No. 829,001. PATENTED AUG. 21, 1906.

J. B. DAVIS.

SELF MEASURING OIL PUMP.

APPLICATION FILED NOV. 10, 1905.

2 SHEETS—SHEET 1.

Fig-1

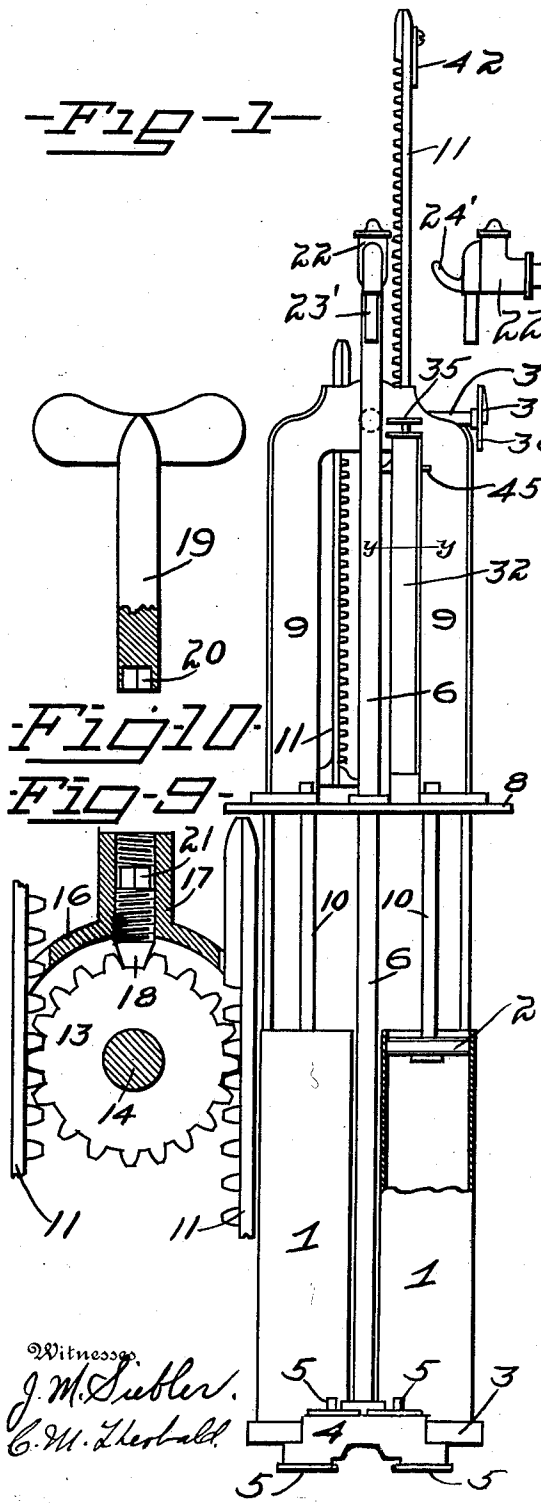
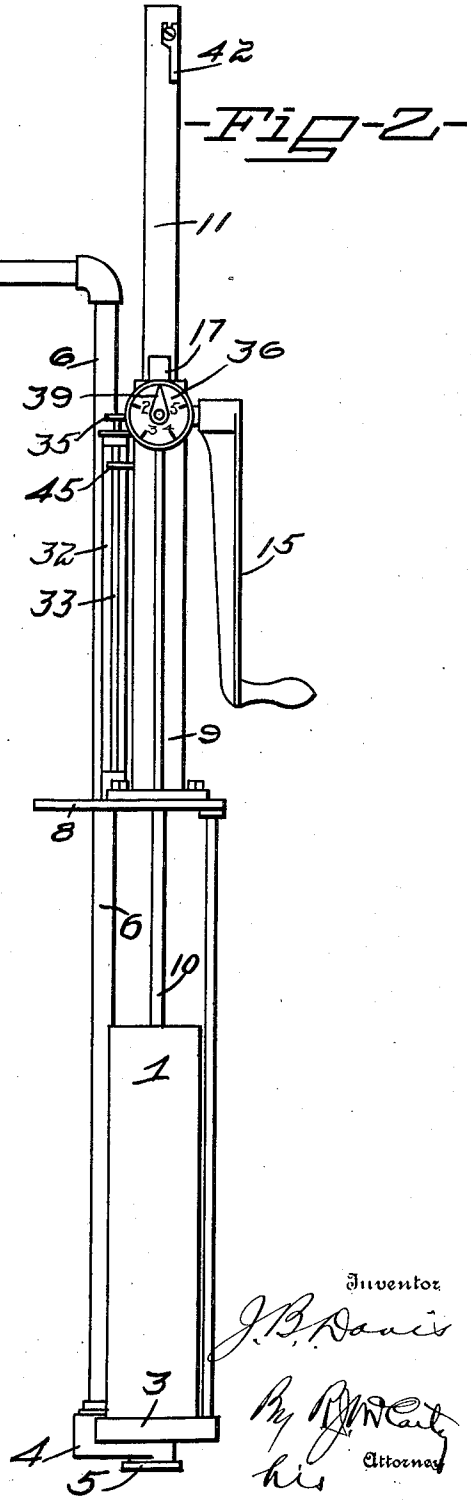


