

Jan. 20, 1948.

A. E. WATTS, JR., ET AL
GASOLINE DISPENSING SYSTEM

2,434,824

Filed June 20, 1946

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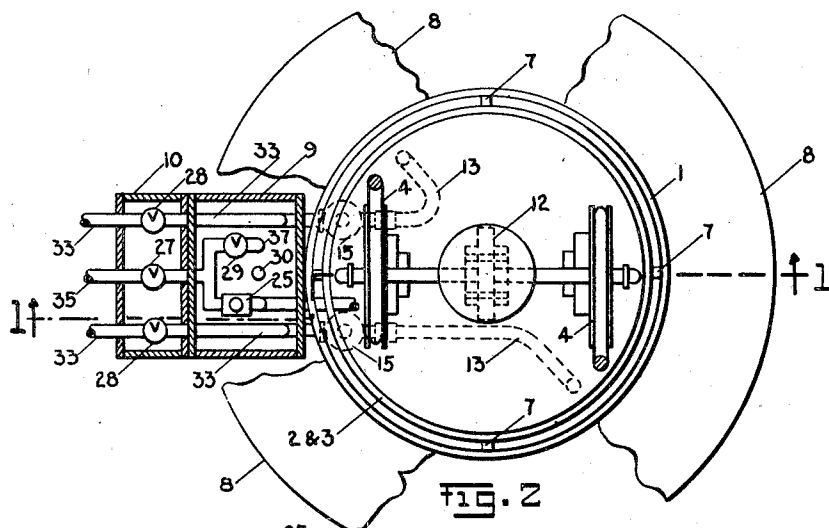
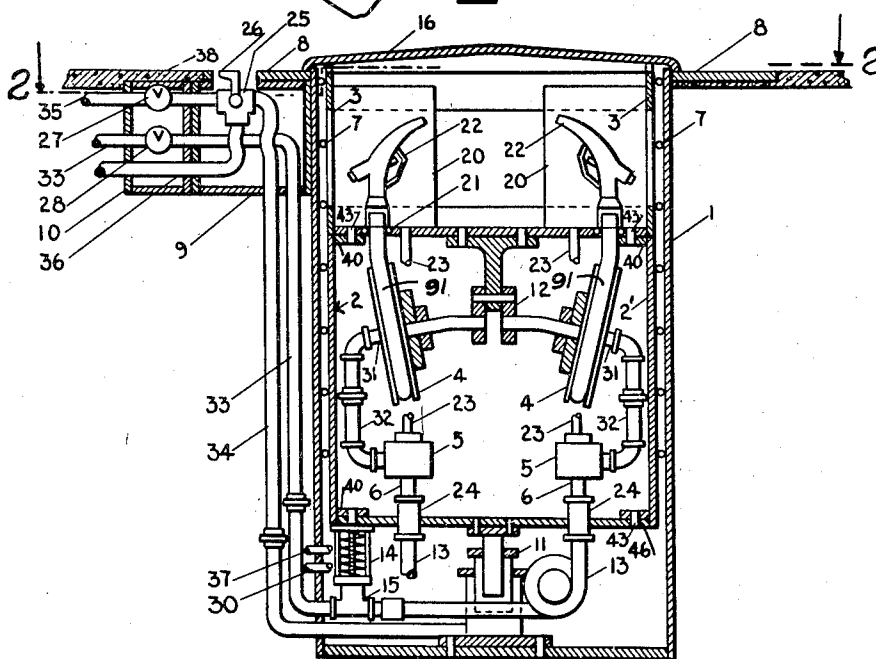


Fig. 1

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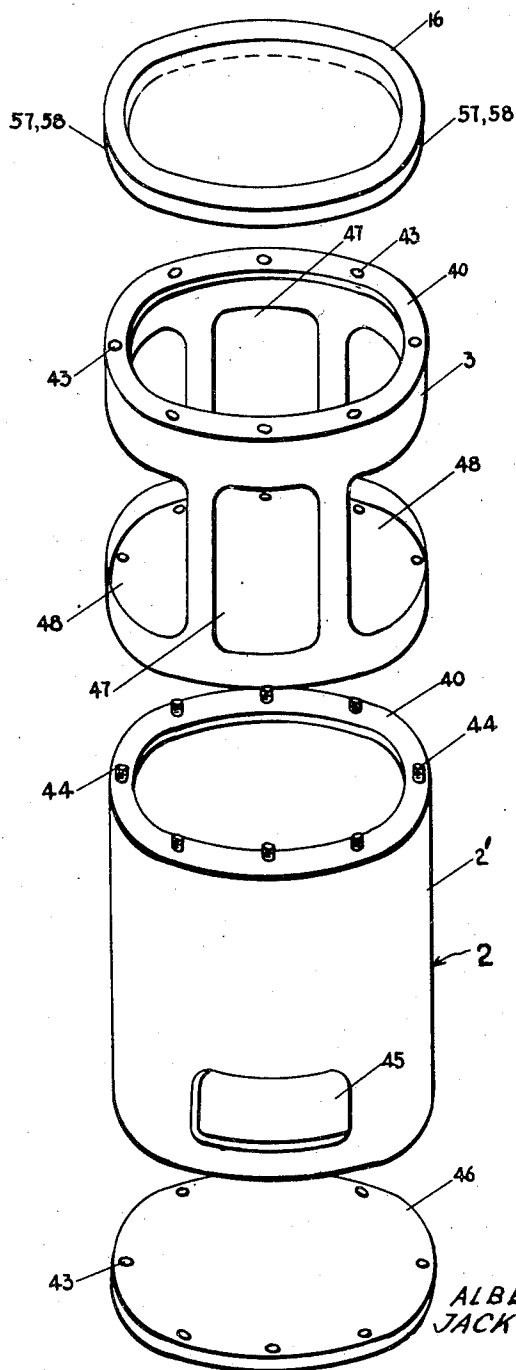


