

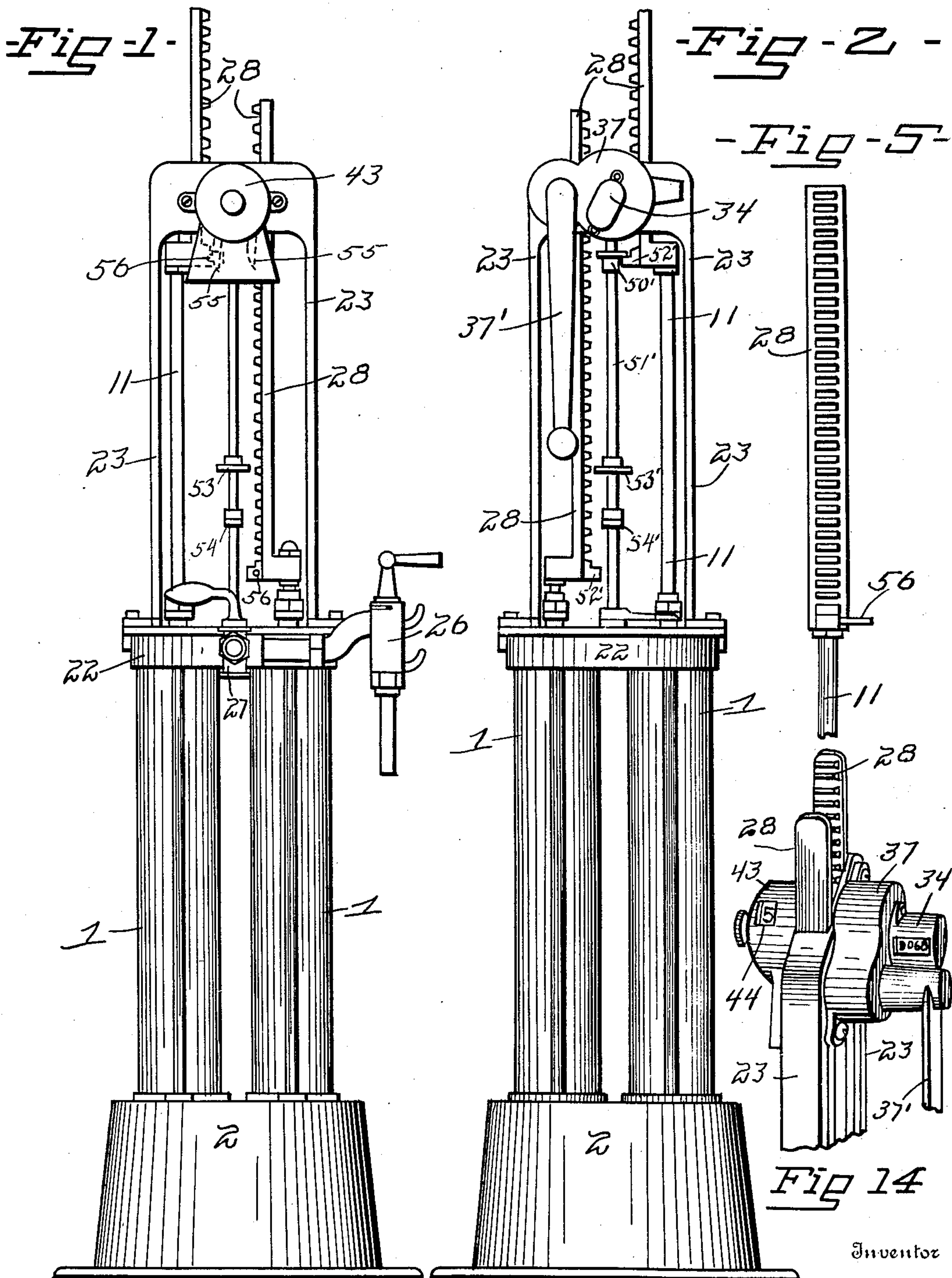
No. 855,504.

PATENTED JUNE 4, 1907.

J. B. DAVIS.
SELF MEASURING OIL PUMP.

APPLICATION FILED MAY 3, 1906.

3 SHEETS—SHEET 1.



Witnesses

Manuel Lubber.
C. M. Theobald.

