J. F. ANDRES.

MEASURING DEVICE FOR GAS MACHINES.

APPLICATION FILED MAY 9, 1910.

994,102.

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Fig. 1.

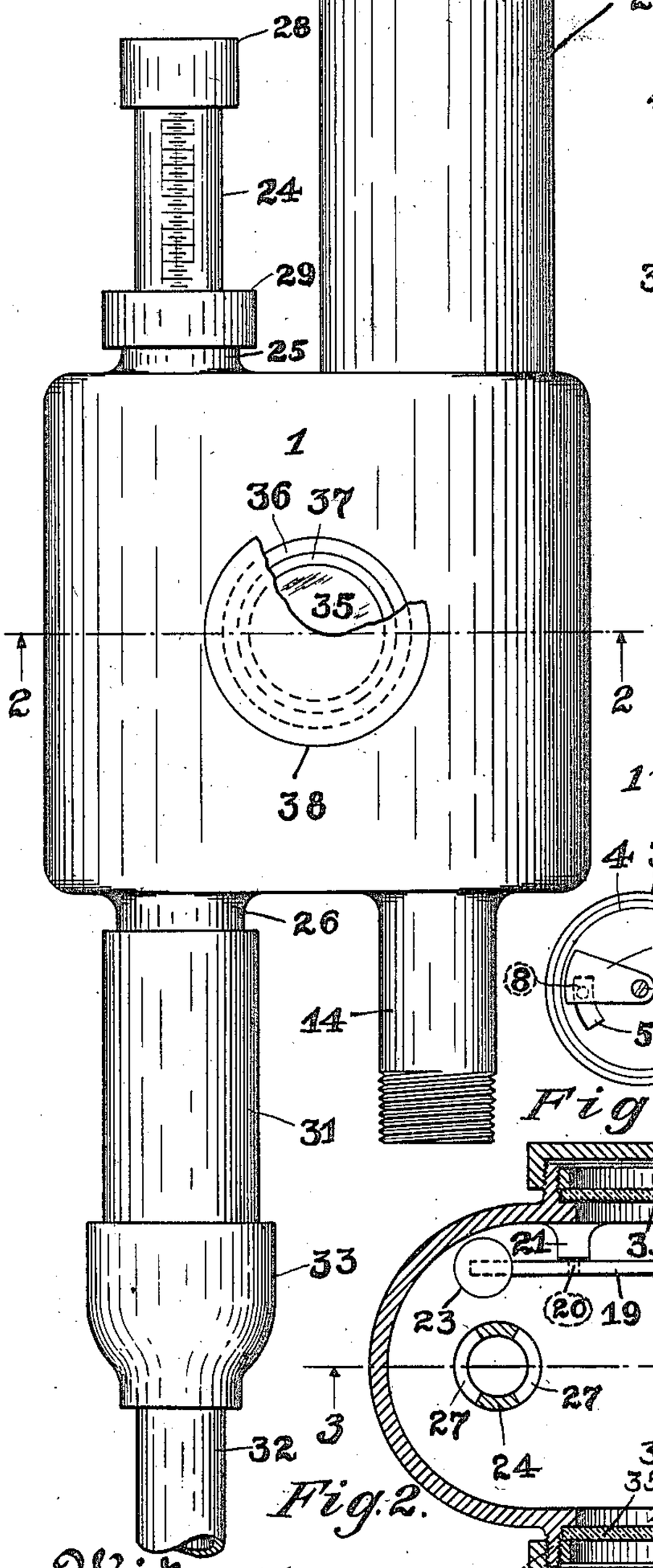

Fig. 3.