FIG. 5

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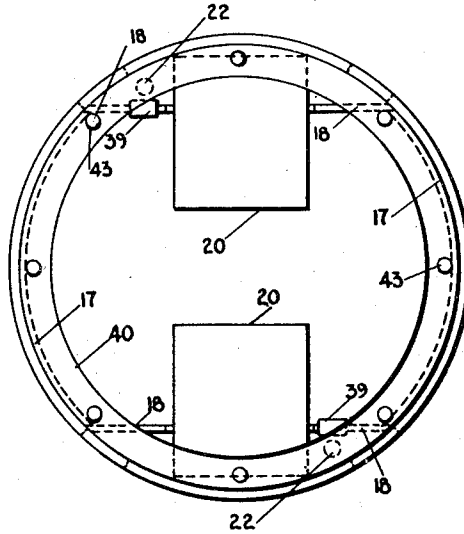


Fig. 3

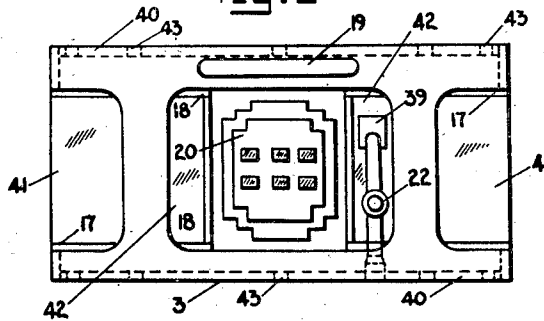


Fig. 4

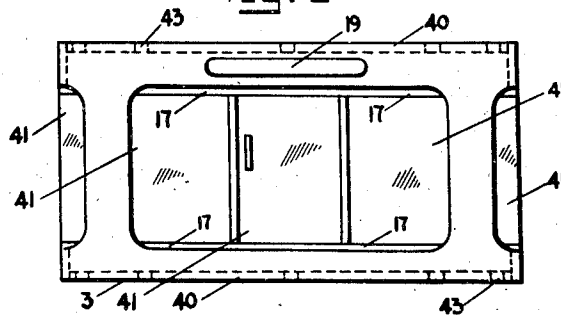


Fig. 5

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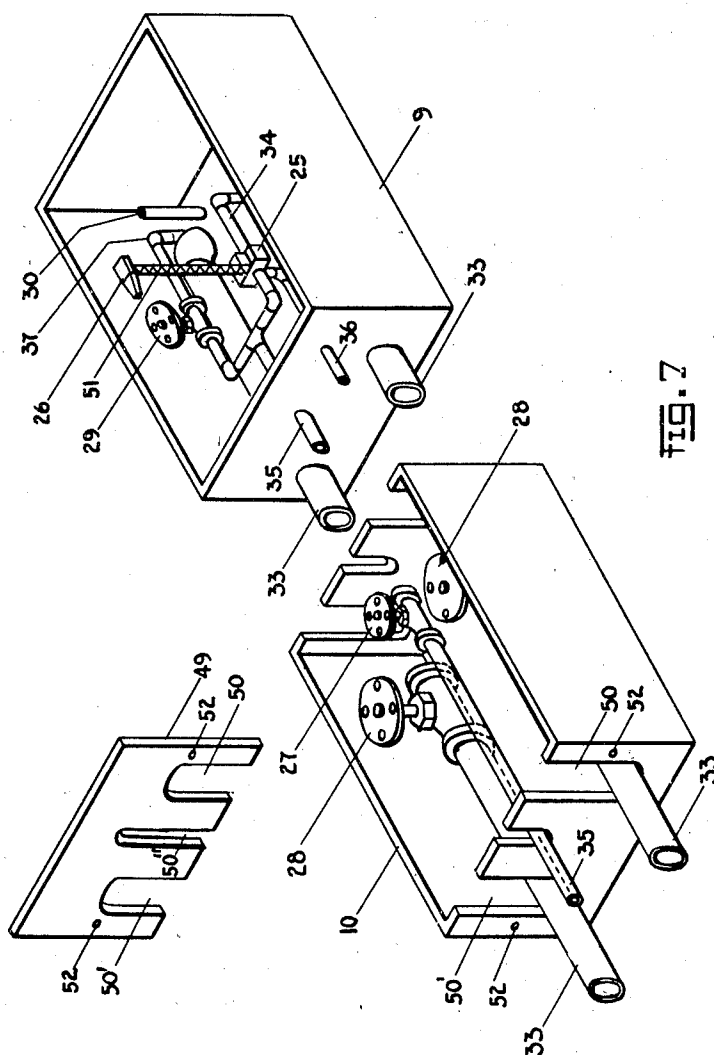