By

J. B. Davis.
J. W. Hart
his Attorney

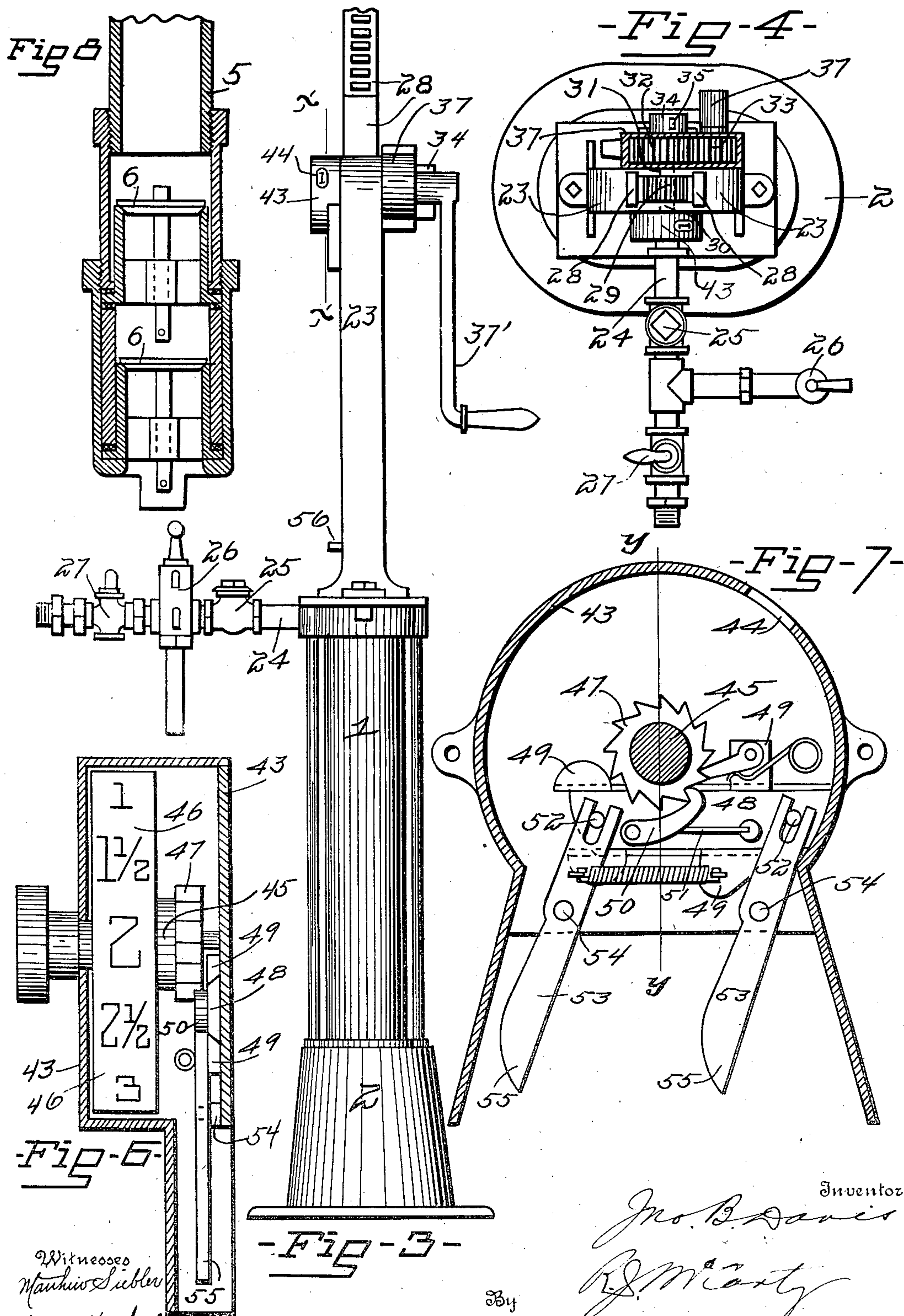
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Witnesses
Markus Liebler
G. W. Herbold.

