

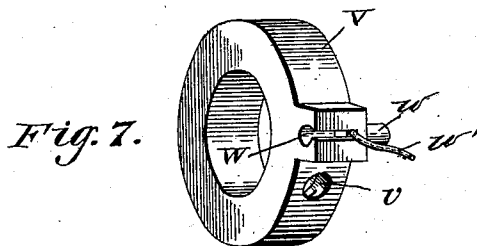
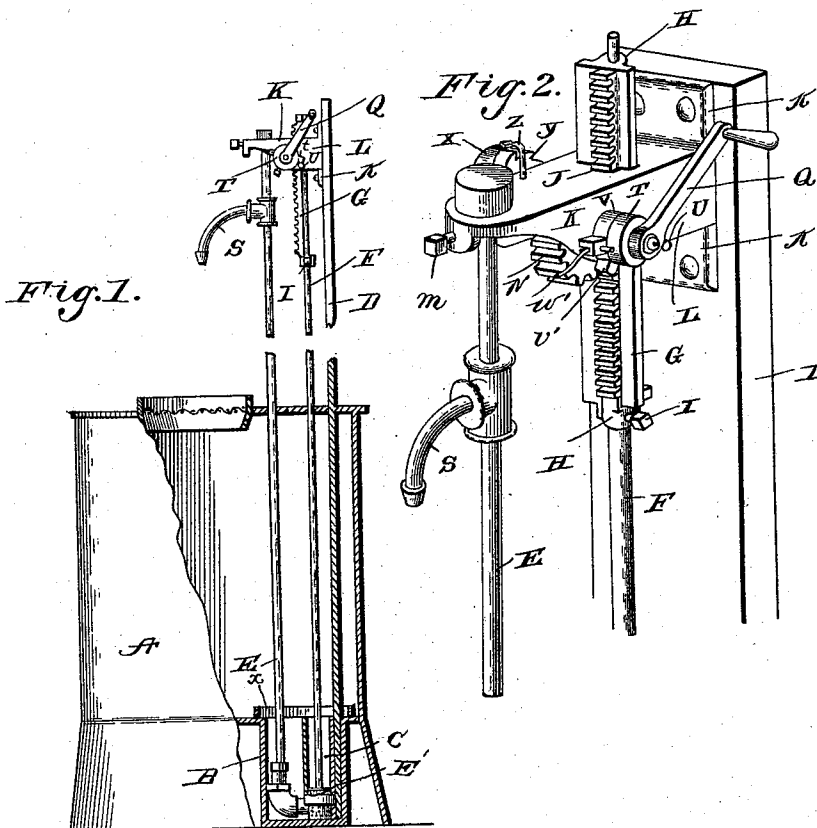
(No Model.)

2 Sheets—Sheet 1.

S. F. BOWSER.
SELF MEASURING PUMP.

No. 534,464.

Patented Feb. 19, 1895.



Inventor

Sylvanus F. Bowser

Witnesses

Julius Ulke, Jr.
D. B. Knapton, Jr.

By his Attorneys.