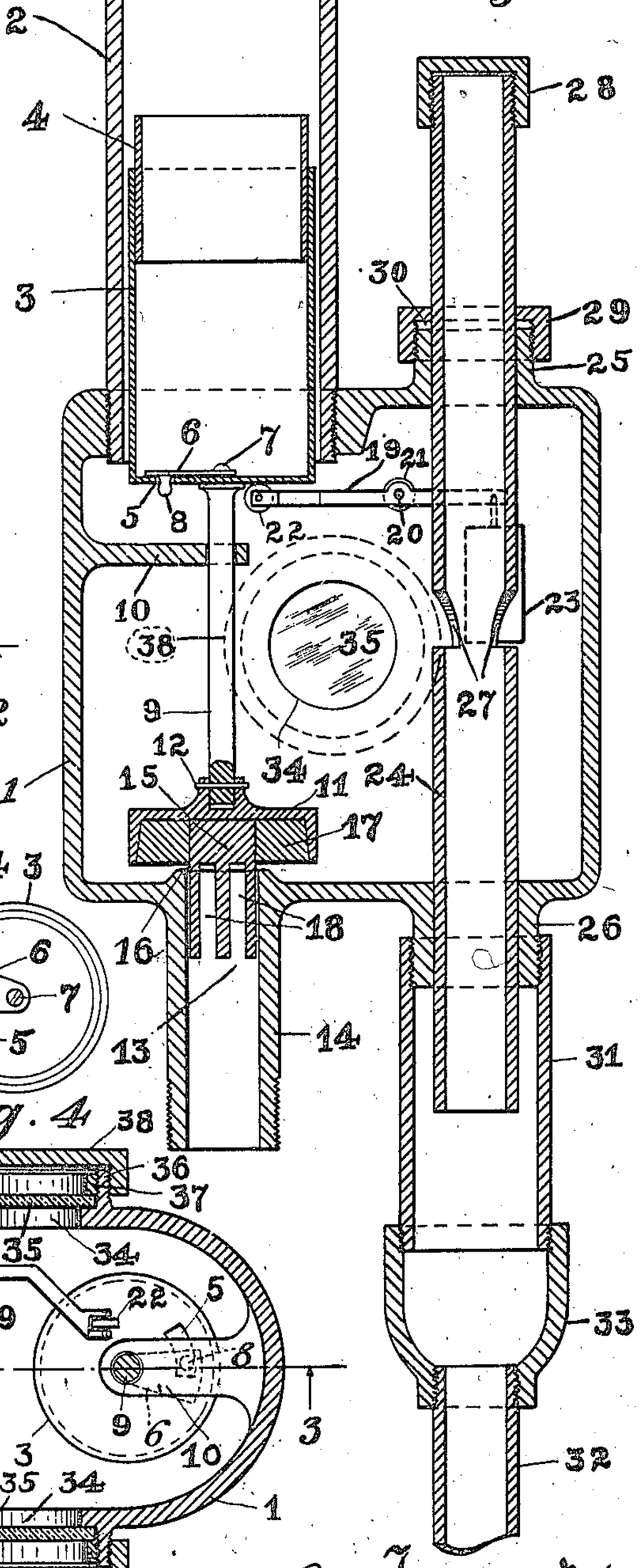

Fig. 4

Fig. 2.

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UNITED STATES PATENT OFFICE.

J FRANK ANDRES, OF ST. LOUIS, MISSOURI, ASSIGNOR TO UNITED STATES SAFETY GAS MACHINE COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

MEASURING DEVICE FOR GAS-MACHINES.

994,102. Specification of Letters Patent. Patented May 30, 1911.

Application filed May 9, 1910. Serial No. 560,269.

To all whom it may concern:

Be it known that I, J FRANK ANDRES, a citizen of the United States, residing at the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Measuring Devices for Gas-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention consists in the provision of a measuring device that is particularly adapted to be utilized in connection with a gas machine in order to govern the amount of hydrocarbon oil to be delivered to a carbureter in which the vapors of the oil are mixed with air to form a combustible gas.

In the accompanying drawings forming part of this specification, in which like numbers of reference denote like parts wherever they occur, Figure 1 is a side elevation of the measuring device embodying this invention; Fig. 2 is a sectional view on the line 2—2, Fig. 1; Fig. 3 is a sectional view on the line 3—3, Fig. 3; and Fig. 4 is a top plan view of the receiving cup.

The casing 1 of the measuring device is preferably formed of metal and is provided with an inlet tube or pipe 2, which is connected by any suitable means to a pump (not shown in the drawings) that forces the hydrocarbon oil to said device, said pump being preferably similar to and operated in the same manner as the pump disclosed in my other application filed of even date, Serial No. 560,268. A cup 3 is reciprocatively mounted in tube 2 and is arranged to receive the liquid that is delivered to said tube. A sleeve 4 is telescoped in cup 3, and affords a means for increasing the capacity of said cup. An orifice 5 is formed in the bottom of cup 3 in order to allow the liquid oil to flow from said cup into the interior of casing 1. A slide 6 is pivoted by means of a screw 7 or the like to the bottom of cup 3 and is arranged to open or to close said orifice. A projection or button 8 borne by slide 6 protrudes through orifice 5 and affords a means for moving said slide.