By

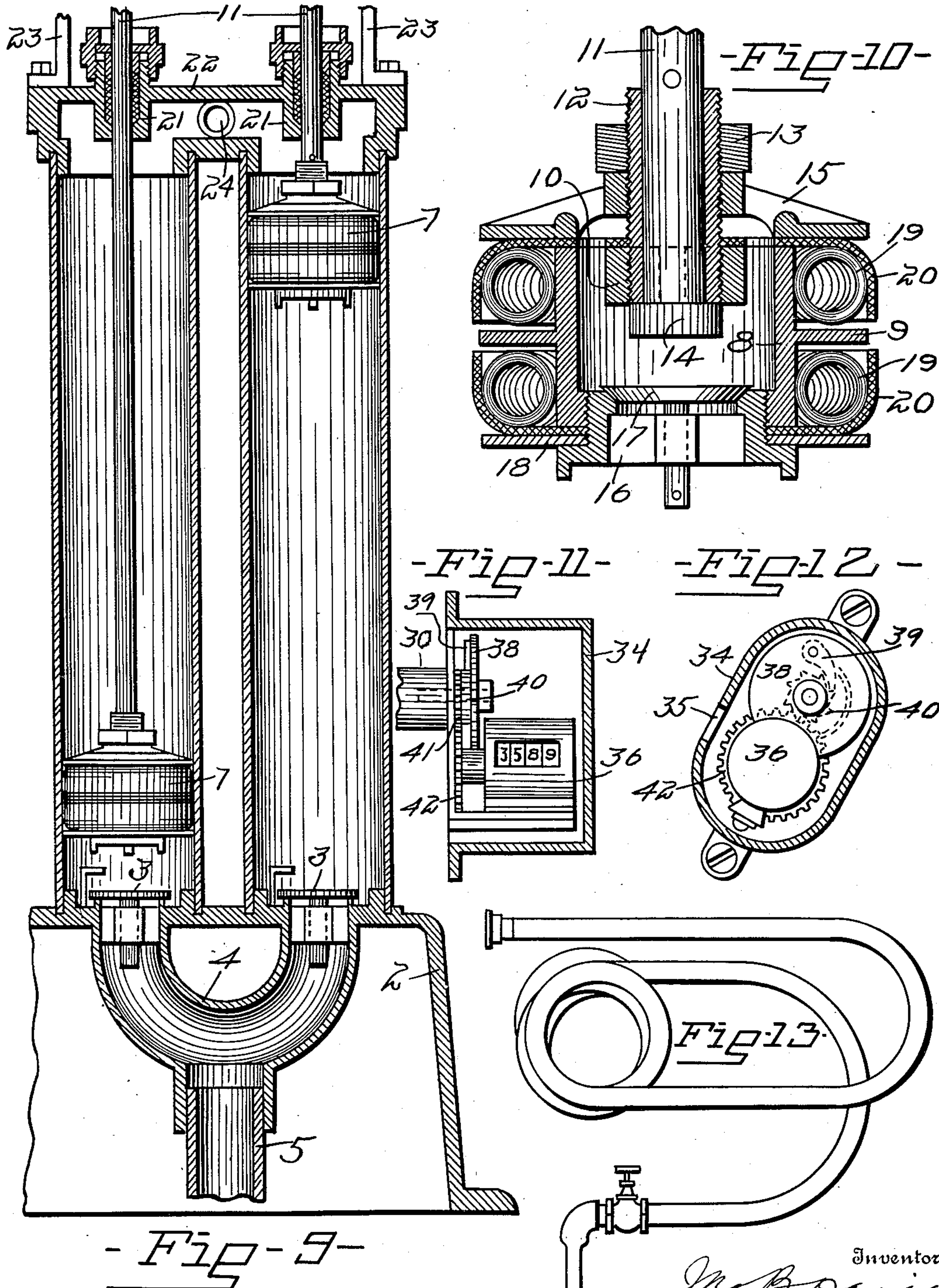
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3 SHEETS—SHEET 3.



Witnesses

Marshall Seibler
C. M. Thibault.

By

J. B. Davis
his Attorney

UNITED STATES PATENT OFFICE.

JOHN B. DAVIS, OF DAYTON, OHIO.

SELF-MEASURING OIL-PUMP.

No. 855,504.

Specification of Letters Patent.

Patented June 4, 1907.

Application filed May 3, 1906. Serial No. 314,960.

To all whom it may concern:

Be it known that I, JOHN B. DAVIS, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Self-Measuring Oil-Pumps; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in duplex self-measuring oil pumps for dispensing oil in retail quantities.

The invention comprises various improved details, all of which combine to produce a pump of the above type having a degree of efficiency and utility which meet all requirements.

Referring to the drawings—Figure 1, is a front elevation of my improved duplex self-measuring oil pump. Fig. 2, is a rear elevation thereof. Fig. 3, is a side elevation thereof. Fig. 4, is a top plan view thereof. Fig. 5, is a detail of the driving racks. Fig. 6, is a detail of the discharge register through which the quantities of oil dispensed are visually indicated; said view being on the line $y-y$ of Fig. 7. Fig. 7, is a detail on the line $x-x$ of Fig. 3 showing the discharge register-actuating mechanism. Fig. 8, is a detail of the foot valve. Fig. 9, is a longitudinal section of the lower part of the pump. Fig. 10, is a sectional detail of one of the pistons. Figs. 11 and 12, are detail views of the gallon meter through which the total oil discharged in gallons from the cylinders, is recorded. Fig. 13, is a detail view of the hose which is utilized when it is desired to deliver oil from the pump to a stationary tank, such as is used in a motor vehicle. Fig. 14, is a perspective view of the upper part of the pump showing the discharge register and the gallon meter.

