(No Model.)

M. J. WINE.

MEASURING PUMP.

No. 597,477. Patented Jan. 18, 1898.

Fig. 1.

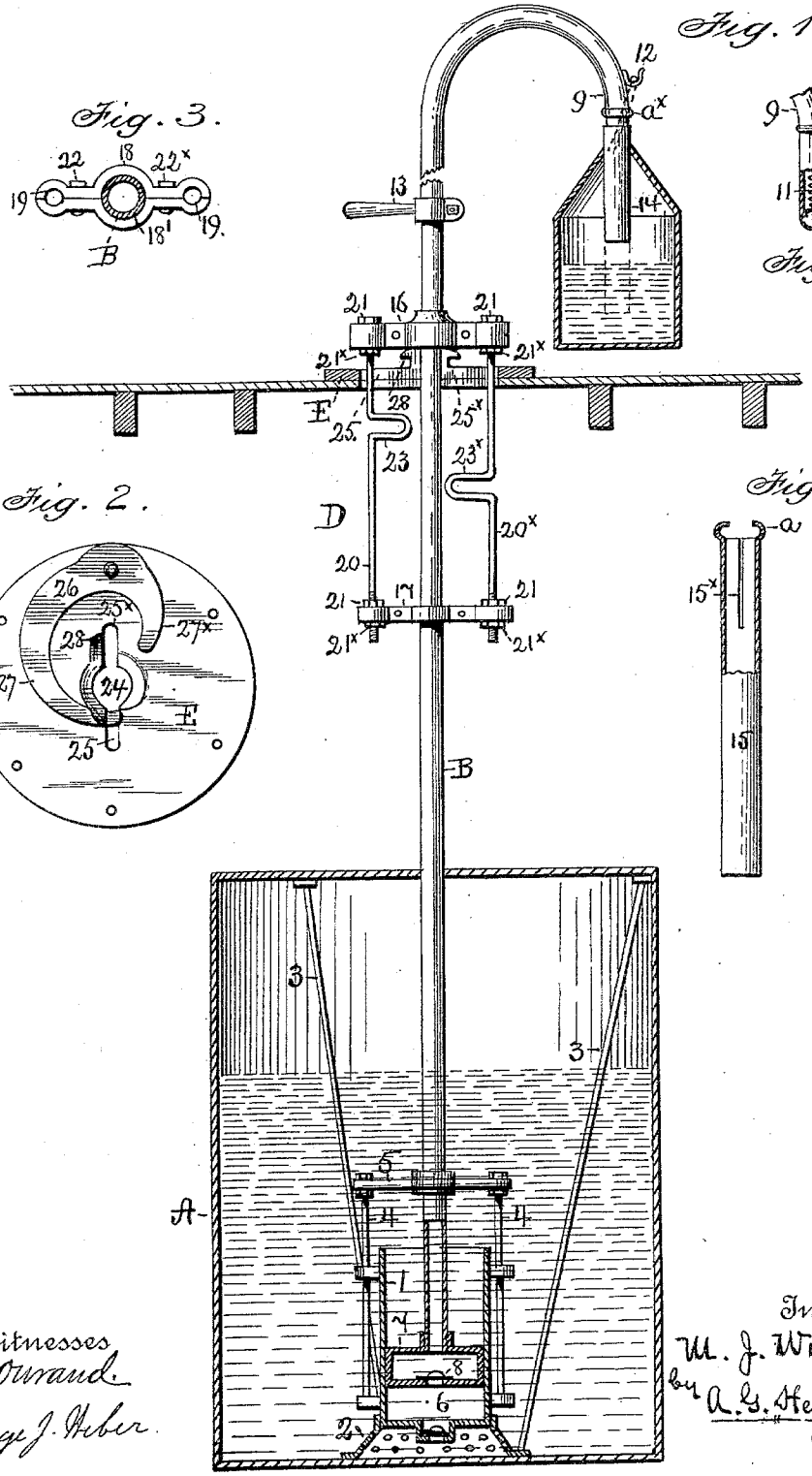


Fig. 1a.

