R. CROWDER.

OIL DISPENSING APPARATUS.

APPLICATION FILED APR. 19, 1920.

1,390,508.

Patented Sept. 13, 1921.

4 SHEETS—SHEET 1.

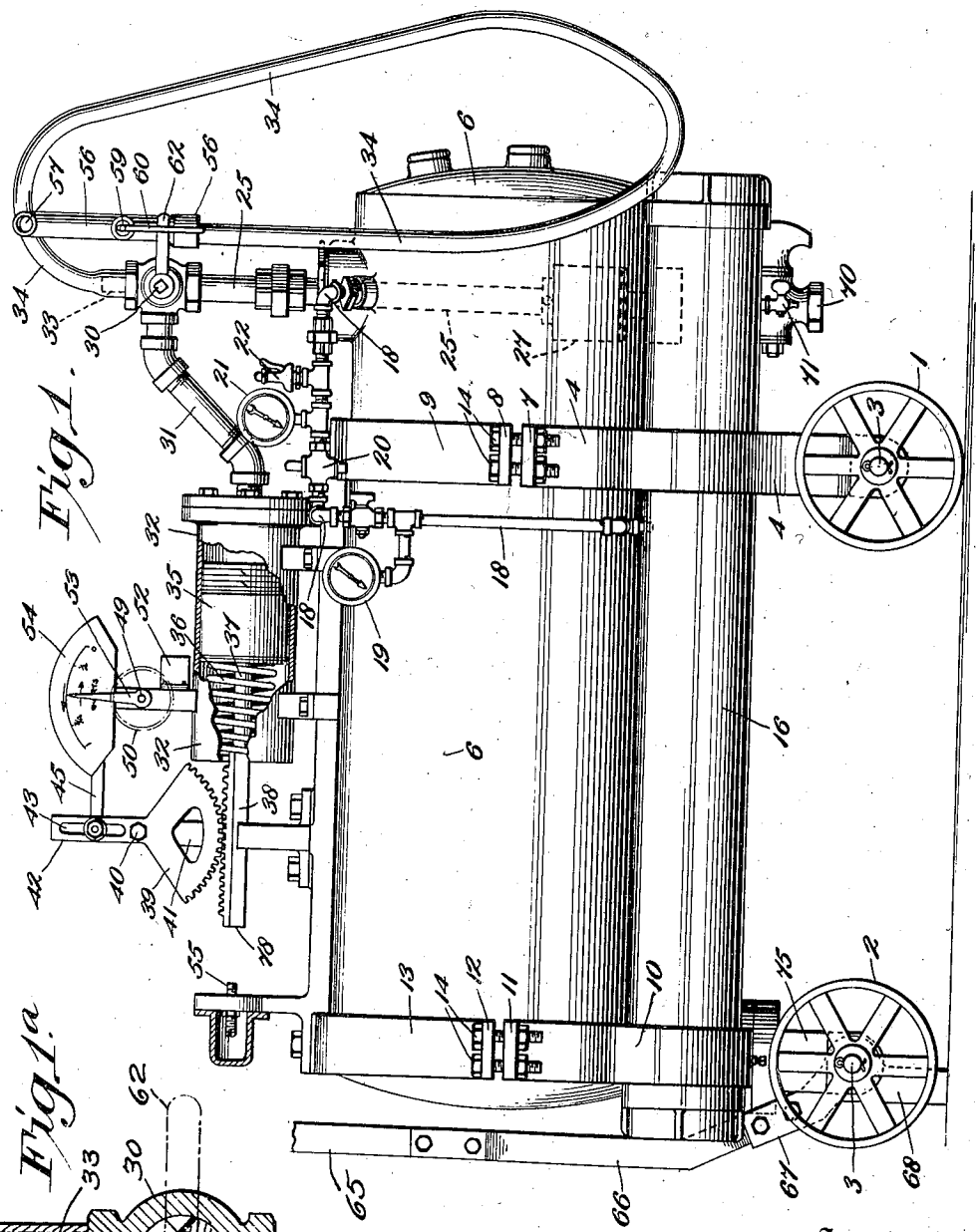


Fig. 1.