Fig-10

Fig-9

Fig-2



Witnesses.
J. M. Siebler.
C. M. Eberhardt.

Inventor.
J. B. Davis
By D. N. Carter
his Attorney.

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2 SHEETS—SHEET 2.

Fig-3-

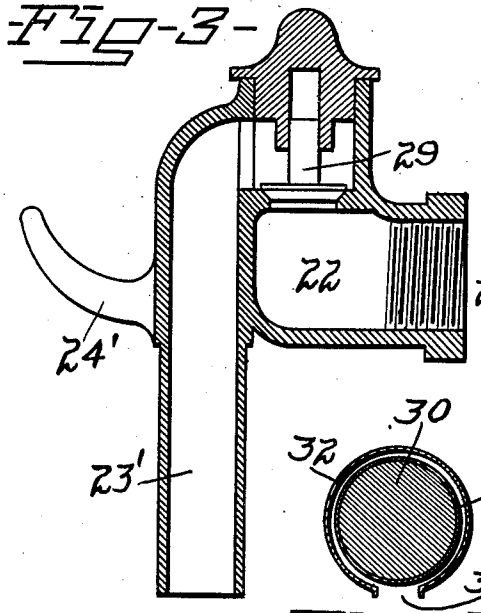

Fig-4-

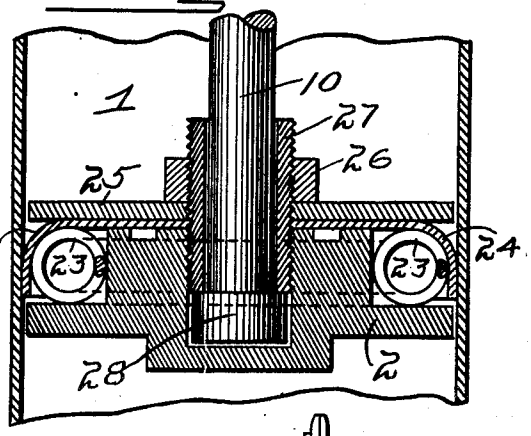

Fig-5-

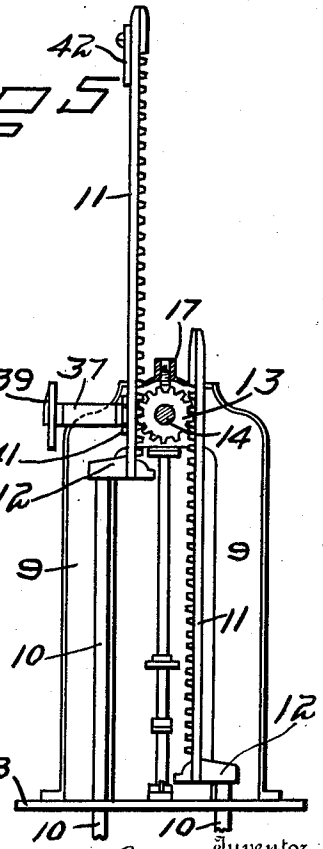

Fig-6-

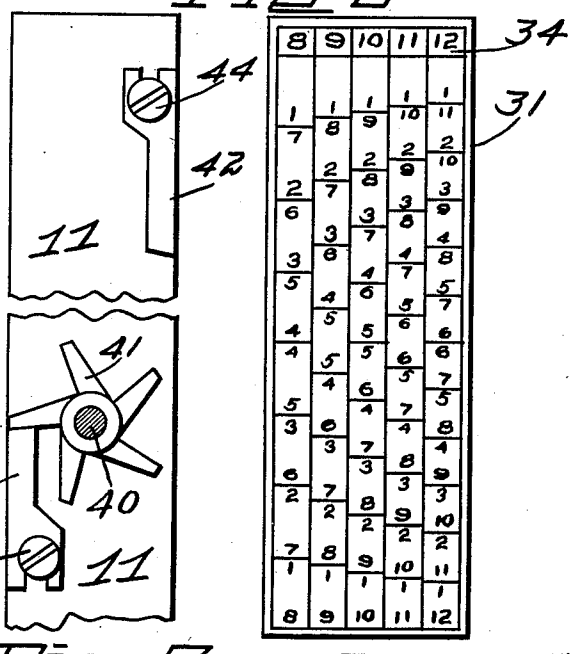

Fig-7-

Fig-8-

Witnesses

J. M. Sibley.

C. M. Theobald.

Inventor,

J. B. Davis

By

R. J. M. Canty

his

Attorney

UNITED STATES PATENT OFFICE.

JOHN B. DAVIS, OF DAYTON, OHIO.

SELF-MEASURING OIL-PUMP.

No. 829,001. Specification of Letters Patent. Patented Aug. 21, 1906.

Application filed November 10, 1905. Serial No. 286,665.

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 figures of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in measuring oil-pumps and possesses the new and useful features hereinafter described and claimed.

The present improvements relate to means for indicating the prices of gallons and the fractional parts thereof up to one gallon, to means for indicating the quantity of oil sold in greater quantities than a single gallon, to means for locking the pump against operation by unauthorized persons, to means for preventing evaporation of gasolene when such is used in the pump-cylinders, to means involving the construction of the pistons, and to other features hereinafter described and claimed.

Preceding a detail description of the invention reference is made to the accompanying drawings, of which—

Figure 1 is an elevation of an oil-measuring pump constructed in accordance with my invention, a portion of one of the pump-cylinders being broken away. Fig. 2 is an elevation at right angles to Fig. 1. Fig. 3 is an enlarged sectional view of the discharge-spout. Fig. 4 is an enlarged sectional view of one of the pistons and surrounding portion of one of the cylinders. Fig. 5 is a detail view of the upper portion of the pump. Fig. 6 is a cross-sectional view on the line *y y* of Fig. 1, illustrating the price-scale and casing. Fig. 7 is an enlarged detail view of a portion of one of the racks. Fig. 8 is an elevation of the price-scale removed from its cylinder. Fig. 9 is a detail view illustrating the lock mechanism. Fig. 10 is a detail view of the key for said lock mechanism.

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

1 1 designate a pair of uniform pump-cylinders united to a base 3 above a valve-casing 4, which contains four valves, one operating in connection with each cylinder, as shown in my former patents, Nos. 790,786 and 790,787.