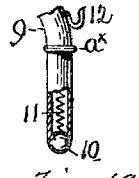


Fig. 3.

Fig. 2.

Fig. 4.

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UNITED STATES PATENT OFFICE.

MILETUS J. WINE, OF WASHINGTON, DISTRICT OF COLUMBIA.

MEASURING-PUMP.

SPECIFICATION forming part of Letters Patent No. 597,477, dated January 18, 1898.

Application filed July 29, 1897. Serial No. 646,357. (No model.)

To all whom it may concern:

Be it known that I, MILETUS J. WINE, of the city of Washington, in the District of Columbia, have invented a new and useful Measuring-Pump, of which the following is a specification.

The invention has relation to improvements in measuring-pumps for drawing a determined quantity of a fluid from a reservoir or containing vessel and delivering it directly into the portable receptacle; and the objects are to simplify the construction and increase the efficiency of the mechanism and insure accuracy in movement.

I accomplish the objects of the invention by the mechanism illustrated in the accompanying drawings, wherein—

Figure 1 is a side elevation of the measuring-pump complete and vertical section of the pump cylinder and piston disposed in the fluid reservoir or tank. Fig. 1ª is a detail of the delivering-nozzle, showing the valve secured therein. Fig. 2 is a plan view of the plate adapted to be secured to a floor above the tank and to which the pivotally-mounted stop is secured. Fig. 3 is a plan view of one of the cross arms or heads of the measuring-frame and cross-section of the hollow piston-rod. Fig. 4 is a view in elevation of an auxiliary delivering tube or spout designed to be connected to the nozzle of the pump to fill deep or large cans.

This pump is particularly intended for use in measuring inflammable fluids—such as coal-oil, gasolene, and similar fluids—and is designed to be placed with the operating filling mechanism above a floor in one compartment, with the pump extending below the floor and into a tank secured and placed in a safe place.

Referring to the drawings, A designates a tank or reservoir of any suitable size and of a construction adapted to contain with safety an inflammable fluid. In this tank is secured a pump-cylinder 1 of any proper size and fastened in the bottom of the tank. This pump-cylinder is made of a capacity suited to pump and measure the largest quantity designed to be delivered at the nozzle of the pump at a single stroke. In the drawings I have shown the pump-cylinder as seated on a perforated stand or support 2, secured on the bottom of the tank, and braced and held in position by means of brace-rods 3 3, having their lower ends lodged on the flange of the stand and their upper ends bearing against the top or cover of the tank. A guide-frame for the piston-rod is provided, being composed of side rods 4 4, let through ears on the pump-cylinder, said rods being connected at their upper ends by a cross-piece 5, formed with a central hole through which the piston-rod slidingly operates and is guided.

In the bottom of the pump-cylinder is a suitable valve 6, opening upward in a well-known manner. This part or portion of the pump above described I make no claim to, and it may be of other constructions suited to a measuring-pump having a reciprocating hollow piston-rod.

In the pump-cylinder is disposed the reciprocating hollow piston-rod B, consisting of a metal tube of the desired bore to freely deliver the fluid through the nozzle. At the lower end of the piston is carried the piston-head 7, fitted to the pump-cylinder and provided with a valve 8, opening upward, so that when the piston is moved upward the required distance to measure the required quantity of fluid and is then moved down to its limit of movement the quantity of fluid to be measured will be delivered through the nozzle into a can placed to receive it. The upper end portion of the piston-rod is curved over and directed straight downward, as at 9, and in the nozzle is placed a valve 10 to stop the drip, this valve being moved outward and away from the nozzle by the force of the discharging fluid and returned to close the nozzle when the flow is completed or the pressure ceases by means of a retractile spring 11. On the nozzle end portion of the piston-rod is fixed a hook 12, on which is hung the bail of a light can while being filled, substantially as shown in Fig. 1 of the drawings. A handle 13 is secured to the piston-rod at a suitable point above the floor, as shown, whereby the pump is operated.