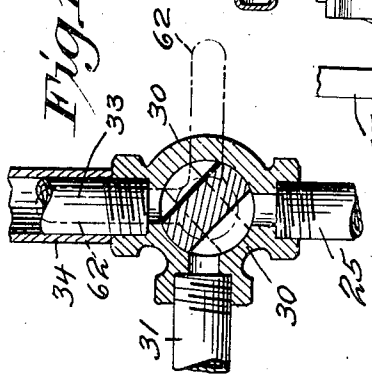


Fig. 1a.

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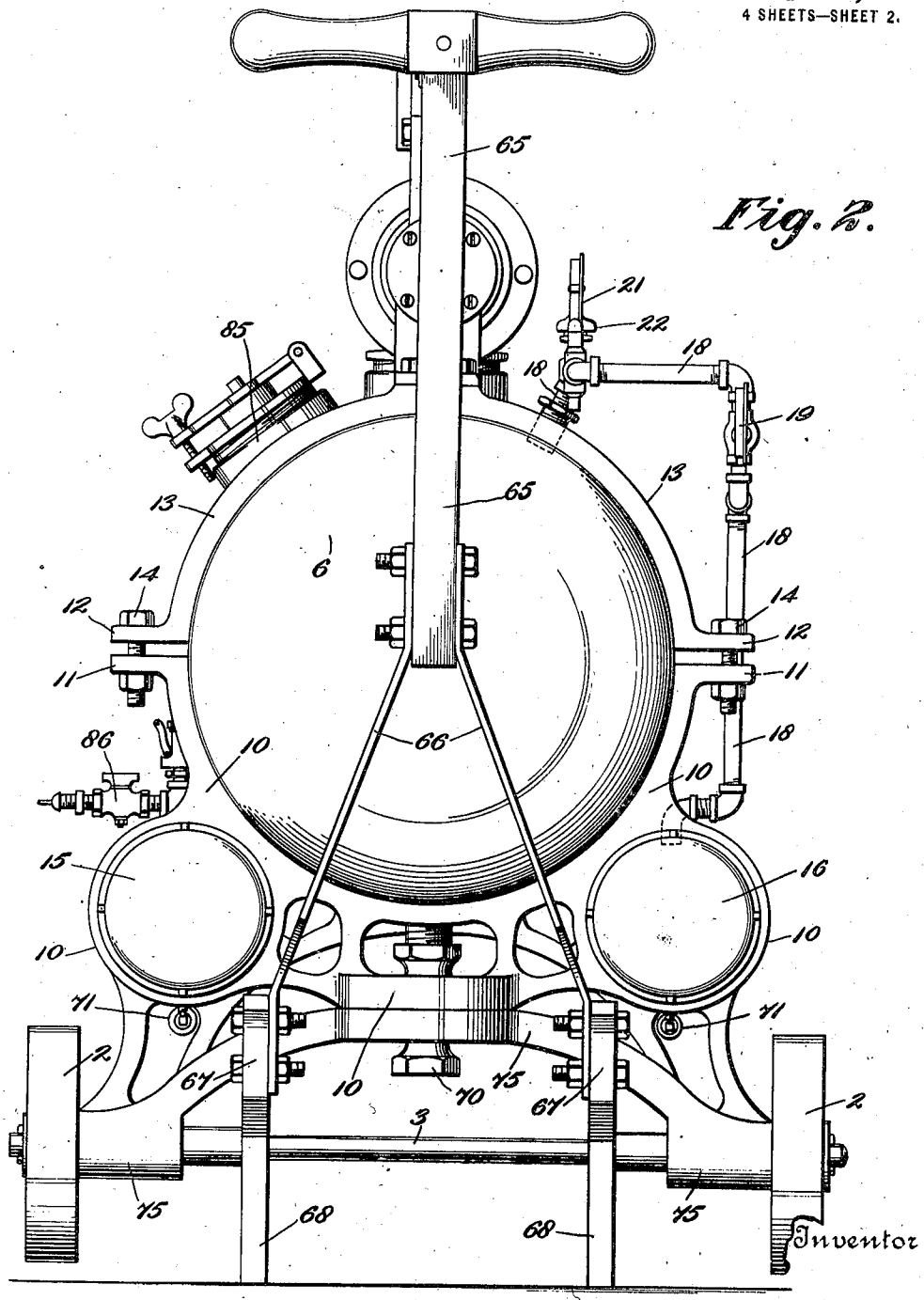
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4 SHEETS—SHEET 2.

