(No Model.) 2 Sheets—Sheet 1.

J. P. JACKSON.

MACHINE FOR MANUFACTURING AND DISPENSING AERATED WATER.

No. 485,386. Patented Nov. 1, 1892.

Fig. 1.

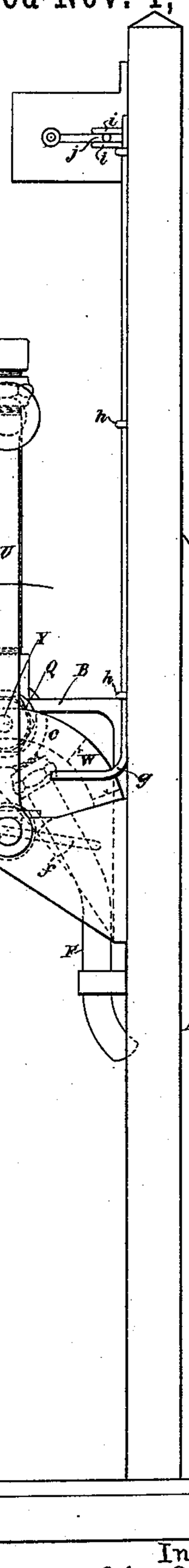


Fig. 4.

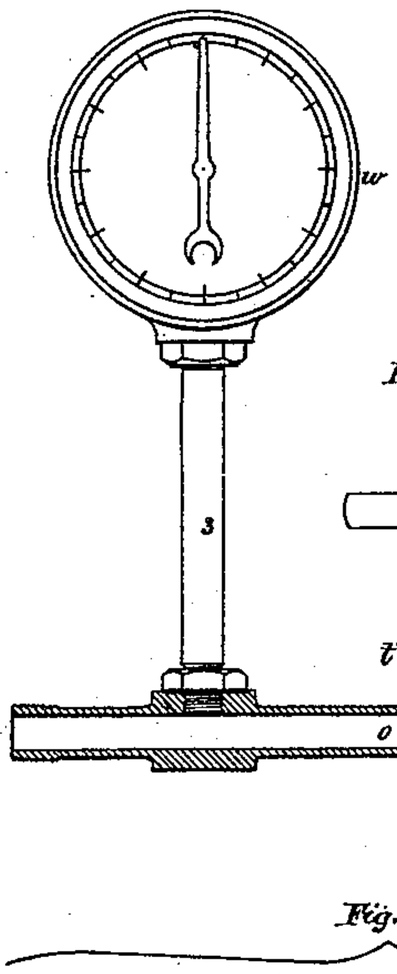
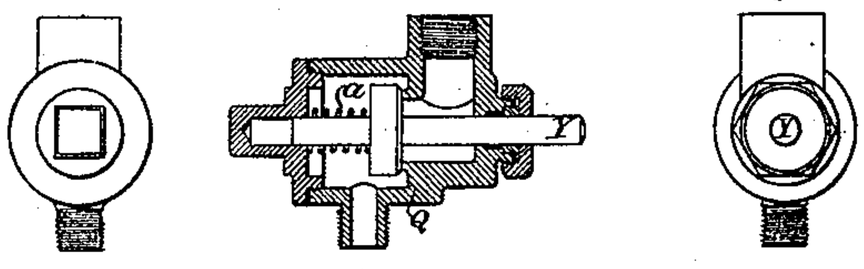


Fig. 2.

Fig. 3.



Witnesses
John Revell
George Baumann

Inventor
John P. Jackson
By his Attorneys Howson and Howson

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FIG. 2.