FIG. 7

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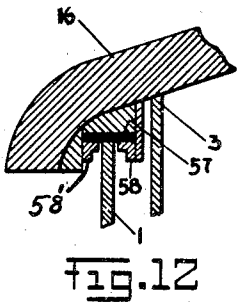
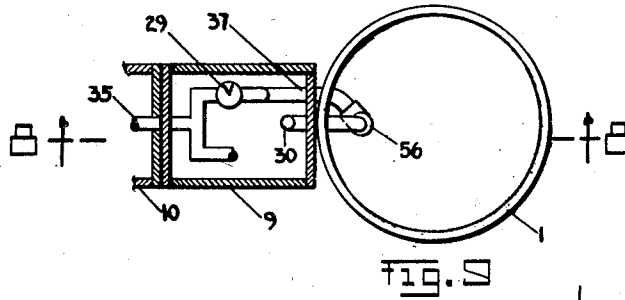
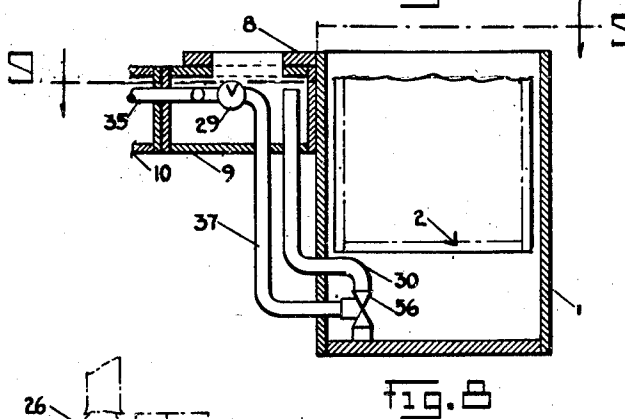
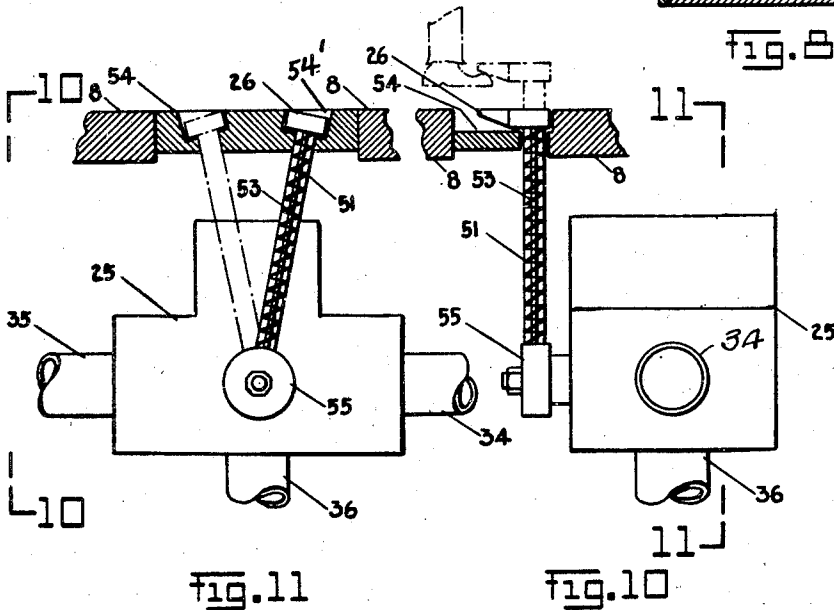
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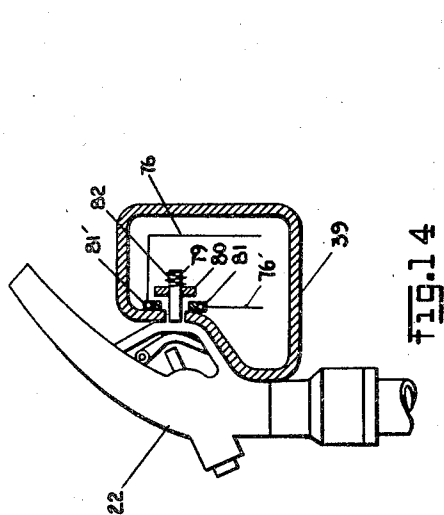