Fig. 2.



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4 SHEETS—SHEET 3.

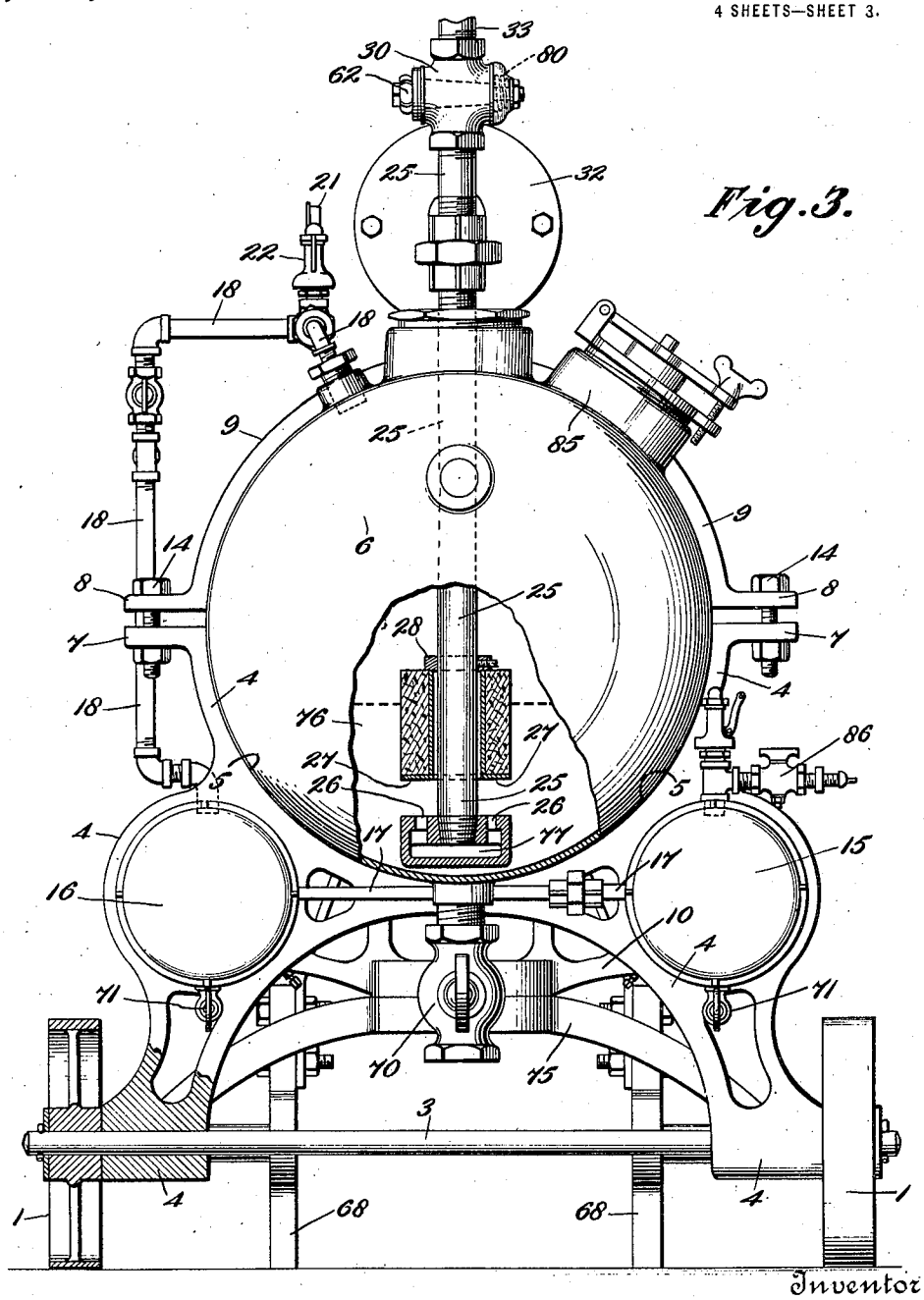


Fig. 3.

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4 SHEETS—SHEET 4.

Fig. 4.

