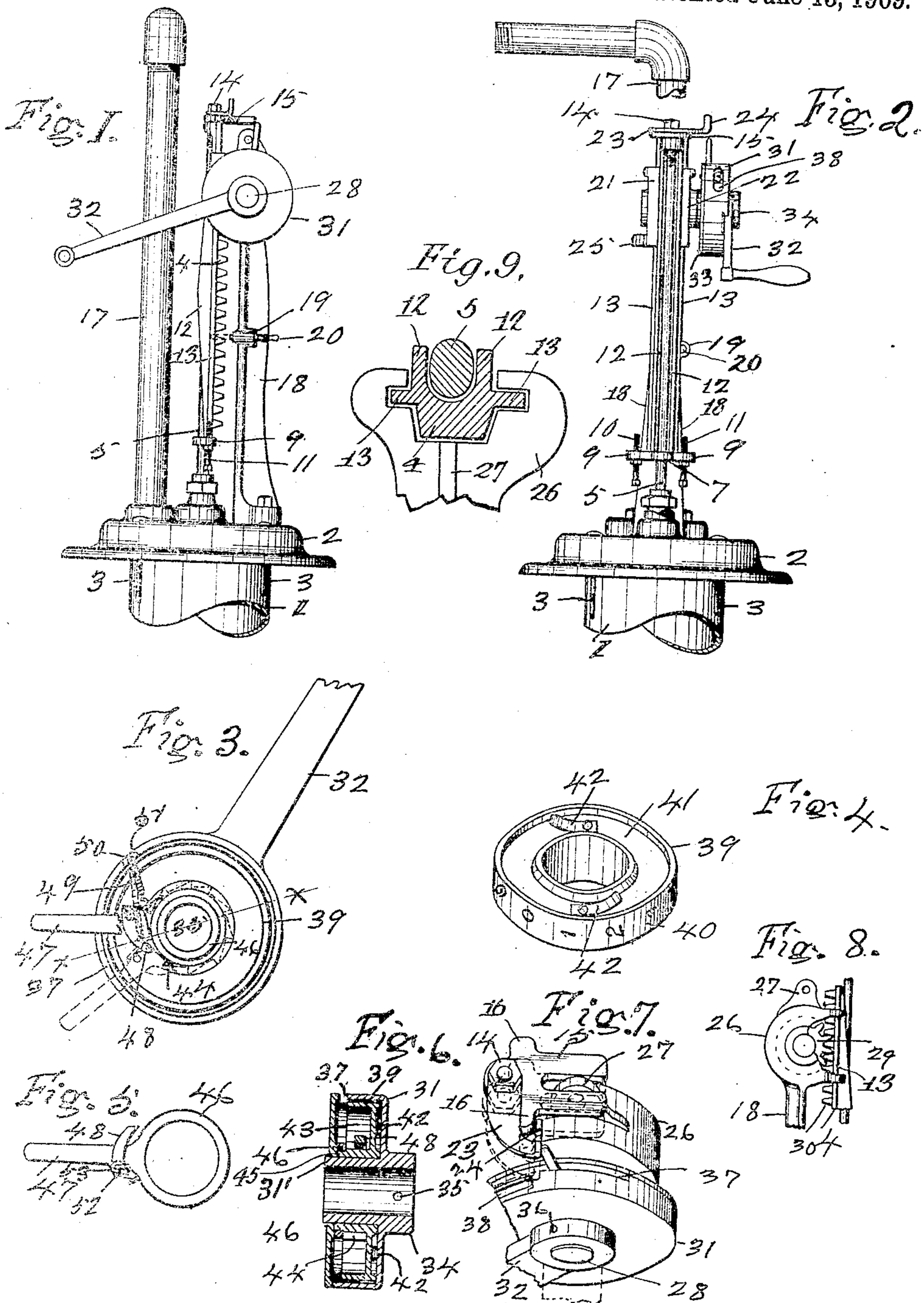


924,715.

Patented June 15, 1909.



WITNESSES:

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FLAVIUS J. YOUNG, OF FORT WAYNE, INDIANA.

SELF-MEASURING OIL-PUMP.

No. 924,715.

Specification of Letters Patent.