FIG. 14

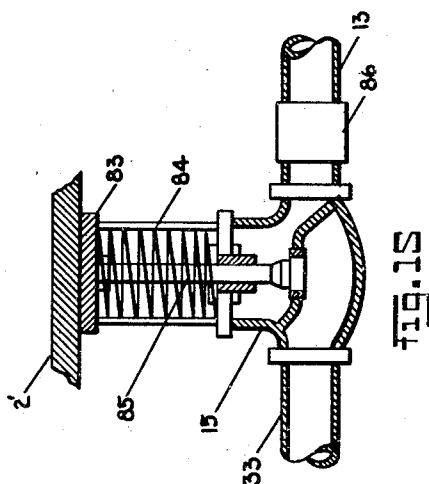


FIG. 15

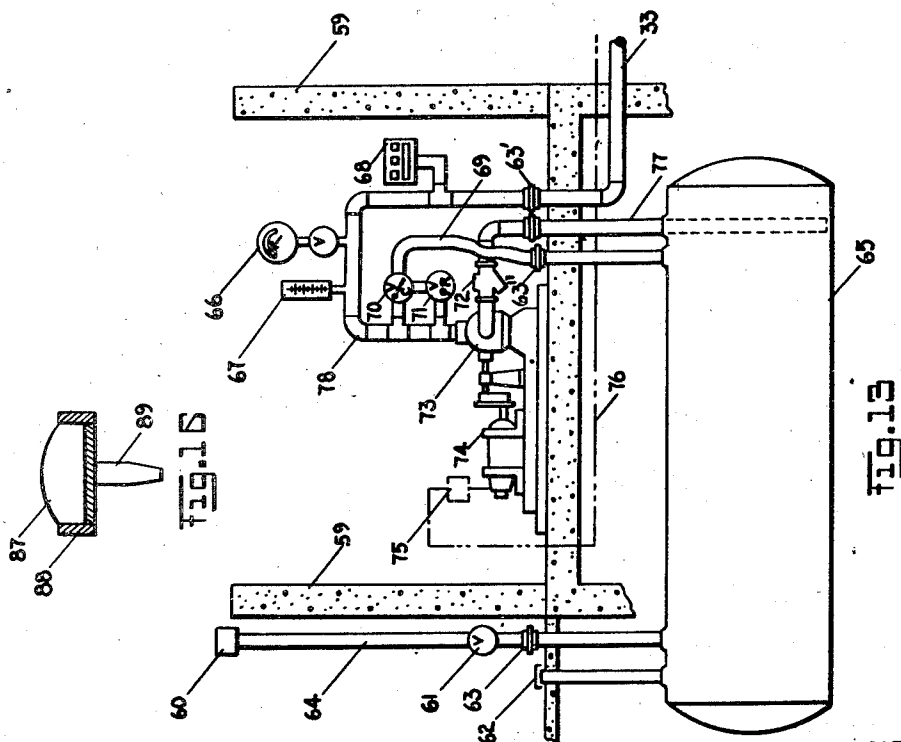


FIG. 16

FIG. 17

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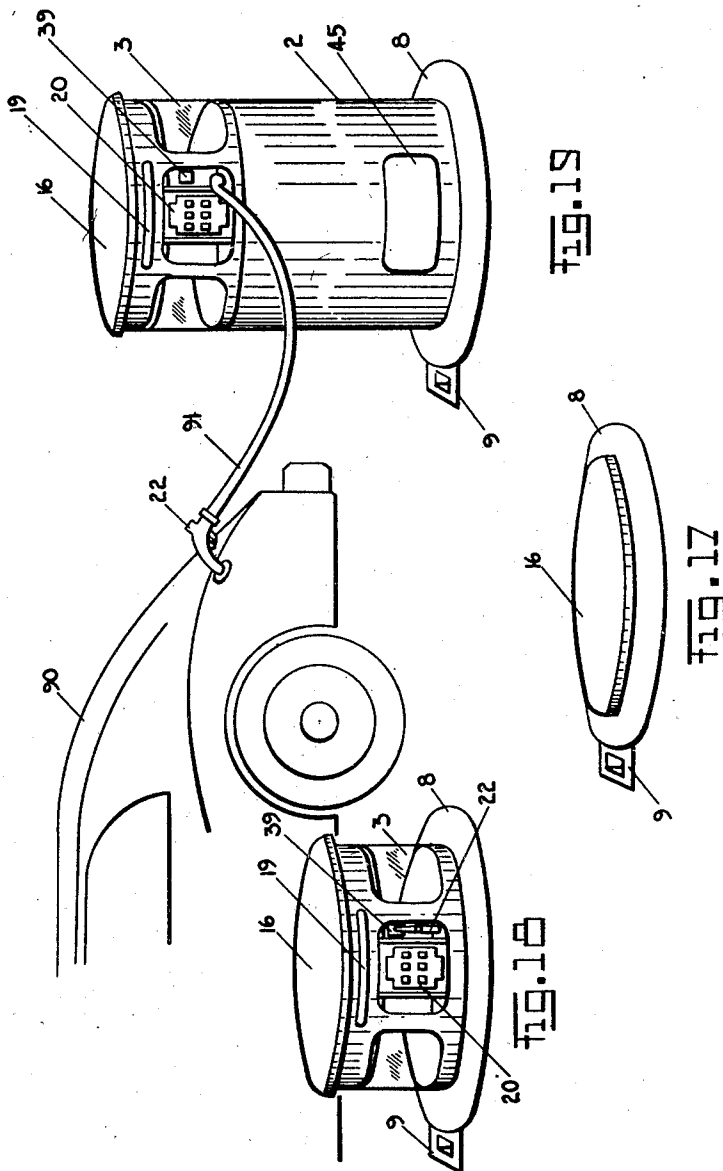
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2,434,824

GASOLINE DISPENSING SYSTEM

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Application June 20, 1946, Serial No. 677,950

11 Claims. (Cl. 222-173)

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Our invention relates to a fluid dispensing system and more particularly to a gasoline dispensing system, for installation on and in a service station area wherein a service station includes a gasoline supply tank and a pump therefor to maintain air pressure in the system available for operating purposes in dispensing units located entirely below the surface of the ground.