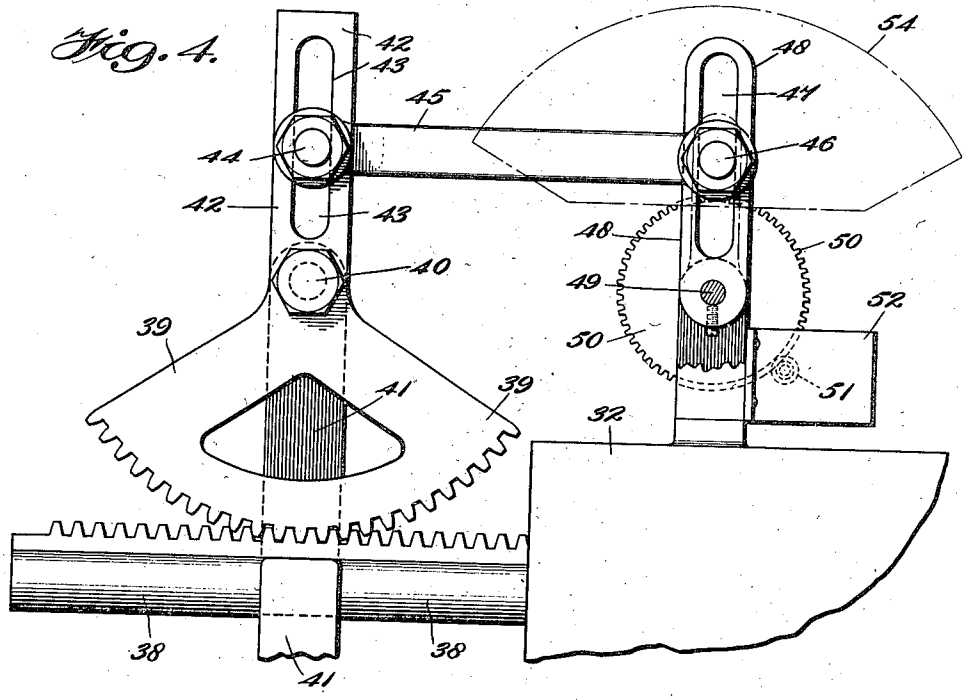


Fig. 5.

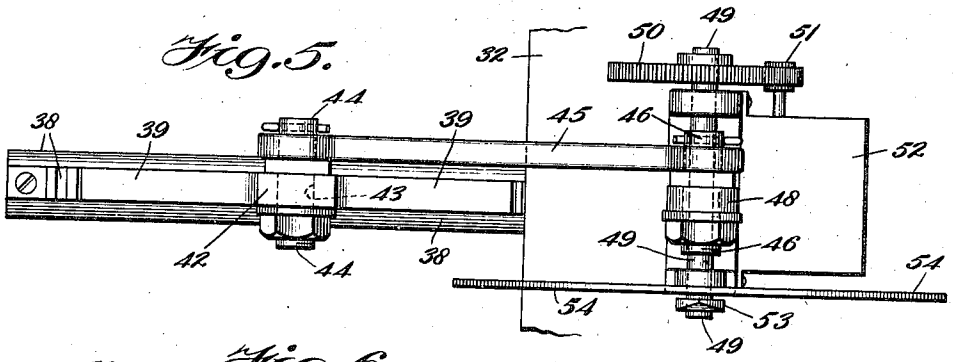
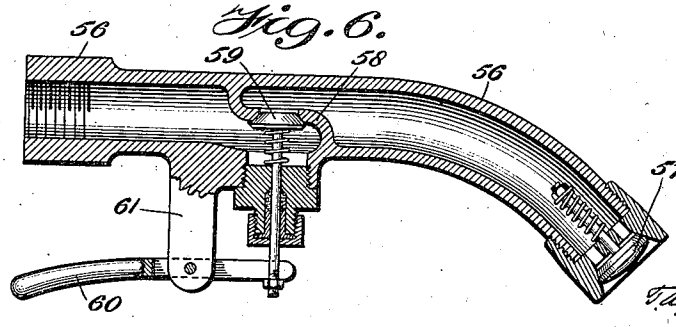


Fig. 6.



Inventor

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UNITED STATES PATENT OFFICE.

RAYMOND CROWDER, OF RALEIGH, NORTH CAROLINA.