Patented June 15, 1909.

Application filed October 23, 1908. Serial No. 459,123.

To all whom it may concern:

Be it known that I, FLAVIUS J. YOUNG, a citizen of the United States, residing at Fort Wayne, in the county of Allen, in the State of Indiana, have invented certain new and useful Improvements in Self-Measuring Oil-Pumps; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to improvements in self measuring oil pumps.

The object of my present invention is to provide a simple, economical and reliable self-measuring pump for the measurement of illuminating oils in retailing the same, and adapted to register the amount of oil delivered to the customer at each operation thereof, by an improved registering mechanism, and an improved construction and arrangement of the means for limiting the vertical movement of the plunger for different quantities of oil.

My invention consists of a pump-cylinder located in a suitable oil reservoir and provided with a vertical discharge pipe; a vertically reciprocating plunger mounted in the pump cylinder and connected with the actuating mechanism; a rack-bar fixed to the upper end of the plunger; an upright supporting standard fixed on the pump base and carrying the actuating and registering mechanisms; a horizontal shaft rotatably mounted in the standard and carrying upon one end thereof a fixed gear wheel in mesh with the said rack, and on its other end the registering mechanism and the operating handle.

The principal novel features of my invention reside in the construction of the registering mechanism, and the means for limiting the stroke of the plunger to regulate the quantity of liquid discharged at each operation.

Similar reference numerals indicate like parts in the several views of the drawings in which—

Figure 1 is a side elevation of my invention with the pump cylinder partly broken away, and the top plate partly in vertical section. Fig. 2 is a front elevation with the discharge pipe partly broken away to show the general arrangement of actuating and registering mechanisms. Fig. 3 is a detail

side view of the registering mechanism partly broken away to show the arrangement of the ratchet mechanism therein. Fig. 4 is a perspective detail of the dial showing the friction devices to prevent displacement thereof in use. Fig. 5 is a bottom plan of the operating lever of the registering mechanism. Fig. 6 is cross section of Fig. 3 on the line $x-x$ of Fig. 3 showing the relative arrangement of the registering means in its containing casing. Fig. 7 is an enlarged perspective detail of the upper end of the pump partly broken away, showing the actuating lever of the registering means in engagement with its actuating means, and showing in dotted outline the position of such means when the same is at its lowest limit. Fig. 8 is an enlarged detail of the pump-head, partly broken away to show the engagement of the plunger rack-bar with its actuating means. Fig. 9 is a fragmentary plan view of the pump head with the rack-bar and pump-rod in cross-section therein, showing the relative arrangement of the guiding means for the rack-bar.

The pump-cylinder 1 of common form is provided with a circular cap 2 of common form forming the base of the pump. This cap 2 is rigidly fixed in position in any proper manner, as by the rods 3 in a well understood way. In a central vertical opening in the pump-base 2 is slidably mounted the plunger rod 5 to which is rigidly secured the vertical rack-bar 4 having its lower end provided with a vertical opening for the plunger rod, as shown at 7 in Fig. 2, and has a pair of oppositely arranged lateral lugs 9 having a vertical screw threaded perforation for the respective screws 10 and 11, for the purpose hereafter described.

The rack bar 4 has its front face provided with the parallel longitudinal strengthening flanges 12 between which the plunger rod 5 is compactly arranged, Figs. 1 and 2, and it has its opposite sides throughout their length provided with the longitudinal guiding flanges 13. The rack-bar 4 has its upper end provided with a vertical opening in which the upper end of the plunger rod is rigidly secured by means of the nut 14.

On the top of the rack bar is fixed a bifurcated plate 15, Figs. 1 and 7, provided with a pair of opposite lateral lugs 16 which limit the downward movement of the plunger by their engagement with the top of the standard about to be described. A second plate

23 is mounted on the upper end of the plunger rod 5 adjacent to the upper face of the plate 15 and is rigidly fixed thereon by means of the nut 14. This plate 23 is rearwardly curved, as shown, and has its free end provided with an upright lug 24 for the purpose hereafter described.

In a proper screw threaded opening in the pump-base is fixed a suitable discharge pipe 17 to whose outer end any proper nozzle can be attached.