In a detail description of the invention, similar reference characters indicate corresponding parts.

The pump cylinders 1—1 are mounted upon a hollow base 2 and communicate through suction valves 3—3 with a curved feed pipe 4. The pump cylinders in the present instance are limited in their capacity to a half gallon each, but of course their ca-

capacity may be varied from this. The valves 3—3 seat above the ends of the feed pipe 4. This double-ended feed pipe 4 is fed from a supply tank (not shown) by a single feed pipe 5 which connects with the middle of said pipe 4 and has attached to its lower end lying within said tank, a foot valve consisting of two similar valves 6—6. Two of such valves are employed in order to prevent leakage or any inoperativeness in the event that one of such valves should become defective while in operation, for example, by clogging. These valves it will be understood, like the cylinder valves 3—3, are lifted from their seats by the vacuum created by the moving pistons 7—7 which have opposite movements. The details of construction of said pistons are illustrated in Fig. 10 of the drawings and comprise a cup 8 having an annularly projected flange 9 surrounding its middle circumference and a spider 10 through which it is connected to the piston rod 11. The said spider 10 is screwed onto the lower end of an exteriorly screw-threaded sleeve 12, said sleeve being placed upon the lower end of the piston rod and supported thereon by resting upon an enlargement or head 14 on the extreme end of said piston rod. The top of the cup 8 is engaged by a washer 15 which also screws onto the sleeve 12 and is jammed against said cap by a nut 13 which engages said sleeve. Within the lower end of the cup 8 there is screwed a ring 16 which provides a seat for a piston valve 17.

Engaging the valve seat 16 is a washer 18 which, together with the flange portion 9 and the washer 15 form two annular spaces around the piston for two expansion springs 19—19 which lie in said spaces and surround the body of the piston. The springs 19 are made of wire coiled, with their ends united to form rings. Inclosing these springs are two piston cups 20 which engage the surrounding surfaces of the pump cylinders, and being of leather or other suitable packing material, are maintained in contact with the pump cylinders through the outward pressure of the springs, and thus all inaccuracies of the cylinders are taken up. This construction of piston is most effective in its operation owing to the action of the springs upon the leather cups serving at all times to compensate for the wear between the pump cylinders and the pistons. The piston rods 11—11 work through stuffing boxes 21 in a cap 22 which surmounts the top of the pump cylinders and

provides a support for the super-structure consisting of the frames or standards 23 which are bolted to said cap 22. The cap 22 forms the outlet from either cylinder through a pipe 24 which is located in an opening in said cap mid-way between the two cylinders—see Figs. 4 and 9.

Within the outlet pipe 24 there is an automatic check valve 25 which controls the outlet to hand-operating valves 26 and 27; through these two valves 26 and 27 the oil is delivered from the pump to the receptacles; valve 26 being utilized to deliver the oil to any portable receptacle, and valve 27 being utilized in connection with the hose shown in Fig. 13 to deliver the oil to a stationary tank, such for example, as the gasoline tank of an automobile. Mounted upon each of the piston-rods is a rack 28 having the teeth thereon lying inwardly and engaging opposite sides of a pinion 29—see Fig. 4. The pinion 29 is on a shaft 30 which is driven from the primary-actuating shaft 31 through pinions 32 and 33, the former pinion being on the shaft with the pinion 29. 34 designates a housing having a sight opening 35; within this housing there is mounted a set of counters 36 which are viewable through the sight opening 35; the housing 34 is secured to the housing 37 which incloses the gear wheels just referred to which transmit movement to the rack pinion 29. The counters 36 are utilized to record the total quantity of oil dispensed from the pump cylinders and may be termed a gallon meter; said counters are actuated concurrently with each measuring operation from the main shaft 31 which is the driving shaft and which is operated from the crank handle 37'.