OIL-DISPENSING APPARATUS.

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Application filed April 19, 1920. Serial No. 374,979.

To all whom it may concern:

Be it known that I, RAYMOND CROWDER, a citizen of the United States, residing at Raleigh, in the county of Wake and State of North Carolina, have invented certain new and useful Improvements in Oil-Dispensing Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a dispensing apparatus especially adapted for accurately delivering oil to automobilists and other users, and has for its object to provide an apparatus of this character which will be comparatively inexpensive to manufacture and more efficient in action than those heretofore proposed.

With these and other objects in view, the invention consists in the novel details of construction and combinations of parts more fully hereinafter disclosed and particularly pointed out in the claims.

Referring to the accompanying drawings forming a part of this specification in which like numerals designate like parts in all the views;

Figure 1 is a side elevational view partly in section, of an oil dispensing apparatus made in accordance with this invention;

Fig. 1A is a fragmentary vertical sectional view partly in elevation of the three way valve shown in Fig. 1;

Fig. 2 is a front elevational view of the parts shown in Fig. 1;

Fig. 3 is a rear elevational view partially in section of the parts shown in Fig. 1;

Fig. 4 is an enlarged detail diagrammatic view illustrating the connection between the piston controlled rack and the meter mechanism;

Fig. 5 is a plan view of the parts shown in Fig. 4; and

Fig. 6 is a sectional view of the nozzle employed in this apparatus.

1 indicates the rear wheels, 2 the front wheels, 3 the axles of said wheels, 4 the rear bottom clamping member provided with a seat 5 for the oil tank 6, and with the flanges 7 registering with the flanges 8 of the rear top clamping member 9. 10 represents the front bottom clamping member resting on the front support 75 and provided with the flanges 11 registering with the flanges 12 of the front top clamping member 13. The axles 3 thus find their supports in the bottom clamp 4 and swiveling member 75, while the oil tank 6 is firmly held between said bottom clamps 4 and 10 and said top clamps 9 and 13 by means of the bolts 14 as will be clear from the drawings. 15 and 16 represent a pair of compressed air tanks carried by said bottom clamps, 17 is a pressure equalizing pipe between the tanks 15 and 16, 18 represents an air pipe leading from the tank 16 to the tank 6 to supply a pressure in the latter, and 19 represents a pressure gage to indicate at all times the amount of compressed air in the tank 15 and 16.

In the pipe 18 there is provided the pressure reducing valve 20, the reduced air pressure gage 21, and the pop safety valve 22, as shown.

Inside the oil tank 6 there is provided the exit pipe 25, having the inlet ports 26, controlled by the float valve 27 controlled by the stop 28 adjustable on the pipe 25. Said pipe 25 is provided with the three way cock 30 controlling the feed pipe 31 leading to the cylinder 32 and the hose delivery 33 leading to the hose 34.

The cylinder 32 is provided with the piston 35 governed by the spring 36, and provided with the piston rod 37 having the rack 38 meshing with the sector 39 pivoted at 40 to the support 41. Said sector 39 is provided with the extension 42 having the slot 43 in which is adjustably mounted the slide 44 connected to the link 45 joined to the slide 46 mounted in the slot 47 of the member 48 secured to the stud 49 rigid with the gear 50, all as will be clear from Figs. 1 and 4. The said gear 50 meshes with the pinion 51 of the meter 52, and the said stud 49 carries the pointer 53 playing over the graduated dial 54. 55 is an adjustable stop for the rack 38 and piston 35, so that the volume displacements of said piston may be made to accurately agree with the indications on the dial 54.

The hose 34 is provided with a nozzle 56, best shown in Figs. 1 and 6, and which is provided with a spring controlled valve 57 at its extreme outer end to prevent drip, and near its middle with a partition 58 and

spring controlled valve 59. Said valve 59 is operated by the hand controlled lever 60 mounted on the stud 61 adapted to rest said nozzle on the handle 62 of the three way valve 30 to keep said valve in a predetermined position. 65 represents a handle or other means for moving the apparatus over the ground, provided with the extensions 66 rigid with the lifting or brake members 67 pivoted on the front axle 3, and provided with the supporting members 68 adapted to maintain the front wheels 2 clear of the ground. 70 represents a drain cock for the tank 6, and 71 pet cocks for the air tanks 15 and 16.

