnetic (solenoid) valve 18, and through the ceiling 12 and is connected to the cylinder of air motor 40 within the delivery unit 10. A suction pump 19 is provided in the pipe line 15 at an intermediate point thereof and, driven by an electric motor 20, draws fuel 21 from the interior of the reservoir tank 16. The above mentioned solenoid valve 18 operates in response to the switching on and off of a power supply 23 by a switch 24.

The fuel 21 which has been thus drawn up by the pump 19 is pumped through a flowmeter 22 and the stationary pipe line 15 to the interior of the delivery unit 10. Within the delivery unit 10, there is installed a hose pipe 25 made of an oil-resistant and flexible material and wound on a hose reel 42 of Y-shape in section and rotatably supported on a shaft 41. Thus, the free end of this hose pipe is suspended from the hose reel and can be lowered and raised. The hose pipe 25 is provided at its free end with an indicator 26 having a zero-resetting or clearing device described in detail hereinafter and having at its extreme end a fuel dispensing nozzle 29.

A pulse emitter 27 operates in response to the flow measurement of the flowmeter 22 to emit measurement pulse signals which pass through a special power supply unit 31 operated by the power supply 23 and are transmitted by wires 30 and 32 extending through the erected structure. The wire 30 further passes through the delivery unit 10 and, extending through the hose pipe 25, reaches the electromagnetic counter of the indicator 26. The measurement pulses transmitted through the wire 30 are counted by the electromagnetic counter, and the flow quantity value is indicated.

Furthermore, the wire 32 extends to an indicator 33, which is of relatively large type and is mounted in an easily readable position such as the lower surface of the ceiling 12 or the upper part of the side surface of the wall structure 14. This indicator 33 counts the measurement pulses transmitted through the wire 32 and indicates the same flow quantity value as the indicated value of the above mentioned indicator 26.

The above mentioned special power supply unit 31 is provided with a current-limiting resistance limiting the current to a small value of the order of 12V and a number of micro-amperes, for example, so that, even if a short circuit occurs at an intermediate point in the wire 30 or 32 and a spark is generated, for example, the energy of this spark will be less than the minimum ignition energy of an atmosphere of the fuel vapour.

When fueling is not being carried out, the hose pipe 25 is wound around the hose reel 42, and the nozzle 29 is in a raised position near the housing 11, in which position it is clear of vehicles that may pass below. Then, after a vehicle to be fueled enters the service area and parks, the button of the switch 24 is pressed, whereupon the compressed air within the air motor 40 passes through the pipe 17 and is discharged from the electromagnetic valve 18, and the nozzle 29 descends to a waiting or ready position at a height of approximately 1.8 meters above the ground level under the weight of the unit and hose pipe and the force of a spring (not shown) within the cylinder of the air motor 40.

Thereafter, the operator grasps and pulls down on the nozzle 29, whereupon the hose pipe 25 is unwound still further as the reel 42 rotates against the force of the spring 43, thereby energizing this spring, and the nozzle 29 is thus moved further downward from the waiting position to a fuel supplying position suitable for fueling the parked vehicle.

Then, when the nozzle 29 is thus pulled downwrd to the fueling position, and the zero-resetting (clearing) of the indicator 26 is accomplished, the motor 20 is started, and the pump 19 operates, whereby the fuel is supplied through the pipe 15, the hollow interior 47 of the shaft 41, and the hose pipe 25. Then, when the nozzle 29 is disengaged from the stop 36, inserted into the inlet of the fuel tank of the vehicle, and operated to supply the fuel, the indicator 26 indicates the quantity of fuel which has passed through the flowmeter 22. At the same time, the indicator 33 also indicates this quantity.

