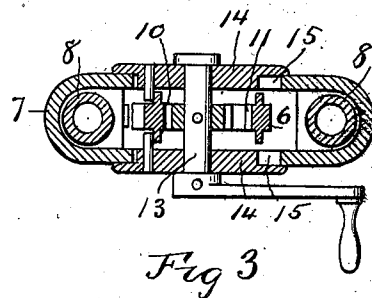
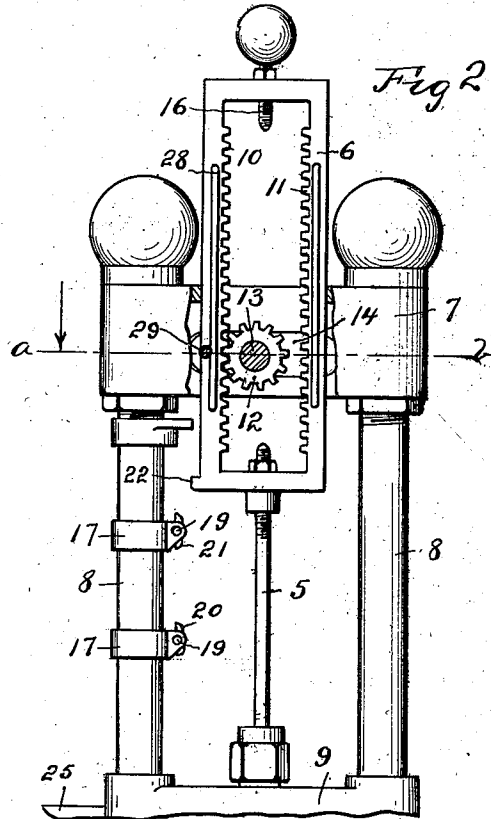
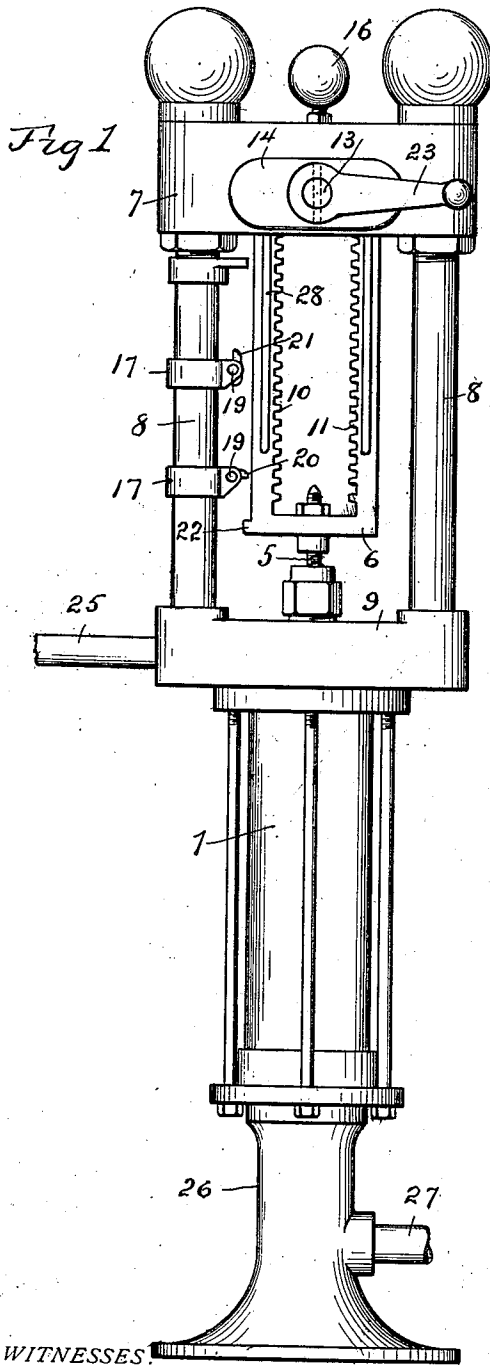


C. G. HOLT.
SELF MEASURING PUMP.
APPLICATION FILED MAR. 4, 1911.

1,011,790.