Our invention is intended primarily for use in a service area for vehicles, such as automobiles, trucks, aeroplanes, air ships, etc.

It is an object of this invention to provide an arrangement for dispensing equipment which can be effectively cleared from the surface of the service station area when not in use, thereby eliminating obstruction hazards.

Another object of the present invention is to provide a dispensing system which can be installed in a comparatively short period of time by inexperienced help, if necessary.

A further object of this invention is to provide dispensing unit parts that may be lowered to a position below the level of the ground when not in use, thereby taking advantage of all of the space afforded by surface area.

It is also an object of this invention to provide gasoline dispensing equipment located below the surface of the station area at suitable locations so that said equipment could be raised and lowered in a practical and convenient manner to provide service on the spot, i. e., any spot on the surface area of the service station.

An additional object of this invention is to provide a compact dual dispensing unit whereby, at least, two grades of gasoline products may be selectively dispensed.

A further object of our invention is to provide a central pumping unit in a service station house so that separate pumps and motors may be eliminated. A pump and motor is required only for each grade of gasoline product and is capable of servicing a plurality of dispensing units.

Still another object of our invention is to provide an inexpensive built-in drainage system for each unit. This drainage system is especially desirable in airport installations.

It is also an object of our invention to provide means for automatically eliminating the pressure on dispensing units when not in use, thereby reducing fire hazards.

It is a further object of our invention to provide a pit casing having therein a hollow or cell body spaced from said casing by means of roller

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bearings retained on said casing or said body. The spaced condition of the casing and body, plus the roller bearings, prevent jamming and freezing of said casing and body.

5 Another object of our invention is to provide an automatic starting device which will start the pump when the dispensing nozzle is lifted.

A further object resides in providing a system which is comparatively simple and durable in construction and very efficient in use.

10 Others objects and advantages will be disclosed in connection with the detailed description of the drawings which form a part of the specifications.

15 In the accompanying drawings forming a part of this application—

Figure 1 is a sectional view taken approximately on line 1-1 of Figure 2 and represents a dispensing unit, not in use, located below the surface of a service station area.

20 Figure 2 is a sectional view taken approximately on line 2-2 of Figure 1.

Figure 3 is a plan view of the cell body with its cover removed.

25 Figure 4 is a side elevational view of the upper section of the cell body, as indicated by the line 4-4 of Figure 3.

Figure 5 is a side elevation of the upper section of the cell body, as indicated by the line 5-5 of Figure 3.

30 Figure 6 is an exploded perspective view of the parts of the cell body is disassembled relation.

Figure 7 is an exploded perspective view of a sectional compartment pipe and valve housing located on the outside of the pit casing below the top edge thereof.

35 Figure 8 is a vertical sectional view of the pit casing, including its pipe and valve housing, plus an assemblage of pipes and valves.

Figure 9 is a horizontal sectional view taken approximately on the line 9-9 of Figure 8.

40 Figures 10 and 11 are vertical sectional views taken at right angles to each other as indicated by the lines 10-10 and 11-11 and disclose a foot operated device for controlling a valve.

Figure 12 is a vertical sectional view of a closure carried by the cell body and engaging the top edge of the pit casing.

45 Figure 13 is a side elevation of a pumping unit installed in the station house.

Figure 14 is a vertical section of a nozzle support, including a spring actuated electrical switch which closes a circuit when the nozzle is lifted.

55 Figure 15 is a vertical sectional view of a spring

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actuated valve for cutting off the supply of gasoline when the cell body is lowered into the pit casing.

Figure 16 is a vertical sectional view of a surface marker button or reflecting jewel.

Figure 17 is a perspective view of the closure for a dispensing unit shown in its relation to the top rim of the pit casing.

Figure 18 is a perspective view of the top section of the cell body, the body being partially raised from the pit casing.

Figure 19 is a perspective view of the cell body in a raised service condition.

In the specification and the drawings thereof, the reference characters identify the particular parts of the system, including the details thereof.

The drawings are not to be considered definitive of our invention, but merely illustrative thereof, since many changes can be made within the scope of the invention, as claimed.

In our system, a plurality of pumping station units are contemplated, one of which is shown in the station house 59, Figure 13.

Each pumping station unit is provided with a plurality of dispensing units connected directly therewith.

