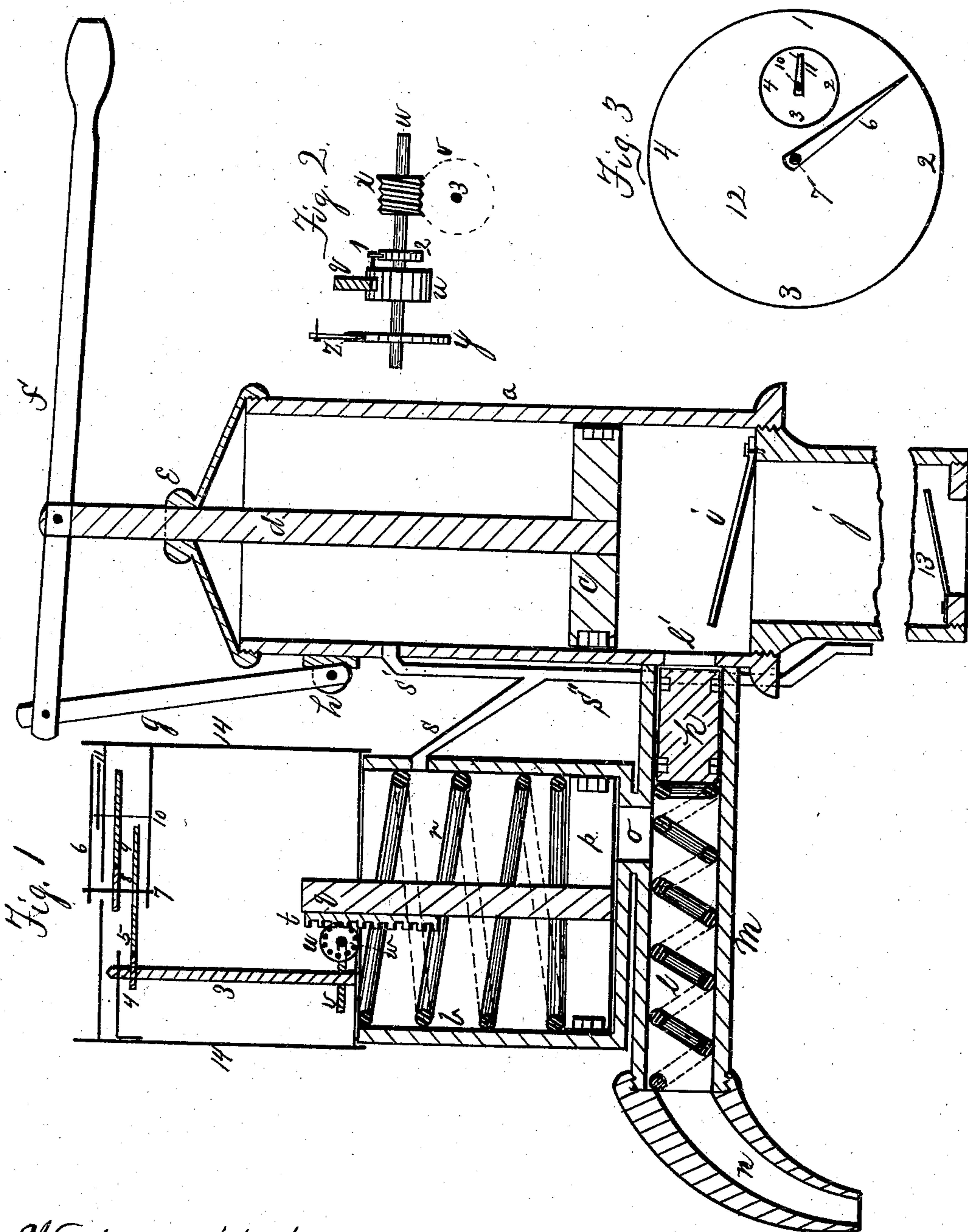


(No Model.)

A. P. & W. L. FIFIELD.
MEASURING PUMP.

No. 370,613.

Patented Sept. 27, 1887.



Witnesses.
E. S. Fogg
Edw L. Whitehouse

Inventors
Alfred P. Fifield
Walter L. Fifield
By *Hughes & Choate*
Their attys.

UNITED STATES PATENT OFFICE.

ALFRED P. FIFIELD AND WALTER L. FIFIELD, OF AUGUSTA, MAINE, AS-
SIGNORS OF ONE-HALF TO WILLIAM G. FIFIELD, OF SAME PLACE.

MEASURING-PUMP.

SPECIFICATION forming part of Letters Patent No. 370,613, dated September 27, 1887.

Application filed May 25, 1887. Serial No. 239,375. (No model.)

To all whom it may concern:

Be it known that we, ALFRED P. FIFIELD and WALTER L. FIFIELD, of Augusta, in the county of Kennebec and State of Maine, have
5 invented a new and useful Improvement in Measuring-Pumps, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a sectional view; Fig. 2, part of
10 the registering apparatus, and Fig. 3 the dial and indicators.

Like letters of reference indicate like parts.

The object of our invention is to construct
15 a measuring-pump by which the liquid is pumped from the cask or barrel to any other vessel and measured by passing through the intermediate device connected thereto without the use of a tank or similar arrangement.