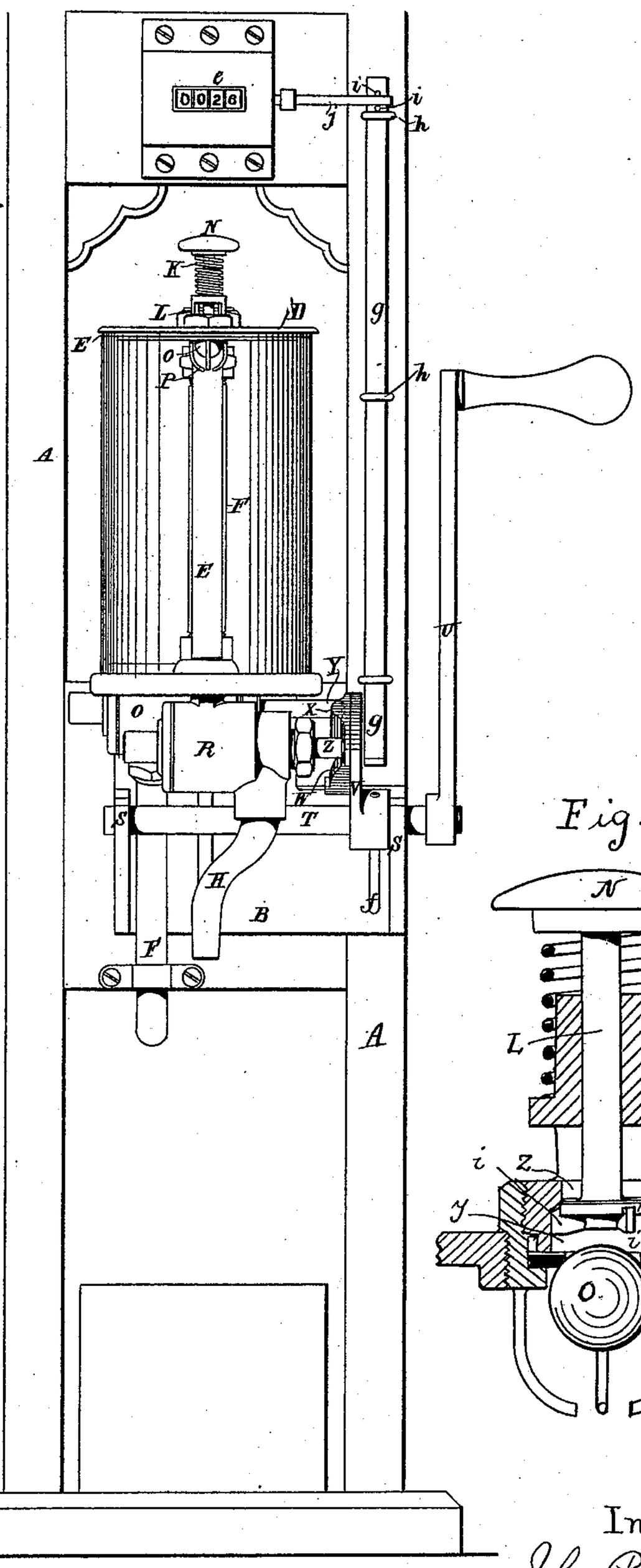

Fig. 5.

Witnesses
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UNITED STATES PATENT OFFICE.

JOHN P. JACKSON, OF LIVERPOOL, ENGLAND.

MACHINE FOR MANUFACTURING AND DISPENSING AERATED WATER.

SPECIFICATION forming part of Letters Patent No. 485,386, dated November 1, 1892.

Application filed June 17, 1890. Serial No. 355,754. (No model.) Patented in England December 30, 1889, No. 20,868, and February 27, 1890, No. 3,117.

To all whom it may concern:

Be it known that I, JOHN PERKINS JACKSON, engineer, a subject of the Queen of Great Britain and Ireland, residing at 63 Duke Street, Liverpool, in the county of Lancaster, England, have invented certain Improvements in Appliances for Dispensing Aerated Water, (for which I have applied for patents in Great Britain, No. 3,117, dated February 27, 1890, and No. 20,868, dated December 30, 1889,) of which the following is a specification.

My invention has for its object to provide improved apparatus for the dispensing of aerated liquors.

My improved fountain or apparatus for dispensing the aerated liquor is illustrated by the accompanying drawings.

Figure 1 is a side elevation partly in section, and Fig. 2 is a front elevation. Fig. 3 shows in cross-section and end elevation the inlet and outlet valve. Fig. 4 is a view of the pressure-regulator. Fig. 5 is an enlarged view of the snift-valve.

A is a standard or pillar, which may be fixed to a counter or other suitable support. Attached to or forming part of this standard or pillar is a bracket B, preferably of metal, constituting a table or support for a vessel C, which consists of a cylinder, (preferably of glass.) The lower end of this cylinder is placed in a recess in the bracket or table B and the upper end is closed by a disk D, the whole being securely held together either by stays or supports on the exterior or, as shown in the drawings, by means of a bolt E, passed through a hole in the cover D and screwing into the bracket B, which constitutes the bottom of the vessel. Packing E, of india-rubber or other suitable material, is interposed between the ends of the cylinder C and the bracket B and the cover D to insure fluid-tight joints at these parts.

In the cover D is an opening D′, by which aerated liquor enters the vessel C, the said opening communicating by a pipe or tube F with the liquor retainer or reservoir. The bottom B of the vessel also has an outlet G for the aerated liquor from the vessel B, the said outlet being provided with a tube H for conducting the liquor into a tumbler or other receptacle. The pipes or tubes F and H are each provided with a valve governing the passage of the liquid into and from the vessel C, which valves are maintained in their normal closed position by springs, as shown in Fig. 3.