C. A. Snow & Co.

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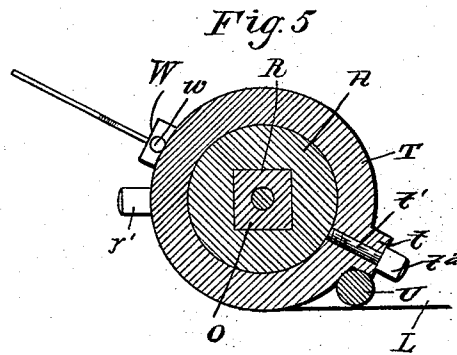
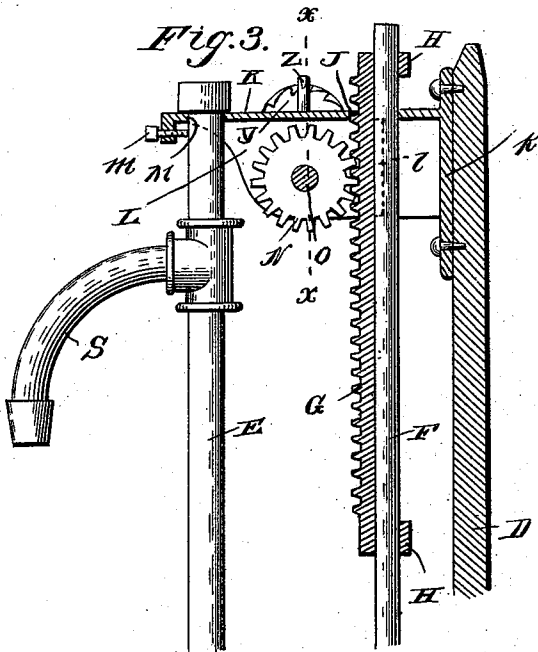
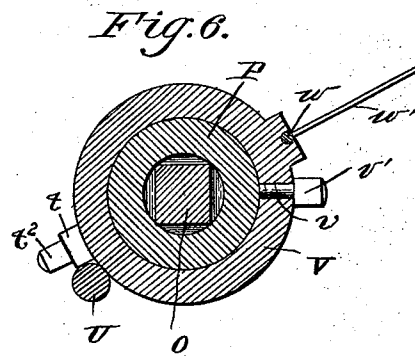
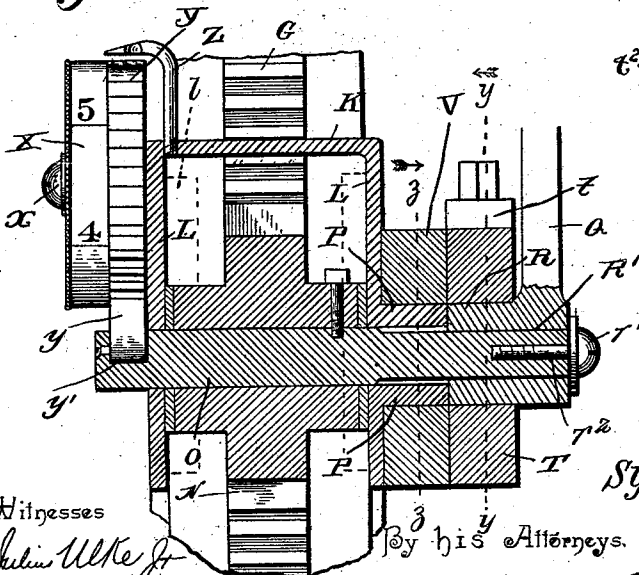


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

SYLVANUS F. BOWSER, OF FORT WAYNE, INDIANA.

SELF-MEASURING PUMP.

SPECIFICATION forming part of Letters Patent No. 534,464, dated February 19, 1895.

Application filed June 28, 1894. Serial No. 515,997. (No model.)

To all whom it may concern:

Be it known that I, SYLVANUS F. BOWSER, a citizen of the United States, residing at Fort Wayne, in the county of Allen and State of Indiana, have invented a new and useful Self-Measuring Pump, of which the following is a specification.

This invention relates to self-measuring pumps; and it has for its object to effect certain improvements in pumps of that character wherein means are provided for accurately gaging the quantity of liquid to be elevated without the use of supplemental measuring devices.

To this end the main and primary object of this invention is to provide certain improvements in the operating mechanism for pumps of that character especially employed in lifting oils and other heavy liquids, whereby the quantity of oil may be properly and accurately gaged, and at the same time registered, when large quantities are being pumped.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the drawings:—Figure 1 is a side elevation of a storage tank, partly in section showing my improved pump used in connection therewith. Fig. 2 is an enlarged detail in perspective of the pump operating mechanism. Fig. 3 is a central vertical sectional view of the construction shown in Fig. 2. Fig. 4 is a transverse sectional view on the line $x-x$ of Fig. 3. Fig. 5 is a detail sectional view on the line $y-y$ of Fig. 4. Fig. 6 is a similar view on the line $z-z$ of Fig. 4. Fig. 7 is a detail in perspective of the adjustable stop collar carrying the sliding stop-stud.

Referring to the accompanying drawings, A represents an ordinary storage tank in connection with which the herein described pump is preferably employed, and this storage tank is usually intended to be arranged in the cellar of a store or below the floor thereof whereby the contents, which are oil or other liquid, may be conveniently pumped up into the store-room by the operator. This storage tank A, is provided at the bottom thereof with a drop pump-pocket B, which is of a

depth sufficient to accommodate the cylinder of a pumping apparatus, said pocket usually being about eighteen inches deep. The pocket B, extends below the plane of the tank bottom so that the entire liquid contents of the tank can be substantially drained by the pumping devices employed in connection with the tank, the cylinder C of such pump being adapted to be seated in the said pocket, and at its upper edge the pocket is entirely encircled or surrounded by the surrounding rim-flange x , extended upwardly from the bottom of the tank around the upper edge of the pocket. The upwardly extended rim-flange x , is usually about one inch high and serves to keep back all the sediment that would otherwise naturally drain into the pump-pocket and clog up and interfere with the free working of the pump.