Upon completion of the fueling, the nozzle 29 is released, whereupon the delivery unit 10 takes up the hose pipe 25 by the force of the spring 43 to the above mentioned waiting position. Then, when the hose pipe 25 is to be taken up further, the button of the switch 24 is again pushed to operate the electromagnetic valve 18 to change over flowpath passages, whereupon the compressed air of the compressed-air source passes through the electromagnetic valve 18 and pipe 17 and is supplied to the air motor 40. When this air motor 40 thus starts to operate, the sliding movement of its piston 44 is converted by the rack and pinion mechanism 45 into a rotational movement, which is transmitted through the gear mechanism 46 to the shaft 41 and the reel 42. The hose pipe 25 is thereby taken up by the

reel 42, and the nozzle 29 is hoisted to a position near the housing 11 of the delivery unit 10.

As shown in FIGS. 2 and 3, the indicator 26 is fixed at its one end to the end of the hose pipe 25, and the nozzle 29 is connected by way of a swivel fitting 37 to its other end. The indicator 26 has a casing 50 provided with a window 52 for displaying indication numerals of an electromagnetic counter 51 and a recessed opening 54 for insertion thereinto of a finger for pressing a push button 53 for zero-resetting.

The push button 53 has a push stem 55, which can slide axially in the side-to-side direction as viewed in FIG. 3, guided by a guide 56. When the push button 53 is pushed inward counter to the force of spring 57, the stem 55 slides to the right as viewed in FIG. 3. A lever 58 is pivoted at its one end by a pivot pin 59 and is urged to rotate in the clockwise direction, as viewed in FIG. 3 by a spring 60.

The electromagnetic counter 51 counts the pulse signal transmitted through the interior of the hose pipe 25 by the wire 30 and indicates the fuel quantity. This counter 51 has a zero-resetting button 61, which is pressed by the lever 58 when it rotates in the counterclockwise direction. When the lever rotates in the counterclockwise direction, it also presses a lever 63, which in turn presses a button 64 of a microswitch 62 for generating zero-resetting signals.

The apparatus of the above described organization is controlled and operates in the manner described below in conjunction with FIGS. 6 and 7 illustrating an electrical system.

At the time when fueling is to be started, the nozzle 29 is pulled and moved downward from the aforementioned waiting position to the fueling position. As the hose reel 42 rotates in the direction for unwinding the hose pipe 25, a delivery switch 70 is closed. Then, with the apparatus in this state, the push button 53 for zero-resetting of the indicator 26 is pushed, the lever 58 is pushed by the stem 55 and rotates in the counterclockwise direction. The lever 58 thus rotating presses the button 61 of the electromagnetic counter 51, whereby the displayed indication is cleared or returned to zero. Simultaneously, the lever 58 thus rotating closes the microswitch 62.

The closing of the microswitch 62 causes a zero-resetting signal to be sent out from the indicator 26 as indicated in FIG. 6, whereby zero-resetting of the indicator 33 is accomplished. As another result of the closing of the microswitch 62, a current is supplied to a relay 71 as shown in FIG. 7, which relay 71 thereby operates to close its relay switch 71*a*. Since the switch 70 is already closed at this time, a current flows through the relay 72, which thereupon operates to close its relay switches 72*a* and 72*b*. As a result, even when the push button 53 is immediately released after being pressed, the relay 72 is self-held by the relay switch 72*a* and continues its operative state. The closure of the relay switch 72*b* causes a motor starting signal to be sent from a control device 73 to the motor 20, which thereupon starts to rotate.

Then, when the trigger lever of the nozzle 29 is pulled to open the nozzle valve, the fule 21 drawn up by the pump 19 driven by the motor 20 passes through the flowmeter 22, the stationary pipe 15, and the hose pipe 25 and is supplied into the fuel tank of the vehicle. At this time, the pulse emitter 27 operates in accordance with the flow quantity measured by the flowmeter 22 to emit a measurement pulse signal, which is supplied by way of a counting device 74 to the electromagnetic counter 51 of the indicator 26 and to the indicator 33, and the quantity of the fuel supplied is indicated by each of these indicators.