The vessel C is provided, preferably on the top plate or cover D, with a "snifting-valve" I, maintained on its seat by a spring K, Fig. 5. The spindle L of this valve extends upward and is provided on its upper end with a knob or handle N, by means of which the valve may be opened slightly when required to allow the air confined inside the vessel to pass out, the lower part of the valve-spindle being made hollow or provided with a groove or grooves *i′* in it for that purpose. The spindle L also extends below the valve I and when depressed sufficiently forces from its seat a buoyant valve O, contained in a cage P, carried by the cover D below the valve N.

In order to allow gas to escape from the vessel C while the liquid is entering it, the snift-valve I is depressed only sufficiently to uncover the passages *i′* in the said valve or in its seat, as the case may be, but not to such an extent as to cause the spindle L to prevent the float-valve O entering its seat when raised by the inflowing liquid. The object of this float-valve is to prevent the liquid escaping past the snift-valve should the said valve by accident or otherwise remain open while the liquid is entering the vessel. The float-valve O is raised to its seat by the inflowing liquid and is maintained on its seat by the combined pressure of the liquid and the gas contained in the vessel. When it is desired to withdraw the liquid, the snift-valve may be further depressed, so as to force the float-valve O from its seat, and thereby allow the gas to escape before the liquid is withdrawn.

The inlet-valve Q and the outlet-valve R for controlling the passage of the aerated liquid to and from the vessel C are opened and closed alternately, which may most conveniently be done in the following manner:

Fitted to turn in bearings S in brackets projecting from the standard A is a shaft or spindle T, provided on one end with a handle

U and having fast thereon a segment V. On one face of this segment are fitted or formed cam-surfaces W and X, which when the spindle T is partially rotated are caused to bear, respectively, upon the spindles Y and Z of the valves Q and R, so as to open the said valves at the required periods to fill the vessel C with liquid and discharge the same from the said vessel.

To charge the vessel C with the aerated liquid from the cylinder or reservoir, the handle U is pulled forward in the direction of the arrow in Fig. 1, thereby turning the segment V, so as to cause the cam-surface W to come into contact with and depress the spindle Y of the inlet-valve Q, and thus open the said valve and admit aerated liquid into the vessel C. As the liquid is entering the vessel and when the said vessel is about half-full the valve I may be depressed, so as to allow some of the confined gas and air to escape by the passage or passages *z* in the valve-seat, whereby the pressure inside the vessel is reduced and more liquid is able to flow in. When the vessel is fully charged with liquid, the buoyant valve O will close the passage *y* and prevent the escape of the liquor therethrough, even if the valve is being held down.

To discharge the liquor from the vessel C, the handle U is pushed back in the reverse direction to that indicated by the arrow, so as to remove the cam-surface W out of contact with the spindle Y, whereupon the valve Q will close under the action of its spring *a*, Fig. 3. The snift-valve is now depressed and the whole of the pressure blown off, and then by a further motion of the handle U in the same direction the cam-surface X is brought into contact with and caused to depress the spindle Z of the outlet-valve R, thereby opening the said valve and allowing the liquor by its own weight to flow out of the vessel through the pipe or tube H into a tumbler *b* or other receptacle placed in position to receive it. If only a portion of the liquor is required to be withdrawn from the vessel C, when the required quantity of liquor is withdrawn the handle U may be moved in the direction of the arrow, so as to remove the cam-surface X from the spindle Z, the remaining portion being discharged when required by again moving the handle, so as to cause the cam X to again open the valve R. When the contents of the vessel have been discharged, the handle U is returned to its normal position (shown in Fig. 1) in readiness for the next operation, the ends of the spindles being then opposite the plain or lower surfaces *c* and *d* of the segment V.

In order to prevent fraud and to register the number of times the vessel has been discharged, there is provided on the bracket A a counter or registering apparatus *e*, which may be operated by any convenient means from a movable part of the apparatus, so as to indicate on the registering device each charging or discharging operation of the apparatus. A convenient arrangement for operating the registering mechanism is illustrated in the drawings, and consists in providing on the shaft or spindle T or on the segment V a projection or tail-piece *f*, which when the segment V is moved into position to open the valve R comes into contact with the lower end of a rod or bar *g* and raises the said bar in its bearings or supports *h*. The upper end of the bar *g* is provided with pins or studs *i*, engaging an arm or projection *j* from a pawl which actuates a ratchet-wheel connected with the first gear-wheel, which effects the rotation of the numbered wheels of the counter, so that at each elevation of the bar *g* by the tail *f* on the segment V the indicating-wheels of the counter are moved one number forward, thereby indicating at all times the number of discharges of liquor from the vessel C. Thus if the said vessel be of a certain known capacity the quantity of liquor discharged from or passed through the vessel may be readily ascertained. To prevent the mechanism being tampered with, so as to extract without operating the registering mechanism, the operating parts may be inclosed and locked in a glass or other suitable case, the key thereof being retained by the proprietor. The outlet-valve R should be gradually opened, so that the liquor will flow out through the pipe H gently against the side of the glass. In fountain apparatus hitherto in use it has been usual to hold a bottle by means of a treadle tightly up against a rubber mouthpiece on the aerated-liquor-discharge pipe and so fill the bottle under pressure, and then to empty the bottle into a glass or else to hold the glass itself against a rubber disk or plate and discharge the aerated liquor into the glass direct. The first plan is troublesome, and in the latter case the glasses were frequently broken unless a thick and unsightly glass were used.