A valve-stem 9 is fastened by any suitable means to cup 3, and passes through a perforation in a guide 10 that projects from the inner wall of casing 1. An inverted cup 11 is attached to stem 9 by means of a pin 12 or the like and is disposed above opening 13 of an outlet pipe 14 projecting from the bottom of casing 1, said pipe being connected to the carbureter (not shown). A member 15 extends from the interior of said cup into opening 13 and guides the movement of said cup toward and away from seat 16 that encircles said opening. Cork 17 or other suitable material is placed around member 15 within cup 11, in order to engage seat 16 when said cup is moved toward said seat in the manner hereinafter described said member being provided with openings 18 to allow the liquid within casing 1 to flow through opening 13 when cup 11 is moved away from seat 16.

A lever 19 is pivoted at 20 to a boss 21 that projects from the inner wall of casing 1. One end of said lever bears a roller 22, which underlies cup 3, a weight 23 being attached to the other end of said lever in order to hold said roller in engagement with the bottom of said cup. When cup 3 is empty, the pull of weight 23 forces said cup upwardly within tube 2, thereby moving cup 11 away from seat 16 with the result that the liquid within casing 1 is allowed to flow through openings 18 into opening 13, but when the liquid enters tube 2 and fills cup 3, said cup 3 descends against the pull of weight 23 and causes cup 11 to move toward seat 16, whereby the cork in cup 11 engages said seat and closes the opening 13. Cup 3 remains in its lowered position until all of the liquid therein flows through orifice 5 into the interior of casing 1. Weight 23 then raises cup 3 with the result that cup 11 moves away from seat 16 and allows the liquid in casing 1 to flow through openings 18 into opening 13 of the outlet pipe 14.

The amount of hydrocarbon oil that is allowed to discharge through the outlet pipe 14 each time the cup 11 is moved away from seat 16 is regulated by means of an adjustable tube or gage 24. Said tube 24 passes through an opening in lug 25, which projects from the top of casing 1, and extends through an opening in lug 26 borne by the bottom of said casing. Tube 24 is arranged to fit snugly in said lugs in order to be held in any desired position and is provided with apertures 27 which communicate with the interior of casing 1. When the liquid flows into the interior of casing 1, it fills said casing to the level of aper-

tures 27 in tube 24, said apertures being held at any desired elevation within said casing in order to allow a predetermined amount of the liquid to discharge through pipe 14. Any excess of liquid that enters the interior of casing 1 previous to the raising of cup 3 in the manner hereinabove described flows through apertures 27 into tube 24 from which it discharges to the source of liquid supply. The upper end of tube 24 projects above casing 1 so that said tube can be moved upwardly or downwardly in order to raise or lower apertures 27 within said casing. A cap 28 is attached to the upper end of said tube and prevents the vapors of the hydrocarbon oil from escaping from said tube. A cap 29 encircles tube 24, and is screw-threaded to fit on the screw-threaded portion of lug 25. Said cap 29 presses packing 30 against the end of lug 25 and prevents the vapors of the hydrocarbon oil from escaping from the interior of casing 1. The lower end of tube 24 protrudes into the interior of pipe 31 that is connected to lug 26, said pipe 31 being connected to pipe 32 which leads to the source of liquid supply (not shown) by means of a coupling 33 or the like.

In order to afford a convenient means by which the elevation of apertures 27 can be observed from the outside of casing 1, said casing is provided with an opening 34 or a plurality of such openings, each opening 34 being covered with a piece of glass 35. Said glass 35 fits into a ring 36 that projects from casing 1, said ring being screw-threaded internally to receive a screw-threaded ring 37, which holds said glass firmly in place and prevents the liquid from leaking through opening 34. A cap 38 fits over ring 36 and protects glass 35. Each opening 34 affords a means for obtaining access to the interior of casing 1 in order to actuate the slide 6, or for any other purpose. If desired, the tube 24 can be graduated to indicate the amount of liquid that is measured by the device.

The operation of the device is as follows: Each discharge stroke of the pump forces a quantity of hydrocarbon oil to tube 2. The oil fills cup 3 and sleeves 4 and lowers said cup, thereby forcing cork 17 against seat 16 to close opening 13. If a larger amount of oil enters tube 2 than is necessary to fill cup 3 and sleeve 4, the excess of oil runs down the outside of said cup into the interior of casing 1. The oil in cup 3 discharges through orifice 5 into the interior of casing 1 and fills said casing to the level of the apertures 27 in tube 24, said apertures being set at the desired elevation to allow a predetermined amount of oil to be measured in said casing. The superfluous amount of oil that enters casing 1 flows through apertures 27 into tube 24 which discharges same back to the source of oil supply. When all of the oil in cup 3 drains into casing 1, weight 23 lifts said cup thereby raising cup 11, with the result that cork 17 moves away from seat 16 and allows the oil in said casing to discharge through pipe 14 to the carbureter before the next stroke of the pump forces another quantity of oil to tube 2.