On the base 2 in diametrically opposite relation to the discharge pipe is rigidly bolted the upright standard 18 having a lateral lug 19 in which is slidably mounted the stop pin 20 which by its engagement with the screw 11 limits the upward movement of the plunger in discharging the desired quantity of liquid.

The upper end of the standard is provided with a hollow pump-head 26 having a pair of lateral parallel guiding flanges 21 and 22 whose inner faces are longitudinally recessed to loosely receive the respective flanges 13 of the rack-bar 4, Fig. 2. The flange 21 has upon its lower end a lateral lug 25 which by its engagement with the screw 10 limits the upward movement of the plunger when carried to its uppermost limit in use.

On the upper surface of the pump head 26 is arranged an upright laterally apertured lug 27 adapted to be received by the bifurcation in the plate 15, whereby the pump can be locked against interference by intruders.

In suitable bearings in the pump-head 26 is rotatably mounted a shaft 28 carrying at or near one end thereof a fixed gear wheel 29 in mesh with the teeth 30 of the rack-bar 4, Fig. 8, and adapted to actuate the same.

On the other end of the shaft 28 is fixed a two-part casing 31 in which the registering mechanism is arranged. This casing 31 has a fixed handle 32 and a detachable plate 33 which forms the inner side of the casing and is secured thereto by screws or other proper manner.

The casing 31 has a boss 34 having a diametric opening 35 in register with a similar opening in the adjacent end of the said shaft to which the casing is securely fixed by means of a pin 36, and has at a suitable point a slot 37, Fig. 7. This casing is also provided with a suitable peripheral opening 38, Figs. 2 and 7.

Within the casing 31 and on the shaft 28 is loosely mounted a registering disk 39 whose perimeter 40 is provided with a series of spaced numerals preferably forming ten equal spaces and designated by the first ten numerals, Fig. 4. The disk 39 has its outer face provided with an annular recess 41 in which are fixed a pair of springs 42 in diametric arrangement, whose free ends firmly impinge against the adjacent inner face of the casing 31, Figs. 4 and 6 to prevent the disk from being inadvertently thrown out of its

proper relation by a sudden jerking movement of the operating handle 32. The opposite face of the disk 39 has relatively a deep annular recess 43, Fig. 6, in which is arranged an integral annular series of ratchet teeth 44, and an integral annular portion 45 on whose perimeter is loosely mounted the annular plate 46 having a fixed or integral lever handle 47 on whose inner face is pivotally mounted a pawl 48 adapted to engage the ratchet teeth 44.

The lever handle 47 is arranged in the slot 37 whose length limits the movement thereof, and which is normally held at one end of the said slot by the coiled spring 49 which has one end secured to a pin 50 in a recess 51 in the edge of the said casing, Fig. 3, and has its other end secured to the perimeter of the plate 46.

The operation and manner of employing my invention thus described is obvious, and briefly stated is as follows: Assuming the pump to have a capacity of delivering but one-half of a gallon at each stroke of the plunger, and that it is desired to deliver to a customer a quantity of illuminating oil, say three gallons, for example, the operator first adjusts the pin 20 to outer limit in the lug 19 thereby removing its inner end from the path of the screw 11 upon the upward stroke of the plunger. He then rotates the operating handle 32 until the upper end of the screw 10 engages the lug 25 of the standard 18 thereby limiting the upward movement of the plunger. The screw 10 is so adjusted relatively to the lug 25 that the above described upward stroke of the plunger delivers exactly one-half of a gallon. He then returns the plunger to the lowest limit of its movement, at or near the end of which movement the lug 24 engages the free end of the lever 47, as shown in Fig. 7 and forces it to the other end of the slot 37 against the tension of the coil spring 49. This movement of the lever 47, of course, carries with it the pawl 48 which during such movement is engaged with one of the teeth 44 of the ratchet gear and thereby rotates the disk 39 correspondingly. This movement of the disk 39 is so timed that at each return stroke of the piston, the disk is rotated just the distance between the numerals on the perimeter of the disk, and at each movement of the disk the next successive numeral appears in full view of the operator at the center of the peripheral opening 38, Fig. 2. This is done by having the length of the slot 37, and the length of the teeth 44 so related to each other and to the distance between the numerals on the perimeter of the disk 39 that each movement of the lever 47 from one end of the slot 37 will move the pawl 48 just the length of one notch 44. As in this instance it is desired to deliver to the customer three gallons of fluid, the operator gives the plunger six

full strokes, at the end of which strokes the numeral 6 will appear in its order to indicate the number of full half gallon strokes of the plunger and therefore the number of half gallons delivered by the pump.