In the practical operation of these measuring-pumps an objection to their use has been that in discharging the fluid into the cans or other vessel the force of the delivering flow

causes the contents to froth and foam and rise out of the can and run down the outer surface thereof onto the floor, thus making a dangerous deposit, besides making it necessary to clean both the can and the floor. To allay this produced ebullition and prevent the overflow occasioned thereby, I make the nozzle-piece 14 considerably longer than usual, extending well down into the can being filled, so that the fluid will rise up and around the lower portion thereof and close the same and the can may be filled to completion without any appearance of the agitation occurring when a shorter nozzle-piece is used.

The pump may be used to fill cans which are too heavy to be lifted with the piston-rod, and to meet this exigency I have provided the auxiliary nozzle-piece shown in Fig. 4 of the drawings. Referring to this figure, 15 designates a suitable metal tube of such length as to adapt it to be detachably fitted and fixed to the nozzle of the piston-rod, and which tube being so arranged may be inserted in a large vessel seated on the floor, in which position and arrangement the pump may be worked with the same convenience and utility as when the smaller cans are being filled, as the auxiliary nozzle-piece is long enough to permit the reciprocations of the piston-rod. The upper portion of the tube 15 is split, as at $15^{\times}$, and is formed with a turned-in flange a to take over a head or ring $a^{\times}$ on the nozzle. When a large vessel is measured into and the desired amount of fluid has been discharged, the piston-rod may be lifted and the auxiliary tube or nozzle be detached therefrom and then withdrawn from the nozzle.

D designates a rectangular measuring-frame secured to the piston-rod and so disposed thereon in relation to the action of the piston that the limits of its adjusted and determined movements will cause the piston to discharge the requisite and desired quantity of fluid into the can or vessel at a single downstroke of the piston-rod. This measuring-frame D is of the following-described construction:

Referring to Fig. 1, 16 and 17 designate upper and lower cross pieces or heads, preferably consisting of duplicate alining bars (see Fig. 3) formed with oppositely-directed semicircular central recesses 18 18′ to take in and hold the piston-rod and at the ends formed with recesses 19 19 to clamp and hold the respective ends of the measuring-bars. 20 and $20^{\times}$ designate the measuring-bars of the frame, having their upper and lower ends adjustably secured in the cross-heads 16 and 17 by means of upper and lower nuts 21 $21^{\times}$, threaded on the respective ends of the bars and disposed above and below the cross-heads, substantially as shown in the drawings. The alining bars of these cross-heads are held together, clamped to the piston-rod by clamping bolts or screws 22 $22^{\times}$. It will be readily perceived that these cross-bars 16 and 17 may be made in single integral pieces formed with apertures to take the piston-rod and measuring-bars and secured to the piston-rod by any suitable fastenings.

The measuring-bars of the frame D are formed or provided with suitable stops 23 $23^{\times}$, designed to limit the movement of the pump and arranged therein or secured thereon at certain distances, determining the required quantities of liquid which are to be measured by the movement of the piston, the distance between the stops or loops, and a stopping element to be interposed in their path. The construction or formation of these stops in the form of loops in the manner indicated in the drawings is preferred as giving to the frame a resilient impact with the stop against which they contact, and thus tends to relieve the movement of the pump from the jar otherwise consequent.

As illustrated in the drawings, the stop or loop 23 in the bar 20 indicates the pint-measuring stop, and is so made in the bar that the distance between it and the upper cross-head will permit a movement of the piston sufficient to take from the pump-cylinder and discharge at the nozzle at one stroke a pint of the fluid, and the stop or loop $23^{\times}$ is located in the measuring-bar $20^{\times}$ at such a distance below the upper cross-head as to permit a movement of the piston requisite to discharge at one stroke a quart of the fluid, and the length of the stroke of the whole frame between the cross-heads is intended to discharge a half-gallon of fluid through the piston-rod. The stops or loops of the measuring-bars are disposed in alinement, with their inner ends adjacent to the piston-rod, substantially as shown in the drawings, and when the largest quantity is to be drawn they pass through the slots in the plate E, hereinafter described.