I claim:

1. A measuring device comprising a casing having an inlet and an outlet, a reciprocatory receptacle arranged to receive the liquid that enters said inlet and adapted to discharge same into said casing, a valve operable by said receptacle and adapted to close said outlet when liquid enters said receptacle, a valve stem connected at one end to the receptacle and at its opposite end to the valve, means for automatically raising said receptacle to open said outlet after the liquid discharges from said receptacle into said casing, and an adjustable gage adapted to discharge the excess of liquid that enters said casing.

2. A measuring device comprising a casing having an inlet and an outlet, a reciprocatory receptacle arranged to receive the liquid that enters said inlet and adapted to discharge same into said casing, a valve operable by said receptacle adapted to close said outlet when the liquid enters said receptacle, a valve stem connected at one end to the receptacle and at its opposite end to the valve, means for automatically raising said receptacle to open said outlet after the liquid discharges from said receptacle into said casing, and an adjustable gage adapted to allow a predetermined amount of liquid to enter said casing and to discharge the excess of liquid, said casing having a glass-covered opening.

3. A measuring device comprising a casing having an inlet and an outlet, a reciprocatory receptacle arranged to receive the liquid that enters said inlet and adapted to discharge same into said casing, a valve operable by said receptacle adapted to close said outlet when the liquid enters said receptacle, means for automatically raising said receptacle to open said outlet after the liquid discharges from said receptacle into said casing, and an adjustable gage adapted to allow a predetermined amount of liquid to enter said casing and to discharge the excess of liquid, said casing having a glass-covered opening, and means for protecting the glass covering said opening.

4. A measuring device including a casing having an inlet and outlet, a reciprocatory receptacle having a normally open discharge to receive the liquid that enters the inlet, a rod depending from said receptacle, a valve carried by the lower end of said rod and operating to control the outlet, means to automatically raise the receptacle to open

the outlet after the liquid leaves the receptacle, and independently regulable means in the casing to discharge any excess of liquid in the casing.

5. A measuring device including a casing having an inlet and an outlet in vertical alinement with each other, a perforated receptacle for receiving the liquid that enters the inlet, a valve for the outlet, a rigid connection between said receptacle and valve, and means to automatically raise the receptacle to open the outlet after the liquid leaves the receptacle, said means comprising a lever pivoted between its ends, one of the lever ends bearing on the bottom of the receptacle and the other end having a weight thereon.

6. A measuring device including a casing having an inlet and an outlet, an adjustable receptacle within the casing for containing the liquid to be measured, said receptacle having a discharge, means for regulating the quantity of liquid egressing through said discharge, and means operated by the receptacle for controlling said outlet.

7. A measuring device including a casing having an inlet and an outlet, measuring means in the casing to receive a determinate quantity of liquid from the inlet and to discharge same into the casing to thereby allow the same to enter the outlet, and adjustable overflow device in the casing separate from said means, said casing having a glass covered sight opening to permit of visual inspection of said overflow device in adjusting the same.

8. In a measuring device, a casing having an inlet in its top and a pair of outlets in its bottom, measuring means arranged between the inlet and one of the outlets to receive a determinate quantity of liquid from the inlet and to discharge same into the casing to thereby allow the liquid to enter said last named outlet, and an overflow device discharging into the other outlet, said last named outlet having a connection with the source of liquid supply.

9. A measuring device including a casing having an inlet and an outlet, measuring means in the casing to receive a determinate quantity of liquid from the inlet and to discharge same into the casing to thereby allow the liquid to enter the outlet, said measuring means being formed with an outlet which permits the discharge of the liquid, and adjustable means carried by the measuring means to allow of adjustment of the size of the outlet thereof to permit the speed at which the liquid egresses from said outlet of the measuring means to be regulated.

In testimony whereof I have hereunto affixed my signature in the presence of two witnesses.

J FRANK ANDRES.

Witnesses:
GLADYS WALTON,
JOSEPHINE SCHAEFER.