The operation of this apparatus will be understood from the foregoing disclosure, but may be briefly summarized as follows:

The tank 6 and its associated parts are conveniently brought to the place where the oil is to be dispensed, on the wheels 1 and 2, and should said place be on an incline, or should it be desired to prevent the apparatus from being moved on said wheels, the handle 65 is thrown upwardly, whereupon the supports 68 are brought downwardly until they strike the ground, whereupon a further upward movement of the handle 65 will lift the front end of the apparatus, thus taking the wheels 2 off of the ground and supporting said front end by the members 68.

It will be observed that although the above disclosure relates to a portable apparatus, yet substantially the same construction may be employed in connection with stationary cylindrical tanks, with stationary rectangular tanks, and with underground tanks. It will further be observed that the apparatus consists of three distinct units. (1), the measuring mechanism; (2), the oil tank; and (3), the air tanks. In the illustration shown, these three units are mounted together rigidly by the special castings or forgings illustrated, and in such a construction it is convenient for the tank 6 to hold say about twenty gallons.

The air tank or tanks are also of a sufficient capacity to completely empty the oil tank. Of course, with stationary models of this device larger capacities would be employed.

The air tanks being thus charged with air, the latter under pressure passes the reducing valve 20 and through the pipe 18 into the tank 6, whereupon said pressure, amounting to say about 12 pounds to the square inch will force the oil 76 in said tank 6 through the openings 26, into the chamber 77, up the pipe 25, to and through the three way valve 30, through the pipe 31, and into the cylinder 32, thus moving the piston 35 against the compression of the spring 36 until the extreme end 78 of the rack 38 contacts with the adjustable stop 55. Said stop is so adjusted that when the end 78 contacts therewith, the cylinder will hold just one quart of oil. The movement of the rack 38 turns the sector 39, which moves the link 45, which in turn moves the slotted member 48 and the gear wheel 50, thus registering on the meter 52 the amount of oil which has entered the cylinder. In the meantime, the shaft 49 has been turned and with it, the pointer 53, and thus is the amount of oil entering the cylinder indicated on the dial 54.

The nozzle 56 of the hose 34, having been introduced into the container brought by the purchaser of the oil, and the handle 62 of valve 30 having been released, the spring 80 controlling the three way valve 30 turns said valve in such a position that the pipes 31 and 33, as well as the hose 34 are brought into communication. The hose is supposed to be filled with oil from a previous operation, up to the valve 57 in the nozzle 56, but if it has not been so filled, then it is filled by repeated operations of the said valve 30. The hose and its connections being thus filled with oil and the piston 35 being thus thrown back until the surface 78 contacts with the stop 55, the lever 60 controlling the valve 59 is now operated by hand, which permits the pressure of the spring 36 to be brought on the oil held back by the valve 57, and thus is the valve 57 opened and is oil delivered to the customer until said pressure of the spring 36 ceases. This pressure will cease when the piston 35 empties the cylinder 32, and thus will the customer be assured of having received exactly one quart of oil. In the meantime, of course the pointer 53 will indicate on the dial 54 that one quart of oil has been delivered and the meter 52 will count up or register said quart. If for any reason the customer desires a quantity less than a quart, such for example, as three-fourths of a quart, a pint, or a half-pint, then the operator may by watching the said pointer 53 and by properly manipulating the lever 60 cause the valve 59 to close at the proper moment to deliver to the customer the exact quantity desired. As soon as the valve 59 is thus closed, or the pressure is released in the nozzle 56 by reason of the piston 35 having reached the end of its stroke, the valve 57 will automatically close, and thus prevent any loss through dripping.

In the meantime, the hose 34, pipe 31, and their connections remain full of oil ready for the next operation.

The nozzle 56 is now placed on the lever or handle 62 of the valve 30, very much after the fashion of placing a telephone receiver on its hook, whereupon said valve 30 is so turned as to cut off the hose 34 and

to reëstablish connection between the tank 6 and the cylinder 32. As soon as said connection is thus brought about, the said cylinder immediately again fills with oil and the spring 36 will remain under compression ready to deliver a measured quantity to the next customer in the manner above set forth.