Patented Dec. 12, 1911.
2 SHEETS—SHEET 1.



WITNESSES.

R. Hamilton
E. B. House

INVENTOR.

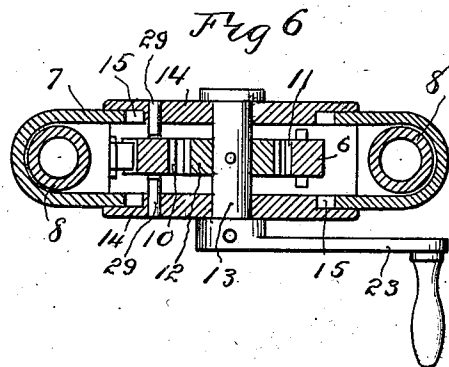
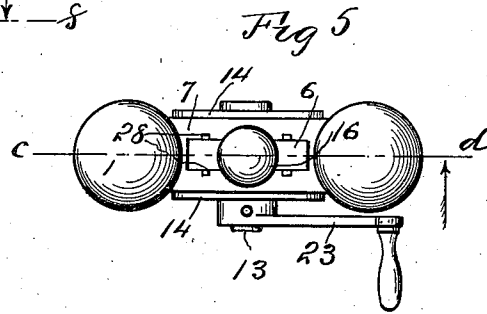
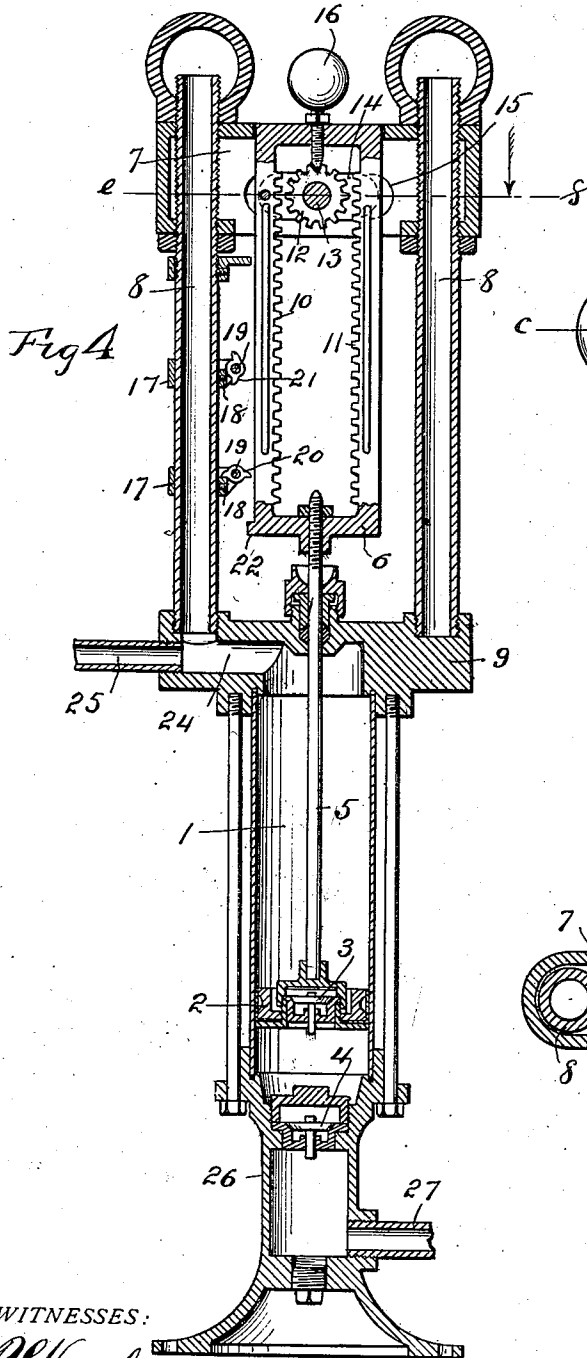
Claude G. Holt
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UNITED STATES PATENT OFFICE.

CLAUDE G. HOLT, OF KANSAS CITY, MISSOURI, ASSIGNOR OF ONE-HALF TO A. A. KRAMMER, OF KANSAS CITY, MISSOURI.