The main actuating shaft 31 has its end projecting into the housing 34, and secured to said end is a disk 38 carrying a ratchet pawl 39, which engages a ratchet wheel 40 loose on the end of the shaft 31 and has connected to it a spur wheel 41 which meshes with a spur wheel 42 on the shaft of the counters 36. On the opposite side of the super-structure is another wheel 46 shown in detail in Figs. 6 and 7, and which is intended to register and indicate the oil discharged in small quantities up to the full capacity of each cylinder, which in the present instance is a half gallon; this last named register has a housing 43 of cylindrical form which is attached to the standards 23 and has a sight opening 44 through which the characters on the wheel are visible. The said wheel 46 is mounted upon an independent shaft 45 which has its support in the walls of the housing 43; also fixed to said shaft is a ratchet wheel 47 through which movement is imparted to the shaft upon each elevation of the racks 28. 48 designates a reciprocating slide mounted in guides 49 on the interior of the housing 43; this slide 48 carries a ratchet pawl 50 which

is maintained in constant engagement with the ratchet wheel 47 by a plate spring 51 secured to said slide. Upon opposite ends of said slide 48 there are pins 52 which are engaged by the slotted ends of levers 53, said levers having their fulcrums at 54 in the side of the housing. The lower ends of these levers are tapered as at 55 and said tapered ends lie in the pathways of trip arms or projections 56 on the lower ends of the racks 28, so that when said racks are elevated they actuate one or the other of the levers 53 by coming in contact with the lower ends of said levers and thus impart movement to the slide 48 and to the shaft 45 through the pawl 50 and ratchet wheel 47. The periphery of the wheel 46 bears figures indicating gallons and fractional parts thereof, and these are viewable through the sight opening 44 to ascertain the quantity of oil dispensed. 50' designates a stop on rod 51' by which the piston stroke is regulated for measuring; this stop is engaged by a lug 52' carried on each of the racks 28. The lugs 53' and 54' are stops for pints and quarts. In drawing a pint, the lug 52' on either rack as the case may be, is carried up to lug 54' which will measure a half pint, and by then reversing and going back in the stroke, will give a pint measure, taking a half pint out of each cylinder and leaving the pump in a condition to draw any specific quantity within the capacity of the pump.

An operation of the invention is as follows: Through the crank handle 37' the pinion 29 is operated to drive the piston 7 in opposite directions; the rising piston forces the oil through the pipe 24 to either of the valves 26 or 27; in the meantime, the discharge register 46 is actuated when the projection 56 on the rack engages the lever 53. The position of the wheel 46 is viewed through sight opening 44 in the housing and the quantity of oil delivered from the pump is regulated by thus viewing the indicator wheel 46 as the pump is operated; in the meantime, the gallon meter registers each gallon pumped.

I claim:

1. In a self-measuring oil pump, the combination of a piston and piston rod, means for imparting reciprocating movement to said piston and piston rod, a discharge register to indicate the oil pumped by the piston in gallons and half gallons, a gallon register to record the total quantity pumped by the piston for any given period, and means interposed between the discharge register and the piston rod extensions whereby said discharge register is actuated at the limit of each elevation of each piston rod.

2. In a self-measuring oil pump, a pump cylinder, a piston and piston rod movable in said cylinder, a rack extending from the piston rod, a crank handle, gearing between the crank handle and the rack, a discharge register to indicate the specific quantities of oil

delivered from the cylinder, said discharge register being actuated by means on the piston rod and upon the completion of each upward movement of said piston rod, and a total register to record the quantity of oil pumped in any given period, said total register being operated from the crank handle.

3. In a self-measuring oil pump, the combination with duplex cylinders, a piston and piston rod in each cylinder, racks extending from said piston rods, means engaging said racks to operate the pistons in opposite directions, a discharge register to indicate the specific quantities of oil dispensed, means interposed between said discharge register and said racks for actuating said register, said means being out of engagement when the racks are in their lower positions, and a total register to indicate the total quantity of oil dispensed, said total register being operated from the means which actuate the pistons.

4. In a self-measuring oil pump, duplex cylinders, a piston and piston rod for each cylinder, a rack connected to each piston rod, means for driving said racks in reverse directions, a discharge register, to indicate the specific quantities of oil discharged from the cylinders, means comprising a reciprocating

slide with ratchet and lever devices for actuating said discharge register from the piston rod extensions, and means on the piston rod extensions for engaging said ratchet and lever devices to actuate the slide.

5. In a self-measuring oil pump, pump cylinders, a piston and a piston rod for each cylinder having rack extensions, means engaging said racks to operate the pistons, a discharge register common to both of said cylinders to register the quantities of oil discharged from each cylinder in each operation, register-actuating devices for operating said register at the limit of the upward movement of each piston, means on each of the rack extensions of the piston rods for engaging said register-actuating devices at the limit of each upward movement of each piston, said means on said racks being otherwise out of engagement with the register-actuating devices.

In testimony whereof I affix my signature, in presence of two witnesses.

JOHN B. DAVIS.

Witnesses:

C. M. THEOBALD,
MATTHEW SEIBLER.