It will now be clear that this said measuring mechanism comprises a measuring cylinder provided with a piston, an adjustable stop 55 for regulating the amount of oil delivered at each operation and for making said amount agree with the indications on the dial 54 and with the amount registered on the meter 52. It will also be clear that said dial 54 thus accurately indicates at all times the amount of oil that is in the cylinder.

I prefer to maintain in the tanks 15 and 16 a pressure of about 150 pounds, although the apparatus will operate satisfactorily on a pressure less than this.

I further prefer in the apparatus illustrated to maintain a pressure on the oil of about 12 pounds, and this is readily accomlished by adjusting the reducing valve 20.

It will further be clear that should it be required to deliver more than one quart to a single customer, this can be accomplished by letting the nozzle 56 remain in its delivering position, and by pulling down the lever 62 of the valve 30 by hand after each stroke of the piston, so that the cylinder 32 will be refilled and the piston will redeliver and duplicate the amounts. In other words, by properly manipulating the valves 59 and 30, any amount of oil from 0 to one or more quarts can be accurately delivered and the amounts indicated on the dial 54 and added up on the meter 52.

It is an especially important feature of this invention that the nozzle 54 is always maintained full of oil, because owing to this feature, one customer is not required to wait until the nozzle drains before receiving his desired quantity of oil. In the winter time when oil drains very slowly, it is a tedious operation to wait for the draining of the nozzle before serving successive customers.

In addition to saving oil by means of the valve 57, said valve prevents oil from dripping onto the fenders or other parts of an automobile, and thus prevents gumming up or marring the finish of expensive machines.

The oil tank 6 is conveniently filled through any suitable opening such as that indicated at 85, and the air tanks are conveniently filled through any opening such as 86. The employment of a float valve 27 in the tank 6 causes the exits 26 to be automatically closed when the tank is empty, and thus prevents air from getting into the measuring system. The adjustable stop 28 prevents said valve 27 from ever getting too far from said exits to be effective.

It is desired that it be distinctly understood that the foregoing disclosure is merely illustrative of this invention, and that both the arrangement of parts, as well as the details of construction can be widely varied without departing from the spirit thereof. Therefore, I do not wish to be limited to said disclosure except as may be required by the claims.

What I claim is:—

1. In an oil dispensing apparatus, the combination of a tank adapted to contain oil; means for creating a pressure in said tank; an exit pipe leading from said tank; a measuring cylinder connected to said exit pipe; a delivering means joined to said exit pipe; and means comprising a valve closing the extreme end of said delivering means, by which the same quantity of oil that reaches said cylinder is forced to exit without drip, from said delivering means, while the latter is maintained full of oil, substantially as described.

2. In an oil dispensing apparatus, the combination of a tank for containing oil; means to force said oil from said tank; means to convey said oil after leaving said tank to a measuring cylinder; a valve controlling said last named means; a delivering means communicating with said cylinder and controlled by said valve; means comprising a pair of valves located in its end adapted to normally maintain said delivering means full of oil; and means for forcing out of said cylinder and delivering means at each operation of said first named valve, the same quantity of oil that passes into said cylinder, substantially as described.

3. In an oil dispensing apparatus, the combination of a tank for holding oil; a measuring apparatus; a delivering apparatus; a connection between said tank and measuring apparatus and between the latter and said delivering apparatus; a valve in said connection; means comprising a valve located at the extreme end of said delivering means by which each of said apparatus is normally kept filled with oil; and pressure means by which on the operation of said first named valve a predetermined quantity of oil will be forced out of said delivering apparatus while the latter still remains full of oil to its extreme end, substantially as described.

4. In an oil dispensing apparatus, the combination of a tank for holding oil; a measuring apparatus comprising a cylinder and piston; a delivering apparatus comprising a hoze and nozzle; a connection between said tank and measuring apparatus and between the latter and said delivering apparatus; a three way valve in said connection; means

by which each of said apparatus is normally kept filled with oil comprising a pair of valves in said nozzle; and means by which on the operation of said three way valve a predetermined quantity of oil will be forced out of said delivering apparatus while the latter still remains full of oil, substantially as described.