One of the dispensing units is disclosed in Figure 1. These units are installed below the surface of a service station area. Each unit comprises a pit casing 1 having a rim 8 on a level with the ground. Each pit casing 1 receives telescopically a hollow sectional body 2. The body 2 comprises the sections 2' and 3 which are secured together by any suitable means, such as ring flanges 40 and a bottom closure 46, Figure 6, and a closure or floor at the bottom of the upper section 3. The fastening means passing through the ring flanges 40 and the closures may be bolts, studs or rivets 43.

The pit casing 1 and the cell body or hollow body 2 are maintained in concentrically or equally spaced relation by a multiplicity of roller bearings 7 retained in position on the wall of the pit casing 1 or on the adjacent wall of the body 2, preferably the former.

The concentric spacing constitutes a heat insulating feature which aids in preventing freezing while both the space and rollers 7 prevent jamming of the body 2 and the casing 1.

The lower section 2' of the cell body 2 contains self-retracting hose reels 4, positive piston displacement meters 5 and combination air releasers and strainers 6 in advance of the meters 5.

The pit casing 1 is provided adjacent its top portion with a laterally extending sectional and compartment box construction 9 and 10 receiving pipes or tubes 30, 33, 34, 35 and 36, including their valves which have operating means or handles 26, 27, 28 and 29. The operating means 26 is a foot pedal manipulated by the foot of the operator or attendant. The foot pedal 26 operates a three way air valve 25 for raising and lowering the cell body 2 within the casing 1.

When the pipes and valve are installed in compartment 9, as shown to the right of Figure 7, then the connections are made for the pipes and valves later to be housed in compartment 10. After the connections are made, the compartment 10 is inserted over the pipes from below. The use of the notches or recesses 50 in the ends of the compartment 10 makes the insertion assemblage possible.

The closure and retainer insert 49 is provided with notches or recesses 50' and 50'' to receive the pipes 33 and 35. After the insert 49 is in assem-

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bled position, it is secured in that position by passing bolts through aligned apertures 52.

The raising and lowering mechanism or means 11 is located between the bottom of the pit casing and the bottom 46 of the cell body 2. The means 11 is operated by fluid pressure and said means 11 is preferably telescopic and operates like a plurality of displaceable pistons. When the three-way air valve 25 is turned on by the foot manipulated pedal 26, the air under pressure enters the means 11 and raises the cell body 2 and its contents. When the air under pressure is released from this means 11, the cell body 2 descends to its lowermost position.

The gasoline hose 13 is supported on self-retracting reels, one of which is symbolically disclosed in the pit casing 1 to one side of the lifting or raising means 11.

The self-retracting hose reels are supported on one side by a bracket 12 suspended from the bottom of the section 3.

The pipe or tube 33 conducts gasoline into one dispensing means through the hose 13 and finally to a nozzle 22. The pipe 33 is provided with a valve 15 having a valve head provided with a stem 85 operated by a spring 84. The transversely arranged flat piece 83 is carried by the valve stem 85 and is adapted to be engaged by the cell body 2 when it is lowered. When the cell body 2 is in a raised position, the spring 84 retracts the stem 85 and its valve head, thereby opening the valve. When the cell body is lowered, it closes the valve 15, whereby the flow of gasoline to cell body 2 is stopped.

The metal ring 8 which is substantially flush with the surface of the station area serves as a partial closure for the valve box 9.

The closure 16 of a dispensing unit may be flat, but is preferably slightly convexed or dome-shaped, as disclosed in Figures 1, 12, 17, 18 and 19. The closure 16 is secured by any suitable means to the upper edge portion of the cell body section 3. This closure is provided with a depending rim portion extending, at least, into close proximity to the ring 8. Between the rim and the section 3, the closure 16, Figure 12, is provided with an annular channel having a backing piece engaged by a yieldable ring 57 of rubber or rubber composition or any other suitable yieldable material. The ring 57 yieldably engages the upper edge of the pit casing 1. This particular closure construction in connection with the air space between the body and the casing affords protection against freezing. The yieldable sealing ring 57 is secured in position against the backing of the annular channel by a pair of spaced concentric rings 58 and 58'.

The upper section 3 of the cell body 2 is provided in its opposite sides with computers 20 having dials displayed through windows fitted with flat panes of transparent material 42, preferably made of plastic. The other opposite sides of the section 3 are provided with display compartments having display windows containing convex panes 41, 41' of transparent material, preferably plastic. In these compartments are convex frames 17, 17' having floors or shelves for supporting, at least, some merchandise currently on sale at the service station house.

The frames 18 of the computer compartments are straight and extend around the computers. The wall portion 19 is adapted to form a support for advertising material. The frames 18 contain a housing 39, Figure 14, for a spring actuated electric switch. The terminal contacts 81 and 81'

are secured to the inside of the housing 39. The movable part 82 is moved to closed position by the spring 79. The housing 39 contains a supporting recessed portion in alignment with the movable part 82 and is adapted to receive and support the dispensing nozzle 22. The movable part 82 carries a metallic ring 80 adapted to contact simultaneously the terminals 81 and 81'. When the nozzle 22 is removed from its support the circuit, including the wires 76 and 76', is automatically closed by the switch. When the nozzle 22 is replaced on its support the switch is opened and the electric circuit is broken.