2 designates a piston in each cylinder, for the special construction of which see Fig. 4, which discloses the following features: Surrounding the body of the piston is a coil-spring 23, the ends of which are united. These springs when so placed around the body of the pistons exert an expanding effect to press outwardly in a uniform manner a packing ring or cup 24, which projects around the outer sides of the springs and lies adjacent to the inner surface of the cylinder. Maintaining said packing-cup in rigid connection with the pistons is a disk 25. This disk is held rigidly against the packing by means of a jam-nut 26. The piston-rod 10 passes through a sleeve 27, which is screwed through the disk 25 and into the body of the piston, and around this sleeve 27 the jam-nut 26 is placed. Each of the piston-rods has a head 28, which lies in a recess in the piston, and said piston-rod is held in such position by the sleeve 27. There is a suitable space between the piston-rod head 28 and the piston 2, the piston-rod and the sleeve 27, also between the piston 2, the disk 25, and the interior of the cylinder, as illustrated in Fig. 4. By providing the constant and uniform pressure against the packing 24 by means of the springs, and which is augmented by the pressure of the oil entering the space in which said springs are located, the oil is prevented at all times from passing above the piston. It will be understood that in the upward movement of each piston the oil is drawn into the cylinder, and in the reverse or downward movement the oil is expelled into the discharge-pipe 6, which will be hereinafter again referred to in connection with the discharge-nozzle 22. (Shown in Fig. 3.) Each of the piston-rods has attached to it a rack 11 by means of an intervening head 12, substantially as shown in my former patent. Engaging these racks is a pinion 13 on a shaft 14 and driven by a hand-crank 15, said racks being guided in their movements in the horizontal table or portion 8 of the superstructure—that is to say, the piston-rods 10 in their movements pass through suitable openings in said superstructure. (See Fig. 5.)

The shaft 14 is journaled in the upper portion of the frames 9 9. It will be thus seen in the operation of the pinion 13 the racks, and therewith the piston-rods, are driven vertically in opposite directions, resulting in the filling of one cylinder with the requisite amount of oil and the discharging of the other cylinder.

Means are provided for preventing a meddling with or useless operation of the pump by unauthorized persons and consisting of means illustrated in Figs. 5 and 9 of the drawings. These means consist of a screw-plug 18, which is screwed into a nipple 17 in a housing 16, which incloses the upper portion of the pinion 13. The screw-plug 18 has a square head 21, which is engaged by a key 19, which has a square opening 20 in its end, which receives the head of said screw. The screw may thus be inserted between the teeth of the pinion 13 and made to lock said pinion against any movement. The discharge-pipe 6 has a specially-constructed discharge-nozzle 22 attached thereto, which prevents any evaporation of gasolene from the pump-cylinders when the pump is used for dispensing that article. This nozzle is illustrated in Fig. 3 and consists of a body portion which is screwed onto the end of the pipe. A gravity-valve 29 seats above the inlet-chamber in said nozzle and is only opened by the pressure of the oil when the same is being forced through the nozzle and out of the discharge end 23'. When the pump is not in operation, the valve 29 seats itself and prevents any outlet through the nozzle. A convenient means is provided on said nozzle for suspending a vessel into which the oil is discharged, said means consisting of a hook 24', which is projected from the downwardly-projected portion of the nozzle.