On the floor is secured a strong metal plate E, having a piston-rod aperture 24 therein through which the piston-rod works, and, from this aperture 24, leads opposite the slots 25 $25^{\times}$, through which the stops or loops may pass, or both of them, as when measuring a half-gallon.

To stop the upward movement of the pump at the determined distances to measure a pint or quart, I pivotally secure on the plate E to move in the plane thereof a latch or stop-piece 26, formed with bent or curved arms 27 $27^{\times}$, so formed and disposed that either may be moved over the slots in their path and stop the loops in the measuring-bars from coming farther through the slots, and should it be desired to measure the full capacity of a stroke of the frame the stop-piece 26 is turned so that the ends of both arms thereof stand clear and away from the slots and thus permit both loops to move unimpeded therethrough. To hold the respective ends of the stop-piece 26 securely down over the slots, an overhanging flange 28 is formed on the plate

E around the pump-aperture, the overhanging part of the flange serving as keepers for the respective ends of the stop-piece when moved over the slots, as indicated in Fig. 2 of the drawings.

To adjust the frame to the measurements of the pint and quart, the upper cross-head of the frame is adjusted thereto by means of the adjusting-nuts on the upper ends of the measuring-bars, and the requisite adjustment for the half-gallon or greatest measurement is made by movement of the lower cross-head of the frame. After these adjustments have been made and ascertained the frame will need no further adjustment.

The operation and use of the pump are as follows: The pump having been set up substantially as illustrated and the measurement adjustments having been made as specified the vessel to be filled is hung on the hook on the nozzle. If a large vessel is to be filled, it is set on the floor, with the long nozzle-piece therein. The piston is then raised to the required and set distance and forced downward, when the determined and desired quantity of fluid will be discharged.

What I claim is—

1. In a measuring-pump, the combination with a vertically-reciprocating piston-rod, of a measuring-frame carried by the said piston-rod, composed of upper and lower cross-bars secured to the said piston-rod and measuring side bars, in the ends of the cross-bars, formed with loops disposed at determined distances in said bars, and means to limit the upward movement of the frame and piston-rod.

2. In a measuring-pump, the combination with a vertically-reciprocating piston-rod, of a measuring-frame carried by the piston-rod, and composed of upper and lower cross-heads, secured to the piston-rod, and measuring side bars connecting the cross-bars and having stops therein disposed at determined distances, means to adjust the cross-heads on the side bars, and means to stop the upward movement of the frame and piston-rod.

3. In a measuring-pump the combination with a vertically-reciprocating piston-rod, of a measuring-frame carried by the said piston-rod and composed of upper and lower cross-bars secured to the piston-rod, and measuring side bars connecting the cross-bars, and formed with integral loops disposed at determined distances, means to adjust the cross-heads on the side bars, and means to stop the upward movement of the frame and piston-rod.

4. In a measuring-pump, the combination with a vertically-reciprocating piston-rod, of a measuring-frame, carried by the piston-rod, having side bars formed with measuring-stops, a suitably-supported plate formed with a piston-rod aperture and slots leading therefrom to admit the passage of the measuring-frame, and a pivotally-secured stop-piece formed with arms adapted to move over the said slots and stop the passage of the said frame.

5. In a measuring-pump, the combination with a vertically-reciprocating piston-rod, of a measuring-frame secured to the piston-rod and having side bars formed with stop-loops, a suitably-mounted plate formed with a piston-rod aperture and slots for the piston-rod and frame-bars to pass through, and having a keeper-flange about the piston-aperture, and a pivotally-mounted stop-piece on the said plate formed with arms arranged to move across the said slots and under the said flanges.

In witness whereof I have hereto set my hand in the presence of two attesting witnesses.

MILETUS J. WINE.

Attest:
S. A. TERRY,
A. G. HEYLMUN.