After completion of the fueling, when the nozzle 29 is moved upward from the fueling position to the waiting position, the switch 70, operating interrelatedly with the rotation of the hose reel 42, is opened. Accordingly, the relay 72 assumes its inoperative state, and the rotation of the motor 20 stops.

When the nozzle 29 is left in its state of having been pulled down to the fueling position, the switch 70 is in its closed state. Consequently, the relay 72 is maintained in its operative state, and the motor 20 continues to rotate to maintain the state wherein fueling is possible. Accordingly, when the nozzle 29 is in the state wherein it has been pulled down to the fueling position, the motor 20 continues to rotate, and after completion of fueling of one vehicle, fueling of the succeeding vehicle can be immediately continued by merely pressing the zero-resetting push button 53 to clear the indication of the indicators 26 and 33.

One embodiment of a wire take-up device in the delivery unit 10 will now be described with reference to FIGS. 5A and 5B. The wire 30 extending through the hose pipe 25 is led at one end thereof out of the hose through a sealing packing 106 and, by way of connectors 100 and 101, is connected to one end of a conductor wire 102. The wire 102 is wound on a first wire reel 103 and is further wound around a second wire reel 104 in a winding direction opposite to that of the first reel 103. To other end of the conductor wire 102 is connected to a spiral cable 105 at the innermost part of the reel 104. A spring 107 imparts a torque to the reel 104 in the direction for taking up the wire 102, which is thereby prevented from becoming slack.

The above described hose 25, wire 30, packing 106, connectors 100 and 101, the first wire reel 103, and related parts rotate integrally with the hose reel 42. The second wire reel 104 is rotatably mounted on a stationary plate 108.

When the hose pipe 25 is pulled to lower the nozzle 29, the hose reel 42 rotates in the direction for unwinding the hose pipe 25, and the reel 103 and other parts named above also rotate in the counterclockwise direction. The rotation of the reel 103 causes the wire 102 between the reels 103 and 104 to be wound on the reel 103, and, furthermore, the reel 104 is rotated by that amount of winding in the clockwise direction, whereby the conductor wire 102 is paid out. The clockwise rotation of the reel 104 at this time causes the spring 107 to be wound and thereby to store energy. On one hand, the innermost terminal of the wire 102 also rotates as the reel 104 rotates, but twisting of the spiral cable 105 due thereto is absorbed by the spiral cable 105 itself.

Then, when the nozzle 29 is pulled upward as described above, the hose reel 42, the first wire reel 103, and related parts rotate in the clockwise direction. Consequently, the wire 102 is unwound from the reel 103, while the reel 104 is rotated in the counterclockwise direction by the force of the spring 107, which has been energized as described above, and thereby winds up the wire 102 which has been unwound as mentioned above thereby to prevent slackening thereof. During this operational step, the above mentioned twist absorbed by the spiral cable 105 is restored to its original

state. Therefore, it is possible to accomplish transmission of signals in a positive manner without adverse results such as twisting and breakage of the wire **30** taken up together with the hose pipe **25** on the hose reel **42**, the wire for supplying signals thereto, and other wires.

Another embodiment of the zero-resetting mechanism of the indicator will now be described with reference to FIGS. **8A**, **8B**, and **8C**.

A pushing member **80** is fixed to the inner end of the stem **55** of the push button **53**. A lever **81** is pivoted by a pivot pin **82** and is urged to rotate in the counterclockwise direction, as viewed in FIGS. **8A**, **8B**, and **8C**, by a spring **83**. This lever **81** has a bent flange part **81***a*, which is engaged by a bent flange part **80***a* of the member **80** urged upward by the force of the spring **57** and is in the position indicated in FIG. **8A**. A bell crank-shaped lever **84** is pivoted at its bent part by a pivot pin **85**, and its two free ends are respectively in contact with bent flange parts **80***b* and **81***b* of the member **80** and lever **81**. This lever **84** is urged to rotate in the counterclockwise direction. One end **81***c* of the lever **81** is in a position to contact the actuating lever **63** of the microswitch **62**.