I will next describe a computing-scale by means of which quantities of oil less than gallons are sold at prices indicated on said price-scale. This price-scale is illustrated in Figs. 6 and 8 and consists of a cylinder 30, which is mounted on the upper portion of the frame and is inclosed in a cylindrical casing 32, which has a longitudinal sight-opening 33, through which the price-figures on the scale may be seen. The price-scale 31 is placed around the cylinder 30 and consists of a sheet of pliable material, on the upper end of which is a horizontal column of figures 34, which represent the prices per gallon. The lower figures under each price-per-gallon figure represent the prices of fractional portions of a gallon at said price. For example, each vertical column is divided into spaces, which represent fractional quantities of a gallon of oil, and the figures represent the money values of said quantities. For example, the left-hand column, looking at Fig. 8, contains eight spaces, which stand for eight parts of a gallon at eight cents per gallon. Reading downwardly in said column, an eighth of a gallon costs one cent, three-eighths cost three cents, and so on until we get to the bottom of the column, where eight cents represents the cost of a gallon. Reading upwardly, the figures are reversed, but the same results are obtained. The figures are preferably made to appear in contrasting colors. For example, the upper figures may be black and the lower figures red or white or other contrasting color. This cylindrical price-scale is rotated by the hand by means of a finger-piece 35, which is connected thereto and lies above the top of the casing 32. (See Fig. 1.) These scale indications are pointed to by means of a finger or pointer 45, which is attached to one of the racks 11 in a position to move vertically across the sight-opening 33. When oil is dispensed in gallon quantities, I provide a register to indicate the quantities independently of the price-scale. This device consists of a dial 36, (see Fig. 2,) which is mounted loosely on a boss 37, projecting from the superstructure or upper framework. This dial 36 has suitable figures, indicating the gallons in the present instance, and it may indicate half-gallons. Extending through the boss 37, upon the end of which the dial is located, as before stated, is an arbor 40, on one end of which is a pointer 39, adapted to move over the face of said dial. The other end of this arbor has a star-wheel 41 rigidly attached thereto. (See Fig. 7.) This star-wheel lies adjacent to the rear side of one of the racks 11 and in position to be tripped in each direction of movement of said rack. The tripping devices consist of upper and lower pawls 42 and 43, which are adjustably connected to the rack by means of screws 44, which pass through slots in the bodies of said pawls. These pawls are in different positions to engage the star-wheel on opposite sides in either an upper or lower movement of the rack. The movement imparted to the star-wheel and the pointer 39 is one-tenth of a revolution on each engagement of the pawls 42 and 43. In the present case, assuming that each of the cylinders was limited to a half-gallon capacity, the star-wheel 40 would necessarily be tripped ten times in order to have the pointer 39 indicate five gallons on the dial 36. This may, however, be varied according to the capacity of the pump. It will be understood that the pawls 42 and 43 have only a limited movement after they engage the star-wheel, such movement being approximately half an inch. It will therefore be understood that neither pawl passes the star-wheel. As shown in Fig. 7, the lower pawl 43 has completed the movement of the star-wheel. The pawls are mounted at the opposite ends of the rack.