In the drawings, *a* is a cylinder in which is
20 the piston *c*, operated by the handle *f* and rod *d*, the handle being pivoted to the rod *g*, secured in box *h*. In the cylinder *a* is fixed the valve *i*, opening upward. The cylinder *a* is joined by coupling to the pipe *j*, which ex-
25 tends into the liquid to be pumped, and if there is any considerable distance to the liquid a second valve, 13, can be put in the pipe to prevent the flow of the liquid from the pipe *j* when not in use.

30 To the cylinder *a* the discharge-pipe *m*, with the outlet *n*, is connected, *m* and *n* being connected by a screw-thread. In the pipe *m* is the sliding block *k* and spiral spring *l*. The pipe *m* also has an opening, *o*, connecting with
35 the cylinder *b*. In the cylinder *b* is the piston *p*, with rod *q*, said rod having the rack *t* thereon. It also has, resting upon the piston *p*, the spiral spring *r*.

40 *s* is an overflow from *b*, *s'* from *a*, joining in *s''*, which runs down on the outside of the pipe *j*.

The rack *t* engages the cage-pinion *u*, which turns loosely on the small spindle *w*. On this pinion is the pawl 1, which engages the ratchet-wheel 2, secured on the spindle *w*. Secured
45 on the spindle *w* are also the screw-wheel *x* and the ratchet-wheel *y*. This screw-wheel engages the cog-wheel *v* on spindle 3, and the ratchet *y* is held by the pawl *z*. On the spindle 3 is the cog-wheel 4, engaging wheel 5 on
50 spindle 7. This spindle 7 extends through the

dial-plate 12, and has thereon the indicator 6. It also has thereon the wheel 8, which engages wheel 9 on spindle 10, which spindle also extends through the dial-plate 12 and has thereon the indicator 11. 12 is the dial, numbered for
55 the indicators 6 and 11.

The operation of the pump is as follows: The pipe *j* is run into the liquid to be pumped. Then by raising the handle *f* the piston *c* is lifted, the valves *i* and 13 are opened, and the
60 liquid drawn up into the cylinder *a*, the outlet through the pipe *m* being closed by the block *k*, which is pressed forward and held by the spiral spring *l*. The handle *f* being depressed, the valves *i* and 13 are closed, the
65 block *k* forced back, the spring *l* being compressed, and the liquid forced out through the pipe *m* until the block *k* passes the opening *o*. Then, the block *k* being longer than the width
70 of the opening *o*, there is no outlet for the liquid except into the cylinder *b*, and the force exerted throws up the piston *p* and rod *q*, and consequently compresses the spiral spring *r*.

When the movement of the handle *f* is re-
versed and the force withdrawn from the pis-
ton *c*, the spiral spring *l* expands, the block *k*
75 is thrown forward, and as soon as it passes the opening *o* the liquid flows out through *m n* into the receiving-vessel, the spiral spring *r* expands, and the piston *p* and rod *q* are brought
80 back to the position indicated. If there is any liquid forced above the pistons *c* or *p*, it will find its way back into the cask through the pipes *s'*, *s*, and *s''*. When the rod *q* is thrown
85 up, the rack *t* thereon engages the pinion *u* and turns it. The pawl 1 thereon, engaging the ratchet 2, which is fast on the spindle *w*, turns the spindle, and consequently the wheels *x* and
90 *y*. When the piston *p* and rod *q* return to place, the pawl 1 on *u* slides back over 2, while the spindle *w* is prevented from turning back by the pawl and ratchet *z y*. When the wheel
95 *x* is turned, it turns the cog-wheel *v*, and through the spindle 3, wheels 4 and 5, and spindle 7 motion is transmitted to the indicator 6, and
100 from spindle 7, through wheels 8 and 9 and spindle 10, to the indicator 11. These indicators on dial 12 have numbers around the circles to indicate the amount of liquid which has been forced through the pump, and this,

together with the relation between the two, may be varied as desired. The registering device is inclosed in the case 14.

It will be seen that it is immaterial what the length of the stroke of the piston *c* is, as the indicators are moved in proportion to the movement of the piston *p* and will accurately measure any quantity, however small, passing through the cylinder *b*. The pistons *c* and *p* and the block *k* have proper packing to prevent the passage of the liquid by them.

The dial 12 is placed so that the operator looks down on it. It is obvious that it may be placed perpendicular, if desired, the operation being substantially the same.

The indicators 6 and 11 may be arranged to turn on the spindles 7 and 10, so that they can be brought back to a starting-point when commencing to pump.

We claim as our invention—

1. A measuring-pump composed of the

force-pump, as described, connected with the pipe *m*, having cylinder *b* thereon, and the sliding block *k*, and spiral spring *l* therein, said cylinder having the piston *p*, with rod *q*, and spring *r* therein, all operating, substantially as described, in combination with a suitable registering device.

2. A measuring-pump composed of the force-pump, as described, the pipe *m*, having sliding valve *k*, discharge *n*, cylinder *b*, with piston *p*, rod *q*, and spring *r* therein, in combination with the registering device described, consisting of rack *t*, wheels *x*, *u*, *v*, 4, 5, 8, and 9, ratchets 1 2 and *y* *z*, indicators 6 and 11, and spindles *w*, 3, 7, and 10, as fully set forth.

ALFRED P. FIFIELD.

WALTER L. FIFIELD.

Witnesses:

WINFIELD S. CHOATE,
E. S. FOGG.