A bar **87** is passed at one end thereof through a guide hole **88** formed in a base structure (not shown) and is urged upward by the force of a spring **89**. A zero-resetting lever **90** is pivotally supported at one end thereof by a pivot shaft **91** and is urged to rotate by a spring **92** but, being engaged at its side surface by the above mentioned bar **87**, is held in the position indicated in FIG. **8A**. The distal end of the zero-resetting lever **90** has a shape enabling it to strike a heart-shaped cam **94** of an index wheel **93** of the electromagnetic counter.

In the operation of the zero-resetting mechanism of the above described organization, when the push button **53** is pressed against the force of the spring **57**, the lever **84** is pressed by the bent flange part **80***b* of the member **80** and thereby to rotate clockwise. At this time, while the bent flange part **81***a* of the lever **81** is disengaged from the bent flange part **80***a* of the member **80**, the bent flange part **81***b* of the lever **81** remains in a state wherein it is engaged by the extreme end **84***a* of the lever **84** as indicated in FIG. **8B**.

Then, as the push button **53** is pressed further, and the lever **84** rotates clockwise, the bent flange part **81***b* of the lever **81** is released from engagement by the extreme end **84***a* of the lever **84**. Since the lever **81** is continually urged to rotate by the spring **83**, its bent flange part **81***b* drops into a cutout part **84***b* of the lever **84**, and the lever **81** rotates counterclockwise to assume the state indicated in FIG. **8C**. This rotation of the lever **81** from its position indicated in FIG. **8B** to that indicated in FIG. **8C** takes place abruptly, and the displacement of the lever between these two positions can be set at will by suitably selecting the depth of the cutout part **84***b*.

Then, when the lever **81** rotates as described above to the position indicated in FIG. **8C**, its distal end **81***d* depresses the bar **87** downward against the force of the spring **89**. Consequently, the zero-resetting lever **90** is released from engagement by the bar **87** and is rotated counterclockwise by the force of the spring **92**. The end of this lever **90** thereby strikes against the heart-shaped cam **94** and, rotating the index wheel **93** to the zero-indicating position, accomplishes zero-resetting.

As a further result of the above mentioned rotation of the lever **81**, its end **81***c* presses against the actuating lever **63** of the microswitch **62** thereby to close this microswitch.

After the above described zero-resetting operation, the push button **53** is released, whereupon this push button **53** is raised by the force of the spring **57**, and the bent flange part **80***a* of the member **80** raises the bent flange part **81***a* of the lever **81**. Thus, all parts of the mechanism are again returned to their states indicated in FIG. **8A**.

In the embodiment decribed hereinbefore in conjunction with FIG. **3**, the zero-resetting mechanism is so organized that the button **61** of the electromagnetic counter **51** is pressed by the lever **58** rotating in a continuous manner as it is pushed by the push button **53**. For this reason, there may be instances wherein, depending on how the push button **53** is pressed, the electromagnetic counter **51** is not reset to zero although the microswitch **62** is closed. That is, while an instantaneous and mechanical force is required to a certain degree in the zero-resetting of the counter **51**, in the method of applying a zero-returning force continuously as described above, the operation tends to become unreliable. In such a case, it has been necessary to press the push button **53** again in an abrupt manner.

In contrast, in the zero-resetting mechanism of the instant embodiment, when the push button **53** is pressed to a certain extent, the lever **81** rotates instantaneously and abruptly. As a result, the zero-resetting of the index wheel **90** and the closing of the microswitch **62** are simultaneously carried out in a positive, reliable manner.

Further, this invention is not limited to these embodiments but various variations and modifications may be made without departing from the scope and spirit of the invention.