5. In an oil dispensing apparatus, the combination of an oil supply; a measuring cylinder; means to transfer oil from said supply to said cylinder; means to indicate at all times the quantity of oil in said cylinder; means for force said oil out of said cylinder; means to convey away the ejected oil; and means to maintain at all times said last named means full of oil to its extreme end, substantially as described.

6. In an oil dispensing apparatus, the combination of an oil supply; a measuring cylinder; means to transfer oil from said supply to said cylinder; means comprising a dial and indicator to indicate at all times the quantity of oil in said cylinder; a meter to register the quantity of oil leaving said cylinder associated with said dial and indicator; means to force said oil out of said cylinder; and means to deliver the ejected oil without drip while maintaining itself at all times full of oil, substantially as described.

7. In an oil dispensing apparatus the combination of an oil supply comprising a tank; a measuring cylinder provided with a piston; means comprising a source of air pressure to transfer oil from said supply to said cylinder; means comprising an indicating mechanism and connections with said piston to indicate at all times the quantity of oil in said cylinder; means to force said oil out of said cylinder; means to convey away the ejected oil; and means comprising a valve located at the extreme delivery end of said last named means to maintain at all times said last named means full of oil, substantially as described.

8. In an oil dispensing apparatus, the combination of an oil supply; means connected with said supply for delivering measured quantities of oil; means connected with said last named delivery means for indicating at all times the amounts of oil delivered; and means comprising a valve in the extreme end of the delivery means to prevent drip and to maintain said last named means always full of oil, substantially as described.

9. In an oil dispensing apparatus the combination of an oil supply; means comprising a nozzle connected with said supply for delivering measured quantities of oil; means comprising a cylinder, a piston and an indicating mechanism actuated by said piston connected with said last named delivery means for indicating at all times the amounts of oil delivered; and means comprising a valve in the extreme end of said nozzle adapted to prevent drip from said nozzle and to maintain said last named means always full of oil, substantially as described.

10. In an oil dispensing apparatus the combination of an oil supply; a delivery means comprising a nozzle provided with a partition having an opening connected with said supply for delivering measured quantities of oil; means connected with said delivery means for indicating at all times the amounts of oil delivered; means comprising a valve in the delivery means to maintain said last named means always full of oil; and a valve to prevent drip in the extreme end of said nozzle, substantially as described.

11. In an oil dispensing apparatus, the combination of a measuring apparatus; a delivery pipe provided with a nozzle adapted to deliver measured quantities of oil from said measuring apparatus; a valve in the extreme end of said nozzle to prevent drip and for maintaining said pipe always full of oil; and another valve associated with said nozzle for governing the passage of the measured quantities of oil delivered, substantially as described.

12. In an oil dispensing apparatus, the combination of a measuring apparatus; a delivery pipe provided with a nozzle adapted to deliver measured quantities of oil from said measuring apparatus; a three way valve between said measuring apparatus and said pipe adapted to permit said measuring apparatus to be filled; a valve in the extreme end of said nozzle for maintaining said pipe always full of oil; and another valve associated with said nozzle for controlling the flow of the measured quantities of oil delivered, substantially as described.

13. In an apparatus for dispensing oil, the combination of a measuring apparatus; an indicator adapted to indicate at all times the amount of oil in said measuring apparatus; a pipe for delivering oil from said measuring apparatus; a nozzle provided with a perforated partition connected to said pipe; a valve in said partition; and a valve in the extreme end of said nozzle to prevent a drip, substantially as described.

14. In an apparatus for dispensing oil, the combination of a measuring apparatus; a pipe for delivering oil from said measuring apparatus; a tank for supplying oil to said measuring apparatus; a pressure tank for forcing oil out of said first named tank; a valve having an operating lever governing the admission of oil to said measuring apparatus and to said pipe; a nozzle provided with a perforated partition connected to

said pipe; a valve in said partition; a valve in the extreme end of said nozzle to prevent drip; and means for hanging said nozzle on said lever, substantially as described.

15. In an apparatus for dispensing oil, the combination of a tank for supplying the oil to be dispensed; a measuring apparatus connected to said tank; a delivering pipe and nozzle for conveying the measured oil from the measuring apparatus; and means located in the extreme end of said pipe to prevent drip and for maintaining said pipe always full of oil, substantially as described.

In testimony whereof I affix my signature.

RAYMOND CROWDER.