The pump cylinder C, is of the ordinary construction, and in the present invention is preferably bolted to the lower end of the frame upright D, which is of a length sufficient to extend above the floor and to a convenient height for easily operating the pump, and said pump cylinder C, at the lower end of said upright, has connected to the lower end thereof the pump discharge pipe E, which rises parallel with the frame upright to substantially the same height as the same. The said pump cylinder C, accommodates therein the piston head E', to which is attached the lower end of the pump rod F, working through the top of the tank and the floor above which the apparatus projects, and having attached to the upper portion thereof the vertical rack bar G. The rack bar G, is provided at its upper and lower ends with the off-standing collars H, embracing the pump rod and one of which collars receives the set screw I, to clamp the said rack bar in position on the pump rod.

The rack bar upper end of the pump rod is guided to move through a top guide opening J, in the off-standing bearing bracket K, having an inner flanged end k , bolted at one side of the frame upright D, at the upper end thereof. The said off-standing bearing bracket K, is of a substantially hollow construction having the opposite bearing sides L, from the inner faces of which project inwardly extending guide lugs l , disposed at

one side of the attached rack bar G, to assist in holding the pump rod steady in its vertical reciprocations, while at the outer end of the bearing bracket is located a top pipe opening M, to receive the extreme upper end of the pump discharge pipe E, which is held firm in this bracket by a set screw *m*, engaging a threaded opening at the outer end of the bracket and impinging against the said pipe.

A reciprocatory movement is communicated to the pump rod from the meshing cog pinion N, mounted on the short operating shaft O, journaled in the opposite bearing sides of the off-standing bracket K, and one end of said short operating shaft O, projects through the short circular bearing collar P, projected from the outer face of one of the bearing sides of the brackets, and this projecting end of the short operating shaft is squared to removably receive one end of the crank handle Q. At the end which is attached to one end of the operating shaft, the said crank handle is provided with a short laterally extended hub portion R, working against the outer edge of the bearing neck P, and with a squared opening R', to fit over the squared end of said shaft. The said crank handle is detachably held in position by means of the securing screw *r'*, engaging a threaded opening *r*², in the outer end of the short operating shaft. The crank handle is turned back and forth in operating the pump, it being obvious that the meshing cog pinion will communicate a reciprocating motion to the upper rack end of the pump rod and thereby operate the pump to discharge a quantity of oil out through the discharge spout S, leading from the pump discharge pipe near its upper end.

The short hub portion R, at one end of the crank handle, accommodates thereon the circularly adjustable stop collar T, provided at one side with a stop-lug *t*, and a threaded opening *t'*, to receive the set screw *t*², which holds the said collar fast in any adjusted position on the hub of the crank handle, and the movement of said crank handle is limited by the stop lug, *t*, of said stop collar coming in contact with the stop pin U, projecting from one side of the bearing bracket. When the piston of the pump is raised to its full height the lug on said collar is adapted to contact with said pin, and it will therefore be obvious that by adjusting the collar and moving the stop lug thereof toward or away from the said stop pin, the stroke of the pump can be made longer or shorter, so that the exact amount of liquid to be drawn by a complete stroke can be accurately regulated or gaged.

At one side of the stop collar T, and adjustably mounted on the bearing neck P, is a second stop collar V, provided at one side with a threaded opening *v*, to receive a set screw *v'*, to hold the second stop collar fast on the bearing neck in any adjusted position. The said collar V, is further provided with a recessed lug W, which accommodates therein the slid-

ing stop stud *w*, having attached to one end thereof the short finger wire or piece *w'*, which is grasped by the fingers to project one end of the stop stud beyond the outer face of the second stop collar and in the path of the stop lug *t*, on the main stop collar T, and thereby provide means for shortening up the stroke to one-half or one quarter, or other fraction desired.

As illustrated, we may assume that the outer or main stop collar T, is adjusted so that one complete stroke of the piston will draw one half a gallon, while the inner or second stop collar is adjusted so that when the stop stud is projected, the movement of the crank handle will only give one half a stroke and thereby pump one quart of the liquid to be drawn.

With the pump operating mechanism adjusted to gage one half a gallon of liquid at each stroke it will be obvious that in drawing large quantities, for instance five gallons or more, it would require the operator's closest attention to count ten or more half-gallon strokes, and to relieve the operator of such count and to accurately indicate the exact amount of liquid being pumped, I employ a register dial X. The register dial X, is mounted on the pivot screw *x*, at one side of the off-standing bearing bracket and is provided upon its periphery with suitable graduations from one gallon up, and also with a ratchet portion or disk Y, the teeth of which are engaged one at a time at the end of each full stroke by the gravity pawl or dog *y*, pivotally mounted in the recess *y'*, at one end of the short operating shaft O, which is journaled below the register dial. A pointer finger Z, is secured to the top of the bracket K, and is disposed over the top of the register dial to indicate the number of gallons which have been drawn. It will be obvious that when the crank handle is turned in a direction to raise the pump rod, the pawl *y*, will turn on its pivot to fall into a position, whereby a reverse movement of the crank handle will carry it into engagement with one of the teeth at the lower side of the register dial, and thereby turn the said dial a distance of one tooth around to indicate one complete stroke. When the pump is adjusted to operate in connection with the inner or second stop collar and its sliding stop stud, the registering device just described is hardly necessary and will not operate.