SELF-MEASURING PUMP.

1,011,790.

Specification of Letters Patent.

Patented Dec. 12, 1911.

Application filed March 4, 1911. Serial No. 612,342.

To all whom it may concern:

Be it known that I, CLAUDE G. HOLT, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Self-Measuring Pumps, of which the following is a specification.

My invention relates to improvements in self measuring pumps.

The object of my invention is to provide a pump which may be quickly adjusted to accurately measure any desired quantities, and which is easily operated and efficient in operation.

The novel features of my invention are hereinafter more fully described and claimed.

In the accompanying drawings illustrative of the preferred form of my invention, Figure 1 is a side elevation of my improved pump. Fig. 2 is a view partly in side elevation and partly broken away of a portion of my improved pump, the pinion being shown engaged with one row of the rack teeth. Fig. 3 is a horizontal section on the line *a-b* of Fig. 2. Fig. 4 is a central vertical sectional view on the line *c-d* of Fig. 5, the pinion being shown disengaged from the rack. Fig. 5 is a top view of the pump. Fig. 6 is a horizontal section on the line *e-f* of Fig. 4.

Similar reference characters denote similar parts.

1 is a vertical cylinder in which is reciprocally mounted a piston 2 carrying a check valve 3 which lifts to open. In the cylinder below the piston 2 is a check valve 4 which also lifts to open.

Secured to the piston 2 is a vertical piston rod 5 which extends through the closed upper end of the cylinder 1 and has a screw threaded upper end which is fitted in and extends through a vertical screw threaded hole in the lower end of a rectangular rack 6, which is vertically reciprocative in a support comprising a casting 7 which is secured to the upper ends of two vertical pipes 8, the lower ends of which are secured to the upper cylinder head 9. Opposite inner sides of the rack 6 are provided with two rows of teeth 10 and 11 disposed parallel with each other and adapted to be alternately engaged by a pinion 12, located between the two rows of teeth, when the rack is vertically reciprocated.

The pinion 12 is rigidly secured to a horizontal crank shaft 13 rotatively mounted in two bearings 14 horizontally slidable respectively in two slots 15 provided in opposite sides of the casting 7.

A stop comprising a vertical screw 16 is fitted in a vertical screw threaded hole provided in the upper end of the rack 6. The screw 16 extends through the rack and is adjustable toward and from the piston rod 5 and is so located that when the pinion 12 is being turned and comes into contact with the lower end of the screw 16 the screw will shift the pinion 12 laterally into engagement with one row of teeth and out of engagement with the other row of rack teeth. For example, say that the pinion is engaged with the row of teeth 10, as shown in Fig. 2, and that the pinion is being rotated the opposite of clockwise, as viewed in said Fig. 2, when the rack has lowered to a position in which the screw 16 contacts with the pinion 12, the pinion will be shifted to the right and into engagement with the row of teeth 11. Continued rotation in the same direction of the pinion 12 will cause it to lift the rack 6 until the upper end of the piston rod 5 strikes the pinion 12, upon which the pinion will be shifted to the left and into engagement with the row of teeth 10. Thus continued rotation of the pinion in one direction will cause the rack 6 to be reciprocated.

By adjusting the piston rod 5 or the screw 16 in the rack 6, the length of stroke of the rack may be varied. When it is desired to limit the upward movement of the piston 2 to certain predetermined distances, this may be done by means of the following described mechanism:—On one of the pipes 8 are mounted vertically adjustable collars 17, which are rigidly secured in position by set screws 18 which bear against the adjacent pipe 8. Pivoted respectively on horizontal pins 19 mounted in the collars 17 are stops 20 and 21. These stops are arranged so as to be swung to positions in which they may be engaged by a projection 22 provided on the rack 6. Such a position is occupied by the lower stop 20. Or the stops may be swung to the position occupied by the stop 21, in which position the projection 22 can not strike them.

The crank shaft 13 is provided with a handle 23 by which it may be turned. The

cylinder head 9 is provided with a passage 24 communicating with the cylinder 1 and with a discharge pipe 25. The lower cylinder head 26 is hollow and communicates 5 through the valve 4 with the cylinder. It is also in communication with an inlet pipe 27.