Having described my invention, I claim—

1. In an oil-pump of the type specified, the

combination with twin cylinders and their pistons and piston-rods, racks connected to said piston-rods, a pinion engaging said racks and driving the pistons in opposite directions, of means engaging said pinions and locking the pump against operation said means comprising a socket arranged in a housing which incloses said pinion, a screw-plug within said socket and engaging and disengaging said pinion, and means insertible in said socket and engaging said screw-plug to engage or disengage the same from the pinion.

2. In an oil-pump of the type specified, a pair of pump-cylinders and their pistons and piston-rods, racks connected to said piston-rods, a pinion engaging said racks, a housing partially surrounding said pinion and having an interior screw-threaded socket, a plug within said socket adapted to lock and unlock said pinion, means insertible in said socket to engage said plug to engage or disengage the same with or from said pinion, a cylindrical casing having a sight-opening therein and mounted upon the superstructure, a cylindrical price-scale within said casing with means projecting therefrom on the exterior of the casing for setting said price-scale to the desired point, and a pointer movable to positions to indicate the prices of quantities of oil dispensed.

3. In an oil-pump of the type specified, a pair of cylinders and their pistons and piston-rods, racks connected to said piston-rods, a pinion engaging said racks, means for locking said pinion against operation, said means consisting of a screw-plug, a socket receiving said screw-plug and means insertible in said socket and engaging the screw-plug to engage or disengage the same with or from said pinion, a discharge-pipe through which either cylinder empties, and a nozzle on the end of said discharge-pipe, said nozzle having a gravity-valve normally closing the exit-passage through said nozzle.

4. In an oil-pump of the type specified, a pair of measuring-cylinders and their pistons and piston-rods, racks connected to said piston-rods, a pinion engaging said racks, means for locking said pinion against operation, said means consisting of a housing partially inclosing said pinion and having an interior screw-threaded socket in alinement with the teeth on the pinion, a screw-plug concealed in said socket and engaging or disengaging said pinion, and a key insertible in said socket to actuate the screw-plug and means for measuring the quantities of oil discharged from said cylinders.

5. In an oil-pump of the type specified, a pair of measuring-cylinders and their pistons and piston-rods, racks connected to said piston-rods, a pinion engaging said racks, means for locking said pinion to prevent an operation thereof, said means consisting of a housing having an interior-screw-threaded socket in alinement with the teeth of said pinion, a screw-plug concealed in said housing and engaging or disengaging the pinion, and means insertible in said socket for engaging the screw-plug, a numerical dial bearing indications denoting the quantities of oil discharged from said cylinders, a pointer to indicate the numerals on said dial, and means operated through the movement of one of the racks for rotating said pointer over the face of the dial.

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

JOHN B. DAVIS.

Witnesses:
R. J. McCARTY,
CAROLYN M. THEOBALD.