From the above it will be seen that the herein-described pump can be accurately gaged to draw any amount of liquid desired at one stroke of the piston, while at the same time simple and efficient means are provided for accurately registering extra large quantities of the liquid being pumped, and I will have it understood that changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what

is claimed, and desired to be secured by Letters Patent, is—

1. In a measuring pump, the combination with a suitable tank; of a pump arranged within the tank and having its discharge pipe and rod extending there-above, said pump rod having a rack bar at its upper end, a suitably arranged operating shaft having a cog pinion engaging the rack bar of the pump rod, and adjustable stops arranged at one end of said operating shaft to limit the movement thereof, substantially as set forth.

2. In a self-measuring pump, the combination of a pump rod having a rack bar, a suitably arranged operating shaft carrying a cog pinion meshing with said rack bar, a fixed stop pin projected from a point at one side of the operating shaft, an adjustable stop collar mounted on one end of the shaft and having a lug adapted to contact with said stop pin, and a registering device arranged at the other end of the shaft and operated thereby, substantially as set forth.

3. In a self-measuring pump, the combination with a suitable storage tank; and a force pump arranged within said tank and the pump rod of which is provided with a rack bar near its upper end; of a suitably supported bearing bracket arranged to receive the upper end of the pump rod and its discharge pipe, a turning operating shaft journaled in said bracket and carrying a cog pinion meshing with the rack bar of the pump rod, a handle detachably attached to one end of said shaft, and adjustable stop devices arranged at one end of said shaft to limit the turn thereof, substantially as set forth.

4. In a self measuring pump, the combination with a tank; of a force pump adapted to be arranged within said tank, a rack bar removably clamped onto the pump rod near its upper end, a suitably arranged operating shaft carrying a cog pinion engaging said rack bar and having a detachable handle at one end, a stop pin projected from a point at one side of said operating shaft, and a circularly adjustable stop collar mounted on one end of said shaft and having a projecting stop lug adapted to contact with said stop pin, substantially as set forth.

5. In a self-measuring pump, the combination with the frame upright; of the force pump attached to the lower end of said upright and adapted to be arranged within a suitable storage tank and having its discharge pipe and pump rod extended to the upper end of said upright, an off-standing bearing bracket attached to the upper end of said frame up-

right and provided with a guide opening to receive the upper end of the pump rod and a pipe opening to receive the upper end of the pump discharge pipe, an operating shaft journaled in said bracket and carrying a cog pinion, a rack bar attached to the pump rod and engaged by said cog pinion, and adjustable stop devices arranged at one end of said shaft to limit the turn thereof, substantially as set forth.

6. In a self-measuring pump, the combination with a pump whose rod carries a rack bar at its upper end, a suitably arranged bearing bracket guiding the upper end of the pump rod and having a stop pin projected from one side, an operating shaft journaled in said bearing bracket and carrying a cog pinion meshing with said rack bar, a crank handle having a hub portion fitted onto one end of said operating shaft, a circularly adjustable stop collar mounted on the hub portion of said crank handle and having a stop lug adapted to engage against said stop-pin, a second circularly adjustable stop collar mounted at one side of the bearing bracket, a sliding stop stud mounted on said second stop collar and adapted to be projected over the other stop collar in the path of its stop lug, and a registering device arranged at the other end of said operating shaft and operated thereby, substantially as set forth.

7. In a self-measuring pump, the combination with the force pump, the rod of which carries a rack bar at its upper end, a suitably arranged bearing bracket guiding the upper end of said pump rod, a short operating shaft journaled in said bearing bracket and carrying a cog pinion meshing with said rack bar and provided at one end with a pawl recess, adjustable stop devices arranged on the other end of said shaft, a turning register-dial journaled at one side of said bearing bracket and having graduations and a ratchet portion or disk, a pointer finger secured to the top of the bracket and disposed over the dial, and an actuating pawl pivoted in the recess at one end of the operating shaft and adapted to be carried into engagement with one tooth of said ratchet portion or disk at each complete stroke of the pump, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

SYLVANUS F. BOWSER.

Witnesses:

ROBERT V. CRAGG,
A. Z. POLHAMUS.