In operating my invention, the collars 17 are adjusted to the proper positions, as are also the screw 16 and piston rod 6. If it is 10 desired to pump an amount determined by the stop 20, this stop is positioned as is shown in Figs. 1 and 4. The handle 23 is then rotated in either direction. If rotated clockwise, as viewed in the drawings, the screw 15 16 will cause the pinion 12 to shift into engagement with the row of teeth 10, thus raising the rack 6 and piston 2, through the intermediacy of the piston rod 5. The liquid which is above the piston 2 will be 20 lifted and forced out of the discharge pipe 25, fresh liquid being drawn into the cylinder 1 below the piston 2 through the pipe 27, head 26 and valve 4. When the projection 22 of the rack 6 strikes the stop 20, 25 the rack 6 will be limited from further upward movement. The proper amount of liquid will now have been ejected from the cylinder through the discharge pipe 25, it being understood that the cylinder must first 30 be filled, in order to measure the liquid dispensed. The crank handle 23 is then rotated in the reverse direction until the rack 6 has again reached the position shown in Fig. 4, at which time the screw 16 will have again 35 engaged the pinion 12 and shifted it to the neutral position out of engagement with either row of rack teeth. As the rack 6 and piston 2 lowers the valve 3 will open and the valve 4 will close, thus permitting 40 the liquid below the piston 2 to pass above it through the valve 3. By setting stops 20 and 21 in the neutral position shown in Fig. 2, the rack 6 may be reciprocated by turning the handle 23 continuously in either direc- 45 tion, as has already been described. If desired the rack 6 may be provided on opposite sides with vertical flanges 28 adapted each to have its opposite sides engaged alternately, as the rack 6 reciprocates by a horizontal pin 29 secured to the adjacent bearing 14. Two of these pins are provided and secured respectively to the bearings 14 in positions for respectively engaging the flanges 28. The function of these pins and flanges 50 is to retain the pinion 12 in proper mesh with the teeth with which it is at the time engaged.

I do not limit my invention to the specific structure illustrated and described, as many 60 modifications in structure may be made, within the scope of the appended claims,

without departing from the spirit of my invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent, is:— 65

1. In a self measuring pump, a reciprocative piston rod, a rack reciprocative therewith and having two parallel rows of teeth, two stops adjustable relatively toward and 70 from each other on said rack, a pinion located between the two rows of teeth and between said two stops, the stops at opposite ends of travel of the rack alternately engaging the pinion and shifting it in opposite 75 directions from one row of teeth to the other row of teeth, and laterally movable means for supporting and rotating said pinion and by which the pinion is moved from one to the other row of teeth. 80

2. In a self measuring pump, a reciprocative piston rod, a rack reciprocative therewith and having two parallel rows of teeth, the piston rod extending through one end of the rack with which it has a screw threaded 85 engagement, the piston rod serving as a stop, a screw disposed in alinement with said piston rod and extending through the other end of the rack with which it has a screw threaded engagement, a pinion located between 90 said two rows of teeth and between said piston rod and said screw, the screw and piston rod at opposite ends of travel of the rack alternately shifting the pinion in opposite 95 directions from one row of teeth to the other row of teeth, and means for rotating and supporting the pinion and upon which the pinion is carried from one to the other row of teeth.

3. In a self measuring pump, a reciprocative piston rod, a rack reciprocative therewith and having two parallel rows of teeth, a support in which the rack is reciprocative, a pinion located between said two rows of teeth, a crank shaft to which the pinion is 105 secured, bearings rotatively supporting said crank shaft and movable on said support to positions in which the pinion may alternately engage either row of teeth, means for shifting the pinion in one direction when 110 the rack has moved a predetermined distance in one direction, and means for shifting the pinion in the opposite direction when the rack has moved in the other direction a predetermined distance. 115

In testimony whereof I have signed my name to this specification in presence of two subscribing witnesses.

CLAUDE G. HOLT.

Witnesses:

E. B. HOUSE,
FLORENCE M. VENDIG.