By my system the vessel C takes the place of the bottle and the aerated liquor is quietly discharged from it into the glass as if from an opened bottle.

On the pipe which conducts the aerated liquor from the cylinder or reservoir to the fountain there is fitted a pressure-regulator or reducing-valve, which I prefer to fix on or alongside of the standard A and to use a pressure-gage in connection with it, as shown in Fig. 4, so that the operator can see the pressure at which he is filling the vessel C or dispensing the liquid. The chief advantage of the regulator is that while the aerated liquor in the generator or reservoir is at about one hundred and twenty pounds pressure about forty pounds pressure is sufficient for it to be sold, and therefore a great economy of gas is obtained by reducing the pressure of the liquor from the higher to the lower pressure.

The reducing apparatus which I prefer to employ is shown in vertical section in Fig. 4,

and consists of a valve *k*, operated by the pressure of the aerated liquor, so as to open and close (more or less) a communication *l* between the inlet-passage from the reservoir at *m* and the outlet *o*, leading to the vessel C or to a bottling apparatus. On the spindle of the valve *k* are secured two diaphragms *q* q^2, one of which *q* divides the pressure-regulator into two compartments 2 3, it being securely held all around its edge at the junction *t*, where the two parts constituting these two compartments are screwed together. Above the diaphragm *q* the valve-spindle is surrounded by the spiral spring *p*, the upper end of which spindle turns freely in a recess in a screwed nut *r*, by means of which nut the power of the spring may be regulated, as required. At the lower part of the compartment 3, below the diaphragm *q*, is the opening *l*, through which the valve-spindle passes, and at the lower or under side of this opening is the seating for the valve *k*. This valve is situated inside a lower chamber *u*, which communicates by the pipe *m* with the cylinder or liquor-reservoir. At the lower part of this valve-chamber *u* is secured by a cap or plug 4 and the nuts 5 on the lower end of the valve-spindle the lower diaphragm q^2. The aerated liquor from the cylinder or reservoir enters the regulator by the pipe *m*, and only when the tension of the spring *p* (which is the full tension of the spring less the tension of the gas upon the diaphragm *q*,) permits it can the aerated liquor flow through the passage *l* into the compartment 3 and out therefrom by the exit *o* to the vessel C or to a bottling apparatus. Should the pressure in the pipe *m* and chamber *u* increase, so as to exceed the pressure for which the spring had been adjusted to resist, and therefore tend to force the valve onto its seat, and thus close the passage *l*, the said excess of pressure by acting on the lower diaphragm q^2 will counteract this tendency and maintain the valve *k* open. On the pipe leading from the regulator-chamber *u* to the vessel C is affixed a pipe *s*, leading to the pressure gage or indicator *w*, which will indicate the pressure of the liquor entering the vessel C.

I claim as my invention—

1. An apparatus for dispensing aerated water, provided with a measuring-vessel having inlet and outlet passages and a snift-valve and a spring to control the snift-valve, in combination with a floating valve, all substantially as set forth.

2. An apparatus for dispensing aerated water, provided with a measuring-chamber having inlet and outlet passages and a spring snift-valve, in combination with a floating valve and a spindle to operate at will either both the said valves or only the snift-valve, substantially as and for the purpose set forth.

3. In an apparatus for dispensing aerated water, a glass dispensing-cylinder provided with outlet and inlet valves and a lever having a to-and-fro movement to operate the inlet and outlet valves, in combination with a cover for the cylinder, provided with a snift-valve opening directly to the atmosphere and provided with a knob or handle to operate the snift-valve separately and independently from the other valves and at the will of the operator to allow the escape of air, all substantially as and for the purposes set forth.

4. In an apparatus for dispensing aerated water, the combination of a measuring and dispensing cylinder, a reservoir, and a pipe connecting the cylinder with the reservoir with a valve in the said pipe, a valve-stem, and two diaphragms on opposite sides of the valve to regulate the supply-pressure from the reservoir to the measuring-vessel, all as and for the purpose set forth.

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

J. P. JACKSON.

Witnesses:

H. C. REYNOLDS,
Notary Public, Liverpool.

W. M. WRIGHT,
10 *Park Street, Bootle, Clerk.*