When it is desired to measure the discharge of the liquid in quarts the operator simply pushes in the pin 20 sufficiently to project into the path of the screw 11 in the upstroke of the plunger, and then rotates the operating handle as before, whereby the disk 39 will be rotated as before, and the numbers on the periphery of the disk will appear successively opposite the opening 38 and thus indicate the number of quarts delivered by the pump.

The pump can readily be locked against interference by means of a common form of padlock mounted in the apertured lug 27 in a well understood manner when the rack-bar is at the lowest limit of its movements.

The pawl 48 is firmly held to its engagement with the teeth 44 by a suitable spring 53 coiled about its pivot 52 in a well understood manner.

The casing 31 has a concentric journal bearing 31' for the arbor, and on which the disk 39 and the casing plate 33 are mounted.

Having thus described my invention and the manner of operating the same, what I desire to secure by Letters Patent is:

1. In a self-measuring oil pump a vertical standard having a hollow laterally apertured head; an arbor rotatably mounted in the head; a gear wheel fixed on the arbor within the head; a vertically reciprocating pump plunger; a vertical rack-bar fixed upon the upper end of the plunger in mesh with the said gear wheel; and means for actuating the arbor; in combination with registering mechanism consisting of an inclosing casing fixed on one extended end of the arbor and having a concentric bearing for the arbor, and a peripheral sight opening, and provided with a closing plate for the inner face thereof, a registering disk loosely mounted on the said bearing and having a fixed concentric ratchet gear, and provided upon its perimeter with a series of numerals in radial arrangement with the respective teeth of the said ratchet gear; and means for actuating the said disk one notch at a time at each return movement of the pump plunger, and an adjustable stop in the lower end of the rack-bar to limit the upward movement of the plunger.

2. In a self measuring liquid pump a ver-

tical standard having a laterally apertured head; a revoluble arbor mounted in the head of the standard; a gear wheel fixed on the arbor within the said head; a vertically reciprocating plunger; a vertical rack-bar on the upper end of the plunger in mesh with the said gear wheel; and means for actuating the arbor; a registering mechanism consisting of a casing fixed on one extended end of the arbor, and having a fixed operating handle, and provided with a peripheral sight opening; a registering disk rotatively mounted within the casing and having a concentric ratchet mechanism for actuating the same, the said disk being provided upon its periphery with a series of numbers in circumferential arrangement to indicate the consecutive strokes of the plunger; an arm loosely mounted on the said disk and provided with a pivoted pawl in an actuating engagement with the said ratchet mechanism; means on the upper end of the rack-bar for operating the said arm at each down stroke of the plunger; and means on the said pump head for limiting the movements of the plunger to regulate the quantity of liquid discharged thereby.

3. In an oil pump a discharge spout; an upright standard; an arbor revolubly mounted on the upper end of the standard; a gear wheel fixed on the arbor; a vertically movable plunger; a vertical rack carried by the plunger in mesh with the said gear wheel; means for rotating the arbor; a casing fixed on one extended end of the arbor and having a fixed concentric sleeve, and a peripheral sight opening; a concaved disk loosely mounted on the said sleeve and having a peripheral scale—adapted to register consecutively with the said opening, and provided with a fixed concentric ratchet; a lever arm loosely mounted on the disk adjacent to the ratchet and provided with a pivoted pawl in engagement with the said ratchet; means for normally retaining the said arm in its normal position; means on the rack for actuating the said arm against its retaining means; and means for regulating the vertical movements of the plunger.

Signed by me at Fort Wayne, Allen county, State of Indiana, this 21st day of October, 1908.

FLAVIUS J. YOUNG.

Witnesses:

AUGUSTA VIBERG,

AUGUSTE SPIEGEL.