The antifriction bearings 21, Figure 1, are adapted to engage the hose 91, Figure 19, as it moves to and fro through the bearings 21 which are supported in the combined floor and shelf in the bottom of section 3.

In Figure 1, the shafts 23 connect the meters 5 with the computers 20. The quick releasable couplings 24, 24 connect the hose 13 with the combination air releasers and strainers 6, 6. The swivel joints 31 connect the piping 32 with the hose 91 on the hose reels 4.

In Figure 8, the pit casing 1 is provided with a drainage device comprising an eductor 56. Air is supplied through the pipe or tube 37 which passes through the aspirator 56 and draws the water, etc., from the casing 1 and forces it out through the pipe or tube 30. A hose (not shown) should be attached to the upper end of the pipe 30 to carry the drainage away to a suitable place of disposal. When the drainage of the casing 1 is completed the valve 29 is closed and the hose may now be removed from the pipe 30.

Air is supplied from the compressor in the service station house, which is also used for tire inflation as well as operating tools used in and about the station. A pressure relief valve is inserted in the discharge pipe line from the compressor to the telescopic pistons 11. The function of the relief valve is to dissipate or discharge to the atmosphere any excessive pressure beyond a predetermined setting of the relief valve. This arrangement is intended to prevent damage to a vehicle or to the unit, should a unit be accidentally raised under a vehicle. The relief valve would insure just a sufficient amount of pressure of air to cause the cell body 2 to rise. In the event of an abnormal weight on the closure 16, such as a vehicle, the cell body 2 and its closure 16 could not rise.

Control of the air for lifting and lowering the cell body 2 is maintained by the use of a three-way control valve 25. One side of the valve has the air inlet pipe 34 and the bottom has the air outlet and air return pipe 36 and the exhaust outlet pipe 35 is located on a side of the valve 25 opposite to the inlet pipe. The three-way valve 25 is located in the valve box 9 below the surface of the ground. Attached to the three-way valve 25 is a foot pedal 26; Figures 1, 10 and 11. To provide for operation of the control valve 25 by the operator's foot, the foot pedal 26 is connected to the circular part 55 of the valve 25 by means of an extensible arm 53 including a spring 51 to maintain the arm 53 normally in retracted condition with the foot piece located in one of the recesses 54 or 54'. The recesses 54 and 54' are large enough to receive the toe of the operator's boot or shoe, so that the foot piece can be lifted and tilted to a desired position.

In Figure 13, the station house 59 is provided with a gasoline storage tank 65 located below the level of the service station area. The tank 65

is provided with a filling tube or pipe 62 and a vent pipe 64 having a vacuum relief valve 61, a flame arrester 60 and a detachable pipe connection or union 63.

The mechanism located in the station house 59 is provided with a supply pipe 33 for dispensing units located in the service station area. The pipe 33 is connected by a union 63' with the gasoline discharge line or tube 78. The discharge tube 78 is provided with a pressure gage 66, a thermometer 67, and a register 68 for gallons of gasoline dispensed from the storage tank 65. The pipe 69 is connected to the tank tube by a coupling or union 63'' and is provided with a check valve 70 adjacent to its connection with the pipe or tube 78. Both the check valve 70 and the pipe 78 are connected by pipes or tubes having an interposed pressure relief valve 71. The pump 73 has a pipe or tubular connection 77 which is provided with a strainer 72 interposed therein.

The pump 73 is operated by the explosion proof motor 74 which is provided with a controlling means 75. The electrical conductors 76 lead to the various dispensing units located in the service station area.

The markers 89 are placed about the dispensing units to aid drivers of vehicles in properly placing their vehicles in a suitable position for convenient servicing from a dispensing unit. The marker includes a spike or prong having a head with an upright wall 88 surrounding a reflecting jewel 87.

The hollow cell body 2 has in its lower section 2' windows 45 making the body accessible for inspection and repairs.

From the foregoing description of the construction of the system, the assembly and operation thereof will be readily understood, and it will be seen that we have provided a comparatively simple, inexpensive and efficient means for carrying out the various objects of the invention.

While we have described the elements best adapted to perform the functions set forth, it is apparent that various changes in form, proportion and in the minor details of construction may be resorted to, without departing from or sacrificing any of the principles of the invention.

Having fully described our invention, what we claim is:

1. In a gasoline dispensing system of the character described, said system comprising a pit casing adapted to be installed below the surface of the ground, in combination with a revoluble cell body movably located in said casing, in further combination with gasoline dispensing equipment arranged in said cell body, said gasoline dispensing equipment comprising meters, self retracting hose reels with dispensing nozzles and computers, means for raising and lowering said revoluble cell body relative to said casing, said means being located beneath the center and between the bottom of said cell body and the bottom of said casing.