What we claim is :

1. A fuel supplying apparatus comprising:
- an erected structure having an overhead structure extending horizontally over a fueling service area;
- a fuel storage reservoir for storing fuel;
- a stationary pipe having an open end communicating with the interior of said storage reservoir and extending through said erected sturcture;
- a flexible fuel-supplying pipe connected communicatively at one end thereof to the other open end of said stationary pipe and at the other end thereof to a dispensing nozzle and suspended from said overhead structure in a manner enabling the pipe to be lowered and raised;
- a first indicator provided at the end of said fuel-supplying pipe in the vicinity of said nozzle and operating in response to an electrical signal to indicate fuel quantity;
- a second indicator secured to one part of said erected structure and operating in response to an electrical signal to indicate fuel quantity;
- a pump for pumping fuel from said storage reservoir through said stationary pipe;
- a flowmeter for measuring the quantity of fuel flowing through said stationary pipe;
- a signal emitter for emitting electrical signals in accordance with measurement of said flowmeter;
- a first transmitting wire extending along said erected structure and said fuel-supplying pipe and adapted

to transmit each electrical signal emitted by said signal emitter to said first indicator,

a second transmitting wire extending along the erected structure and adapted to transmit said electrical signal to said second indicator;

means provided at said first indicator and being operable to mechanically reset to zero the indication of said first indicator and, at the same time, to emit a zero-resetting signal;

means for operating in response to said zero-resetting signal to reset electrically to zero the indication of said second indicator;

a delivery switch adapted to be closed when said flexible fuel-supplying pipe is lowered to a predetermined height; and

pump control means operating, when a zero-resetting signal is emitted with said delivery switch in its closed state, to start said pump and thereafter to maintain the pump in its driven state when the delivery switch is closed even if there is no emission of a zero-resetting signal.

2. A fuel supplying apparatus as claimed in claim **1** which further comprises a hose reel provided on said erected structure and adapted to rotate to alternately wind up and unwind said flexible fuel-supplying pipe and a spiral-shaped wire cable connected to an appropriate part of said first wire and adapted to absorb any twisting in the first wire extending through the fuel-supplying pipe due to the rotation of said hose reel accompanying the winding up and unwinding the fuel-supplying pipe.

3. A fuel supplying apparatus as claimed in claim **2** which further comprises a third wire connected to said first wire outside of said fuel-supplying pipe, a first wire reel winding up said third wire in one direction, and a second wire reel winding up the third wire in the direction opposite to said one direction, said spiral-shaped wire cable being connected to the end at the innermost winding turn of said third wire wound on said second wire reel.

4. A fuel supplying apparatus as claimed in claim **1** in which said zero-resetting means provided at said first indicator comprises: a zero-resetting push button; a first lever pivotally rotated by the pushing movement of said push button; a second lever urged by a torque to rotate in a direction for being engaged by said first lever and normally being thus engaged and locked by said first lever, said second lever undergoing abrupt rotation upon being disengaged and released when said first lever rotates to a predetermined position; a mechanism operated by said abrupt rotation of the second lever to reset to zero the indication of the first indicator; and a microswitch closed by said rotation of the second lever to emit a zero-resetting signal.

5. A fuel supplying apparatus as claimed in claim **4** in which said first lever has an engagement end for engaging said second lever during rotation of the first lever up to a predetermined position and a cutout part into which the second lever drops as the first lever thereafter rotates further, and said zero-resetting mechanism comprises a resetting lever for striking against a heart-shaped cam of an index wheel of said first indicator thereby to reset the indicator to zero, means for urging said resetting lever in the direction for thus striking against said heart-shaped cam, and a member operating to engage and lock said resetting lever against the force of said urging means and actuated by said rotation of the second lever to disengage and release the resetting lever.

6. A fuel supplying apparatus as claimed in claim **1** in which said pump control means comprises a first relay operated at the time of generation of each zero-resetting signal, a second relay connected in series with said delivery switch, a relay switch of said first relay and a first relay switch of said second relay both connected in series with said delivery switch and the second relay and mutually connected in parallel, and a second relay switch of the second relay for closing the circuit of a driving power supply to said pump; and said first relay is connected in parallel with the series-connected combination of the delivery switch, the parallelly connected relay switches, and the second relay.

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