2. In a gasoline dispensing system of the character described, said system comprising a pit casing adapted to be installed below the surface of the ground, in combination with a revoluble cell body movably located in said casing, in further combination with gasoline dispensing equipment arranged in said cell body, said gasoline dispensing equipment comprising meters, self retracting hose reels with dispensing nozzles and computers, in still further combination with a revoluble piston, said piston controlled by a liftable foot spring valve for raising and lowering said revolva-

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ble cell body with reference to said casing, said body being provided with a closure secured to the top thereof, said closure being provided with a sealing ring engaging the upper edge portion of said casing whereby a vehicle passing over said closure may be supported above said pit casing, cell body and closure.

3. In a gasoline dispensing system of the character described, said system comprising a pit casing adapted to be installed below the surface of the ground, in combination with a revolvable cell body movably located in said casing, in further combination with gasoline dispensing equipment arranged in said cell body, in further combination with said gasoline dispensing equipment comprising meters, self retracting hose reels with dispensing nozzles and computers, in still further combination with a revolvable piston, said piston controlled by a liftable foot spring valve for raising and lowering said revolvable cell body with reference to said casing, in still further combination with a closure disposed over said casing and supported thereon in sealed relation, said closure constituting a support for pedestrian and vehicle traffic thereover.

4. In a gasoline dispensing system of the character described, said system comprising a pit casing adapted to be installed below the surface of the ground, in combination with a supporting revolvable cell body located within said casing and movably supported therein, in further combination with gasoline dispensing equipment arranged in said cell body, said gasoline dispensing equipment comprising meters, self retracting hose reels with dispensing nozzles and computers, in still further combination with a revolvable piston, said piston controlled by a liftable foot spring valve for raising and lowering said revolvable cell body with reference to said casing, said equipment comprising a plurality of separate dispensing means whereby different fluids may be separately and selectively dispensed.

5. In a gasoline dispensing system of the character described, said system comprising a source of gasoline supply, a tank and a pumping unit therefor, in combination with a plurality of dispensing units located below the surface of the ground, each of said dispensing units comprising a pit casing below the surface of the ground, said pit casing having a revolvable cell body vertically movable therein, a foot pedal spring valve connected with said pit casing and said body for raising and lowering said revolvable cell body, said foot pedal valve comprising a control valve having an air inlet, an air outlet and an air return, said foot pedal being liftable and comprising an arm, a spring to maintain said arm in retracted position and a foot piece, recesses for said foot piece large enough to receive the toe of a shoe to lift said foot pedal to the desired position, said cell body being provided with dispensing equipment, said dispensing equipment being a variable length hose in connection with said source of gasoline supply and said gasoline dispensing equipment comprising meters, self retracting hose reels with dispensing nozzles and computers.

6. The construction set forth in claim 5, in further combination with spring valve means located in said system for automatically keeping the pressure off said hose connection when not in use when said cell body is lowered within said pit to its lowermost position.

7. In a gasoline dispensing system of the char-

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acter described, said system comprising a pit casing adapted to be installed below the surface of the ground, in combination with a revolvable cell body movably located in said casing, in further combination with gasoline dispensing equipment arranged in said cell body, said dispensing equipment receiving its gasoline supply by means of a variable length flexible hose between said cell body and a source of gasoline supply, in further combination with a centrally located vertically movable revolvable piston attached to the bottom of said cell body for raising and lowering said cell body relative to said casing, said piston controlled by a liftable foot spring valve for raising and lowering said revolvable cell body with reference to said casing.

8. The construction set forth in claim 7, in which said cell body is rotatably mounted on said piston whereby said cell body may be rotated at least 180 degrees when in its raised position, said hose automatically varying its length when said cell body is rotated.

9. In a gasoline dispensing system of the character described, said system comprising a pit casing adapted to be installed below the surface of the ground, in combination with a revolvable cell body movably located in said casing, in further combination with gasoline dispensing equipment arranged in said cell body, said gasoline dispensing equipment comprising meters, self retracting hose reels with dispensing nozzles and computers, means for raising and lowering said revolvable cell body relative to said casing, a foot pedal spring valve connected with said pit casing and said body for raising and lowering said revolvable cell body, said foot pedal valve located adjacent said pit casing at ground level, said cell body having openings in the upper portion of its side walls, said openings having display shelves in said cell body, other openings provided for display of computer indicating means.

10. The construction set forth in claim 1, in which said pit casing is provided with a compartment housing extending laterally therefrom at a position below the upper edge of said casing, whereby tubular portions of the system including the valves there'n may be adequately protected, one of said compartments having an opening in the top wall thereof, and an operating means for rotating said cell body, and operating means connected to and extending from one of said valves into said opening.

11. The construction set forth in claim 1, in which the pit casing is provided with a valve box connected thereto below the upper edge thereof, and extending latterly therefrom, said box receiving and housing pipe portions and valves there'n and an operating valve therein, said box having pipe supports therein to facilitate alignment of said pipes and the assemblage thereof.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

70 Number	Name	Date
1,867,602	Stukenborg	July 19, 1932
1,868,497	Griffith et al.	July 26, 1932
1,872,418	Davis	Aug. 16, 1932
2,340,218	Grise	Jan. 25, 1944
130,468	Borg	Aug. 13, 1872